Lectures on the theory and practice of physic (Volume 1).

Contributors

Stokes, William, 1804-1878.
Bell, John, 1796-1872.
National Library of Medicine (U.S.)

Publication/Creation

Philadelphia : Ed. Barrington & Geo. D. Haswell, 1848.

Persistent URL

https://wellcomecollection.org/works/k97szqtm

License and attribution

This material has been provided by This material has been provided by the National Library of Medicine (U.S.), through the Medical Heritage Library. The original may be consulted at the National Library of Medicine (U.S.) where the originals may be consulted.
This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

Surgeon General's Office
LIBRARY.
ANNEX
Section, ~~Medicine~~
No. 3251.

LECTURES

ON THE

THEORY AND PRACTICE

OF

PHYSIC.

BY JOHN BELL, M.D.,

Member of the American Med. Association, and of the Med. Soc. of the State of Pennsylvania;
Fellow of the College of Physicians of Philadelphia;
Member of the American Philosophical Society, and of the Georgofili Society of Florence, etc., etc.

AND

BY WILLIAM STOKES, M.D.,

Lecturer at the Medical School, Park Street, Dublin; Physician
to the Meath Hospital, etc., etc.

FOURTH EDITION, REVISED AND ENLARGED.

LIBRARY
SURG. GEN. OFF.

IN TWO VOLUMES.

VOL. I.

PHILADELPHIA:

ED. BARRINGTON AND GEO. D. HASWELL.

1848.

[Entered, according to Act of Congress, in the year 1848, by Barrington and Haswell, in the Clerk's office of the District Court for the Eastern District of Pennsylvania.]

WB
S874L
1848
V.1

PREFACE

TO THE FOURTH EDITION.

It was not foreseen by the American contributor to these Lectures, that his additions would have constituted, in a comparatively short period, the larger part of the entire work. His proportion is, now, upwards of fourteen hundred pages;—enough, in amount of matter and variety of topic, to form a separate treatise; one as large, if not as comprehensive, as some systems of medicine which find willing and instructed readers.

His professional brethren throughout the United States have been pleased to justify whatever rashness may have been exhibited in the union of his name with that of Dr. Stokes, in a work on the "Theory and Practice of Physic." To them he thought he might appeal, with a firm belief that justice would direct their verdict. The response has been as favourable and as hearty as he could possibly have hoped for,—both among the great body of the profession and the more privileged class of teachers; many of the latter of whom have evinced their kindly appreciation of his labours by adopting *Bell and Stokes's Practice* for their text-book. Among these gentlemen may he not name, without impropriety, Dr. John K. Mitchell, the accomplished Professor of the Theory and Practice of Medicine in the Jefferson Medical College? Still more grateful to the feelings of the man than to the ambition of the author, is this fresh testimony of a friendship which extends beyond a period of thirty years.

The present edition of these lectures has been revised with considerable care, and many of the subjects—such as *Epidemic Cholera*, *Diseases of the Urinary Organs*, *Diseases of the Female Organs of Generation*, *Pulmonary Consumption*, *Diseases of the Heart*, *Meningitis* (*Simple and Tubercular*), the *Exanthemata*, and *Fevers*—recast. Others are introduced for the first time, viz., *Diseases of the Eye*, *Diseases of the Bloodvessels*, and *Dropsy*. A large infusion of pathological anatomy and organic chemistry, together with histology and microscopy, has been made, in the hope of enhancing the value of Diagnosis and Prognosis; although it must be confessed that, as yet, these important matters are not so closely blended with therapeutics as to form a homogeneous system. A notice of them is due to medical science; but care has been taken that it should not, in these lectures, encroach on the large space requisite for clinical or practical medicine—observations and descriptions made at the bedside of the sick in different periods and climates, and under various other modifying circumstances.

In the performance of his task, the American contributor has not been backward in adducing his own experience, or in the independent expression of his own matured convictions; but, at the same time, he disclaims the particular absurdity of professing to write an original work on the Practice of Medicine. Where the materials are in such large proportion common to all, a self-attribution of originality may well create suspicion of the want of good sense, if not of good faith, of the claimant. As well might we look for an original cyclopædia, or an original dictionary. How small, in the nature of things, is the amount of positive knowledge, verified by actual observation and experiment, peculiar to any single inquirer, however industrious and conscientious he may be. Still smaller must be the proportion of real discovery, originating with himself. He, therefore, who would obtain credit for an original work on the pathology and treatment of the several diseases included in the nosological catalogue, or even the chief of them, written with an approach to the minuteness of detail met with in the systematic treatises extant, must either draw largely from his imagination or be inspired. He must write a romance or be favoured with a special revelation.

Some writers deceive themselves, if not their readers, into a belief that, if they use their own language, they give a stamp of originality to ideas derived from the common stock. They forget, that a temporary control of the mint and the imprint of their effigy on the coin are not the circumstances on which depend its intrinsic value and currency. A desirable homogeneousness of appearance is obtained by a certain unity of style; but it may still be questioned, whether a description of disease is less vivid in the very words of Cullen, or a matter of fact is less tersely expressed in those of Heberden or Louis, than if the description and fact were conveyed in the choicest phrases of the lecturer or writer at the time.

The progress made in medical knowledge is by slow and very gradual advances; and he who thinks to accelerate it by, himself, taking great and rapid strides, or by indulging in a species of still-vaulting, loses the support of antiquity and precedent, at the same time that he gains no substantial foot-hold, nor useful array for farther progress. In the eagerness to obtain new positions, or to be original,—as is the watch-word of tyros, sciolists, and framers of paradoxes,—established truths are treated as abortions; our neglect of them being mistaken for their insignificance and decay. Of little avail is our boasted accumulation of the knowledge of more than twice ten centuries, if we are not careful to revise the treasure, and to prevent the last addition from overlaying previous deposits. A neglect of this important condition for turning our professional riches to the best account, produces, every now and then, no little embarrassment in the treatment of disease. Instances often occur in the recurrence of epidemic, and occasionally in the aggravation of endemic diseases after considerable intervals, of physicians being taken by surprise, owing to their not having studied the records of antecedent visitations. The alleged novelty of a disease, which alarms by its diffusion and the mortality to which it gives rise, may exist only in the minds of those who have remained ignorant, not only of its appearance in former times, but, also, of its having been subjected to appropriate treatment. A remarkable example of one of these oversights occurs in the Congestive Fever of the United States, which was regarded, generally, as a new form or a new modification of fever, and which, as such, was

observed and treated under speculative points of view. Less eagerness to begin the work of observation *de novo*, or to acquire the reputation of original observers, and a better acquaintance with medical literature, would have saved our American physicians many embarrassments and barren trials, in their attempts to ascertain the true features and treatment of this disease. They might have found the requisite information in several European writers, some of whose treatises on pernicious or malignant intermittents were probably on their shelves at the time. It is a source of pleasurable reflection to the American contributor to these volumes, that he was successful in directing his medical brethren into this neglected path of inquiry, by the first edition of his lectures on Congestive Fever, published in 1840. He has been told, from many quarters, of the essential services rendered by this means to practical medicine. His own experimental observation, in different climates, added to the essays of home origin, came in opportunely to strengthen the inferences deduced from former histories.

Equally important with those of a retrospective cast, are the labours of the medical historian in arranging the materials of contemporary records. Scattered through various treatises and journals, these are, in a great measure, inaccessible to the profession at large, and hence not available for the immediate requirements of practice. A pertinent example to this effect is found in the subject of *Epidemic Meningitis*, or, as it is less happily termed by some, cerebro-spinal arachnitis. In the last edition of these lectures (1845), a methodical account of this formidable disease was given, as it exhibited itself both in Europe (especially in France) and in some parts of the United States. That this summary was called for, and that it was in advance of the current knowledge of the profession at large, may be inferred from the fact, that, even during the last year, writers in some of our medical journals confessed that they were entirely without guide or precedent in their observations on this epidemic, when it appeared in their own immediate neighbourhood.

Reference may here be made to the opinion advanced in the first edition of these lectures, of the general sameness of *typhous* and *typhoid fevers*, and of the difference between them being merely in degree or intensity, but not specific or organic. Heterodox as this opinion was deemed at the time by the more exclusive disciples of M. Louis, its correctness is becoming every year more apparent, from the concurring evidences adduced by competent observers on both sides of the Atlantic. Striking confirmation of this will soon be placed before the profession in the Report of the Committee on Practical Medicine, by Dr. Joseph M. Smith, of New York, to the National Medical Association, at the session of that body in Baltimore, in May, 1848.

Examples of this nature preclude the necessity of sustained argument to show, that, although an author of a system of the theory and practice of physic can lay small claim to originality, he is, nevertheless, enabled, by a methodical arrangement of existing materials, and a separation of the conjectural and the redundant from the tried and available, as well as by embodying in a connected series facts which had been overlooked or not properly appreciated, to confer substantial services on medical literature and medical science.

Without making any pretension to discovery, the writer believes that in these lectures, he has placed on a surer basis than before, the pa-

thology of *Cholera Infantum* and of *Croup*, by a careful examination and analysis, joined to his own observations, of the essential phenomena of these diseases. So, likewise, he thinks, that his views of the physiological and therapeutical action of quinine, of calomel, and of tartar emetic, harmonise with the pathology of the diseases, in the cure of which one or more of these remedies performs an important part; as, for example, tartar emetic and calomel in croup and in the phlegmasiæ generally; quinine and calomel in congestive fever, &c.

As respects contributions from American sources, the writer has endeavoured to do justice to the additions, both in pathology and therapeutics, of his countrymen, and to give them, as opportunity might offer, all fitting prominence. In conclusion, he can truly aver, that, intent on exhibiting the material facts and deducing what he believes to be legitimate consequences, he has drawn freely from all available sources of information, without seeking to merge the enviable character of honest historian in that of chief actor.

J. B.

Philadelphia,
June, 1848.

CONTENTS OF VOL. I.

LECTURE I.

DR. STOKES.

General Observations . . . . . Page 25

LECTURE II.

DR. STOKES.

General remarks on local diseases.—Fixed rules for the guidance of students—Great importance of diagnosis.—Existence of pure fever rare.—Doctrine of the Humoralists and of the Brownists.—Pathology of the digestive system . . . 36

LECTURE III.

DR. BELL.

Diseases of the Mouth and Pharynx.—Connexion in structure and function between them and diseases of the stomach and bowels.—Stomatitis.—Its different species.—*Simple erythematic stomatitis.*—Its nature, causes, and treatment.—*Follicular or aphthous stomatitis.*—Its varieties, complications; pathology, analogous to follicular gastritis and enteritis.—Connexion with dyspepsia in adults, and in children with cholera and diarrhœa.—Remedies, general and local.—Importance of hygienic measures.—*Ulcerous stomatitis* 44

LECTURE IV.

DR. BELL.

Pultaceous Stomatitis, or Muguet—Its Pathology—Treatment.—Pseudo-membranous Stomatitis.—Its complications with visceral disease—insidious approach—Pathology—sometimes prevails epidemically—Treatment,—modified by the state of the digestive system and degree of local excitement—Local applications—Means of properly applying mineral acids and lunar caustic—Sulphate of copper—Iodine, topically and internally—Warm bath 51

LECTURE V.

DR. BELL.

Gangrenous Stomatitis.—As a result of other kinds of stomatitis, and as a separate disease.—Different opinions as to its violence and danger.—Two states of gangrene of the mouth—Its Pathology—Common origin in the gums—Treatment, general and local—Emetics, tonics, and the warm bath and frictions—Iodine—Topical remedies are numerous—The chief one is sulphate of copper 57

LECTURE VI.

DR. BELL.

Glossitis—Its varieties and causes—Symptoms—Termination—Diagnosis—Treatment—Importance of scarifications—Symptomatic or secondary glossitis—Treatment modified by the nature of the primary disease.—Parotitis—Primary—Supposed contagion of—Terminations—Metastasis to other organs—Treatment—Secondary or symptomatic parotitis—That caused by mercury—its treatment. 63

LECTURE VII.

DR. BELL.

Diseases of Dentition.—Predisposition to numerous diseases in early infancy.—Causes besides dentition.—The susceptibility of the organs of the child, and peculiar exposure to external agents.—Sympathies of the dental apparatus—direct and remote.—Treatment during dentition—hygienic and medicinal.—The measures chiefly demanded. 70

LECTURE VIII.

DR. BELL.

DISEASES OF THE THROAT.—Their various origins and complications.—RETRO-PHARYNGEAL PHLEGMON—Difficulty of diagnosis, and danger of this inflammation—Cases.—ANGINA SIMPLEX—Its causes, symptoms, and treatment—Sometimes associated with typhoid fever.—*Chronic angina*—Inflammation sometimes located in the uvula, sometimes in the palate—Treatment of the same 77

LECTURE IX.

DR. BELL.

TONSILLITIS—Most common in young subjects—Symptoms, duration, treatment—Importance of bloodletting—Purging—Gargles.—CHRONIC TONSILLITIS—Inconvenience and even danger in this disease—An indirect cause of spinal curvature—Treatment, local and general; by caustics and inunction and internal remedies—Diseased follicles of the tonsils—Morbid secretion,—how distinguished from tuberculous matter.—Morbid states of hearing and deafness caused by enlarged tonsils, and diseased mucous membrane of the throat.—Voice and speech modified from similar causes.—Change of voice after extirpation of tonsil 84

LECTURE X.

DR. BELL.

ANGINA MEMBRANACEA—Its varieties.—The simple and the malignant—Symptoms and treatment of Angina Simplex—MALIGNANT ANGINA or DIPHTHERITIS—Earlier notices of it—*Causes*—Connexion with scarlatina—Persons most liable—Epidemical and endemical, and sometimes sporadic—*Symptoms*—*Diagnosis*—Its anatomical characters—Membranous exudation—Is sometimes ulcerous and gangrenous—*Prognosis*—Age, temperament, particular exposure and lodging modify result 92

LECTURE XI.

DR. BELL.

ANGINA MEMBRANACEA MALIGNA—(*Continued*).—*Treatment*—Bloodletting sometimes admissible—Emetics—Revulsives—Stimulants—Calomel—Blisters, under what indications required—Topical treatment—Stress laid on it in malignant angina—Chief articles employed.—Summary of treatment in some of the worst cases marked by suddenness of invasion and prostration of the powers of life.—ANGINA *vel* PHARYNGITIS GANGRENOSA—Two varieties—The *circumscribed* and the *diffused*.—Circumscribed gangrenous angina described—Its defined limits—Diffused variety.—Its anatomical characters, *seat, symptoms, diagnosis, prognosis, causes, and treatment* . . . 99

LECTURE XII.

DR. STOKES.

PATHOLOGY AND TREATMENT OF DISEASES OF THE DIGESTIVE SYSTEM—Different forms of gastritis—Pathology of this disease imperfectly understood by the ancients—Gastritis and enteritis not always found in connexion—Phenomena characterising acute gastritis—Symptoms and sympathetic relations—Diagnosis—Gastritis simulating other diseases 105

LECTURE XIII.

DR. STOKES.

GASTRITIS.—No one symptom decidedly indicative of the particular condition of any organ.—Sympathetic irritation liable to terminate in organic disease.—Sympathetic relations as connected with the viscera of the thorax.—*Treatment* of simple acute gastritis.—Antiphlogistic remedies.—Purgative medicines injurious.—Enemas and injections.—Use of ice beneficial.—Effervescing medicine hurtful 117

LECTURE XIV.

DR. STOKES.

PATHOLOGY AND TREATMENT OF GASTRITIS—Application of Blisters—Emetics can be seldom used in acute gastritis—Hematemesis and delirium tremens complicated with gastritis—Treatment of these affections—Dyspepsia, or chronic gastritis—Hypochondriasis—Termination of chronic gastritis 125

LECTURE XV.

DR. STOKES.

TREATMENT OF CHRONIC GASTRITIS.—Frequent excitement of the vascular system necessary to the performance of the functions of the stomach—Local bleeding—Regimen—Counter-irritation over the stomach—Treatment of Broussais—Use of vegetable tonics—Oxide of bismuth—Acetate of morphia—Friction with croton oil—Attention to diet during convalescence—Organic disease of the stomach—Principles of treatment—Diet and attention to the bowels 133

LECTURE XVI.

DR. BELL.

DYSPEPSIA. — *Causes* — Temperaments and constitutions most liable to the disease — Habits of life inducing it—Concomitant diseases—of brain, liver, skin, lungs, uterus, and kidney—These are sometimes causes, sometimes effects of dyspepsia—A complex disease, sometimes caused by, sometimes causing spinal irritation — Modification of treatment required—Andral's case and reflections—Dr. Chapman's notice of chief causes—Tobacco, its injurious tendency and effects—High excitement of brain in England and United States.—DYSPEPSIA WITH MORBID GASTRIC SECRETION—*Pyrosis* or *Water-brash*—Its causes and treatment.—*Cardialgia*, its mixed nature and treatment—Mercury—Ipecacuanha—Sulphuret of potassa—Gunpowder . . 143

LECTURE XVII.

DR. BELL.

GASTRODYNIA, OR GASTRALGIA.—Its symptoms—*Diagnosis*—*Causes*—*Treatment*—Hygienic means the first to be attended to—Alleviation of pain—Caution respecting stimulants—Draughts of hot water—Blending of gastritis and gastralgia—Hydrocyanic acid—colchicum—emetic tartar in small doses—oil of turpentine—subnitrate of bismuth—oxide of zinc—subcarbonate of iron—carbonated chalybeate waters—nitrate of silver.—Periodical gastrodynia requires sulphate of quinia.—Danger of alcoholic stimulants.—Superiority of water as a drink.—Attention to the lower bowels.—The kind of food proper.—Regulation of the cutaneous functions.—Mental habits to be studied.—Change of scene and travel 155

LECTURE XVIII.

DR. BELL.

GASTRO-DUODENAL DYSPEPSIA.—Relations of the duodenum—Varieties of duodenal disease—the *acute* and the *chronic* or *atonic*—General characters—Particular symptoms—direct and sympathetic—Causes—common in the United States—Necessity of a better pathology of diseases called bilious and hepatic—*Treatment*—depletion if acute disease be present—Counter-irritation—Emetic tartar—castor oil—nitrate of potassa—mercury—taraxacum—mineral acids.—In the atonic variety, purging—suitable food—exercise—laxatives—tonics, and alteratives.—*Follicular duodenal dyspepsia*—Its symptoms, progress, and treatment.—*Strumous dyspepsia*.—Its course, complications, and treatment—General directions 164

LECTURE XIX.

DR. STOKES.

DUODENITIS—Inflammation of the jejunum.—ILEITIS—complication and nature of—Dothinenteritis—Ulceration of the mucous membrane—Symptoms and diagnosis of ileitis.—Diseases of the small intestines—Symptoms of ileitis—Occurrence of diarrhœa with fever symptomatic of this form of inflammation—Frequency and symptoms of the disease in children.—Tabes mesenterica,—*Treatment of* . . . 177

LECTURE XX.

DR. STOKES.

TREATMENT OF ILEITIS—Advantage of leeching—Stimuli sometimes beneficial—Infantile remittent fever—Inflammation of the mucous membrane—Enteritis with diarrhœa—Effects of opium in inflammation of serous and mucous membranes—Pathology and treatment of diarrhœa and dysentery—Perforation of the intestine—Diseases of the large intestine 190

LECTURE XXI.

DR. STOKES.

DISEASES OF THE LARGE INTESTINES.—Treatment of diarrhœa—Apyrexial period of diarrhœa—Danger in suddenly arresting the discharge—Purging in Phthisis—Dysentery—Epidemic dysentery 198

LECTURE XXII.

DR. STOKES.

SPORADIC DYSENTERY — Nature of this disease — Treatment; mercurial, stimulating, antiphlogistic — Recommendation of Dr. Elliottson — Success of Dr. O'Beirne in the use of tobacco injections. — TYMPANITES, OR METEORISM. — WINDY COLIC, remedies for the cure of 205

LECTURE XXIII.

DR. BELL.

DYSENTERY.—The anatomical lesions in dysentery,—same in all parts of the world—Dr. Cheyne's experience in Dublin; Mr. Twining's in Calcutta; Dr. Cornuel's in the West Indies.—Stomach, small intestines, and liver, sometimes inflamed concurrently with the colon.—*Causes* of dysentery—crude ingesta—atmospherical vicissitudes—damp and impure air—particular seasons and climates—Malaria not a cause—The disease not contagious—Duration—Terminations—*Prognosis*—*Treatment*—venesection—leeching—mercurials.—Autumnal dysentery—modified treatment of—sulphate of quinia—blue mass—demulcents—tannin—gastric complication—emetics in—acetate of lead—prussian blue—diaphoretics—change of air—ipecacuanha—opium—Rectal inflammation—its treatment.—HEPATIC FLUX—Symptoms and treatment 212

LECTURE XXIV.

DR. BELL.

ENTERORRHŒA—Includes both *diarrhœa mucosa* and *d. serosa*.—Gastrorrhœa.—Pathology of enterorrhœa—Two varieties of the disease.—Acute and chronic stages—Connexion between dentition and development of the intestinal mucous follicles—Treatment of enterorrhœa based upon subduing intestinal irritation—diet, and sudorifics and opiates, sometimes astringents—In lymphatic subjects and in epidemic visitations, emetics and purgatives proper.—Importance of diet for the cure of diarrhœa in all its forms—Kind of diet most beneficial.—ENTERORRHŒA WITH MEMBRANOUS FORMATIONS—Pellicular exudation on intestines of very young children—Associated sometimes with stomatitis—Later in life with dysentery—Probably the result of morbid follicular secretion, with or without inflammation—May appear and recur frequently,—sometimes without much general disorder—in duodenal dyspepsia—Causes and seat not known—Treatment 230

LECTURE XXV.

DR. BELL.

COLONIC DYSPEPSIA.—The colon—its extent, situation, and functions.—*Atonic colonic dyspepsia*—*Constipation*—its general character, symptoms, causes, and various terminations—Spinal irritation connected with dyspepsia—Treatment of the colonic disease—Importance of a suitable diet 238

LECTURE XXVI.

DR. BELL.

INFLAMMATORY COLONIC DYSPEPSIA—Connexion with chronic colitis—Causes and treatment.—*Irritable colonic dyspepsia*—*Enteralgia*—Peculiar temperament of persons suffering from this disease—Treatment; to be simple and mild.—*Follicular colonic dyspepsia*—its analogy to follicular duodenal dyspepsia—*Treatment* 246

LECTURE XXVII.

DR. BELL.

DISEASES OF THE CÆCUM.—Peculiarities of position, structure, and function of the cæcum—Its liability to be disordered—Symptoms of fecal accumulations in it—*Treatment*—Importance of enemata—Best means of employing them—Suspicion of hernia being present—Liniments and friction—Attention to diet.—CÆCITIS—Its varieties—*Causes*—*Symptoms*—*Treatment* 251

LECTURE XXVIII.

DR. BELL.

STERCORAL INFLAMMATION OF THE CÆCUM.—Symptoms and treatment.—*Chronic inflammation of the cæcum*—Its causes, complications, and cure.—COLITIS OF THE SIGMOID FLEXURE OF THE COLON.—*Inflammation of the pericæcal tissue—Perityphilitis.*—Symptoms—Prognosis—Causes—Termination—Statistics—Treatment.—Perforative ulceration of the cæcum and of the appendix vermiformis—Causes—Symptoms—Prognosis—Treatment 256

LECTURE XXIX.

DR. BELL.

DISEASES OF THE RECTUM.—The structure and sympathies of the rectum.—Chief diseases of the rectum, viz., *hemorrhoids, ulceration, stricture,* and *cancer.*—Danger from neglect of proper knowledge of rectal disease.—HEMORRHOIDS—Definition—Disease, both hemorrhage and tumours—Varieties of hemorrhoids or piles.—*The anatomical characters* of the three principal ones,—varicose, erectile, and cystic or spongy (mariscæ).—*Hemorrhoidal Flux or Discharges*—Their sources—Quantity and colour of blood discharged.—*Mucous* or *Sero-Mucous* hemorrhoidal discharge—*Causes*—Constipation and drastic purgatives overrated as causes of hemorrhoids.—*Consequences and complications of hemorrhoids* 266

LECTURE XXX.

DR. BELL.

TREATMENT OF HEMORRHOIDS.—Relief afforded by hemorrhagic discharge.—Disadvantage of this natural method.—Measures, medicinal and hygienic, required in a first attack of hemorrhoids.—Treatment of the fixed disease.—Difference between arresting and curing a disease.—Attention to the general system, and to the removal of plethora and visceral disease.—Sometimes active measures—v.s., leeching, calomel, &c., required—To vary the treatment, according to preceding or accompanying disease.—Chronic variety—Balsams, turpentine, and cubebs, useful.—Periodical hemorrhoids—treatment of—Precautions to avoid an attack of the disease.—Hemorrhoids with anemia.—Extirpation of tumours practised sometimes with advantage—Danger—Constitutional measures more prudent.—Necessity of preparing the system for the operation of removal.—Restricted regimen afterwards 277

LECTURE XXXI.

DR. BELL.

NATURAL CURE OF HEMORRHOIDS.—EXTERNAL HEMORRHOIDS.—Topical applications—washes, ointments, injections, pads to cause pressure.—Remarkable case by M. Guyot.—Reasons for enlarging on the subject of hemorrhoids.—*Ulceration of the rectum*—Two varieties—treatment of.—*Prolapsus of the rectum*—its peculiarities and treatment.—*Stricture of the rectum*—Mistakes and malpractice respecting this disease—Stricture commonly the result of inflammation 286

LECTURE XXXII.

DR. BELL.

TREATMENT OF STRICTURE OF THE RECTUM.—*Spasmodic stricture—Fissures—Carcinoma* of the rectum—Treatment, palliative.—*Neuralgia—Preternatural pouches or sacs.—Blenorrhagia—Pruritus Ani* 295

LECTURE XXXIII.

DR. BELL.

COLIC—Its chief divisions—Community of causes, and of many symptoms and other pathological features of these varieties—Inference to guide us in the treatment.—SIMPLE COLIC—Its seat and diagnostic symptoms—Varieties of simple colic—Treatment—Preliminary inquiries to be made—Remedies according to the cause of colic—from cold, indigestible matters, or stercoraceous accumulations—Carminatives—Enemata—Purgatives—Venesection—Cupping—Liniments of narcotic substances—Oil of turpentine—Croton oil.—*Infantile colic*—Two varieties of—the stercoraceous and that from indigestible matters—Modifications of treatment in consequence—Importance of attention to the diet and health of the mother—Danger from habit of giving opium to children.—Periodical infantile colic 303

LECTURE XXXIV.

DR. BELL.

BILIOUS COLIC—Time of its attacks—Causes and Symptoms—Anatomical lesions—Treatment—Venesection—Opiates—The warm bath or fomentations—Purgatives—Enemata—Means of acting on the bowels—Calomel—Caution against too early excitement of any kind—Recourse at times again to bloodletting—Dover's powder—Blisters—Practice by others—Sydenham's directions—Emetics sometimes used.—DRY BELLYACHE—Analogous to bilious colic—Does not arise from lead—Common formerly in the West Indies and in America—Description by Hillary—Paralysis of limbs—Metastasis.—COLIC OF MADRID—Closely resembles the preceding—Causes of—Symptoms—Anatomical lesions.—*Devonshire Colic*—Causes.—*Vegetable Colic*, similar to the preceding—Treatment of this kind of colic, including the preceding varieties 311

LECTURE XXXV.

DR BELL.

ILEUS—Affinity between ileus and colic—Symptoms of ileus—Causes—Anatomical characters.—*Volvulus or intus-susception*—*Invagination of intestine*—How formed; its varieties and termination—Diagnosis of intus-susception—Treatment—Preliminary inquiry into the existence of hernia—Localization of intus-susception—For this last, bloodletting, opium and tartar emetic, and enemata—Venesection generally called for in ileus—Blisters—Turpentine epithem—Dry cupping—Purgatives—Stimulants in last stage—Other remedies—cold—tobacco injection—Other narcotics externally and internally—Injections of linseed oil—Crude mercury in quantity—Operation of gastrotomy—its doubtful propriety and dangerous consequences . . . 321

LECTURE XXXVI.

DR. STOKES.

PAINTERS' COLIC—Effect of metallic poisons on the nervous system—Symptoms of painters' colic—Pathology of neuroses—Action of lead on the system—Abdominal and cerebral symptoms—Species of painters' colic—Dr. Thomson's researches on lead—Effects of, in animals—Effects of, on the generative system . . 330

LECTURE XXXVII.

DR. STOKES.

PATHOLOGY OF PAINTERS' COLIC.—Researches on the state of the nervous and digestive systems—Treatment—Use of narcotics, purgatives, tobacco, &c., &c.—Treatment of paralysis from lead—Efficacy of strychnia and brucia—Colic from copper—Poisonous effects of mercury—Remarkable case—Affection of respiratory muscles 339

LECTURE XXXVIII.

DR. BELL.

CHOLERA MORBUS—Definition—Sydenham's description—Divisions of cholera.—*Sporadic* or *Common Cholera*—*Symptoms*—Not a very fatal disease—Proportion of cases and deaths in the British troops in different regions—Greater proportionate mortality in northern than in southern latitudes—Often exceptions to this.—*Causes*—Mutations of temperature from heat to cold, and errors in regimen—Seat of the disease—Not often depending on inflammation.—*Diagnosis*.—*Treatment*—Diluents—External irritation—Emetics—Opium—Venesection occasionally—Calomel—Calomel and opium—Laxatives—Occurrence of gastro-enteritis—its appropriate treatment—venesection or leeching—laxatives, diluents, mild diaphoretics, and the warm bath.—Convalescence from cholera—Its treatment 349

LECTURE XXXIX.

DR. BELL.

EPIDEMIC CHOLERA—A counterpart to the pestilences of olden times—The great pestilence in the fourteenth century—Less mortality with advanced civilization.—First appearance of the epidemic cholera in India—Its progress in that country and in Eastern and Western Asia and the islands—in Russia; Poland; Hungary; Austria—Its appearance in England, Scotland, and Ireland; United States; Mexico; Havana; Southern Europe; Algiers.—Order of succession of the attacks of cholera—No regular rate of progress or rule of transmission—Quarantine restrictions useless—Singular limitations of its range by the smallest change of locality . . 357

LECTURE XL.

DR. BELL.

CAUSES OF EPIDEMIC CHOLERA.—Connexion between cholera and other diseases.—Influenza—Influenza and cholera in 1780 and 1781—Both have pursued a similar course, including divergences from the main line—Prevalence of bowel affections in cholera seasons—Increased mortality at this time from other diseases—Scarlet fever with cholera.—The special cause unknown—Predisposing and modifying causes, in weather and seasons; low situations; poverty, destitution, and vice of the inhabitants; bad food; watery fruit and vegetables; intoxicating drinks; sudden debility of the nervous system; fear; great and unusual exposure to atmospherical extremes and changes.—*Atmospheric and other phenomena anterior to and contemporaneous with cholera.*—Attacks of the disease mainly in the summer half of the year—Prevalent winds—Sickness and mortality among animals coincident with cholera in different countries—Cholera not transmissible by contagion 365

LECTURE XLI.

DR. BELL.

SYMPTOMS OF EPIDEMIC CHOLERA.—To be described under the head of *diarrhœal stage or cholerine; confirmed cholera, collapse and reaction*—Importance of attention to the first, or diarrhœal stage—Time of attack of.—Confirmed cholera—Disorder of the stomach and bowels; of the circulation; of animal heat—Vomiting and purging vary in extent—Collapse without evacuations—Mind undisturbed—Symptoms of disordered innervation—Spasms and cramps—Symptoms of collapse, or blue stage—Sinking of the circulation the most constant and alarming symptom of cholera—Thirst, and sense of heat in the stomach—Respiration, how affected—Symptoms connected with the blood and circulation—Sameness of cholera in all parts of the world—Stage of reaction, or consecutive fever—Urea in the blood, an alleged cause of the consecutive fever—Analogy between cholera and pernicious or malignant intermittents—Torti cited—The lecturer's case of comatose intermittent 376

LECTURE XLII.

DR. BELL.

PROGNOSIS OF EPIDEMIC CHOLERA—Common and individual signs—Modification by age, sex, occupation, and race—Promptness of recovery—Congestions with slower convalescence—Immediate causes of death—Remoter causes, in the constitution and habits of the individual—Misleading signs in the consecutive fever.—*Post-mortem Appearances:*—1. The adventitious, though common; 2. The peculiar, and in a measure pathognomonic, textural and visceral changes in the digestive canal and liver, lungs, and sometimes brain and visceral ganglia—Changes in the fluids—Automatic muscular movements—Increase of animal heat.—*Mortality* from cholera—In India—Russia—Poland—Hungary—France—Great Britain and Ireland—Berlin—Naples—Geneva—Leghorn—Sunderland—Glasgow—Quebec—Montreal—New York—Philadelphia—Cincinnati.—*Law of Recoveries and Mortality* in cholera.—*Comparative Mortality* 385

LECTURE XLIII.

DR. BELL.

SPECIAL PATHOLOGY OF CHOLERA—Poisoning of the blood and disorders of the nervous system, and secretions dependent on it.—TREATMENT OF CHOLERA—Difficulty of the subject from defective data—Almost certainty of death, unless medicine be given—Therapeutic indications—The sedative class of remedies most useful in cholera—Evidences of increased innervation—Increased glandular secretion—Indications of cure.—*Treatment of the diarrhœal stage*—Necessity of prompt attention to the first symptoms of irregular digestion—Mild purgatives, sometimes an emetic; laudanum; diluents; rest; moderate warmth—Case—Selection of purgatives.—*Treatment of Marked Cholera*—An emetic—Bloodletting—Sedative or contra-stimulant remedies—Calomel; its primary and sedative effect; is to be given in large doses, sometimes alone, often with a full dose of laudanum—Opium—Tartar Emetic—Ipecacuanha—Magnesia—Sub-acetate of lead—Sub-nitrate of bismuth—External sedatives—Warm, tepid, and cold baths—*Enemata*—Laudanum—Sub-acetate of lead—*Stimulants*—Alcohol injurious—Carbonate of ammonia—Spirits of turpentine—Camphor—Capsicum—Aqua ammoniæ—Camphorated ether—External stimulants—Blister—Cauterization of skin—Irritating liniments to spine—Dry vapour to skin—Advantages of dry friction—The hot bath 400

LECTURE XLIV.

DR. BELL.

TREATMENT OF THE STAGE OF COLLAPSE—Difficulty—Stimulants and sedatives often alike fail—External remedies; friction, ammoniacal liniment; friction with ice; the cold dash—Sudden collapse treated sometimes by venesection—Arteriotomy useless and cruel—Cups to the abdomen—Astringent injections—Stimulant injections—Astringents—Special stimulants; oil of turpentine and capsicum—Ice grateful and serviceable—Cold water treatment—Dr. Shute's views in directing it—Tobacco enemata—The saline treatment—General experience not in its favour—Saline injections into the veins—Delicacy and difficulty of the operation.—*Treatment of the Stage of Reaction.*—This and the diarrhœal stage less common in India.—*Convalescence.*—PROPHYLAXIS—The chief means are temperance, cleanliness, and equable temperature of the body—Importance of early attention to the very first symptoms of the disease 420

LECTURE XLV.

DR. BELL.

CHOLERA INFANTUM—Is endemical in the United States—Scarcely noticed by the English and French writers—Dr. Cheyne's *atrophia ablactatorum* resembles it.—*Symptoms*—Ushered in generally by diarrhœa—state of the circulation—skin—discharges from the bowels—thirst—nervous symptoms—state of the brain—expression of the countenance.—*Prognosis.*—*Causes*—High heat of the summer—Irritation of teething—Errors of regimen—Predisposition—Anatomical lesions—chiefly disease of the mucous follicles of the intestines—Softening of the gastro-intestinal mucous membrane—Billard's case—Entero-mesenteric fever of Serres and Petit,—dothinenteritis of Bretonneau 429

LECTURE XLVI.

DR. BELL.

CHOLERA INFANTUM (*Continued*).—Farther dissections exhibiting inflammation of the small intestines and follicles—Dr. Horner's opinion of the nature of cholera infantum—M. Billard's view of the cause of follicular development applied to the pathology of infantile cholera—Resemblance between this disease and epidemic cholera—Hepatic pathology of cholera infantum not sustained by autopsic examinations—Mode in which heat causes hepatic derangement—Contents of intestinal canal.—TREATMENT—Indications to guide us—To reduce excessive sensibility and to remove irritations—Modifications depending on temperament and constitution—Treatment of first stage—Demulcents, chalk-mixtures—an opiate, if the teeth irritate—Calomel in minute doses—Oil of turpentine—Cold affusions and cold water injections—Sugar of lead 438

LECTURE XLVII.

DR. BELL.

CHOLERA INFANTUM (*Concluded*).—Caution not to irritate the stomach by needless repetition of either food or medicine—Danger of relapse during hot weather—Remedies for the diarrhœa after vomiting has ceased—Nitrate of silver—alumina—Dr. Durr's cases, illustrative of German practice—Astringents,—of secondary value—Treatment when the disease remits—Renovation by fresh air—Treatment in the state of collapse with diseased brain—Proper food for the patient—Drinks,—great importance of selecting them and regulating their use—Removal of irritation from teething—Paramount importance of pure air, day and night—Bathing—Continued watchfulness on the part of the mother to withhold all irritating ingesta—Preservation of equable temperature of the skin—*Prophylaxis*,—cool air, cool bathing, cool drinks, and proper food at stated intervals 445

LECTURE XLVIII.

DR. STOKES.

GASTRITIS, WITH DELIRIUM TREMENS.—Intestinal worms—Varieties of—Organization and origin of—Occurrence in the fœtuses of various animals—Formation—Pathology of—Perforation of the intestines by.—Worms in tumours and abscesses . 454

LECTURE XLIX.

DR. STOKES.

SYMPTOMS OF INTESTINAL WORMS—Sympathetic irritations—Affections of the nervous and respiratory systems—Various diseases mistaken for worms—Exciting causes of worms—Farinaceous and milk diet—Verminous fever.—Treatment of worms—Specific and mechanical purgatives; calomel, turpentine, &c., &c.—Remedies for each species of worms—Preventive measures 462

SUPPLEMENT TO LECTURE XLIX.

DR. BELL.

DOUBLE INDICATION IN THE TREATMENT OF WORMS—Iron with purgatives—with calomel, followed by purgatives—Bark of pomegranate root—Spigelia Marilandica—Chenopodium anthelmintica—Pride of China—Common salt.—*Treatment of ascarides*—Purgatives occasionally—Injections,—chiefly of turpentine, aloes, &c.—Mixed treatment of worms,—by bitter, saline, and sulphurous waters 469

LECTURE L.

DR. STOKES.

DISEASES OF THE BILIARY APPARATUS.

PATHOLOGY OF JAUNDICE—Its coexistence with a flow of bile—Case of aneurism of the hepatic artery—The disease, independent of mechanical obstruction—Colouring of the various parts—Effects on the milk, and humours of the eye—Jaundice with preservation of health—Icterus infantum 472

LECTURE LI.

DR. STOKES.

JAUNDICE FROM GASTRO-DUODENITIS—Researches of Broussais and Marsh on—Jaundice without hepatic inflammation—Nervous symptoms.—*Treatment*—Yellow fever—its occurrence in this country—Predominance of gastric irritation in warm climates—Typhus icterodes—Jaundice from biliary calculi—Different situations in which biliary calculi may be found 479

LECTURE LII.

DR. STOKES.

DIAGNOSIS OF JAUNDICE FROM BILIARY CALCULI—Proof of the passage of the calculus—Indications of treatment—Rupture of the gall-bladder after the use of emetics—Spasmodic jaundice.—*Treatment* of spasmodic jaundice—Discharges of fatty matter—Researches of Drs. Bright and Elliotson—Connexion with malignant diseases examined—Source of fatty matter 489

LECTURE LIII.

DR. STOKES.

ACUTE AND CHRONIC HEPATITIS—Pathological differences—Effects of climate—General and local symptoms—Character of fever—Pain of shoulder—Use of pleximeter—Complication with jaundice—Resolution—Abscess—Various openings of the latter—Cicatrization 498

LECTURE LIV.

DR. STOKES.

DIAGNOSIS OF THE RUPTURE OF HEPATIC ABSCESS—Pulmonary openings—Case of double opening—Puncture of the gall-bladder—Gangrene of the liver—Its connexion with hepatic apoplexy—Diagnosis of distended gall-bladder—Its causes—Inflammation of the parietes over the liver—Sympathy of the integuments 509

LECTURE LV.

DR. STOKES.

ANEURISM OF THE HEPATIC ARTERY—Distention of the liver with bile.—*Treatment of hepatitis*—Employment of mercury.—SYMPTOMS OF SUPPURATION—Dr. Graves's operation for giving exit to matter in hepatic abscess—Rupture into the peritoneum—Chronic hepatitis—Complication with disease of the heart—Embryonary state of the liver 517

LECTURE LVI.

DR. STOKES.

TREATMENT OF CHRONIC HEPATITIS—Neuralgia of the liver succeeding hepatitis—Connexion of hepatic with gastro-intestinal disease—Modes of transmission of disease from the mucous surface of the liver—Phlebitis of the vena porta—Obstruction of this vein—Case of pulmonary, hepatic, and intestinal fistulæ—Hepatic neuralgia . 527

LECTURE LVII.

DR. BELL.

DISEASES OF THE PANCREAS AND SPLEEN.

PANCREAS—Its pathological states not well appreciated—Symptoms of inflammation of the pancreas—Few positively diagnostic ones—*Post-mortem* appearances of the organ—Its morbid secretions—Connexion of these with pyrosis—*Diagnosis*—*Treatment*—Moderately depleting remedies, with opiates and narcotics, and counter-irritants.—DISEASES OF THE SPLEEN—Connexion between the spleen and the liver, and stomach, and bowels—Community of affection with these organs in paludal fevers—Organic lesions of the spleen and their sympathetic disturbances—Exploration of the spleen—Its situation and size.—SPLENITIS—Obscurity of its symptoms—Enlargement—Characters of the tumour—Structural changes.—*Chronic Splenitis*—Symptoms equivocal—Terminations of inflamed spleen—suppuration—softening—congestion—Sympathetic disorders from splenitis 538

LECTURE LVIII.

DR. BELL.

TREATMENT OF DISEASES OF THE SPLEEN.—Remedies for acute splenitis the same as for other phlegmasiæ—Mercury in general inadmissible—Avoidance of extreme views and practice—Sedative narcotics useful—Free purging in enlargements of the spleen, or chronic splenitis; to be followed or alternated with chalybeates—Mr. Twining's plan of treatment—Spleen mixture—Addition of sulphate of quinia—Venesection and cupping, or leeches, occasionally directed before the use of chalybeates—Salutary crisis by hemorrhages—Native (Bengalese) remedies for diseased spleen; chiefly aloes and iron, with occasionally castor oil—Acupuncture—Enlarged spleen with intermittent and remittent fevers, requires sulphate of quinia—Great utility of this medicine—Iron in other varieties of tumid spleen—Connexion between *spleen cachexia* and chlorosis, scurvy, and anemia 547

LECTURE LIX.

DR. BELL.

DISEASES OF THE URINARY APPARATUS.

Accumulation of knowledge of urinary diseases of late years—Importance of the function of the kidneys—Their office as depurators—Immediate seat of urinary secretion—Influence of the nerves on this function—Normal ingredients of human urine—The chief ones noticed—Water—Urea—Lithic or uric acid: its combinations—Difference in quantity of uric acid in different ages and sexes—Fixed salts—Effects of exercise and diet—*Pathological states* of the urine—Works to be consulted—Morbid products—Albumen—fibrin—blood-corpuscles—fat—casein—biliphœin—bilin—sugar and carbonate of ammonia—Salts—oxalate of lime, carbonate of lime, and cystic oxide—Bile—*Semeiological relations of the urine*—Secretion of the prostate gland—Pus.—*Diseased structure of the kidney*—Healthy size and weight of the organ—Exploration . 552

LECTURE LX.

DR. STOKES.

NEPHRITIS—Its species—Hyperemia common to them all in the beginning.—*Symptoms:* organic and functional; remote or sympathetic—May be confounded with organic disease of stomach and bowels—Attention to state of the urine.—*Causes:* traumatic and constitutional.—*Anatomical lesions.*—Chronic nephritis; its symptoms, lesions, and causes.—*Nephralgia.*—*Treatment of nephritis* in general—The acute form requires active antiphlogistics—Nephritis, in fevers.—*Suppuration of the Kidney*—Directions taken by the abscess—Most frequent cause, formation of calculi—Not incompatible with even long life.—*Pyelitis*, its varieties, its tendency to end in suppuration and in nephritis.—Its *anatomical lesions.*—*Treatment* 560

LECTURE LXI.

DR. BELL.

BRIGHT'S DISEASE, or *Granular Degeneration of the Kidney.*—*Renal dropsy*—Its organic seat, common accompaniments and constant symptoms—*History*—*Symptoms* of the disease—Acute form of the disease is short, and not often seen—Anasarca soon appears—Acute affection a sequence of scarlatina—Albuminous urine, how far a characteristic symptom—Properties of the urine in this disease—Its inflammatory type—Morbid urine under the microscope.—*Tests of albuminous urine*—The blood; its appearance and composition.—*Anatomical lesions* of the kidneys in the several stages of albuminuria—In the other organs—Congested condition of the kidneys.—*Secondary diseases*—Anasarca most common; next, ascites—Morbid state of the heart—Albuminous urine from diseased heart alone—Phthisis—Diarrhœa very common—Cerebral disease and meningeal inflammation with effusion—Pregnancy developing Bright's disease—Exanthemata—particularly scarlatina giving origin to it 568

LECTURE LXII.

DR. BELL.

CAUSES AND TREATMENT OF BRIGHT'S DISEASE, OR RENAL DROPSY.—Predisposition by particular constitution, and especially intemperance—Exciting causes—cold and dampness—Origin of dropsies—Antiphlogistic remedies—Appearance of the blood—After venesection, free purging—Mercurials not inadmissible in all cases—Salivation to be especially avoided—Diaphoretics of great value, and, also, all the aids for securing their effects—Warm bath—Diuretics to be sparingly used—Complication of renal dropsy with bronchitis—Treatment of—Other secondary disorders to be relieved—Employment of tartar emetic—Contributions to the treatment of dropsy, which is but a symptom of some organic disease—Dr. Osborne's practice in ascites—Measures useful in the more advanced stages of renal dropsy—Alteratives—Great importance of equable temperature of the skin and of regular diet 577

LECTURE LXIII.

DR. BELL.

FUNCTIONAL DISEASES OF THE KIDNEY.—Suppression of urine—*Ischuria* or *Anuria*,—an effect rather than a primary disease—Sudden in its attacks—Sympathetic disturbances—Coma—Pyretic ischuria.—*Anatomical lesions*, not constant—*Prognosis* is unfavourable—*Treatment*—Antiphlogistic.—*Excessive diuresis* or *hydruria*—Not always productive of disease—Most troublesome in old persons.—*Treatment*—dietetic and medicinal—*Diabetes insipidus*, or *anazoturia*—*Symptoms*—*Treatment*—Diabetes insipidus with *azoturia*, or excess of urea—Symptoms and treatment—*Diabetes mellitus*, or *mellituria*—Its definition,—qualities of the urine, symptoms, terminations, causes, *post-mortem* appearances—Confervoid sporules in the stomach—*Treatment*—Diet and regimen of most importance—*Diabetes chylosus* 584

LECTURE LXIV.

DR. BELL.

VARIOUS OTHER DIATHESES OF RENAL SECRETION—Renal calculi,—Lithic or uric acid, or *lithuria*—amorphous and crystallized—Red gravel—Uric acid—appearance and tests of—*Urate of ammonia*—*Causes of uric acid formations and deposits.*—*Causes.*—*Treatment*—Solvents of uric acid—Phosphatic salts and deposits—Triple phosphates—White gravel—Phosphate of lime—Mixed phosphates.—*Treatment*—Cystine in cystic oxide—Its microscopic characters—Oxalic acid or *oxaluria*—tests of in the urine—Lactic acid—Calculi—renal and vesical.—DISEASES OF THE BLADDER—*Vesical calculi*—Hematuria—*Cystitis*, its varieties—The most important is inflammation of the mucous coat—*Cystirrhœa*, or *catarrhus vesicæ*—*Symptoms and treatment.*—*Ischuria vesicalis.*—Proportion of cases of urinary disease 597

LECTURE LXV.

DR. BELL.

DISEASES OF THE ORGANS OF GENERATION.

Connexion between Diseases of the Genital and of the Urinary Apparatus—The former not adequately studied or described by English physicians—Influence of the genital organs on the moral nature of man,—his sentiments and emotions.—DISEASES OF THE MALE ORGANS OF GENERATION—The organic are—I. *Urethritis* and its con-

sequences; II. *Balanitis and Posthitis;* III. *Orchitis* and its consequences; IV. *Neuralgia of the Urethra and Testicle;* V. *Prostatitis.*—Urethritis defined.—*Causes*—Various kinds of irritants—First seat of the disease—Period of incubation.—*Symptoms*—New sensations in the urethra, discharge, thickening and hardness of the canal, occasionally hemorrhage—Sympathetic and consecutive inflammation of other parts—Appearances of the urethral discharge—Chordee—Terminations and consequences of gonorrhœal urethritis.—*Pathology*—Inoculation the true test of gonorrhœal and chancrous virus—Matter of gonorrhœa does not produce chancre—Syphilis not a consequence of gonorrhœa—Gonorrhœa essentially an inflammation of the mucous membrane of the urethra.—*Treatment*—Too often empirical—Systematic division into the preventive, aborting, and curative—Chief preventive means—Aborting remedies—Injections—Gonorrhœa to be treated like other inflammations—Hunter's remarks—Comparison with coryza and incipient catarrh—Remedies following antiphlogistic course—stimulants and astringents 613

LECTURE LXVI.

DR. BELL.

Treatment of Gonorrhœal Urethritis (*Continued*).—Selection of remedies—Chief ones employed—Copaiba balsam preferred to all others—Loses after a while its effects—Alternation of remedies—Necessity of inspecting the urethra—Local obstructions to be removed—Doses of copaiba and forms of administering it—Use by enema; by injections into the urethra—Whether its virtues are greatest by purging—Copaiba sometimes injurious to the general health; causes skin diseases—Cubebs; its doses and preparations—Oils of cubebs and copaiba preferable—Extract of cubebs—Adulteration of the balsam of copaiba and of the cubebs—Instances of failure in the latter—Iodine; particularly the iodide and the iodureted iodide of potassium—Mercurials; when useful—Cantharides—Astringents; tannin and iodide of iron the chief ones—Topical remedies in gonorrhœa—Injections; Hunter's remarks on their use—Emollient and sedative injections and warm fomentations—Enemata of the same nature—Stimulating and astringent injections—Sometimes curative at the inception of the disease—Recourse had again to them in chronic cases, conjoined with internal remedies—Use of medicines to be continued for a while after apparent cure—In cases of morbid sensibility, caustic to urethra—M. Ricord's plan of keeping the sides of urethra apart—Compression of the urethra 621

LECTURE LXVII.

DR. BELL.

Effects of Gonorrhœal Urethritis.—Bubo—Chordee—Various remedies for hemorrhage from urethra.—*Treatment*—Irritable and inflamed bladder.—*Stricture of the urethra*—Too exclusive use of surgical or instrumental means—Simulated stricture—Connexion between local and general disorder—Irritable urethra—Disease of prostatic urethra—Sympathetic pains of the urinary organs—Difficulty of diagnosis between spasmodic and permanent stricture—Treatment of stricture—Caution against too free use of bougies—Retention of urine—its terminations—Termination of stricture in ulceration—A cause of disease of kidneys—Gonorrhœal inflammation of the joints—Synovitis—*Treatment* 632

LECTURE LXVIII.

DR. BELL.

Balanitis and Posthitis—Slight difference between the two—Chief cause of balanitis in gonorrhœa—External gonorrhœa—*Symptoms—Treatment—Phimosis*—Description of—Causes—Suspicion of chancres—*Treatment—Paraphimosis*—Symptoms—Danger of gangrene in—*Treatment*—Indication, to restore the displaced parts—Taxis—Incision—Subsequent treatment.—Orchitis—Two forms, acute and chronic—Is primary and consecutive—Causes of primary acute orchitis—Consecutive inflammation; chief cause, gonorrhœal urethritis—*Hernia humoralis—Epididymitis*—Explanation of the mode of consecutive orchitis—Continuous inflammation from urethra to testicle by mucous surface—Consecutive orchitis, or mumps—Wasting of testicle a rare effect of this disease—*Symptoms*—Progress in the consecutive disease from the vas deferens to the testicle—Sympathetic form—Varieties in the symptoms—Duration of orchitis—Right testicle most liable to orchitis—*Diagnosis*—Difference from hernia; between primary and secondary orchitis—Epididymis always affected in gonorrhœal orchitis—*Treatment*—Venesection and active antiphlogistic remedies—Local treatment—Compression; its advantages; mode of applying it—Modification of treatment in irritable habits 638

LECTURE LXIX.

DR. BELL.

CHRONIC ORCHITIS—Its origin; and chief anatomical characters and seat—Yellow matter—Glandular matter—Hernia testis—Is often indolent for years—Misapplication of the term scirrhous to indurated and enlarged testicle—*Causes*—*Symptoms*—Result generally favourable—Occasional termination in ulceration of the tunics and teguments, and in hernia testis—*Treatment*—Blue pill, and opium—Sometimes iodide of potassium and sarsaparilla, or corrosive sublimate and some narcotic extract—Local applications—Treatment of hernia testis—preferably by cauterization.—SYPHILITIC ORCHITIS—Symptoms and treatment analogous to those of chronic orchitis—Mischief sometimes from persisting in the use of mercury—Other organic diseases of the testicle not treated of—NEURALGIA OF THE URETHRA AND TESTICLE—*Symptoms* of irritable urethra—Cause often obscure—Connexion with constipation and deranged bowels—M. Civiale's and Sir Charles Bell's experience—*Treatment*—Various—First to use catheter or bougie—Disorder of digestive organs to be rectified—Remedies often had recourse to the same as for neuralgia in general—*Neuralgia of the Testicle*—Causes not well known—*Symptoms*—*Treatment*.—*Irritable Testis*—*Symptoms*—*Treatment* 648

LECTURE LXX.

DR. BELL.

PROSTATITIS—Why considered in the present connexion—Necessity of inspection of parts on the dead body—Substitutes—Appearance of the prostate gland.—*Acute Prostatitis*—*Causes*—*Symptoms*—Extension of disease—Mode of examination for—Reduction of disease—Resolution—Discharge of blood—Terminations in suppuration and abscess—To give early discharge to matter of abscess—*Treatment*—Decidedly antiphlogistic—Catheter for retention of urine—Cause of obstruction to catheter at the neck of the bladder—Danger in trusting to the patient's account of himself.—*Chronic Prostatitis*—A common, a troublesome, and often incurable disease—Old men very liable to it—Hunter's directions—Brodie's descriptions—*Symptoms*—Secondary affections—Case of—*Treatment*—Chiefly palliative—Instrumental and therapeutical.—FUNCTIONAL DISEASES OF THE MALE ORGANS OF GENERATION—*Satyriasis*—Degenerates into monomania—Diseases with which connected—Caused by cantharides—An effect of prior disease—*Treatment*.—MASTURBATION—Occasional causes—*Symptoms*.—SPERMATORRHŒA—Causes of—Predisposition to—Immediate cause and anatomical seat—Two varieties; daily pollution and nocturnal pollution—*Symptoms*—*Treatment*—Local and general—Sedatives and tonics—M. Lallemand's method by cauterization—Testimony in its favour—Mode of applying the caustic—Adverse opinions—Regimen—Exercise—Change of air—Clothing 656

LECTURE LXXI.

DR. BELL.

DISEASES OF THE FEMALE ORGANS OF GENERATION—Organs included in the genital apparatus of the female—Selection of the more important diseases—Anatomy does not indicate the vital actions and sympathies of the uterine system—Physiologically considered, the changes under functional exercise are diversified and marvellous—Three functions or stages of function of the uterus—What general anatomy points out—Genito-urinary system of mucous membranes—Connexion between the uterus and vagina and other contiguous organs—Importance of *cervix uteri and os tincæ*—Knowledge of these things aids a comprehension of uterine diseases, and suggests better treatment—Examples—Attention not to be fixed on the uterus alone in studying any of its diseases—Diseases of the genital apparatus of three kinds; neuralgia, textural or organic, and functional—Means of better diagnosis; by the touch and with the aid of the speculum—Both these indispensable in every fixed disease of the uterus.—HYSTERALGIA—*Symptoms*—Coincident neuralgia of the vagina—Accompanying phenomena—*Anatomical character and causes*—*Diagnosis*—*Treatment*—Result uncertain—Occasionally, if congestion be present, local bloodletting—Nitrate of silver to the cervix—Simple neuralgia to be treated by chalybeates and narcotics—also nitrate of silver, with some narcotic—Ergot—Use of the pessary—Remedies when dysmenorrhœa is present—Rest and recumbent posture, all-important in hysteralgia.—*Neuralgia of the Vagina*—Its *treatment*.—*Neuralgia of the Ovaries*.—AMENORRHŒA—Two forms, that of *retention* and that of *suppression*—Amenorrhœa after puberty—Treatment depending on presence of plethora or anemia; in the first, depletion and revulsion; in the latter, chalybeates and other tonics, as in chlorosis.—*Suppression of the Menses*—Acute or recent and

chronic—Causes of acute suppression—Effects serious and alarming—Treatment by free depletion, in some subjects of a full habit—Purgatives and anti-spasmodics in spare and delicate women.—*Chronic Suppression*—To study the functions generally—It may be either cause or effect of constitutional disorders—*Symptoms*—*Treatment*—Sometimes purgatives, or blue pill, chalybeates and purgatives—Sulphate of potass and aloes or rhubarb—Emmenagogues so called—The best are preparations of iron and of iodine, and of mercury and ergot—Various stimulants to vagina and uterus—Vaginal injections—Travel, and mineral springs 672

LECTURE LXXII.

DR. BELL.

Dysmenorrhœa—Difficult or painful menstruation—Definition—Appears in different temperaments—Its gravity—*Symptoms*—Varieties—Neuralgic, plethoric and congestive—*Diagnosis*—Difference between membrane expelled and the decidua—*Prognosis*—*Treatment*—Membranes not proof of prior inflammation—Sometimes local bloodletting, or derivative bleeding from the arm—Treatment resolves itself into that during the pains and that in the interval—Anodynes and narcotics, ergot, acetate of ammonia, volatile tincture of guaiacum, warm hip-bath in the first period—Mercurials, chalybeates, and other tonics, and cold bathing in the second—General principles to guide in the treatment of dysmenorrhœa—Its association with disorder of the assimilating functions—Connexion with diseased ovary—Part of a gouty or rheumatic diathesis—Methodical treatment, including hygienic measures, as of paramount importance.—Dysmenorrhœa from mechanical obstruction treated by metallic bougies introduced into the canal of the cervix—Dr. Mackintosh's success—Dr. Churchill's admission.—Menorrhagia—Divisions into active or acute and passive, the latter including the congestive—Acute menorrhagia—*Symptoms*—*Causes*—*Diagnosis*—Similarity of menstrual to common blood—*Treatment*—Passive menorrhagia—Risk of organic cause—Necessity of examination by the vagina 683

LECTURE LXXIII.

DR. BELL.

Organic Diseases of the Uterus.—Leucorrhœa—Whether a disease of the vagina or uterus—More frequently is a metro-vaginitis—Definition of leucorrhœa.—*Acute metro-vaginitis*—*Symptoms*—Subsidence of symptoms—Alternations of disease and suspension—State of the *cervix uteri*.—*Chronic or gleety vaginitis*—*Symptoms*—*Causes* of vaginal and uterine leucorrhœa—Lesions of the os and cervix uteri—Ulceration and induration of their parts—*Morbid Anatomy*—Change in the vaginal mucous follicles—*Diagnosis*—That between leucorrhœa and gonorrhœa cannot be made—Between vaginal and uterine leucorrhœa—*Treatment*—To withhold astringents and special medication during the first stage—Antiphlogistic remedies—In chronic or advanced, purgatives and tonics, then astringents—Cold bath or cold sponging—Injections—at first sedative and anodyne, then stimulating and astringent—Special remedies—Injections into the cavity of the uterus—*Regimen*—*Exercise*—*Baths*—*Clothing*.—Gonorrhœal Vaginitis—*Gonorrhœa in Women*—Symptoms and treatment; same as in leucorrhœa with some few modifications—Ovaritis following gonorrhœa—Its treatment—Vaginal abscesses—Early use of injections of nitrate of silver—Lint introduced into vagina—Ulcerations in cavity of uterus—Injections of nitrate of mercury and nitrate of silver into its cavity 693

LECTURE LXXIV.

DR. BELL.

Metritis—Inflammation of the Uterus—Varieties according to tissue and part affected—Catarrhal metritis and parenchymatous metritis—The first treated of under the head of leucorrhœa—The neck chiefly affected in the parenchymatous variety—Increased thickness of tissue—Formation of pus—Fallopian tubes and peritoneum sometimes implicated—*Symptoms*—Various according as the body or neck is inflamed—Local and general—Examination *per vaginam*—Change of position of the uterus—Discharge—*Diagnosis*—To be distinguished from peritonitis, ovaritis, vaginitis, and cystitis—*Prognosis*—In general favourable—Obliteration of the Fallopian tubes—Death of the fœtus in a pregnant subject—*Causes*—Traumatic ones—Cold—Sudden suppression of the menses—*Treatment*—Antiphlogistic remedies to be freely employed.—Counter-irritation on the hypogastrium or sacrum.—Chronic Metritis—*Anatomical characters*—*Symptoms*—For the most the same as of acute metritis, but of less violence—Occasionally increase of embonpoint—State of the neck and os tincæ, to

the touch and speculum—Ulcerations—Muco-purulent matter and blood—*Prognosis*—The disease generally slow in its progress—*Causes*, some of them mechanical—*Treatment*—According to the part affected—the complication of ulcers and the constitution of the individual—Antiphlogistic, with modifications—Counter-irritants—Mercury—Iodine—Frictions with tartar emetic in solution—Ergot—Arsenic—Iodide of iron—Mineral waters—Living *absque marito* 703

LECTURE LXXV.

DR. BELL.

Ulcerous or Granular Metritis—Its *etiology* and *symptoms* nearly the same as those of chronic metritis in general—Three varieties—*Treatment*—To allay irritation and to remove the associated engorgement and hypertrophy of the *cervix*—More serious in women who have borne children—Ulceration the common result of inflammation—Local blood-letting, rest, posture, and laxative enemata will precede topical applications—Astringent injections—Caustics—Nitrate of silver—To be repeated at intervals—Directions for its use—Deuto-nitrate of mercury in nitric acid—Means of using caustic remedies—Productive of little pain—Rest, warm bath, and soothing vaginal injections—Treatment of associated hypertrophy—Benefit from cauterising the neck of the uterus—Injections into the cavity of the uterus.—Granulations with Stricture of the Os Uteri and Cervix—State of the passage to the womb a cause of dysmenorrhœa—*Treatment*—Cauterization and the use of a delicate bougie, and injections into the uterus of simple and medicated fluids.—Physometra—*Uterine Tympanites*—Idiopathic and symptomatic—*Causes*—*Symptoms*—*Diagnosis*—Uterine seat of physometra—State of uterus in—*Treatment*.—Hydrometra—*Uterine Dropsy*—Different species—Conditions for its occurring—*Causes*—*Symptoms*—*Treatment*—Watery discharges after parturition . 709

LECTURE LXXVI.

DR. BELL.

Tumours of the Uterus—Divisions of tumours in general—Those of the uterus into *fibrous, polypoid, and cancerous*.—Fibrous Tumours of the Uterus—Definition—Varieties—Sometimes may be malignant—Difference in termination between the malignant and non-malignant tumour—Mode of connexion of the first division of fibrous tumours of the uterus—*Symptoms*—*Progress*—*Diagnosis*—*Treatment*—Second division of fibrous tumour, or the sub-mucous—*Symptoms*—*Diagnosis*—*Treatment*.—Polypoid Tumours of the Uterus—Their character—Varieties—Mode of formation—*Causes*—*Symptoms*—*Diagnosis*—*Prognosis*—*Treatment* 717

LECTURE LXXVII.

DR. BELL.

Cancerous Tumours of the Uterus.—*Cauliflower Excrescence*—Intermediate between the fibrous and polypoid, and the cancerous tumours—*Symptoms*—*Diagnosis*—*Prognosis*—*Treatment*—Cancerous are malignant or heterologous tumours—Most frequent in the uterus—Definition—Varieties—Cancer or carcinoma the generic name, scirrhus the variety—*Histological elements of cancer*—*Causes*—*Formation*—*Progress*—The blood changed in cancer—*Duration*—*Symptoms and Diagnosis*—*Treatment*—Remedies in the first stage—Palliatives in the second stage—Cauterization, a means of temporary relief—Ablation not to be relied on 723

LECTURE LXXVIII.

DR. BELL.

Displacements of the Uterus.—Prolapsus Uteri—Definition—*Procidentia uteri*—*Symptoms*—Prolapsus liable to be mistaken for other diseases—*Causes*—Immediate organic ones—Enlarged uterus from chronic inflammation, &c.—*Treatment*—Constitutional and local—The first with rest will often suffice—Of the local, the use of the pessary is the chief—Preliminary treatment in all cases—To replace prolapsed uterus—Avoidance of all strains—Circumstances requiring the use of the pessary—Immediate good effects—The kinds most useful—Directions for their use—Extreme views—Means of supporting the abdominal muscles and perineum—Attention throughout to the general health.—Ovaritis—Oophoritis—*Inflammation of the Ovary*—More frequently occurs than is generally supposed—Divided into acute and chronic—Frequently coexist together—*Anatomical characters* of acute ovaritis—*Progress*—*Termination*—*Symptoms*—These sometimes met with in dysmenorrhœa—Chronic ovaritis—Resembles the acute in its chief phenomena—*Causes*—*Treatment*.—Gonorrhœal Ovaritis—Analogous to gonorrhœal orchitis in the male subject—*Treatment* similar—Ovarian tumour—Ovarian dropsy 729

LECTURE LXXIX.

DR. BELL.

ANEMIA AND CHLOROSIS—Why spoken of here and in connexion with each other—Anemia—A new term—The disorders it expresses—Division—Its distinctive histological traits—changes in the blood and especially the red globules—sometimes a buffy coat—Anatomical characters—*Symptoms*—*Progress*—*Diagnosis*—Peculiar colour of the skin—Arterial sounds may coexist with plethora—To ascertain whether it is idiopathic or symptomatic—*Prognosis*—*Causes*—Has been epidemic—Hemorrhage the most direct cause—*Treatment*—based on the pathology of the disease—Complications of visceral disease require a modified treatment—Main condition to rectify the digestive apparatus—Neuralgia with anemia—Passive hemorrhages—Puerperal anemia—Preferences for particular chalybeate preparations—The main point is to give iron 739

LECTURE LXXX.

DR. BELL.

CHLOROSIS—Little meaning, in derivation, of the word chlorosis—More peculiarly a disease of women—Its chief pathological feature—loss of red globules—*Causes*—Chlorosis occurs in both sexes—Frequent connexion between this disease and disorder of the uterus—The relation not of effect and cause—Precise organic changes not known—*Symptoms*—Derivable from impoverishment of the blood—Complications of other diseases with chlorosis—Cardiac and vascular symptoms—Dr. Latham's observations—Conditions for the production of chlorosis—Period of life when it most occurs—*Treatment*—General outlines—Different preparations of iron—Their use in combination or alternation with iodine—Excellent effects of chalybeates—Paramount importance of fresh air, exercise, and pleasing occupations . . . 745

LECTURE LXXXI.

DR. BELL.

PERITONITIS.

PERITONITIS—Its divisions.—ACUTE PRIMARY PERITONITIS—*Symptoms*—Pain, decubitus on the back, frequency of pulse, great thirst, anxious expression of face—Fatal symptoms—Favourable ones—Persistence of pain and a dragging sensation even in convalescence—*Latent* peritonitis—*Partial, or circumscribed* peritonitis—*Hemorrhagic* peritonitis—Other varieties—*Diagnosis*—Peritonitis to be distinguished from gastritis, enteritis, hepatitis, and from rheumatism, neuralgia, and hysteria, and from colic—*Morbid Anatomy*—Concrete albuminous layer—the chief anatomical character—The blood in peritonitis—*Causes*—*Treatment*—Free venesection—leeching—laxatives—warm bath and fomentations—simple cold drinks—mild emetic—opium—blister or croton oil—calomel and opium—friction with mercurial ointment—In the second period, mild stimulants and tonics may be required—Indications for their use—Their real effects 754

LECTURE LXXXII.

DR. BELL.

Infantile Peritonitis in Infants—The disease is met with in the fœtus—Is a cause of abortion—*Peritonitis in newly-born infants*—Morbid anatomy—Complications—*Symptoms*—Rapid course of the disease—*Causes*—Erysipelas the most frequent—*Treatment*—*Erysipelatous peritonitis*—To be afterwards described.—CHRONIC PERITONITIS—Not merely a sequence of the acute form—Its complications—Tubercles the most common—*Symptoms*—Insidious approach of the disease—First noticeable symptoms, indicative of indigestion with pain—Important modification of chronic peritonitis without pain—Appearance of the abdomen—Effusion, signs of—Hectic symptoms—Pulse variable, but generally frequent—Nausea and vomiting—Peculiar appearance of the feces—Countenance—*Progress and Termination*—Coexistence with pleurisy quite common—Signs of improvement—Fatal termination—*Diagnosis*—*Prognosis*—Generally unfavourable—*Causes*—Strumous habit and lymphatic temperament—*Morbid anatomy*—Ascitic effusions and false membranes—*Tubercles* in the great majority of cases—*Treatment*—Indications, to remove irritation and to keep up the general strength—Mild antiphlogistics—Counter-irritants—The blue pill—Quinine—Bland, nutritive food, air, and moderate exercise—Chalybeates—Resolutive and deobstruent remedies—Mercury as a sialagogue, and iodine 762

LECTURE LXXXIII.

DR. BELL.

Erysipelatous Peritonitis in adults—Peculiarity of effusions in—*Symptoms*—Relation of peritonitis to erysipelas—*Treatment*—*Metro-Peritonitis*—Circumstances of occurrence of this complication—*Symptoms* vary with the part of the uterus affected—*Treatment*—Different according as the disease occurs in the unimpregnated or the puerperal state.—PUERPERAL PERITONITIS—*Puerperal Metro-peritonitis*—Fever accompanying it—The puerperal—Numerous causes of predisposition and complication in the puerperal state, explaining great diversity of symptoms of puerperal peritonitis—*Anatomical characters*—Coincident inflammation of the uterus and its appendages—*Softening* or *putrescence* of the organ—Abscess in the cellular tissue—Inflammation of the lymphatics—Inflammation of the veins (phlebitis)—Their change of texture—Secondary abscesses in the different viscera—*Symptoms*—Time of appearance of puerperal peritonitis—*Progress and Termination*—The peritonitis sometimes latent—Attention to particular symptoms; above all the pulse—Rapid march—Signs of amendment—*Complications*—Metritis, phlebitis, lymphangitis, ovaritis, inflammation of the Fallopian tubes, pleurisy—*Diagnosis*—Characteristic symptoms—*Symptoms*—Inflammation of the uterine appendages—Inflammation of the symphisis pubis—Phlebitis—*Prognosis*—Unfavourable—*Causes*—Epidemic influence and contagion—Individual predisposition—Disease may attack puerperal women in the most different states of constitution and system—Erysipelas—Alleged vitiation of the blood and other fluids—*Treatment*—Divided into the *prophylactic* and the *curative*—Chief means of prophylaxis—Curative treatment—Considerations in case of doubt as to the plan of cure—The antiphlogistic treatment the most reliable—Circumstances under which it is best—Venesection—leeches—emetics—laxatives—calomel and opium—Treatment of the erysipelatous or adynamic variety—Moderate evacuations—mild stimuli—nutritive substances—Reference to works on the subject.—CONSECUTIVE or SECONDARY PERITONITIS—*Causes*—The chief one, intestinal perforation—*Morbid Anatomy*—*Symptoms*—*Diagnosis*—Some cases have been mistaken for poisoning—*Prognosis*—*Treatment*—Opium in large doses the chief resource 769

LECTURES

ON THE

THEORY AND PRACTICE OF PHYSIC.

LECTURE I.

DR. STOKES.

GENERAL OBSERVATIONS.

GENTLEMEN: — You may have often heard that the approaches to science are rugged and uninteresting, and some of you have perhaps experienced the truth of the remark. Hence the custom of delivering an introductory lecture, in order to lay before the young mind, when first entering on each path of knowledge, the objects, the results, the attained good, and the hoped-for glory of the pursuit. These are to be displayed with clearness and with truth, yet it is obvious that much of the effect of such a lecture must depend on the nature of the subject and the judgment of the speaker; and it is well when the exalted nature of the one is attainable by the capabilities of the other. Such a lecture, then, should be an earnest lesson on the objects, the pleasures, and the advantages of that science, of which the course is destined to treat; its history, its true mode of study, its interest, actual state, and future prospects, may all form legitimate subjects, and when thus rightly viewed, an introductory lecture, so far from being a mere ornamental appendage, may become a most important part of the course.

With these views let us approach our subject, the theory and practice of medicine. Let us contemplate that study and that profession, which, venerable by all antiquity, yet in itself is "ever new." Even in its infancy, when the world was in darkness, was medicine a glorious science when compared with its contemporaries, and its first professors were ennobled and exalted by its influence. As their mantles descended through a long line of illustrious successors, we see medicine progressively expanding, and even when the night of barbarism hung gloomily over the earth, we see its genius triumphing over the surrounding darkness, and shining in the east as a beacon to the shipwrecked mind of man: and I trust that I shall be able to prove to you, that, in our own time, when the human mind has made such astonishing advances, medicine has kept pace with her sister sciences, and it is a gratifying reflection to think, that among the most distinguished promoters of the collateral sciences, physicians have ever held a commanding rank, thus proving themselves foremost in know-

ledge, as they have ever been in philanthropy, in private and public charity, and in all good-will to man.

It is scarcely necessary to allude to the title of this course of lectures, further than to remark, that, however different they may be in name, it is yet impossible to draw the line of distinction between the theory and the practice of medicine. If medicine were merely the knowledge of a number of empirical remedies for particular symptoms, given without our inquiring into their mode of action, or any acquaintance with the dependence of one function, or one viscus, on another, of any knowledge, in short, of physiology in the healthy or diseased state, then we might have a practice of medicine independent of what is called its theory. But medicine now holds a higher place, and much of its improvement is traceable to our advances in physiological and pathological science. Thus to treat, or teach, the treatment of a disease, we must know the healthy function of the organ or organs, the history of development, the influence of other organic systems, the changes produced by disease, and, as far as possible, the action of all external or internal agents on the viscera. But this is the theory of medicine.

For example, let us suppose that we are called either to treat or to teach the treatment of a case of enlarged liver. Let me here remark, that in selecting this case I do not wish you to suppose that I am one of what might be called the hepatic school of medicine, in which the existence of almost every organ, except the liver, seems to be forgotten, and of which the creed seems to be, that there is but one viscus, the liver, one source of disease, biliary derangement, and one cure, mercury; a creed which, though not enforced and defended by the sword, has lost perhaps as much of human life as others whose history is written in letters of blood.* But no one can doubt the importance of the organ, and I have taken it to illustrate the connexion between the theory and the practice of medicine.

You detect an enlarged liver; you are called to cure the disease:—

1st. You must be aware of the healthy state of the organ, and of its healthy functions, as shown by the volume, sensibility, influence on digestion, and the healthy state of the secretion. You must know all these, as it is by the departure from these conditions that you recognise this disease at all. — *But this is the theory of medicine.*

2dly. You must know the history of its development, because there is a period of life when the natural state of the liver is in a greatly enlarged condition, and this may continue even to adult life, and produce an enlarged liver, not the result of disease but the arrest of development, and the question will arise as to whether the case before you is an example of this, or of recent and actual disease. The whole treatment turns on this. — *Yet this is the theory of medicine.*

3dly. You must know the influence of other organic systems. An en-

---

* [I wish it could be said that we, in the United States, are not amenable to this censure. But alas! the spoonful doses of calomel, and pills, with calomel for their basis, by the dozens, are, or have been, prescriptions which have cast a stigma on too many American practitioners, who see but one disease, — that of the liver, and one remedy, — calomel. — B.]

larged liver may be produced mechanically by obstructions in the lungs or in the heart; it may be produced from the sympathetic irritation of a duodenitis, or be the result of original disease in its own structure. All these circumstances must be known and taken into account. If it be merely obstruction in the venæ cavæ hepaticæ the ordinary treatment will not answer: if there be duodenitis we must modify our treatment, and so on. We must know these things: we must know how to recognise these diseases before we can prescribe or practise successfully. All this is that part of the theory of medicine called pathology, or the physiology of the diseased body.

4thly. You must know the effects of disease on the liver itself. Some of these are removable by art, others are totally incurable. You must know these in order to determine on the probability of their existence.

5thly, and lastly. You must know the influence of remedial agents on the liver and the adjacent organs. You must be familiar with the effects of stimulation of the mucous surfaces of the stomach and duodenum. Then, indeed, and not till then, will you be qualified to treat the case with judgment and success. The same remarks, I need scarcely add, will be found applicable to the diseases of each viscus in the body.

The objects of medicine, gentlemen, are two-fold: first to cure disease, no matter where seated or how produced; and secondly, to relieve bodily suffering in cases where a cure is impossible. Its great end is to prolong life, and to diminish the bodily evils which result from the infirmities of our nature and other circumstances. Some of you may ask, where then is the distinction between medicine and surgery? In truth, there is no distinction in reality, and there should be none in theory. The human constitution is one; — there is no division of it into a medical and surgical domain; the same laws and the same principles of treatment apply to the cure of a fractured bone and the cicatrization of an internal ulcer. Unlike the corporations of medicine and surgery, the supposed purely medical and purely surgical parts of the body live in excellent harmony. Here, then, there is no division, no jealousy, no separation of interests.

I am by no means prepared to deny that advantages may arise from a practitioner devoting himself to this or that branch of his profession; but *if he seeks for eminence*, he will first educate himself *generally*. Let him attain extended views of pathological medicine: let him make himself master of the actual state of the science, and then he will find that there is not a single fact or law with which he has become acquainted that will not have its bearing on his particular pursuit. It is in the education of medical men that the ruinous effects of the division of the professions of medicine and surgery are most perceived: and I feel convinced, that of the two, *the surgical student is the greatest sufferer*, because his views of pathology are injured. All the great laws in pathology are drawn from the consideration of visceral disease; yet the attention of the surgical student is diverted from this, and directed to what, I will say, can never elevate him in the ranks of science. He is taught anatomy, and what is called surgical disease, but is kept ignorant, by this wretched system, of the great part of his profession, until he comes to practise, when, if he has a mind fitted for observation, he will find, that for one dislocation there will be hundreds of visceral diseases; and he will discover, what was concealed from him during his pupilage, *that many, many more die of what are called medical than surgical diseases*. During the late war, more men in

the British navy died of fever than of all other causes — including the sword. But, I rejoice to say, in Dublin the exclusive system of education is fast wearing away, and one of the many excellences of our national school of medicine is the instruction in general pathology. There are few schools of medicine where now a more enlarged and liberal spirit of education exists.

In the study of your profession, gentlemen, let me warn you not to allow yourselves to be misled by the idea that surgery and medicine are different in their nature. The mere surgeon, or the mere physician, only knows half of his profession. Reckless of human life, he may practise the healing art as a trade, but he never can know it as a science. But, as there are infinitely more cases of what are termed medical than surgical disease, it is plain, that the surgeon, ignorant of medicine, will far exceed the physician ignorant of surgery, in the extent of his malpractice. I have long observed the ruinous system which has been pursued by teachers, as connected with this subject. The pupil was taught to consider, that if he was a skilful anatomist, if he understood the routine surgery of a hospital, and had carefully studied certain works on surgery, and some obsolete books of pathology, he was thereby prepared, in the language of the schools, to go forth to teach and practise the art and mystery of medicine in general. Now, all this was wrong. You may be profound anatomists and be bad surgeons, and worse physicians; you may have by heart the writings of Pott and Dessault, of Hunter and Thompson, and be totally incapable of treating a simple or complicated fever, or a case of visceral disease.

But it is not necessary to say more. Society demands that the old system of a division in education should be abolished; and ere long, I even trust to see a fusion of the profession, when much of the present evils must cease, when medical men shall have a common centre, from which they shall receive a common impulse; when their efforts shall be solely directed to the increase of medical science, and the political and moral exaltation of their profession; and last, yet not least, when the ingenuous pupil shall not be led astray; when we shall not be told by one teacher to despise this, and by another to neglect that part of his profession; but, having the *whole* of the noble science of medicine thrown open to him, his mind unwarped by prejudice, unfettered by fear, shall be permitted to take that right view of his pursuit, that alone can lead him, and assuredly will lead him, to the honours and success which truth bestows on all its votaries.

I have said, that the exclusive system of education has singularly diminished in Dublin. Indeed, our national school has earned great reputation for general pathology; and, from a long and cordial intercourse with the class of Dublin, I will affirm, that there are few places where we can see such zeal, talent, and thirst for knowledge among the students. As an Irishman, addressing my own countrymen, let me congratulate you on the fame the Dublin School of Medicine and Surgery has now acquired, and is every day acquiring; and when the strength of Irish talent, aided by the proper working of our unrivalled institutions, is brought into play, may we not anticipate a still more glorious result? This reflection has often cheered me, that within the last few years there has been a greater stimulus infused into the science and literature of this country. Amid the ungenial influences of political excitement, and the animosities of party,

how gladly should we contemplate the advance of what will prove an honour to our national character, and an advantage to mankind. It is like the growth of the coral into rocks and fertile islands, though surrounded by the strife and waste of waters. Our scientific societies have multiplied; our periodical literature, the want of which furnished so fruitful a theme for cavil, has been extended so as to afford a wholesome and vigorous supply in the varied departments of literature and science; and our monthly and quarterly publications are taking their proper places among the ranks of British journals. When we turn to works of a more permanent kind, we also see cause for satisfaction. Many most important works in anatomy, surgical pathology, physiological medicine, and midwifery, have lately issued from the Irish press; and the Irish contributions to the Cyclopædia of Practical Medicine are allowed on all hands to give to that work no mean portion of its value.

There are few more wholesome exercises for the mind, few so necessary and so useful as the comparison of the actual state of any science with its advance and character at a former period; and it is in this, most chiefly, that the value of what is called the history of medicine consists. We study it then, not as a matter of antiquarian research, of learned curiosity, but as the picture of the human mind, now on the right path, now misled by error, yet still struggling onward; as the record of a dear-bought experience, and a beacon to warn us of the rocks and shoals that beset its future progress unto truth. To analyse the actual state of medical science, to show you all that has been done within a little time, to display all old pretensions to the character of a true and thrice noble science, would far exhaust my capabilities and your patience. Let it suffice to contemplate the improvement considered generally, and the means by which that improvement has been attained.

It is an error too generally received, that medicine owes all its advances to the researches of modern times. Far be it from me to undervalue these, but I believe that the opinion I have alluded to is wrong, and is perhaps kept alive by our own vanity; for by a specious deception we often take to ourselves the honours and distinctions of the time we live in. The truth is, that medicine, like many other of the sister sciences, has been long steadily advancing, and the flippant every-day remarks that the *inductive system* (that is, the observation of facts and the embodying of those conclusions that legitimately flow from them) has only been introduced into medicine in our time; and that our predecessors in medicine put theory first and fact second in their medical philosophy, are "*as false as dicers' oaths.*" Have the authors and teachers who are so fond of decrying the medicine of a former day, at a time when they are (perhaps innocently) making use of its facts and observations—have they read the writings of the father of medicine? Have they studied that "*aureum opus*," so well called from its lustre, its purity, and its surpassing value? Was Avicenna a mere theorist? Did Morgagni observe no facts, nor truly record them, even at the expense of his medical reputation? Is there no induction in Baglivi? Was Haller unacquainted with the method of experiment and induction? Or is the discoverer of the circulation of the blood, the good, the great, the injured, the immortal Harvey, forgotten? Where do they place Boerhaave; and shall the name of Sydenham go down with his ashes to oblivion?

The true state of the case is, that medicine, in its present advanced

state, only represents the improvement in other branches of human knowledge, all of which are so intimately linked together, that although their extremes be far removed, there is a point where all are reciprocally cause and effect; so that if we take any one of them, it is easy to show its intimate bearings with, and importance to, all the rest. We have been long advancing in medicine; though I admit most fully the vast strides which have been made, still I must here declare my firm conviction, that the study of the older authors is too much neglected, and that in them you will find a treasury of knowledge, much of which you may think to be the production of modern times.

If the writings of the ancient authors only contained a small portion of the information with which they abound, it would be a sufficient stimulus to their study; to reflect that it is in them, in the medical writings of the ancients, that the germs of the inductive philosophy are first to be found. It is, then, in the old regions of medicine that we find the fountains of that mighty river, which, for two thousand years, has fertilized the earth, and made man its lord. Had the progress of man not been retarded by the ignorance which is the child and servant of barbaric despotism, an earlier Newton might have enlightened the earth, an earlier Laplace have measured the heavens, or a Cuvier declared the glories of a past and present creation. The mind of man would have burst its chains, and ages ago have formed that holy alliance with knowledge and her first born, liberty, which now is its safeguard and its glory. I repeat it: in the writings of Hippocrates you will find the principles of the inductive philosophy. A physician showed Bacon the road to immortality.

We find that there is in the mind of man a tendency to reverse the true mode of reasoning, and to seek for a principle before it has observed facts, and this was the cause of the retardation of medicine, as well as of all other sciences. Hence the var ous schools, from Pythagoras to Cullen or Brown, in our day. But a slow, though sure, revolution was long going forward; and I believe that Cullen and Brown were even *behind* the actual state of medicine in their time. Physicians turned disgusted from the war of words and doubt, to seek in tangible objects the certainty which these only can produce; in a word, they began to follow the Baconian system more generally. They reverted to the instructions of Hippocrates, and from that period our modern improvement may date. They turned their attention to the examination of those changes which disease produces on the human body, and connected these with the symptoms observed during life. And what has been the result of this?

1st. The accumulation of an enormous number of facts, relative to the changes of organs produced by disease.

2d. The connexion of a vast number of these changes with particular symptoms, and hence the advance in diagnosis.

3d. The establishment of the true value of symptomatology, and the verification of that all-important fact, that opposite states and organs may produce similar symptoms.

4th. The knowledge of the vast class of latent diseases; in other words, diseases which exist without influencing the phenomena of animal life, or, in some cases, the phenomena of both animal and organic life. Diseases, either without symptoms at all, or only with such as previously were not supposed capable of leading to their detection. You know that the phenomena of life are divided into two classes, viz., those of organic or vege-

table life, such as *nutrition*, *circulation*, *absorption*, *respiration*, *secretion*. While those of animal life, or the life of relation (*so called from its being the source of our connexion with surrounding bodies*), are the senses, the phenomena of mind, and muscular motion. The one life seems more under the influence of the ganglionic, and the other under that of the cerebro-spinal system of nerves.

As some of the junior part of the class may not have accurate ideas as to the meaning of symptoms, I may state that disease is recognised by signs and symptoms.

By signs, we mean those mechanical alterations produced by disease, in the conditions of parts, which are recognisable to the external senses of *touch*, *sight*, and *hearing*; *changes in appearances*, *volume*, *shape*, *resistance*, *peculiarities of feel*, and the production of *sounds*. We may make a diagnosis by signs alone. Take, for example, a case of tympanites. The abdomen is prominent, enlarged, circular, elastic, and sounding like a drum when struck. Thus we learn that the belly is distended by air.

Now, *symptoms* are totally different; they consist in certain changes produced in *functions*; and these functional changes are to be considered in a three-fold manner:—

1st. Changes in the functions of the part itself.

2d. Changes in the phenomena of organic life.

3d. Changes in the phenomena of animal life.

Let us take, for example, a case of inflammation of the stomach. We have, first, changes in its own functions — morbid sensibility, vomiting, thirst, anorexia. In the next place, we have changes in the functions of organic life — fever, from the action on the circulating system; hurried respiration, and cough, and hiccup, from the action on the respiratory system; jaundice, from its action on the biliary system; suppression of the secretion of the skin, kidneys, &c. All these, you observe, are lesions of the functions of organic life.

But we may have other symptoms: prostration, headache, delirium, convulsions; these are lesions of the life of relation, or animal life.

Now, in many cases, we have to combine these sources of knowledge to form a correct diagnosis. Take, for example, a case of hepatitis.

The patient has had pains in the hepatic region, fever, jaundice, hurried breathing, tenderness. After some time he has a tumour; the side dilated; the hypochondrium dull on percussion. Well, the signs point out an enlargement of the liver; the symptoms, that the cause of that enlargement was an acute hepatitis.

In general, we may state, that signs only declare the actually existing mechanical condition, while symptoms, either present or past, point out the cause of the change, whatever it may be. Both must be studied together; but you will learn more from symptoms without signs, than from signs without symptoms. But to return to the results of the improved method of investigation.

Great light was thrown on *fever* in general; and it is, I believe, quite true, that all the advances which we have made in the knowledge of fever, are due to the prosecution of pathological anatomy. Almost all of what we may call our general knowledge of fever, is due to Hippocrates; but anatomy has revealed its effects, its complications; and the all-important fact that the cause of its fatality is often local inflammation. This knowledge, however, is not so new as is taught by some modern systematists.

Galen (*De Affect. Intern.* c. xli.) taught, that in continual fevers bleeding and cold drinks were the powerful remedies. Sydenham declares, that the ignorance of the inflammations in malignant fevers has been more fatal to the human race than the invention of gunpowder; Baglivi, that malignant fevers often depend on a visceral inflammation; and Van Swieten knew the frequency of intestinal ulcerations in typhus.

Among the direct results of pathological anatomy, it is shown that *disease is seldom confined to one organ, or even one system*, and thus it has utterly shaken the nosological system of Cullen and his predecessors, which, you know, consisted in classifying disease by symptoms, which were supposed to point out a certain and single disease. For example, the nosologists class *phthisis* as an affection of the lung; but pathological anatomy has shown, that in many cases it is the result of a disease invading many organs and systems, and that the pulmonary disease is but a link in the chain of morbid actions. Pathological anatomy, also, has demonstrated the inflammatory nature of a vast number of diseases, and has thus given us a key to treatment, to prevention, and to palliation, when the disease is incurable.

The last grand result of pathological anatomy is the discovery that a vast number of affections, supposed to be merely lesions of functions, are more or less connected also with alteration of structure. Thus, many of the dyspepsias of the nosologists are proved to be examples of gastritis, or of other organic diseases; cases of asthma turn out to be chronic inflammation with emphysema; cases of palpitations may depend on organic disease which has sprung from a carditis, and so on. I need not now dilate on the vast importance of such facts to practical medicine.

But let us now come to an all-important inquiry. Is pathological anatomy to be considered as the basis of medici e? or is it, even when combined with clinical observations, the foundation of all medical knowledge? This inquiry, you will at once perceive, involves the question as to whether Hippocrates and his followers have done anything for the science, or whether medicine is wholly new, an infant, and consequently a weak and imperfect science. Are we to despise the works of the ancients, to be ignorant of them, and to allow medicine to be in its infancy? In fact, if we review the history of medicine from the Hippocratic era to the absurdities of Hahnemann, we find that there have been two orders of men, one constituting what we may term the school founders, who made a theory, and sought to square facts to meet that theory; these have only brought disgrace on medicine. The other class consists of the Hippocratic observers; that is, of men who sought for facts, who collected and pondered on these facts, in other words, who were Baconian philosophers. It is the labour of these that has really advanced medicine. Asclepiades, who lived in the first century of the Christian era, declared that the medicine of Hippocrates was a *cold meditation* of death. The celebrated Thessalus, who lived under Nero, in writing to the emperor, makes use of the following words:—

"I have founded a new sect, which is the only true one. I have been forced to this, because none of the physicians who have preceded me have discovered *anything useful*, either for the preservation of health, or for the cure of diseases, and because Hippocrates himself has put forward many dangerous maxims."

And what was this new doctrine? That nature in each case pointed

out to the patient what was the most fit for him, and that hence he should be diligently supplied with everything that he fancied.

We have next Paracelsus. He commenced his course of lectures at Basle, in the year 1526, by publicly burning the writings of Galen and Avicenna, and assured his auditors that a single hair of his head contained more knowledge than Hippocrates and his successors. He taught the cabalistic medicine, the intimate connexion between the planets and the viscera: he was a vitalist, but embodied his vitalism under the shape of a demon, who resided within the system, and which he called Archæus. Diagnosis was to repose on the examinations of the stars, and not on symptoms. He invented the doctrine of tartar, which is the cause of all diseases of accumulation, obstruction, and concretion; "and I call it tartar," says he, "because it contains the oil, the spirit, and the salt which burn the patient as hell does."

Hahnemann, the founder of the homœopathic doctrine, may be quoted next as an example of these school founders; and he, like his predecessors, expresses himself with all that arrogance which ignorance, when it pretends to learning, invariably assumes. Speaking of the Hippocratic medicine, he says—

"*Since this art only consists in a gross imitation of a dangerous and insufficient process, it must be admitted that the true medicine was not discovered until by me. It is the infallible oracle* of the art of curing; it is the *sole mode* of really curing disease, because it reposes on an *eternal and infallible* law of nature."

And what is this mode and doctrine? We have it in four propositions, and it is hard to say which of them is most revolting to common sense. We are told that it is absurd to seek for the cause of symptoms in order to remove them; that we must cure diseases by the exhibition of substances which would otherwise produce them; that the dose is to be inconceivably small; and that there are three original diseases from which spring all the maladies which afflict mankind—syphilis, sycosis, and the itch. These are the fruitful causes of all diseases,—epidemic, sporadic, idiopathic, and symptomatic. Like his predecessor in quackery and deceit, he, too, has his syphilis, sycosis, and itch, the oil, the spirit, and the salt which burn the patient as hell does. Like Paracelsus, too, he maintains the curability of diseases, and is a disciple to animal magnetism.

Let us next see how Broussais announced his doctrine to an admiring world.

"*After so many vascillations in its march, medicine at length follows the only path which can conduct it to truth—the observation of the relations of man, with external modifications and the relations of the organs of man, one to the other.*" This is the physiological method, because it cannot be followed without studying life.

I am more anxious to draw your attention to this doctrine, as Broussais may be considered as the source of the anatomical school, which, of late, was so completely the fashion—if I may use such a term; and it is a striking instance of the danger that attends the idea of our having made a discovery, to see a man like Broussais, than whom few have really added so much to medicine, falling into the same fault of arrogance and contempt towards his predecessors.

At this moment, the medical world, particularly on the continent, is divided into two great sects. One may be called that of the *pathologico-*

anatomists, the other the *Hippocratists*. The first declares that diseases *are primitively local* in all cases; that the symptoms—say in a case of fever—are only the *results of sympathetic irritation from some local disease*, which is to be *attacked with vigour;* that pathological anatomy is to be the foundation of all practice; that there is nothing approaching to a *specific in medicine;* and *that nature makes little or no attempt to cure.* Their favourite maxim is that saying of Bichat's—" *What is observation, if we are ignorant of the seat of disease?*"

This is the sentiment of an anatomist, but not of a physician: and we must regret that it once escaped the author of the " Researches on Life and Death," a book of such interest and such beauty, as to captivate even the non-medical reader, and make the very name of Bichat be hallowed in our memory. Many are the diseases of which we know not the seat: yet in which observation—Hippocratic observation—is of the greatest utility.

We know not the seat of fever, let the followers of Broussais say what they may to the contrary: yet is observation of symptoms of no avail in fever? Are the effects of contagion, the history and nature of epidemics, the termination by crisis, the results of treatment, of symptoms as connected with prognosis—is the observation of these useless or unnecessary? Sydenham knew not the seat of variola; yet he declared the true principles of its treatment. There are very many diseases on which pathological anatomy throws but a negative light—if I may use such a term—particularly affections of the fluids, and the neuroses.

So much for the doctrine of the anatomical school. I beg of you not to misunderstand me as undervaluing pathological anatomy; I only wish to show you its true value. I believe there could hardly be adduced a single fact in pathological anatomy that has not its distinct bearing on practical medicine. And it is true that the diseases whose treatment is best understood are those whose pathological nature are best known. Even in fever, the actual nature of which has not been revealed, great advantage has been derived from anatomical researches; for all the advance in our knowledge of this Protean disease consists in ascertaining the number, nature, and seat, of the local inflammations which accompany or rise in the course, and complicate the disease.

Let us, lastly, revert to the opinion of the Hippocratists. They admit that *vast advantage* has arisen from pathological anatomy; but they see that its light is limited within certain bounds. They believe that great advantage is to be derived from the careful study of symptoms, even in cases whose pathological nature is not revealed by the knife. They believe that there are many diseases whose local origin cannot be demonstrated; for instance, *fever*. They deny that pathological anatomy is always to be our guide; but admit a rational empiricism, and the use of remedies which may be called specifics; and, lastly, they hold that nature, in many cases, makes an attempt to cure; and that the physician, in the words of Hippocrates, is to be *the minister, and interpreter of nature*, rather than her master.

Let us, then, combine the precepts of the founder of medicine with the lights of modern science. Let us take *observation*, and that observation rendered fruitful by study, for our guide; and let the observation equally embrace the phenomena of the living as well as the dead. Let us be Hippocratists in the dissecting-room as well as at the bedside. By com-

paring the practice of these two schools, we get more accurate ideas as to their doctrine. The anatomists, holding that all diseases are local, direct their whole attention to the discovery of the lesion, and its connexion with symptoms. This, with their doctrine that almost all diseases are inflammatory, leads them to a strict general and local antiphlogistic treatment. Fever is to them symptomatic, and the supposed source is to be vigorously attacked in the commencement. *Diathesis, the nature of the epidemic*, and the *powers of nature* to effect a cure, are comparatively neglected. They inhibit purgatives for fear of increasing the local inflammation, and lose many patients for want of a timely support of the powers of life.

They deny specificism in diseases as well as in medicine, and are sorely puzzled to explain the extraordinary powers of bark, and mercury, and sulphur, and iodine. They despise the experience of the past.

The true Hippocratist, on the other hand, believing that we have not yet arrived at the knowledge of the local origin of all diseases, and particularly fevers, grounds his practice accordingly. He draws his experience from the recorded knowledge of the past, and his own unbiassed observation. When he recognises a local inflammation, he meets it with judgment, taking into account the habits, diathesis, epidemic, constitution, and tendency to crisis. He trusts much to nature, and watches her operations, particularly in fever. He is not afraid of moderate evacuations; the phantom of a local inflammation does not always haunt him; and even where he recognises its existence, that does not prevent him from using a stimulating and supporting treatment, if the general state of the patient requires it. He treats particular diseases by particular remedies, the utility of which has been proved by experience—such as syphilis, scrofula, intermittent fever, and so on. He uses the expectant medicine, which is not inactive treatment, but founded on the observations of the powers of nature—"*Natura morborum medicatrix;*" but he never loses the opportunity of doing good, when such presents itself, remembering the first aphorism of his great master:—

"Occasio præceps."

I have great hopes for medicine, for I see men's minds turning to the true path; and I trust that all whom I now address will deem themselves as labourers in the great work. Think what a noble science you profess! the only one relating to earth-born things, which, while it ennobles the mind of man, yet softens and expands his heart; whose source is all science, whose end is good to man. Above all things follow truth; nature can never deceive—see that you be her faithful interpreter. The great evil is, that there has as yet been adopted no means by which the experience of the past can be brought fully to bear on the actual teaching and practice of medicine. Too often has the physician to create his own instruments. But when all the scattered facts of medicine are collected, whether they be the observations on the living or the dead body, as old as history, or as young as to-day; when these votive tablets are hung up in the temple of truth, and their facts verified, compared, and classified, then, and not till then, will you see medicine in all her glory.

LECTURE II.

DR. STOKES.

General remarks on local diseases.—Fixed rules for the guidance of students—Great importance of diagnosis.—Existence of pure fever rare.—Doctrine of the Humoralists and of the Brownists.—Pathology of the digestive system.

I COMMENCE the course by entering at once on the subject of particular diseases. I am aware that the common practice is to occupy the early part of a course on the theory and practice of medicine with preliminary discussions on general pathological subjects. To this I have strong objections. Every man who assumes to himself the office of teacher, no matter what the fact may be, should presume that his auditors are ignorant of the subject he is about to teach ; if he does not, he must be unjust to his class. Some of the class must be ignorant of the information he wishes to convey, and he should take it for granted that all are so. To commence with the consideration of general disease would argue that the whole class was acquainted with the subject in all its bearings, and capable of understanding its principles without any previous illustration. I think this is beginning at the wrong end. My plan is first to teach the facts, and then the general principles and conclusions to which these facts lead. It is of the deepest importance in the study of medicine to be able to form a collection of laws or fixed principles. In your professional career, nothing will give you so much satisfaction as having in your minds a number of established facts and fixed rules to bear on every case which comes under your cognizance. We commonly hear of the uncertainty of medicine and the instability of its practice ; it is said to have as many phases as the moon, and as many changes as the tide ; but, after all, I think this expression is more general among those who know little than among those who know much. Those who have successfully laboured in treasuring up a store of deep and extensive knowledge are firmly convinced, that, though some cases are involved in doubt and obscurity, the general certainty of medicine is at present increased far beyond what it was in former times. No man, except one in full and extensive practice, earned by industry and capacity, can be aware of the vast improvements of modern practical medicine, and of the number of lives which are saved by the judicious treatment which the rapidly progressive improvement of medical science has introduced. Medicine is much more certain now than it was in past times. There are two reasons for this ; one of which is, that at the present period diagnosis, the guide and master-key to sound treatment, is more certain. Here, gentlemen, is a great source of certainty in the practice of medicine. You will find, in the course of a few years, that the old saying of " doctors differ," will become less frequently applicable, because, as the education and acquirements of medical men become more extended, diagnosis will be reduced to fixed rules, and difference of opinion will be very seldom observed. A vast number of local diseases, formerly wrapt in obscurity, are now detected with the most unerring certainty, and this certainty of diagnosis must bear on fixed

principles of treatment and similarity of practice. Another vast source of increased certainty is the fact, now extensively established, that the element of a great number of diseases is the same. This is an important law, because the deduction from it is, that the principles of treatment are the same in these cases. The principles of treatment in a case of hydrocephalus and in a case of vomiting from gastritis may be, and often are, completely identical, because in many cases, both are reducible to a common action. In the one case we have to deal with inflammatory action in the stomach, in the other we have to treat an inflammation of the membranes of the brain. The principle in both cases is to deplete the suffering organ, and to diminish or remove everything that keeps up irritation. Pathological anatomy, too, has effected a vast deal for medicine by the improvements in diagnosis which it has introduced, and by reducing to one class a vast number of affections formerly supposed to be wanting in analogy and distinct.

Before I commence entering on the consideration of the pathology and treatment of diseases of the digestive system, it is necessary that I should mention another peculiarity of the mode of teaching the theory and practice of medicine adopted in this school. The ordinary way of lecturing medicine in the schools is this: the teacher begins by going over, at great length, the whole subject of fevers, and then proceeds to the consideration of the signs, symptoms, and treatment of local diseases. We reverse this mode here: we begin by teaching the pathology and treatment of local diseases, or affections of particular organs; and having studied these with care and attention, we then proceed to the consideration of fevers. In point of fact, we are thoroughly impressed with the truth of this splendid conclusion in medicine, that local diseases may be considered, as it were, the alphabet of fevers, and that to have a distinct and accurate conception of the whole subject of fever, it is essentially necessary that we should be acquainted with all kinds of local disease. To commence with a class which the teacher presumes, or should presume, to be ignorant of the phenomena of local diseases, unacquainted with the rules on which their diagnosis depends, and unacquainted with the principles which should regulate their treatment—to begin with such a class by entering at once on the subject of fever, would, in my opinion, be extremely wrong. You will read in books and hear teachers speak of bilious fevers, of nervous fevers, of catarrhal fevers, of gastric fevers, and of simple fevers. These expressions are founded on the fact of the complication or non-complication of fever with local disease in various parts of the system. If simple fever was the rule, and its complication the exception, then, indeed, there would be some reason for pursuing the ordinary track of medical instruction, and we might commence by teaching the subject of fever, independent of local inflammation. But the truth is, that fever, in the *simple form, is the exception, and its complication the rule*, and that to have a correct idea of fever, in the general acceptation of the term, we must previously possess an intimate knowledge of the affections of particular organs. The progress of medicine has established, by the most unquestionable evidence, that simple fever is a matter of extremely rare occurrence; so rare, in fact, that you might pass through the practice of fever hospital for years without meeting with a single case which you could say was, through its whole course, a case of pure essential fever. Sooner or later its character is changed and the complication with visceral

disease comes on; you may take this with you as a well-proved fact. You will have, at some period, a complication with local disease in the head, or local disease in the chest, or in the belly, or in the circulating system, or perhaps all the great viscera in the body will be simultaneously affected. My experience on this point, after having attended the fever wards of the Meath Hospital many years, is this, that among all the cases which were admitted under such circumstances, there were very few indeed in which I could not say that the patient had something more than fever. Many were admitted who presented no indication of disease in the head, chest, or digestive tube; all that could be said of them, at the period of their admission, was, that they had fever; but my experience of them is, that, in a vast majority, there was, during their progress, unequivocal evidence of the supervention of visceral disease. I do not go as far as the disciples of Broussais have gone, nor do I mean to say that all fevers are symptomatic; all I assert is, that, at some period, most fevers are complicated with local disease. I admit that there is a vast number of symptomatic fevers, but I believe there are two which are essentially simple, typhus and intermittent. The progress of medicine has shown that these may exist in the simple form, and that their complications may be secondary; this I believe to be the fact, but the almost invariable liability to complication is a point of the highest importance. We scarcely ever see typhus unaccompanied by symptoms of local disease; and, with respect to intermittent, in ninety-nine cases out of a hundred, visceral disease of the head, or chest, or belly, may, and will, supervene.

Another great fact bearing on this subject, and which pathological anatomy has established beyond the possibility of a doubt, is, that in the great majority of cases having a fatal termination, death is caused by disease of some particular organ or organs. The old notion of the cause of death was, that the patient died of debility or exhaustion. In cholera, in tetanus, in hydrophobia, we cannot, to be sure, demonstrate any appreciable lesion of structure, and we may say, if we like, that the patient died of debility; but this does not hold good in cases of fever, for on dissection you will generally find disease sufficient to account for death, even though there had been no fever at all. From these circumstances it follows that, in the management of fevers, the attention of the physician must be directed to the local affections, or, at all events, that to understand fever well, and to treat it successfully, he must be acquainted with the nature and treatment of every form of visceral disease. It will be sufficient for me to call your attention to this fact, *that there is not a single acute local disease which may not occur during the progress of a fever.* This is a broad and general proposition. If you look to the nervous system you will find, in patients who have died of fever, traces of lesion in almost every part of it, inflammation or congestion in the cerebrum, in the cerebellum, and in the spinal cord. If you go to the respiratory system, you will see all kinds of shades and varieties of inflammatory action, thickening and ulceration of the bronchial membrane, hepatization, congestion, and destruction of the parenchymatous tissue, effusions of lymph, serum, or pus, into the pleural cavities. As you proceed in your examination you will discover new lesions; you may see the whole lung filled with lately formed tubercular matter; you will meet with the destructive ravages of phthisis. You will find the pulmonary tissue converted into a dark and

fetid mass by gangrene. You may see carditis, hypertrophy, inflammation of the external or internal coverings of the heart, inflammation of the lining membrane of the arteries, phlebitis (a common occurrence in typhous fever); and passing on to the lymphatic system, you will often find evident traces of inflammation in its glands and vessels, an occurrence which I shall be able to demonstrate to you when treating on the subject of gastric fever. If we go to the digestive system we find that disease has here taken a wider range; congestions and ulcerations of the stomach and intestines, morbid states of the liver, congestion and inflammation of the spleen or kidneys, evidence the fatal extent of local inflammation. I think I might safely challenge any one to point out any one single organ which may not become diseased during the progress of a typhous fever. I do not wish you to suppose that typhus is a symptomatic affection. I think we may define it, in general terms, as a diseased state of the whole system, in which various local diseases arise, modify the character of the original complaint, give it an additional intensity, and are generally the cause of death. Go round the wards of a hospital during the prevalence of an epidemic fever, examine every patient in succession, and bring this principle to the test. You will see one labouring under the morbid excitement of high delirium; his face injected, his eyes sparkling, his carotids throbbing with intensity. Come next day, and you will find him in a state of profound coma, perfectly insensible to everything around him:—two or three days afterwards he is dead. You follow his body to the dissecting-room, and open his brain; unequivocal marks of excessive congestion, inflammation of the substance of the brain, or of its membranes, sufficiently indicate the cause of the fatal termination. Here is a case of inflammation of the brain. You find another with cold skin, his face of a dirty hue, faintly tinged with red, his breathing quick and hurried, and the spitting-vessel by his bedside filled with adhesive mucus tinged with blood; you percuss his chest, and find dulness over the whole surface of one lung; you apply the stethoscope, and discover intense bronchitis, hepatization, or suppurative pneumonia. Farther on you see another in a state of deep prostration, with a sunken countenance, constant hiccup, and low delirium. Take down his bed-clothes, and you find his belly swelled, tympanitic, and tender on pressure; then his tongue, lips, and gums, are parched and encrusted with dusky sordes; his thirst is insatiable; he vomits, and has an emaciating diarrhœa. After death you find traces of an extensive and fatal gastro-enteritis; in others you will find exemplified the very climax of inflammation, and all the three great cavities are simultaneously affected.

But these, you will say, are cases in which the complications are evident, and where an ordinary knowledge of the phenomena of local disease will be quite a sufficient guide. Well, here is another case. You will meet with instances of fever without any apparent local symptoms, where the patient lies in what you would consider a quiet state, and free from danger; nothing seems to be the matter with him, except that he is very weak; he perhaps does not sleep at night, and his tongue is a little foul; he complains, in fact, of nothing but weakness and some thirst, and you think his fever is going on very well. Some morning or other, on coming to the hospital, you are astonished to see the change which has been wrought in him since the day before; his countenance is altered, his pulse can hardly be felt, and life is fast ebbing away. You ask the

nurse about him, and she tells you that, during the night, he suddenly complained of violent pain in his belly. On examining him, you find distinct evidence of intense peritonitis, and, after death, dissection reveals the existence of a perforating ulcer of the intestines, of which there was apparently no sign during life, except fever and the unexpected occurrence of peritonitis. The frequency of the complication of local disease with fever, its insidious latency, and the fact, that death, in the majority of fever cases, is caused by visceral inflammations, all clearly point out the necessity of being intimately acquainted with every modification of local disease before you proceed to the study of fevers.

Diseases of the Digestive System. — I commence with the digestive system. I am anxious to do this for several reasons, but for none more than this—that, to the improvements made in the pathology of the digestive system we owe much of the rapid advancement of modern practical medicine. Before our time the pathology of the digestive system was very little known, and if not quite a *terra incognita* in medicine, there existed respecting it a great deal of misconception. The schools were deeply tinctured with the doctrines of the Humoralists and the Brownists; and this had the effect of giving rise to irrational theories and false notions of the true state of the system in disease. The humoral pathologists, who sought for disease in an alteration of the fluids alone, neglected the study of visceral lesions; and when they turned their attention to the digestive system, they only considered it, its secretions, and not its actual condition, or the state of its sympathies. The liver, with them, was an organ of the highest importance, and the secretion of bile claimed a vast share of their attention. To it they gave a paramount influence, and to an alteration in its quantity and quality they attributed most of the changes which occur, not only in the digestive tube, but also in the whole system; and hence the great object of their practice was to attempt to restore its healthy condition, convinced that if this were once accomplished everything would go on favourably. From this, too, arose the purgative plan of treatment in various forms of intestinal disease, a plan too often rashly pursued, even where there was unequivocal proof of inflammation in the digestive tube.* Their sole purpose was to evacuate sordes, to produce a flow of healthy bile, and to eliminate depraved secretions; and they did this without possessing any knowledge of local inflammation, or of the effects of disease of the digestive system on other organs. The followers of Brown, on the other hand, only admitted disease of the digestive system in a state of intense, manifest violence, as, for instance, ileus or violent enteritis; but in the great majority of cases, they did not recognise intestinal inflammations, because their prominent symptom was prostration, or, to use their own terms, an asthenic condition of the whole system. They saw nothing but prostration: they prescribed for nothing but debility; they gave wine instead of iced water; ordered bark instead of local depletion. They exasperated the disease by stimulants; and then, thinking they had not gone far enough, they heightened the stimulant and doubled the debility.

Another cause of the low state of pathology in former times was the general neglect of dissection. The fact is, that in fever there were no *post-mortem* examinations made, until very lately. Morgagni, who did so much for pathological anatomy on almost every other subject, did little

* [Our medical brethren of the south and west will see, if not reproof, at least a salutary hint, in these remarks of the lecturer.—B.]

for fever, because he was afraid to dissect the bodies of persons who had died of a contagious disease. This was the idea which prevailed among the older pathologists; and hence this source of knowledge was avoided, and for many successive centuries the state of the viscera in fever was a matter of speculation, doubt, and uncertainty. Even at the present day it is only done by the ardent pathologist, who cares not about filth and stench, and who had rather encounter the miasma of contagion than remain in the mists of error. Nothing is more common, I regret to say, even at the present time, than this:—A person says he has dissected cases of fever, and when asked whether he had examined the intestinal canal, he says that the intestines appeared healthy, but he did not make any particular inspection of them; he only opened the belly, and, finding no trace of inflammation in the peritoneum, he went no farther. Now, nothing can be more useless than such an examination. If we compare the information afforded by an inspection of the serous membranes of the three great cavities, we shall find that the least is given by an examination of that of the abdomen. Diseases of the substance of the brain is rare without affections of its investing membrane; disease of the substance of the lung is exceedingly rare without the occurrence of disease of the pleura; but you may have most extensive and fatal disease of the intestinal canal, without the slightest lesion of the peritoneum. In this point, therefore, it differs from the pleura, and from the arachnoid membrane. The fact of the rarity of disease of the peritoneum in cases of disease affecting the parts beneath, was noticed by Dr. Graves and myself, in our report of the Meath Hospital, and also by Mr. Annesley, in his account of the diseases of India. You will see cases of hepatic abscess, which present a distinct tumour externally, and where you can detect a perceptible fluctuation; and yet, if you examine these cases, after death, you may not find any adhesions of the peritoneum, even in the situation of the abscess. You will find the mucous and muscular coats of the colon extensively destroyed, you will see the stomach all but perforated, you will meet with cases where the whole ileum is one extensive sheet of ulcerations, with no disease in the adjacent peritoneum.

In entering on the consideration of diseases of the digestive system, we shall begin first with the mucous expansion of the stomach and intestines, and then proceed to the affections of the solid viscera connected with them. The mucous surface of the stomach and intestines is of enormous extent and extraordinary sensibility, possessed of innumerable and powerful sympathies; its influence is felt by almost every organ in the body, formed for receiving and elaborating everything destined for nutrition; its conditions, both in health and disease, are entitled to the deepest and most attentive consideration. To facilitate the study of its affections, and for the sake of some practical arrangement, we shall divide its diseases into five classes, beginning with the *œsophagus*, or that portion of the digestive tube which is above the diaphragm, and then proceeding to the *stomach*, *duodenum*, *ileum*, *colon*, and *rectum*. But, in order to give you a clear idea of diseases of the intestinal canal, I shall commence with *diseases of the stomach;* because, if you consider the whole range of animal life, you will find that its functions are the most important, the stomach constituting, as it were, the source and fountain of life, which is nutrition, and giving by its existence a character to all the upper classes of animals. No organ possesses such remarkable sympathies as the stomach, whether we look

upon them as sympathies of organic or of animal life, none possesses such remarkable power and influence in modifying the condition of every part of the system. But, putting aside physiological reasons, let us come to practical matters. The success of almost every form of medical treatment, all the advantages to be derived from the administration of internal medicine, depend upon the stomach; in fact, in whatever point of view we consider it, we must look upon a knowledge of the state of the stomach as the great key to sound and successful practice.

It is a most useful reflection to consider the extraordinary frequency of disease in some portion of the digestive tube. It is now admitted by every person possessed of experience in the causes of mortality, that more human beings die with acute or chronic diseases of the digestive tube than with diseases of any other part of the system. This has been established by numerous investigations, and is admitted by the best pathologists; and, indeed, I think it can be easily accounted for, when we call to mind how many persons die of some form of fever or other, when we look to the ravages of remittent and yellow fever, to the hundreds of thousands who annually perish by the various classes of fevers. Now, in almost every one of these cases, disease of the digestive system forms one of the most prominent pathological characters. Recollect, besides, all that die of dysentery, whether sporadic or simple, and here is inflammation of the colon; see, how many die with diarrhœa — here, too, there is intestinal disease; remember how many die of the malignant intermittent of the West Indies, in which unequivocal proofs of disease of the stomach and intestines have been found. Observe what a close connection there is between *tabes mesenterica* and inflammation of the mucous membrane and surface of the intestines; think what a vast number of persons fall victims to the harassing effects of constipation and dyspepsia; and recollect that there is a host of diseases in which the train of morbid phenomena commences in the digestive system, and then exhibits itself by functional alteration or organic disease of other parts.

We recognise the presence of disease in the digestive tube, first, by the local phenomena and the lesion of the digestive function, and next by the sympathetic relations of other parts, by the sympathies of the respiratory system, of the circulation of the skin, and of the nervous system. I shall enumerate the local phenomena and functional lesions; vomiting, anorexia, thirst, jaundice, pain, tenderness on pressure, tympanites, changes in the character and quality of the discharges, constipation. Here are a set of functional lesions and local phenomena; let us now consider the sympathetic relations; these are fever, heat of skin, suppression of the cutaneous secretion, suppression of the secretion of urine, morbid states of the tongue and pulse, pains in the chest and cough, hurried breathing, and palpitations of the heart. In the next place, we may have prostration of strength, delirium, coma, convulsions, tetanic spasms, and other symptoms of functional disease of the brain; these are all sympathies of relation. Now, in the first place, I have to remark, that there is a great deal of variety in the combination of these symptoms. On what does this depend? On a variety of circumstances; sometimes on the intensity or extent of the inflammation: sometimes on the situation of the disease: sometimes on the complication of the affection; sometimes on the various modes and degrees of susceptibility. All these causes tend to produce a great variety in the disease, and an extensive modification of the sympa-

thetic relations. For instance, in some cases inflammation of the stomach and intestines is so slight that the patient is not prevented from going about and pursuing his ordinary avocations; in others, on the contrary, the patients are struck down at once by the violence of the disease, and are carried off by the fever which accompanies it before the inflammation is completely developed. It varies according to situation; there is a difference between gastritis and dysentery: in the former we have an inactive state of the great intestine, and consequent constipation; in the latter, the colon is thrown into violent action, and there are frequent dejections. Disease of the duodenum is attended with a very remarkable peculiarity, being very frequently complicated with jaundice; here is a modification produced by situation. Again, inflammation of the ileum is attended with a very curious peculiarity, namely, the absence of pain. The patient states, that he feels unwell, he has obscure symptoms of intestinal disease, but it is neither dysentery nor gastritis; you investigate it with care, and find that the ileum is in a state of inflammation. Yet the patient does not complain of any pain; and this is another peculiarity depending on situation.*

But in considering the differences which depend upon intensity, extent, and situation of disease of the intestinal canal, we must not omit those which depend upon tissue. If disease be confined to the mucous membrane of the intestines alone, we may have an extremely diffused and extensive inflammation, sufficient to destroy life, without any pain being complained of by the patient; it is a painless though fatal disease. Recollect this, — extensive and fatal inflammation without pain. In former times the ideas of pain and inflammation were inseparable. Thanks to the light which pathology has shed upon modern medical science, we are now acquainted with this seeming anomaly, and can conceive the existence of extensive disease of mucous surfaces unaccompanied by pain. But let the inflammation seize on the muscular tissue, the character of the disease is instantly changed, and the pain is dreadful. Here is a case in which difference of tissue is to be taken into consideration.†

The phenomena and sympathetic relations of intestinal disease may vary also according to its complication, and here we come to investigate one of the most beautiful laws of the human economy, namely, that the more complicated a disease is, the more latent will be any local lesion. This is a point that should never be forgotten. For instance, enteritis by itself is much more easily recognised than when complicated with pneumonia, or with irritation of the brain, and gastritis is but too often completely masked by being combined with irritation of the bronchial mucous membrane. Lastly, we have the varieties which depend on dif-

* [The physiological explanation consists in the fact, of the nervous supply to the ileum coming from the sympathetic; a fact of some importance in making our prognosis of typhoid fever. The absence of pain might induce belief that there was no organic lesion. — B.]

† [The position is, perhaps, rather too broadly laid down in the text. The sensations of the patient will depend very much on the portion of intestine affected; whether duodenum, for example, or jejunum, and whether even the upper or the lower part of the ileum. The first and last portions of the intestinal canal receive branches of the cerebro-spinal nerves,—the middle is supplied almost entirely by the sympathetic. —B.]

ferent degrees of susceptibility. In one person we may have only slight cerebral irritation, in another high excitement, in a third delirium and extraordinary convulsions. The variety, then, in the modifications of diseases, and the combination of sympathies, is very great, and is referable to the extent and the intensity of the inflammation, difference of situation, complication of disease, difference of tissue, and different degrees of susceptibility.

LECTURE III.

DR. BELL.

DISEASES OF THE MOUTH AND PHARYNX.—Connexion in structure and function between them and diseases of the stomach and bowels.—STOMATITIS.—Its different species.—*Simple erythematic stomatitis.*—Its nature, causes, and treatment.—*Follicular or aphthous stomatitis.*—Its varieties, complications; pathology, analogous to follicular gastritis and enteritis.—Connexion with dyspepsia in adults, and in children with cholera and diarrhœa.—Remedies, general and local.—Importance of hygienic measures.—*Ulcerous stomatitis.*

DOCTOR STOKES passes directly from a general view of the pathology of the digestive system to a consideration of gastritis, its pathology and treatment. But before taking up this subject, it will be well to describe to you some of the chief morbid alterations in the upper portion of the alimentary canal, or the buccal and pharyngeal cavities. This proceeding is in conformity with an affinity between these parts and the stomach, which is manifested both by a continuity and general resemblance of tissue (the mucous), and by a resemblance and sympathy between them in their morbid states. In fact, just as we look at the tongue for an index to the state of the stomach, so may we expect to see (often) in the diseases of the mucous membrane of the mouth and pharynx a reflexion of those of the gastric mucous membrane. I do not by any means assert, that there is uniformity in this respect; but that, as there is so frequent a connexion between the inflammation and irritation of the stomach and the upper cavities already mentioned, we shall be not a little remiss in our diagnosis, and needlessly conjectural in our prognosis, of the diseases of the digestive system, if we do not, with a knowledge of the frequency of this connexion, institute a careful inquiry into the state of both regions, even when our attention is invoked solely for one of them. In practice, we shall be much more successful by taking this enlarged view than if we restrict ourselves to an investigation of either alone, and fail to see more than a mere local disease in the morbid alterations of the mucous membrane of the mouth, or to be aware that a chronic affection of the stomach assumes a much more serious, not to say alarming aspect, when accompanied with some degree of pharyngitis, and still more with aphthæ and ulcers of the mouth and palate.

STOMATITIS.—The morbid states of the buccal mucous membrane have been variously designated, not only in reference to their varieties, but to each of these separately. They have engaged the attention of medical men more when they appear in the infantile subject than in the adult; on

account of their greater frequency of occurrence in the former than in the latter. The general and popular term for designating the sore mouth of infants is *thrush*; the technical one, *aphthæ*. Of late years a new title is given to the whole class of diseases of the mucous membrane of the mouth, which, as far as its radicle is concerned, is perfectly appropriate, but, as in all cases implying inflammation, it is not so accurate. The title is *Stomatitis*, from στομα, mouth; and this is the generic name which is now adopted by the French and some English and American writers for diseases of the lining membrane of the mouth. The specific titles are more or less numerous with different authors. Those of M. Andral (*Cours de Pathologie Interne*) seem to me to designate with sufficient distinctness the several morbid states of this region, and I shall therefore adopt them, with the addition of the *ulcerous* and *mercurial* species. They are—1. *Simple Stomatitis*; 2. *Aphthous* (Follicular) *Stomatitis*; 3. *Ulcerous Stomatitis*; 4. *Pultaceous Stomatitis*; 5. *Pseudo-membranous*, or *Pellicular*; and 6. *Gangrenous Stomatitis*.

1. *Simple* or *Erythematic Stomatitis.*—This species is common, but in a mild degree, in newly-born children, who are predisposed to it by the congested state of the mucous membrane of the mouth at birth; and, at a later period, during dentition. It is usually marked by redness, heat, and some degree of dryness of the mouth and tongue. Sometimes, as M. Billard describes it, the inflammation is confined to one part of the buccal surface, at others it covers the whole of this latter, and spreads to the lips, which are tumefied, excoriated, and cracked, and frequently become the seat of *herpes labialis*. This species of stomatitis often accompanies inflammation of the stomach or bowels, but rarely causes fever in very young infants, an effect common in children from seven to nine years of age. The functions of the mouth, or those in which it participates, such as mastication, deglutition, and speech, are performed with difficulty and pain; and sometimes there is a copious ptyalism. The duration of the disease is from three to eight days; and the termination is commonly by resolution. This description is applicable to infantile stomatitis, but when the erythematic variety occurs, as it every now and then does, in adults, associated with dyspepsia, and is aggravated by the use of tobacco, and particularly by smoking this poisonous weed, the prognosis is not by any means so clear. Nor must we expect, even in children, always to find this kind of inflammation of the mouth retain its simple erythematic character; for, sometimes, it is followed by ulcerations and even gangrene; and it is not uncommon for us to see, after this disease, an induration of the sub-mucous tissue of the mouth.

Causes. — Of the causes of simple stomatitis, dentition is the first and the most common one: others are enumerated, such as very hot drinks taken into the mouth; acrid, caustic, and poisonous substances of various kinds; contusions, operations on the teeth, and the accumulation of tartar. Sometimes, as already intimated, it is symptomatic of inflammation of the digestive canal.

Treatment. — The cure of simple stomatitis is generally trusted to mild means, such as a plain regimen, mucilaginous drinks, consisting of gum water, or a decoction of slippery-elm or sassafras pith, alone, or mixed with milk. If the inflammation run higher, and fever be present, a few leeches should be applied at the base of the jaw, or even to the gums themselves, provided the child be not of a scorbutic habit, or have been badly nourished, and have little habitual activity of capillary circulation. In this

latter case, counter-irritation, by moderately stimulating liniments, is to be practised on the skin of the base of the jaw and mouth, extending back to the angles of the former. Saline or slightly acidulated gargles will be of service, and in nearly all cases of any intensity the bowels should be excited to increased exoneration by castor oil, magnesia and rhubarb, or, with reserve adapted to the temperament of the child, a small dose or two of calomel. This medicine will be most serviceable in the sanguine or nervoso-sanguine; but much less so, if allowable at all, in the decidedly lymphatic with much sluggishness of the functions generally. The warm bath is a useful adjunct to the treatment in this as it is in most of the diseases of children, and in many cases it will, with a little change of air, and a simple, and even reduced milk diet, suffice for the cure.

2. *Follicular* or *Aphthous Stomatitis — Aphthæ — Thrush.* — This is the most common kind of sore mouth in children; and it is that which is a frequent accompaniment of diseases of the gastro-intestinal mucous surface in subjects of all ages, as of gastritis, gastro-enteritis, cholera infantum, and dysentery; also of typhous fever, and diseases of the lungs, and particularly of pulmonary phthisis in its third stage.

Three varieties of aphthous stomatitis are described, viz. — 1, papular; 2, vesicular; 3, pustular. These are often met with constituting successive stages rather than separate varieties of the disease. Whatever may be the form under which it exhibits itself, it more especially attacks the parts in which the epithelium is the most apparent. It usually appears first in the angles of the lips, and then on the tongue and the lining membrane of the lips and cheeks, and on the *velum palati* in the form of little papular, vesicular, or pustular white specks, which some writers have denominated ulcers; but this term is not applicable until the specks burst, — a termination which usually occurs between the second and third days.

The eruption may be either *discreet* or *confluent*. The former is happily the most common; but sometimes the other, or confluent variety, is met with, and it may prevail epidemically. It is no uncommon thing to meet in persons, and particularly children, who have long suffered from bowel disease, an increase in the number and size of the *specks*, which run together and compose a thin white crust, that at length lines the whole inside of the mouth, from the lips even to the œsophagus. In this stage there is fever, headache, and often vomiting, and other disorder of gastric function. But when this kind of sore mouth, or thrush, is a primary disease, there is not, says Underwood (*Treatise on the Diseases of Children:* with Additions, by Drs. Merriman, Hall, and Bell, *Amer. Edit.*), in nine out of ten cases, the least fever, though the mouth is often so much heated as to excoriate the nipples of the nurse, and so tender that the child is often observed to suck with reluctance and caution.

It is a popular opinion that the eruption and ulceration of thrush are continued down the œsophagus, and thence into the stomach, and along the entire course of the intestinal canal, showing itself in a redness about the anus. No doubt there is often coincident and sometimes preceding disease of the stomach and other parts of the digestive tube in stomatitis; but the continuity as above described seldom exists. Nothing is more common than this redness and erythematic inflammation about the anus in diseases of the digestive system of children; and it is worthy of remark, that certain poisons will spend their whole force, as far as this system is implicated, on the stomach, pharynx, and rectum, leaving the intermediate regions intact, or but slightly affected.

The duration of this disease in its milder or simpler forms will vary from three or four days to as many weeks; sometimes returning at different intervals. Underwood states that he has seen this so very often the case, that when he found a child to have the complaint very slightly, and that it did not increase after two or three days, he ventured to pronounce it likely to continue a long time, but that it would be of no consequence.

Pathology.— It would be an erroneous notion respecting aphthæ, if we regarded them as an ulcerative termination of common inflammation. Callisen has described them as small tumours, from a change of the muciparous glands. Billard, with more probability, considers them to be a morbid development of these bodies, or follicles of the mouth, sometimes in a state of simple tumefaction, at other times in a state of ulceration. The follicular points enlarge, preserving still their primitive circular form; and from their central aperture there issues a white matter, which, being squeezed by the surrounding epithelium, itself soon beginning to ulcerate, forms white puriform exudation over all the parts. In this state the aphthous is often confounded with the pultaceous stomatitis, or *muguet*, hereafter to be described; but they may be distinguished by inspection of the inflamed follicles, and a solution of continuity, which is not met with in the latter disease. This is most common within the month; and with aphthæ during dentition.

Aphthæ do not always exhibit the same characters in different spots. Sometimes, when the follicles are about to ulcerate, the edges of the ulcers, instead of being covered with a slight curdy excretion, exude a small quantity of blood, which concretes under the form of a slight brown scab, mistaken, by some authors, for a gangrenous eschar. By MM. Trousseau and Delpech, the stomatitis now under notice is regarded as consisting of a fibrinous pseudo-membrane, which would approximate it to the fifth species, or buccal diphtheritis, to be afterwards described.

The causes of follicular or aphthous stomatitis are predisposing and exciting; and of these the first is the most important and the least controllable, because consisting in an excess of the white tissues, or a predominance of the lymphatic temperament. This may be greatly increased by bad or defective food and impure air, under the influence of slight causes, such as indigestion, common bowel complaint, or changes in the milk or other food. As evincive of predisposition in certain subjects over others, the practitioner must doubtless be able, from his own observation, to confirm the remarks of Underwood, that "the thrush is sometimes found to seize every infant in certain families, in whatever way the children may be managed." Illustrating the effect of dietetic regimen, is the additional observation of this experienced physician, though inelegant writer, that want of a proper attention to the state of the alimentary canal will bring on the disease, as "where the mother happening to be ill, the whole attention of the family has been thereby engaged; or where one infant has been put to nurse, while all the rest of the children have been carefully brought up at home."

Aphthous stomatitis is mainly induced and kept up by disordered digestion and impeded nutrition; and hence its common occurrence in those children who are brought up by the hand, and especially in those who, in addition to the loss of their mother's or nurse's milk, are cooped

up together in hospitals, and deprived of fresh air, and of the means for preserving a clean state of the skin. "The fact is, the thrush is a disease of debility, and therefore attacks very young and very old subjects, especially if otherwise weakened." Whoever has watched the progress of protracted cases of cholera infantum, and seen the spread and severity of aphthæ, increasing as the disease advances, and the little patient becomes weaker and more emaciated, will confirm the accuracy of this remark. MM. Trousseau and Delpech have pointed out a community, to a certain extent, of the causes of aphthæ in infants and of puerperal fever in their mothers. One half of the cases collected by M. Valleix (*Guide de Medicin Praticien*), occurred in the three summer months.

Reference has been before made to some of the symptoms accompanying aphthæ. The most marked ones are produced by a morbid state of digestion, such as eructations of an acid smell, sometimes vomiting and irregular action of the bowels; heat of skin and fever; but you have been already told that this last is by no means a common complication of simple or discreet aphthæ. On this point, however, we must remember that the excitement of the heart and bloodvessel system is relatively low in subjects of a lymphatic temperament, and hence we are not to lay stress on this as the only measure of inflammation or febrile action in them. If we were to judge from the cries, wakefulness, and restlessness of children affected with aphthæ, we should infer that they experience pain. When the disease extends to the pharynx and produces a swelling of the glands and inflammation of the trachea, which is among its alleged effects, the cry of the child is sensibly altered, and it manifests pain, but more by a harsh or hissing cry than by its tears.

Treatment.—We cannot judiciously apply our remedies in aphthous stomatitis, without a due knowledge and consideration of its precursory and concomitant disorders. Thus, if it exists with dentition, and there be much tumefaction and redness of the gums, with irritative fever at the same time, the treatment will be directed to the relief of this morbid state, and nearly all the medicines used for the aphthæ will be of a topical kind, and these the most simple, such as a linctus made of mucilage of gum arabic and syrup, with a little acetic acid; or if the heat and irritation of the mucous membrane be considerable, a weak solution of sugar of lead may be lightly applied to the parts by means of a fine brush or a piece of lint tied to the end of a small, rounded stick. The sub-lingual, or the sub-maxillary glands, taking on secondary disease by the irritation transmitted from the mucous membrane of the mouth, may require the application to them of a few leeches, followed by a poultice and camphorated spirituous lotions so applied as to produce evaporation.

Patches of aphthæ or scattered ones in the regions already mentioned, without apparent complication of pain or fever, may be treated by, at first, a mild mucilaginous linctus applied cold, and the administration of a dose of castor oil, or rhubarb and magnesia, to procure a moderate but yet tolerably complete evacuation of the bowels. The disease still persisting, recourse will be had to a somewhat stimulating substance, such as borax, or alum; the former in a linctus with sugar and mucilage, or with honey and water; the latter dissolved in sweetened barley water, in the proportion of ten grains to the ounce. The preparation of borax which I prefer myself, after frequent trials of its efficacy, is a solution with sugar in water and alcohol, to which sometimes a little laudanum is added, as follows:—

℞. Sodæ sub-borat. ℈i.; Aquæ fluvialis, f℥ij.; Alcohol dilut., f℥ss.; Saccharı. albi, ʒij. M. ft. Solutio. As there is great difference in the common, as well as the morbid, sensibility of the parts, the quantity of borax will be increased or diminished accordingly. If it be thought advisable to circumscribe more accurately, and to retain the substance longer on the part to which it is applied than can be done by a simple solution, gum arabic may be mixed in adequate quantity. But of the preparations which combine power with mildness, I know none equal to a solution of chloride of soda, as it is sold in the shops, and diluted with water, to be applied as a gargle; in the proportion of one drachm to an ounce. In place of this, the chloride of lime in solution may be used. The fetor is removed, and the sores cleansed and excited to heal by these chlorides. I need not enlarge on the use of other topical remedies in this disease, as I shall have occasion to recur to this kind of medication, when treating of pultaceous and pseudo-membranous stomatites.

But, whenever we are called to a case of aphthous stomatitis which has lasted more than a few days in a child of very lymphatic temperament, and whose regimen has been faulty, we must regard all local remedies, indeed all treatment purely medicinal, as of secondary importance; and direct our measures to a change in the food, the air, and the *applicata*, both as regards clothing and bathing. If a child has been weaned, we ought to restore it to the breast; or, if this cannot be done, to give it nutriment nearly analogous to that derived from the maternal bosom. Sometimes, indeed, we are compelled to prescribe the substitute in preference to the original supply, as where the mother is pregnant, and her milk evidently disagrees with and disorders the child. Cow's milk, fresh, and with a little farinaceous matter, as ground rice, pounded crackers, arrowroot, or barley flour, mixed with it, and sweetened, is the best succedaneum for the mother's milk, and will, when given at proper intervals, in quantity not too great at a time, nourish, and correct, at the same time control, previous looseness and concomitant disturbance of the bowels. Fresh air is to be admitted to the little patient in the room, if circumstances prevent its being taken out; but the latter course is still better, and will, alone, exert a beneficially controlling power over the disease. Frequent changes of body clothes, which must be of a suitable warmth, but not oppressive by their weight and thickness,—and the daily, or twice daily, use of the warm bath, at from 90° to 94° F., according to the temperature of the skin and activity of circulation, will greatly contribute to the cure. During the time in which the appropriate regimen is employed attention is to be paid to the state of the bowels. Sometimes they should be acted on by castor oil, or rhubarb and magnesia; sometimes recourse is had to chalk mixture, and at other times again to minute or fractional doses of calomel, mixed with gum arabic, or still farther reduced in strength by mixture with chalk.

For the most part you will discover complications of visceral disorder with aphthæ, of sufficient moment to prompt you to the remedies just indicated; and it is on this account that I enlarge the more on the treatment of the disease of which aphthæ are but a part, perhaps only a symptom, as of gastritis, or of gastro-enteritis of children, constituting what is generally called cholera infantum, or it may be to analogous irritation in the digestive tube, kept up by teething.

If I insist on the paramount importance of regimen in aphthous stomatitis, and dwell on the wants of nutrition, as indicated by the causes, and precursory as well as associated phenomena, I would wish to be understood as recommending renovation, but not that kind of excitement procured by stimulating remedies; and hence the preference I give of regiminal over medicinal means. I would now, in harmony with this view of the nature of the disease, add that, after the therapeutic treatment, which I have stated to you, has been tried, and the febricula which may have been present removed, or so much abated as to excite no uneasiness in your mind, you may then administer with advantage a mild tonic. Of this class, a simple cold watery infusion of chamomile flower, or of wild cherry-tree bark, or if the skin be cold and circulation feeble, sulphate of quinia, are to be preferred. Stress has been laid by some on preparations of iron, and I have myself used the tincture of the chloride with advantage in that feebleness of frame, in which prostration and derangement of digestion and aphthæ were the predominant disorders.

3. *Ulcerous Stomatitis.*—This may be readily confounded with the former kind, but it differs from it in its not being restricted to the follicles. The ulcers occupy indifferently every part of the buccal cavity, viz., the frenum of the tongue, its base, the internal surface of the cheeks, and the palatine arch.

Under this head we may properly introduce *mercurial stomatitis*, the existence of which is not always announced nor accompanied by the characteristic mercurial fetor. I have seen ulcers of the mouth and gums following the use of calomel in large doses in young children, at a time when they who administered them thought that the medicine had produced no effect.

The treatment of ulcerous stomatitis requires nothing of a specific character,—at any rate different from that of follicular stomatitis. The same attention should be given, as in this latter disease, to the state of the general health, and the means recommended for renovating the digestion and quickening nutrition, concurrently with topical applications, should be used in the one as were thought advisable in the other.

Pustular Stomatitis is a name given by M. Billard to the inflammation developed during the course of small-pox, and is analogous to the circumscribed pustular ulceration of the skin, and identical precisely with that variolous ulceration which attacks all parts of the mucous surface (pharyngeal and tracheo-bronchial) that are reached by the atmospheric air. Neither these nor the aphthæ which accompany scarlet fever or measles require any specific notice in this place, constituting as they do a part of these formidable diseases, which will be noticed with their other symptoms and treatment hereafter.

LECTURE IV.

DR. BELL.

PULTACEOUS STOMATITIS, or MUGUET—Its Pathology—Treatment.—PSEUDO-MEMBRANOUS STOMATITIS.—Its complications with visceral disease—insidious approach—Pathology—sometimes prevails epidemically—Treatment,—modified by the state of the digestive system and degree of local excitement—Local applications—Means of properly applying mineral acids and lunar caustic—Sulphate of copper—Iodine, topically and internally—Warm bath.

I CONTINUE a description of stomatitis by speaking of *Pultaceous* or *Curdy Stomatitis*, or *Stomatitis with altered Secretion — Muguet— White Thrush.* — This species has a greater affinity to the first described one, or the erythematic, than to any other. It is peculiarly a disease which attacks, in preference, infants soon after birth, and those who though older are still at the breast. "It is characterized by a concretion of mucus on the surface of inflamed mucous membrane, whether this be an epithelium or not. This concretion may be observed in the mouth, œsophagus, stomach, and small or large intestines." (*Billard.*)

Pultaceous stomatitis begins with small specks on the surface of the inflamed membranes; they are seen on the inside of the lips and at the tip of the tongue. Gradually they are increased, enlarge, and unite together as irregular, thin laminæ, which sometimes remain separate, then exfoliate, and are replaced by others in successive series. Sometimes, on the other hand, they become thicker and more diffused, so as to run into one another and form a continuous membrane, which lines the cavity of the mouth and covers the surface of the tongue, extending even over the pharynx and œsophagus, and, as M. Billard asserts, continued into the stomach and the whole intestinal canal. In the first or simpler form the disease is called discreet, in the latter confluent.

Pathology.— Pultaceous stomatitis consists in an inflammation of the buccal mucous membrane, which soon produces a morbid secretion of mucus, of a white or curd-like appearance, that afterwards concretes and covers a surface of more or less extent. This pellicular or curdy production takes the place of the mucus which moistens and lubricates the mouth. Concretion in a laminar shape, external to the epithelium and unaccompanied by ulceration, and its repeated removal and reproduction until the inflammation is exhausted, distinguish this kind of stomatitis, the true *muguet* of French writers, from the aphthous or ulcerous species.

The *causes* of this disease, as laid down by M. Billard, are, "the first period of infancy — bad nutrition — the assemblage of a great number of children in the same place — debility — inflammation of the buccal membrane, — and lastly, the disposition which the mucous membranes exhibit in young children to be covered, when they are inflamed, with thick, curdy, and membraniform concretions."

"As to general *symptoms*, they scarcely exist in very young infants; fever is hardly ever manifested. I counted," says M. Billard, "the pulse and the beatings of the heart in forty children, aged from one to

twenty days, affected with it, and found fifty, sixty, sixty-five, eighty, and, in one instance, one hundred pulsations in a minute. With the exception of the last case, the number of pulsations did not differ from the natural state of the pulse." M. Billard, you ought to be apprised, does not believe that there is greater frequency of pulse in infants than in adults; but in this opinion he is not sustained by the experimental observations of other physicians. The skin is usually hot and dry. When the membraniform concretions spread to the tonsils, and cover the pillars of the velum palati, the cry is husky. Sometimes, and the fact merits your attention, pultaceous stomatitis is complicated with other phlegmasiæ. In fifty cases, fatal either from the disease or its complications, there was disease of the digestive apparatus in thirty-two.

Season is said not to exert any marked modifying influence in causing *muguet*. It prevailed, according to M. Billard, with almost equal intensity, and at all times, at the *Hospice des Enfans Trouvés* (Foundling Hospital). But the statement which he gives is not in unison with this assertion. In the quarter ending in March, 1826, out of two hundred and ninety patients, there were thirty-four cases of this disease. In the quarter ending in June, out of two hundred and thirty-five patients, there were thirty-five cases; in the three months ending in September, out of two hundred and thirteen sick, there were one hundred and one cases; and forty-eight cases in the quarter ending in December among one hundred and eighty-nine patients. Thus we see that the actual numbers in each quarter were respectively, 34, 35, 101, and 48, showing nearly three times as many in the third or summer quarter, as in the winter and spring, and more than twice as many as in the autumn — results coinciding with those obtained by M. Valleix. The proportion of the sick with muguet to other diseases in the Hospital, were as 1 to 8½ in the winter; 1 to not quite 7 in the spring; 1 to a little more than 2 in the summer, and 1 to not quite 4 in the autumn.

The contagiousness of this kind of stomatitis, believed by many, is denied by M. Billard, who refers to, while confirming, the experience of M. Baron. This gentleman has often seen children drink from the cup used by those who have been affected without their contracting the disease.

Treatment.—The remedies for this kind of sore mouth are nearly the same as those recommended in other kinds of stomatitis. In simple or discreet muguet, it will be sufficient to cleanse the mouth with a little piece of sponge, or of lint, tied to the end of a quill or small round stick, after dipping it either in a simple mucilage, or in one slightly quickened with vegetable acid; and to alter somewhat the intestinal secretions by a mild laxative. But in confluent or diffused pultaceous stomatitis, or muguet, we should apply fomentations or cataplasms to the neck, and cooling saline gargles to the mouth, and purge with a small dose of calomel, followed by castor oil and magnesia. The farther treatment will be regulated by the state of the stomach, accession of fever, and the appearance of the mouth. Minute doses of the alkalies, — carbonates of potassa and of soda, in solution with ipecacuanha wine; or ipecacuanha and chalk, the warm bath, and mildly astringent or stimulating washes or linctus to the mouth and fauces, will be brought into requisition, in the more violent cases of the kind of stomatitis now under notice. Of gargles, my preference is still in favour of a solution of the chloride of lime, or the fluid chloride of soda, to which, on occasions, in this, as well as aphthous stomatitis, may be added tincture of myrrh, as in the following

prescription: — ℞. Liq. chlorid. sodæ, Tinct. myrrhæ, āā. f℥ss.; Aquæ fluvialis, f℥vi; Aquæ Rosar. f℥i. M. This gargle to be applied at intervals, as may be deemed necessary.

In my observations on the different kinds of sore mouth, with inflammation, I have next to speak of the one which is characterized by a membranous or pellicular secretion, somewhat resembling that in croup, and identical with that which lines the fauces and pharynx in certain varieties of angina. After this, your attention will be directed to the gangrenous sore mouth, the most violent and unmanageable of all the species of stomatitis. Let me again impress on your minds the necessity of constantly being aware of the dependence of the local disease on the state of the general system, and especially on interrupted and perverted nutrition; and the impossibility of removing the former unless the latter be corrected, and the permanent stimulants of pure air, wholesome food, and some exercise, be brought into operation on the frame of the little sufferer.

5. *Pseudo-Membranous Stomatitis—Buccal Diphtheritis.*—This is the most dangerous of all the stomatites. It occurs not only alone but in connexion with inflammation and a similar exudation on the pharynx, tonsils, or soft palate of children; and is analogous to the false membrane in croup. Its seat is commonly on the gums, where it first shows itself, the angles of the lips, and on their inner surface, and the lining of the cheeks, or the tip and sides of the tongue. It is more usually seen on one side only: at first appearing as small patches of a greyish-white or yellow, and irregularly rounded, it afterwards extends by the running of these together, and their becoming grey, dark, and livid: they appear depressed, owing to the projection on their margin of the surrounding mucous membrane. Laminæ of the false membrane are, after a while, detached, to be replaced by others, leaving the mucous membrane beneath slightly eroded. At this epoch of the disease, the membranous formation extends over a part of the tongue, the gums, and the internal surface of the cheeks. During some days it is nearly stationary, after which there is a change, either by resolution or gangrene. In the first contingency the patches at their centres, or their borders, begin to be absorbed, and there only remains a simple whitish streak, which gradually disappears, leaving no trace of disease. But when gangrene supervenes, we see some points on which absorption takes place, whilst the rest of the tissue is completely mortified.

This kind of stomatitis is complicated at times with bronchitis, pneumonia, or inflammation of the digestive canal. Regarded as a pellicular inflammation, or one attended with exudation, for such is the etymological signification of diphtherite, this disease is not common, but occasionally, as Drs. Evanson and Maunsell observe (*A Practical Treatise on the Management and Diseases of Children*), "we have seen and removed from the velum or back of the pharynx a thick pellicle of lymph; the mucous membrane beneath being inflamed, but free from ulcer or slough. On the contrary, we have found from the first the inflamed surface beneath converted wholly into an ash-coloured slough or studded with patches of such." Happily this form of diphtherite is not so common as might be supposed from the remarks of some writers who apply the term to any spreading ulceration at the back part of the throat. It is always dangerous, and often the more so from the insidiousness of its approach, and its having made extensive progress without any uneasiness in the throat, pain

in swallowing, or other symptom to indicate the real nature of the disease. Sloughing in gangrene may be the result of any of the morbid conditions of the mouth or fauces of which we have spoken; but it is most liable to occur in affections of the tonsils, soft palate, or back of the throat; perhaps more particularly when attended by false membranes.

"When inflammation of the tonsils or pharynx is very intense, accompanied by false membranes, or occurring during scarlatina or any livid-coloured eruption, we may apprehend gangrene, particularly if the child be very delicate, badly nourished, or exposed to contagion (as when gangrenous sore throat prevails), or if gangrene of other parts of the body be present. We judge of the approach of gangrene by the local appearances and general symptoms, as when much or sudden prostration attends, or is induced by a disproportionate degree of depletion; while the colour of the inflamed part changes from a lively red to pale, or appears from the first of a livid or dusky red hue." (*Op. citat.*) When the isthmus of the fauces is affected, the appearance of the parts betrays this state, accompanied by a sense of suffocation, and difficulty of deglutition, which last becomes impossible, if the gangrene has extended to the œsophagus; and when it has passed into the air tubes, there is a remarkable alteration in the cry or voice, which becomes hoarse or inaudible, with a peculiar cough, or wheezing respiration.

Symptoms.—In the beginning of this disease, increased heat of the mouth is felt and complained of, and also pain, aggravated by the contact of any foreign body. The breath is fetid, and the submaxillary glands are engorged and painful. After a while, the lips and gums are tumid and bleed, and a sanious saliva flows copiously from the half-open mouth; the breath becomes more and more offensive, the face red and swelled, and the fever more or less intense; headache, restlessness, and vigilance, are, also, met with. Gradually, when absorption has begun, these symptoms abate, and the convalescence sets in.

Causes.—Membranous stomatitis attacks persons of all ages, but more frequently children from five to ten years of age than adults; and of the former more boys than girls. (Taupin—*Journ. des Conn. Med. Chir.*, 1839.) It is most apt to occur in cold and damp weather, and where attention has not been paid to cleanliness and ventilation, as where a number of children are crowded together in hospital wards, or small and close rooms. Sometimes this kind of stomatitis prevails epidemically, but it does not appear to be contagious, although M. Taupin, who has paid great attention to the disease, is of a different opinion. It has been known to follow mercurial ptyalism, and it has been observed in fevers called by some continental writers mucous, and at the termination of certain chronic maladies. It may, in fine, supervene on any of the diseases of infancy; and be in some instances associated with croup.

Treatment.—The remedial measures to which we have recourse in pseudo-membranous stomatitis are nearly the same with those in aphthous stomatitis. The same prompt attention is required to remove the external and other causes by which nutrition is deteriorated, viz., impure air, bad and insufficient food, and personal filth; and to substitute in their stead wholesome and appropriate aliment, pure air, bathing, and clean and frequently changed body linen. The condition of the digestive system must be ameliorated, it cannot all at once be relieved of disease, by mild laxatives, with the first dose of which we may combine a grain or two of

calomel; and afterwards simple bitters, or a weak solution of sulphate of quinia. Concurrently with these means we attempt an abatement of the local malady, by leeches beneath the chin or under the jaw, if the glands be sympathetically swollen and inflamed. But, if good is expected from even local depletion, it must be in the first stage of the disease, and ere the system becomes prostrated, as if under the influence of a poison. In a more advanced stage, when the skin is cold and the circulation feeble, we may place considerable reliance on the effects of oil of turpentine, given at first in a dose of ʒi. with castor oil ʒij. to ℥ss. according to the age of the child, and afterwards alone in a dose of ʒss. three times in the twenty-four hours, mixed with sugar and gum,—or, in extreme cases, with carbonate of ammonia. At this time a stimulating liniment, with turpentine oil as its basis, will be usefully applied, by rubbing, and by means of a piece of flannel dipped in the same to the throat and lower jaw.

More stress is laid upon early recourse to local applications, and especially to those of a stimulant nature to the mouth, in this, than in the other kinds of stomatitis; and above all, if the subject of it has been exposed to the deleterious influences so prevalent in hospitals and crowded and illy ventilated rooms. In the selection of these it is most prudent to begin with the milder ones, such as vinegar and water, fluid chloride of soda and water, tincture of myrrh, or a solution of borax, or even of common salt, which last is a very good detergent; and afterwards, if the excitement is feeble or rapidly diminishing, we use those of a more potential character. Chloride of lime sprinkled over the diseased surface, is a favourite remedy of MM. Barthez and Rilliet. (*Traité Clinique et Pratique des Maladies des Enfans*, tom. i., p. 266–268), and is highly extolled by M. Bourreau. It must be repeated so long as false membrane or exudation forms. Foremost in the good opinion of many, are the mineral acids, and of these the preferred one is the hydrochloric or muriatic acid. It may be used either as a common detersive gargle, sufficiently diluted or mixed with honey, in the proportion of one drachm of the acid to an ounce of the vehicle, or used as an escharotic undiluted, in which case it may be applied by a glass capillary tube, which, when immersed in the acid, takes up two or three drops, and afterwards put on the diseased surface, allows of their escape. In the common method of applying the acid with a sponge or dossil of lint tied to a quill, or a small rod of ivory or other stick, the acid is apt to be diffused over a greater surface than was originally intended. At all times, without great care, the teeth may suffer from this acid. On this account, as well as owing to its comparatively less stimulating nature, and a belief that the mode of action which it induces approaches nearer to the healthy one of the mucous tissue, lunar caustic is preferred by some judicious practitioners. It is recommended in solution—from a scruple to half a drachm, to the ounce of water—as a gargle or rather collutory. Preferable, however, to this, is rubbing quickly and lightly the diseased surface with a pencil of lunar caustic. There is one great advantage attending this latter method,—that it must be done by the physician himself, and hence that it will be properly done: whereas gargles left to be used by the mother or nurse are seldom applied as they ought to be, either through ignorance and timidity, or a false tenderness and fear of hurting the child. In discreet aphthæ it is also employed in substance; but pains are taken to touch each separate

aphtha, in place of rubbing it over the whole diseased surface, which last is done in diphtheritis, and also in confluent aphthæ, particularly when the back part of the throat is the seat of either of these diseases.

A still more favourite remedy with several who have written on this subject, and also tested its efficacy, is sulphate of copper, in solution or as a linctus, in which ten grains, or even twenty and thirty, of this salt are added to an ounce of water or of honey; or this salt alone may be employed in many obstinate cases. Testimony in favour of this practice is borne by Drs. Maunsell and Evanson, in the following terms: "From no other application have we derived equal benefit in the treatment of aphthæ, muguet, cancrum oris, ulcerated sore throat, &c., &c. According to its strength, the solution of copper acts as a stimulant or escharotic, while its astringent power is of a higher order. Hence its applicability to a great variety of cases; while it is remarkable that under its use the surrounding inflammation is lessened, as well as the ulceration improved."

Powdered alum, blown into the back part of the throat, has been recommended by Bretonneau, when diphtheritis has extended that far:—"When sloughing has actually taken place, the most decided escharotics may be required to destroy the sloughing parts, and arrest the progress of the disease. For this purpose the muriate, or butter of antimony, is perhaps the most effectual and manageable of the escharotics, as its action does not extend beyond the part to which it is applied, nor is its use attended by inflammation of the surrounding parts."

There is yet another article of considerable activity, not hitherto mentioned by writers in this disease, but one in which I am disposed to put no little confidence. I refer now to iodine, and particularly to the tincture and the compound solution of the iodide of potassium,—the first prepared by dissolving two scruples of iodine in an ounce of rectified spirit; the latter by dissolving a drachm of iodine with two drachms of iodide of potassium (hydriodate of potassa) in one ounce of water. With either of these the diseased surface may be painted over with a brush dipped in it; repeating the application after the lapse of twelve hours,—in less urgent cases in twenty-four hours. The tincture or the compound solution may be reduced in strength by dilution,—of the first with rectified spirit, and of the second with water,—in cases in which the pellicular exudation is not very thick, or the vitality of the mucous membrane is yet active, or where the stronger preparation has been found to be too severe. The advantages of the iodine used in this way are, that the morbid exudation is absorbed: sloughs, if they have taken place, are thrown off, and healthy granulations formed.

At the same time that you use the iodine topically, you should, with no small reliance in its therapeutical virtues, direct its administration internally. With this view you will give a simple solution of the iodide of potassium in a watery infusion of a bitter, at intervals of from four to six hours. The dose of the iodide will be from a sixth of a grain to half a grain, for young children. Its effects will, of course, be carefully watched, and if it prove irritating to the stomach, or cause any oppression of breathing, or restlessness and vigilance, for all these are occasional and unwelcome effects of this medicine, we must either suspend its employment or greatly reduce the dose.

Carbonate of ammonia in full doses, or from three to five and even ten grains, is also highly spoken of in this disease.

Reference has been already made to bathing as a preliminary or incipient part of the treatment of this disease, in order to cleanse the skin of impurities, and to restore, in a measure at least, its function, suspended by accumulation of perspirable matter and want of common ablution, as is the case under circumstances already explained. In the progress of the disease, the warm bath ought to constitute a part of the regular treatment, and be used twice a-day, for about ten minutes at a time. In extreme cases and stages of the disease, stimulating pediluvia should be frequently had recourse to, as answering all the purposes of counter-irritation, without the annoyance and troublesome sores, even of a gangrenous nature, which sometimes ensue on the application of blisters and even sinapisms to the extremities of subjects in whom the capillary circulation is feeble, and the tissues prone to disorganization, owing to their lymphatic temperament and imperfect and depraved nutrition.

LECTURE V.

DR. BELL.

GANGRENOUS STOMATITIS.—As a result of other kinds of stomatitis, and as a separate disease.—Different opinions as to its violence and danger.—Two states of gangrene of the mouth—Its Pathology—Common origin in the gums—Treatment, general and local—Emetics, tonics, and the warm bath and frictions—Iodine—Topical remedies—numerous—The chief one is sulphate of copper.

I CONCLUDE my lectures on sore mouth with a notice of GANGRENOUS STOMATITIS.—This kind of stomatitis corresponds more nearly with gangrenous aphthæ than with gangrenous erosion of the cheek, or gangrene of the mouth; names, these two last, given to a formidable and generally fatal disease.

Gangrenous stomatitis may be the consequence or termination of any of the kinds of sore mouth already mentioned. Aphthæ are liable to degenerate into deep chancrous and eating ulcers, which soon become sphacelated in subjects whose vital energy, from defective nutrition, is feeble. The supervention of this state in common aphthæ, or other kinds of stomatitis, requires a change of treatment, and a suspension of the liberal use of stimulating and caustic applications which may have been used before. Emollients, such as mucilaginous and slightly warm fluids, are to be applied to the parts; and not until gangrene is fairly begun ought we to attempt to aid them to throw off the now foreign and dead matter by the stimulating substances already mentioned.

The other and more important, and unfortunately still less manageable variety of gangrenous sore mouth, is that which spends much of its force on the cheek, and hence one of its names, *gangrenous erosion of the cheek*. It is also peculiar in its being preceded by very slight inflammation; indeed the chief and almost the sole evidence of this morbid state of the capillaries of the part is œdema and congestion, which soon yields to disorganization of the tissues. In this respect it is analogous to anthrax or carbuncle. Antecedently, however, to these changes in the substance of the cheek, are others in the mucous tissue lining this part, and also in the gums, which are designated under the title of *cancrum oris*—canker of the mouth.

Owing to the different degrees of intensity of this last mentioned disease depending on the difference in constitution and circumstances of the patients, writers are not at all agreed in their opinion of its violence and danger. "The common canker," Underwood tells us, "is rarely troublesome to cure." It sometimes, he continues, makes its appearance in the month; at others, about the time of teething; and frequently at the age of six or seven years, when children are shedding their first teeth, and the second are making their way through the gums, which are covered with little foul sores, extending sometimes to the inside of the lips and cheeks. The worst variety of this disease which he saw was during the second period of dentition, when a child has been shedding a number of teeth together, leaving the rotten stumps behind, which have been neglected to be drawn out. The whole gums will then become spongy, or be the seat of foul spreading ulcers; and small apertures will be formed, communicating from one part to another, accompanied with an oozing of a fetid and some purulent discharge.

GANGRENE OF THE MOUTH.—Very different from the disease just described is the gangrene of the mouth, properly so called, in which, with M. Baron, as quoted by M. Billard, we recognise two well-marked stages of the disease:—1. An œdematous circumscribed swelling, characterized by a shining, and, as it were, oily appearance of the skin, and by a central body of more or less hardness, in which there is sometimes an obscure red spot, either on the internal or external surface of the buccal parietes. In this first stage in young infants we do not meet with fever, or any symptom of reaction. 2. This central part presents an eschar which usually forms from within; the mucous membrane becomes disorganized, the bones are laid bare, all the soft parts, even to the periosteum, mortify and separate in shreds, at the same time that the mucous or bloody matter, mixed with the remains of the gums or sides of the mouth, flows out, exhaling an infectious odour.

Pathology.—Dr. B. H. Coates (*N. Amer. Med. and Surg. Journ.*, vol. ii.), in a valuable paper on the "Gangrenous Sore Mouth of Children," says, coincidently with M. Billard, that its access was frequently preceded by no marks of visible disease, or at least none that attracted attention. The little subjects were, apparently, in merely a drooping or enfeebled state. Those met with in the Doctor's clinic, at the Asylum for Children below this city, in a low and unhealthy situation, were generally of feeble and anemic habit, that which is one of the chief, if not the chief predisposing cause of the disease. Sometimes the ulceration followed a common remittent or intermittent fever, insomuch that, at one time, whenever a child was brought to the asylum it was expected, as a matter of course, that its mouth would become sore. Dr. Hall (*Edinb. Med. and Surg. Journ.*, vol. xv.) states that, in all the cases which have come to his knowledge, this affection had been preceded by fever, acute disorder of the digestive organs, typhus, inflammation of the lungs, variola, rubeola, or scarlatina. The coincidence between gangrene of the mouth and pneumonia has been noticed very emphatically by different French writers (*Taupin*, *Baudelocque*, *Barthez* and *Rilliet*), and next in order of frequency of organs affected, after the lungs, is the intestinal canal, which is attacked either with acute entero-colitis or with softening. A frequent concomitant, relatively considered, is gangrene of the lung, as I have elsewhere pointed out. (*Stokes on Diseases of the Chest*, 2d edition, Philadelphia, 1844, *note*, p. 325.) In illustration of the effects of debilitating causes, may be

mentioned the great proportion, at times, of children congregated in an asylum who were attacked with this disease. Thus, out of 240 at one time in the institution, Dr. Coates tells us that 70 were more or less affected with the ulceration in question.

The ulceration may begin in many parts of the mouth, but Dr. Coates tells us that, in by far the greater number of cases, it commences immediately at the edges of the gums in contact with the necks of the teeth, and most generally of the two incisors. The spread of the disease is, he thinks, uniformly from the gums to the cheek. MM. Barthez and Rilliet (*op. cit.*) tell us, that it occupies, in preference, the cheek and lips; and that of the latter, the lower one is most frequently affected. When gangrene is formed, a fever of irritation is generally developed. It is aggravated by loss of rest, want of nourishment, and probably putrid matter finding its way to the stomach. To this latter cause, Dr. Coates refers a diarrhœa which almost uniformly comes on towards the close. We must not, however, forget the probability of a morbid state of the intestinal mucous follicles and membrane being coincident with that of the same tissue in the mouth, as has been already adverted to, when speaking of follicular stomatitis.

Dr. Cuming (*Dublin Hospital Reports*, vol. iv.), in his "Observations on an Affection of the Mouth in Children," as it occurred in the Dublin Institution for the Diseases of Children, says, that, in most instances, the ulceration, commencing in the gums, extends by continuity of surface to the lips and cheek, but sometimes it commences in the lining membrane of the lips or cheek, and extends from thence to the gums. This disease is most liable to attack during the period of the first dentition. It is, however, he adds, frequently met with in children between three and seven years of age. The greater number of cases under Dr. Coates's observation occurred between two and five years of age, but some as late as eight or ten. The period first mentioned is that which corresponds with Barthez and Rilliet's experience. Dr. Cuming has frequently seen it when the child had only six or eight teeth; and he constantly observed, that, when it occurs thus early, it is always the upper gum that is first and principally attacked. This he conceives to be the mildest and most manageable form of the disease. The most formidable variety, in his experience, is that which occurs in children between twenty months and seven years of age.

Thickness and hardness have always occurred in the other situations, besides the cheek, where this gangrene has approached the external cellular masses of the face. After reaching this stage, a black spot is frequently seen on the outer surface of the swelling. This spreads rapidly, and has always, in Dr. Coates's experience, been the immediate harbinger of death. I have seen the skin of the cheek and chin all black, or of a brownish hue, hard like tanned leather, in a fatal case of this kind of gangrene shortly before death.

Billard directs attention to the coexistence of the affections of the teeth, the congestions of the gums, and the œdematous swelling of the face on the diseased side; and he adds, this agreement establishes the existence of some connexion between the diseases of the gums and of the teeth, and gangrene of the mouth; and he expresses his belief, that this latter disease may follow swelling and disorganization in the gums. If it should occur in a child in whom the second dentition had commenced, the con-

sequences would be very serious, and might result in the loss of the teeth for the remainder of life.

There is, in this disease, an increased flow of saliva from the mouth, accompanied by great fever: the breath is sometimes fetid, but without any perceptible lesion in the mouth.

Treatment.—Before prescribing, you ought to be aware that the prognosis in gangrene of the mouth is unfavourable; as might be supposed from the class of subjects who are chiefly affected, and the gravity of the disease itself as well as of its complications. Out of 29 cases collected by MM. Barthez and Rilliet, there were only 3 cured. If fully apprised, as you ought to be, of the antecedents of this disease, intermittent or remittent fever, or bowel disease, you must address yourselves earnestly and early to all the means adapted to alter this morbid condition; and whilst doing so, to modify at once the functions of nutrition. With this view, a mild emetic of ipecacuanha will often be of service, followed at once by tonics, and among these the sulphate of quinia, infusion of bark, calumba, or of quassia, are to be preferred. Alternating with the quinia, and administered conjointly with the simple bitter, should be minute doses of iodine in its state of iodide of potassium, at intervals of four to six hours. Carbonate of ammonia is also to be used. Warm salt water bath, twice or thrice daily for a few minutes each time, followed by assiduous frictions, will contribute to the restorative effects of the preceding treatment. On purgatives we must not lay stress, after an evacuation of the bowels has been obtained by castor oil and oil of turpentine, in the proportions already indicated. Mercury finds advocates in this form of gangrene as well as in aphthous stomatitis, but we cannot rely on its local action to the exclusion of the interference, by its impression on the general system, with nutrition. The same remark applies, with still more force, to arsenic, which is directly adverse to nutrition, and on all occasions like that now under consideration we cannot afford an hour for vitality to retrograde, as would be the case by the diminished activity of nutritive life. Some may object, that iodine also retards nutrition; but it is only in large doses that it acts in this way, and it does not produce that morbid impression on the nutritive centre, the digestive system, that arsenic does, and even, not unfrequently, mercury also. In small or moderate doses iodine quickens digestion and nutritive absorption, and increases, instead of diminishing, the bulk of the tissues and of the frame generally.

Much and not unmerited stress is laid upon the local treatment in gangrenous sore mouth; but if we hope for more than temporary relief from this means, it must be when fully aided and sustained by the general remedies just indicated.

Dr. Stewart (*Practical Treatise on the Diseases of Children*) very properly advises, in the forming stage of infiltration, the application of stimulating frictions to excite the absorbent vessels. Liniment of hartshorn may be used for this purpose, or a solution of muriate of ammonia, applied to the cheek by means of pledgets saturated with the solution. The disease being farther advanced, various substances, of a more or less stimulant and escharotic nature, are recommended; such as lunar caustic, butter of antimony, the chlorides, as already mentioned in the treatment of other kinds of stomatitis; also caustic potassa, and the actual cautery; the last a favourite remedy with some of the French practitioners. In the use of these powerful agents, we ought, however, to be regulated by the extent

of action of the tissues around the gangrened spot: if they be inflamed, and indicate a readiness to separate themselves from the mortified matter, we ought not to be too prodigal of astringents and stimulants, or escharotics; but rather use mild applications, such as the carrot or yeast poultice, or the slightly stimulating wash of a solution of common salt, or powdered borax, on the part.

There is one remedy which latterly unites more suffrages in its favour than any other, as a local stimulant and detergent, in gangrenous sore mouth: it is sulphate of copper, the eulogy on which, by Drs. Evanson and Maunsell, in the worst and aphthous forms of sore mouth, I have already placed before you. I shall now add the unequivocally expressed testimony of Dr. Coates, who is also joined in opinion by some recent French writers, probably as a result, in a measure, of his experience, which was recorded some eighteen years ago (*N. A. Med. and Surg. Jour.*, 1826). Dr. Coates's formula is as follows:—

℞. Sulph. cupri. ℥ij
Pulv. cinchonæ, ℥ss.
Aquæ, ℥v. M.

"To be applied twice a-day, very carefully, to the full extent of the ulcerations and excoriations. The cinchona here is not absolutely necessary, but operates by retaining the sulphate longer in contact with the edges of the gums." Sulphate of zinc, in solution with tincture of myrrh, was useful; also, a simple solution of this salt, ℥i. to an ounce of water. Extraction of the diseased teeth, or of the teeth of the diseased gums, early, is an important part of the cure. For the reasons already assigned, we might, with some confidence, use topically the compound solution of iodine, as a suitable stimulant to the parts.

There is yet a kind of sore mouth which, as far as our present knowledge extends, is seen only in women during lactation, and hence I shall call it

Stomatitis Nutricum. — The first notice of this disease which has met my eye is in a short communication from Dr. Backus, of Rochester, New York (*American Journal of the Medical Sciences*, Jan. 1841). But a more detailed description had been previously given by Dr. E. Hale (1830), in the Medical Communications of the Massachusetts Medical Society, vol. v.; also *Am. Journ.*, April, 1842.

The disease commonly begins with a hard pimple upon the edge of the tongue, generally at a little distance from the tip, which is very red and extremely painful. After a few returns, and not unfrequently after a first attack of this nature, the central spot ulcerates. The ulcer is deep, with hard elevated edges surrounded by an inflamed circle, and is still exquisitely painful. The location of these ulcers is generally the same as in the stomatitis of children, viz., on the tongue and inside of the cheeks, but rarely, if ever, upon the gums or the palate. The inflammation, however, extends to the fauces, and as we have seen in the case of muguet or pellicular stomatitis, is continued on the œsophagus, stomach, and intestines; and it is then accompanied with diarrhœa. The ulcerations increase in depth, though their extent of surface is not great. Dr. Hale has seen a considerable loss of substance in the edge of the tongue, which was only partially supplied when the ulcer healed, leaving the part jagged and uneven. The accession of the disease is represented by Dr. Backus

to be very sudden; "in three hours' time after seeing your patient in health, you may find her with a scalded tongue and fauces, and unable to converse or to take food." The appetite is good throughout the whole course of the disease, but the pain from taking food is so great that nothing but the mildest liquids can be borne. Although the patient becomes greatly emaciated, and her strength wastes rapidly, the secretion of milk is little if at all diminished, and the child continues vigorous and healthy.

The subjects of this disease are, as before stated, women during the period of lactation. Sometimes, indeed, Dr. Hale has seen it during pregnancy; but never in the first pregnancy, nor in a subsequent one, unless the woman had previously suffered from it while nursing; and even when it appeared at this time it readily yielded to remedies without any considerable constitutional irritation. Dr. Backus also admits that it sometimes appears during the *latter months of pregnancy*. Its attacks are not confined to any particular constitution or temperament; but are made at times on the most robust who have always enjoyed good health. Dr. Backus is inclined, however, to believe "that females of a leucophlegmatic temperament and of dyspeptic habits, with habitually *slow bowels*, are perhaps more liable to its attacks than others." A woman who has once had this disease is always liable to a recurrence of it in every subsequent period of nursing.

The *prognosis* is generally favourable, if too long a period be not allowed to pass after symptoms of debility and exhaustion have been manifested: and it is chiefly where there is a predisposition to phthisis pulmonalis that such appearances should excite solicitude, lest the constitution should be fatally undermined. Of course, under these circumstances we must be more urgent in our recommendation that the mother or nurse should wean the child, or hand it over to another and healthier person.

Treatment.—This last mentioned measure is the most certain and speedy means of cure of this kind of stomatitis, and in some instances it is indispensable. The symptoms which require that the nursing should be suspended, are the violence of the diarrhœa and general exhaustion, more than the increased soreness of the mouth.

As the stomach is sometimes disordered, an emetic of ipecacuanha will be of service. But this, although an occasionally useful preliminary to other parts of the treatment, is not indispensably necessary. Dr. Hale rests the cure chiefly on tonics, such as the lime-water infusion of bark, given in the dose of a wine-glassful two or three times a-day. Carbonic acid, as in bottled beer and porter and the effervescing salts, was found to be serviceable. When a laxative is proper, it is best given with some effervescing mixture, as, for example, powdered rhubarb mixed in water with the bicarbonate of potassa, to which a little lemon-juice or vinegar is added at the moment of taking it. When the porter has stimulated too much, and the effervescing salts were agreeable to the patient, Dr. Hale gave a fermented solution of tartaric acid and sugar, as follows: An ounce of tartaric acid is put into about three gallons of water, with white sugar in quantity to please the taste: to this add two or three spoonfuls of good yeast, and stir it well when first mixed, and again after two or three hours; at which time, if necessary, add more yeast: let it stand quietly in a cool cellar about twenty-four hours; then draw it off and carefully bottle it. Sulphate of quinia is well adapted to some cases, and more particularly to those

in which the debility is considerable. All stimulating tonics are injurious, and tinctures of all kinds are inadmissible. Dr. H. found it necessary to direct a discontinuance in the use of wine, a prohibition which ought to be the rule with mothers while nursing their children; and the use of wine or of any fermented liquors the exception during this same period.

Coincident with this view of the treatment of sore mouth of nurses is that of Dr. Backus, who places his chief reliance on chalybeates, combined with rhubarb and aloes, as in the following prescription:—℞. Carb. ferri, grs. lxv.; Pulv. rhei et Gum aloes, āā. grs. xv. M. ft. mass., in pil. 50 dividend. "Two of these pills should be taken twice or three times a day, or often enough to keep the bowels *very open.*"

Little value is attached to local remedies by Dr. Hale. When they are had recourse to, some of those heretofore mentioned, such as the chlorides, or a weak solution of the nitrate of silver, may be used.

LECTURE VI.

DR. BELL.

GLOSSITIS—Its varieties and causes—Symptoms—Termination— Diagnosis—Treatment—Importance of scarifications—Symptomatic or secondary glossitis—Treatment modified by the nature of the primary disease.—PAROTITIS—Primary—Supposed contagion of—Terminations—Metastasis to other organs—Treatment—Secondary or symptomatic parotitis—That caused by mercury—its treatment.

IN the description of the various species of stomatitis in the last two lectures, you have learned that the tongue is frequently affected, and, indeed, that the disease sometimes first manifests itself by aphthous or pellicular inflammation of its mucous membrane. But, in addition to these affections, which it has in common with other parts of the mouth, the tongue every now and then becomes the sole seat of inflammation. This morbid state of the organ is termed glossitis, from γλῶσσα, the tongue.

Glossitis, though a term strictly applicable to partial inflammation of the tongue, induced by bruises from foreign bodies, or compression between the teeth, as in convulsions, or by irritants or corrosives taken into the mouth, or to symptomatic disease, as in violent ptyalism, small-pox, scarlatina, &c., yet we seldom think of applying it formally, or carrying out a specially devised plan of treatment for it, except in cases of idiopathic or primary phlogosis of the organ. Before speaking of the probable causes and phenomena of this disease, I will just repeat the paragraph in which Schill in his *Semeiology** describes the circumstances under which it becomes enlarged, and the prognosis in consequence.

"454. Enlargement of the tongue may be occasioned by hypertrophy, inflammation, or congestion. Inflammatory swelling of the tongue, if it occur in other acute diseases, as angina, pulmonary inflammation, measles, plague, or variola, yields an unfavourable prognosis. Even non-inflammatory swelling of the tongue is a dangerous phenomenon, in acute

* Published in one volume, with Aretæus on Ætiology, in the *Select Medical Library.*

diseases, especially in cerebral diseases which are combined with coma. If it be the consequence of mercury, of the abuse of spirituous drinks, of gastric inflammation, of chlorosis, of syphilis, or if it occur in hysteria and epilepsy, the prognosis is not dangerous; but the disease is always more tedious where the tongue swells, than where it does not. It is enlarged also by degenerescence and cancer." p. 169.

Sanguine temperament and plethora, kept up by excessive and stimulating aliment, are spoken of as among the predisposing causes of glossitis,—the exciting ones being suppressed perspiration or other natural or accustomed discharges, and the immoderate use of spirituous liquors. But there must be some other circumstance which escapes our observation, and on which the occurrence of this disease depends; for we find, happily, no proportion between the combined operation of all the assigned causes and the frequency of the disease. Idiopathic inflammation of the tongue is a rare disease, and, I must add, as formidable as it is rare. The situation and connexions of this organ are such that, apart from the morbid changes in its own tissues consequent on its phlogosis, its enlargement exerts a pernicious influence on respiration and deglutition, by the impediments which it offers to these two functions; and especially to the former.

Glossitis has been divided into superficial and deep-seated; the first attacking the mucous membrane and tissue immediately subjacent; the second extending to the substance of the tongue. The first is the least dangerous. It is ushered in by the common symptoms of inflammation, accompanied with some difficulty of deglutition: the tongue is painful, and the patient is sensible of its enlargement, which is evident on inspection. The pain is not great; the surface is dry and red, and after a while becomes coated with a thick tenacious mucus, sometimes mixed with blood, except at its tip and borders. There is an abundant flow of saliva, which, mixed with the mucus, dribbles out continually from the angles of the mouth. Sometimes, the sides of the tongue are studded with small ulcers, of a greyish colour, and excessively painful, which, in some cases, are quite deep and exhibit schirrous margins.

If the glossitis persist, or become deep-seated, the swelling increases rapidly; speech and the natural movements are more and more impeded; the tongue assumes a bluish hue, and its size is such that it throws back the velum of the palate, presses upon the glottis and larynx, and hence causes a troublesome cough, and, becoming too large for the mouth, protrudes externally. The mechanical impediment thus existing to a free return of blood from the head, causes a lividness of complexion, a protrusion of the eyeballs, and in fact most of the phenomena of strangulation, which are rendered the more obvious and alarming by the imminence of asphyxia, owing to the impeded respiration. In addition to some disorder of the senses,—vertigo, pain in the ears, indistinct vision,—complaint is often made of pain in the tract of the spinal cord and parts adjacent, from the cervix downwards.

The constitutional symptoms are such as might be inferred from the violence of the local ones: the pulse is frequent, full and hard, but smaller, as the respiration becomes more difficult; the skin, which in the early stage is dry and burning, is at length bathed in a cold sweat; the thirst is excessive, and the urine deposits a lateritious sediment. Among the occasional effects of inflammation of the mucous membrane of the

tongue, and, in a measure, a symptom of the disease, is a membranous exudation like that in buccal or pharyngeal diphtheritis, and in croup.

The termination of glossitis is by resolution, suppuration, or gangrene. The first of these is sometimes manifested as early as the second or third day, but seldom before the fifth or sixth: that in suppuration is announced by diminished excitement of the system, with an accession of coldness over the surface of the body, or by a complete rigor, some diminution of pain if the abscess be superficial, an increase of swelling in some particular part, and finally a pointing which indicates more distinctly the place and the termination of the malady. Different is the case when the pus is deeply imbedded in the substance of the tongue, the muscular fibres of which, although forced apart, as by a wedge, do not yield as they would do if the supply of cellular tissue were more abundant; and hence the relief by suppuration is small in such a case. The termination of glossitis in gangrene is fortunately rare, and has happened only in constitutions extremely debilitated by intemperance or prior disease.

Between idiopathic or primary glossitis and symptomatic or secondary the diagnosis is made with tolerable ease. When occurring from acrid substances or poisons, the cause is obvious; and when following or associated with pharyngitis, gastritis, variola, or typhous fever, the sequence and connexion indicate its source: the same may be said of metastasis of gout or rheumatism to the tongue, the inflammation of which follows the subsidence of irritation in other parts, and promptly disappears with its return to, or re-appearance in, these or analogous parts. In all these cases we can have little solicitude respecting the swelling and inflammation of the tongue, which, as a symptom, is readily palliated and seldom is of itself dangerous.

Treatment.—In primary glossitis of the profound kind, on the other hand, our prognosis will be guarded, even if it is not unfavourable. The remedies must be active and promptly used, and not desisted from until a marked impression is produced, by some abatement, at least, of the violence of the disease. Foremost of these is venesection, either from the arm or from the external jugular, to such an extent as to produce faintness; and to be repeated in four or six hours afterwards if the violence of the inflammation is not manifestly abated. Aiding the effects produced by the use of the lancet, is the application of leeches to the tongue itself, at the under surface: the oozing of blood from their bites should be encouraged by warm water held in the mouth, or if this cannot be done, by warm moist clothes, or a sponge saturated with warm water frequently applied to the bleeding surface. If any difficulty be experienced in the application of leeches to the organ itself, they should be put on the skin between the border of the lower jaw and the cricoid cartilage, meeting at the median line just under the chin. Derivation is to be procured, as well as evacuations to diminish vascular excitement, by active purgatives, such as calomel and jalap, infusion of senna with salts, and stimulating enemata,—so as to cause the bowels to be freely and repeatedly evacuated. In a case of extreme difficulty of deglutition, a drop or two of croton oil placed on the back of the tongue will often be carried down with the saliva and produce its wonted purgative effect. It would be a waste of time to rely on the common routine of diaphoretics; but recourse ought to be had at once, after venesection and leeching, to the potassio-tartrate of antimony or emetic tartar, in such doses and so repeated as to cause a powerfully sedative or depressing effect. With it we may conjoin either tincture of

digitalis or of colchicum in adequate doses, to be repeated every hour until their peculiar and full impression is produced, or the disease is mitigated by the administration. For the purpose of counter-irritation, hot pediluvium or, if there be a tendency to perspiration, the warm bath, will be a good adjuvant to the preceding remedies; but we must not regard them in any other light than as aids to more active means. In the early stage of glossitis, before congestion is so established as to threaten gangrene, ice to the tongue is sometimes serviceable—after bloodletting and leeching.

But if the swelling remains unabated, and the parts assume a more livid hue, indicating what some have termed apoplectic congestion, and the respiration continues violently impeded, then must we have recourse to free and deep scarification of the tongue, in the direction of its length, from the base to its apex, and penetrating to its very centre. Several cases are on record, in which the danger was great, and death imminent, until this operation was performed. Its first and obvious effect is a free discharge of blood, which is sometimes followed at once by a lessened bulk of the tongue. But to insure the full efficiency of scarifications, they ought to be employed early, at least so soon as we find that no decided impression is made on the inflammation by the means already indicated. Delay subjects the patient to peril, by laborious and impeded respiration, and also to oppression and engorgement of the brain, which may go so far as to destroy life even after the partial abatement of the primary cause, the local disease. And, besides, the organ becomes so fixedly engorged, that the blood seems to form an integral part of its tissue, and after incision escapes by drops without any abatement of its induration. There is a risk also, of acute inflammation supervening on this state of congestion, and of the tongue being struck with gangrene. In making the incisions, the only danger is of wounding the *arteriæ raninæ*. It has been noticed, that large and deep as the scarifications may be, the retraction of parts, by the tongue resuming its natural size, is such that they leave only scratches or imperfect traces of a wound.

In cases in which suppuration has taken place in the centre of the tongue, but yet in which, although certain symptoms, as already enumerated, indicate this occurrence, there is hardly any fluctuation or pointing, we must not stop short of very deep incisions to give vent to the confined pus. As illustrative of the advantages of perseverance in this part of the treatment, I shall repeat what Dr. Kerr, in a well-written article on *Glossitis*, in the Cyclopædia of Practical Medicine, tells us on this point, when quoting from the Glasgow Medical Journal. The case occurred to Mr. Orgill. The patient, a farmer, fifty years of age, had suffered for some days from glossitis, and, besides other treatment, had undergone local bleeding by cupping and leeches, as well as incisions, *half an inch deep*, from as far as the scalpel could be made to reach to the tip of the tongue. The incised wounds bled freely, and the swelling was a good deal reduced, but in the evening of the same day it became as great as ever; it was scarified still more deeply, and a castor oil enema prescribed; this also gave great relief; but next morning the swelling had returned, with a peculiar lividity at the tip of the diseased half of the organ. An incision an *inch deep* was made with a scalpel, which gave exit to a gush of pus in a very offensive state; and in eight days the patient was well. The sensibility of the organ on the affected side remained imperfect for a year afterwards, but was at length restored.

Few, if any, washes or gargles other than simple or slightly acidulated water are required to aid the healing of the wounds caused by the incisions or of the cavity from which the pus had escaped.

There are cases in which the tongue is much swollen and inflamed in consequence of the constitutional and extreme effects of mercury ending in violent ptyalism. An antiphlogistic treatment will generally suffice for the cure; but it may be necessary to have recourse to incisions in the manner already mentioned. Ice applied to the tongue has been before spoken of, as one of the means of abating the violence of the inflammation, after v.s. and leeching.

In symptomatic glossitis the treatment will readily suggest itself with, and indeed as forming a part of, that of the original disease.

Gangrene, and particularly where it assumes the appearance of carbuncle, is to be promptly met by free incisions, followed by the actual cautery and stimulating washes, such as solutions of the chlorides spoken of in my last lectures, and a solution of nitrate of silver. All the customary means are to be employed for supporting without exciting the general system. With this view, sulphate of quinia, wine whey, and light nourishing food will be administered.

Parotitis—*Cynanche Parotidæa—Mumps.*—The term parotitis, designating inflammation of the parotid gland, is derived from παρωτις, the Greek name of this gland. There are two varieties of this disease, the one primary or idiopathic, or, as called by some, specific, and the other accidental or secondary and symptomatic. To the first only the English term mumps is applicable. It is most apt to attack young persons, especially those of the male sex, just before the approach of puberty: but it seldom appears after the age of 25 or 30 years. It rarely attacks the same person more than once in his life; and on this account, as well as from its sometimes appearing about the same time, or in quick succession in several persons, it is commonly alleged to be contagious. As yet no morbific matter of a peculiar nature, and capable of causing the disease in another and healthy person, has been secreted by, or at least has been detected on, a patient with parotitis. There are, besides, abundance of cases in which no trace of contagion could be ascertained, but which originated from exposure to cold or analogous causes. Sometimes it has prevailed epidemically.

Parotitis is ushered in, generally, by the symptoms common to inflammation, such as rigors, lassitude, acceleration of pulse, and hot and dry skin. To this succeeds a feeling of uneasiness, and then shooting pain in the parotid gland, some swelling under the ear, and impediment in mastication. More commonly, the swelling is on both sides, and increases to the third or fourth day, accompanied with hard and frequent pulse, thirst, headache, loss of appetite, and at times a great heaviness. When the inflammation, or at least tumefaction, is participated in by the sub-maxillary glands, *velum palati*, tonsils and pharynx, deglutition becomes excessively painful, and for a period impossible. In other cases, again, the swelling is more œdematous than inflammatory, and the constitutional symptoms are very slight.

The most usual termination of mumps is by resolution, which occurs in most subjects on the fourth or fifth day from the beginning of the swelling. The accompanying, or, as some might regard it, critical evacuation, is by sweat over the region of the gland and adjoining portion of the neck and head, and sometimes over the whole body. Suppuration is a termi-

nation of rare occurrence in primary parotitis; when it does occur, it is announced by the customary symptoms, — prominence of the swelling at a particular point, and softness and fluctuation, with a bluish hue and sluggish circulation of the skin above the tumour.

More frequently, however, as I have just said, resolution takes place, and there is a prompt diminution and almost disappearance of the swelling. But, at the same time, other and remote organs, — the testicle in males, and the mamma or external parts of generation, and at times the ovaries, in females, and more rarely the brain, — become, by metastasis, the seat of inflammation. When the disease is confined to one parotid, the testicle or mamma of the same side is affected. Sometimes the disease is transferred from the genital organ to the gland, a change which may be followed by a second metastasis from this latter to the former. Cases are related, in which subsidence of inflammation of the testicle has been followed by wasting away of this organ.

Treatment. — The remedial means in parotitis are, in general, quite simple. A saline laxative, reduced regimen for a few days, and an avoidance of dampness and cold, will suffice in most cases. If the fever should, however, be high, and the pain and difficulty of deglutition considerable, a small bleeding from the arm, or a few leeches over the gland, followed by a cathartic of calomel and jalap, and antimonials, will meet the requirements of the case. Metastasis to the testicle will be treated by cooling applications, and a suspensory bandage if the patient should be up and move about; and also by a stimulating liniment rubbed over the parotid gland, or a sinapism of mustard applied to this part, with a view of restoring the inflammation to its original seat. Fever accompanying the metastasis will be obviated by the same remedies which are adapted to the original disease. If arachnitis by metastasis ensue, an active antiphlogistic treatment should be at once instituted for its removal.

Secondary or Symptomatic Parotitis requires little else than topical remedies, — such as cataplasms in the first stage, and detergent washes if suppuration is declared, — other than the treatment adapted to the particular disease in which the parotitis manifests itself. Inflammation and abscess of the parotid are occasionally met with in fevers, such as typhus and plague, and in the eruptive ones, as in scarlatina and measles. I have seen the gland entirely exposed by the breaking of an abscess and loss of the teguments, in the case of a child with scarlatina. My little patient recovered notwithstanding, and the opening gradually closed without much disfiguration. The chief dressing was of lint and solution of chloride of lime.

Mercurial Parotitis. — A variety of parotitis, once quite common, in connexion with similar inflammation of the other salivary glands, from the excessive use of mercury, is now, happily, of rare occurrence. The salivation in these cases, which was merely a symptom or an effect of the morbid excitement of the salivary glands, was spoken of as the disease, against which the remedies were chiefly directed. But if we fix our attention on the parts really diseased, viz., the buccal mucous membrane, and the glands connected with it by their excretory ducts, we shall have little difficulty in devising a treatment adapted to the exigency. Fever, if high and accompanied by parotitis, stomatitis, and even sometimes glossitis, will be removed by venesection or leeches over the parotid and sub-maxillary glands, to be followed by fomentations to these parts; or, if

the state of the patient, owing to the nature of the antecedent disease for which the mercury had been given, forbid the detraction of blood, we have recourse to purging by saline medicines, and to potassio-tartrate of antimony, at first conjoined with nitre, or, in dilution with purgative salts, and afterwards with opium. The extremes of cold or of heat should be avoided, and the feelings of the patient be the guide as to the amount of clothing, fire in the room, &c. : but the admission of cool air, so as not to blow on the patient, will be serviceable. The warm bath daily is one of the best means of keeping up a moderate action of the skin, by which the cure will be greatly accelerated. Of the various gargles recommended on these occasions, the milder or mucilaginous are the best in the acute stage, and afterwards an infusion of green tea, or a weak solution of sugar of lead. The last is apt to cause a temporary discoloration of the teeth. If there be mercurial ulceration of the mouth, hydrochloric acid, or the nitrate of silver, may be employed in the manner recommended in the preceding lecture.

In the treatment of a case of mercurial salivation, we cannot propose to ourselves, nor promise our patient, that it will be arrested at once by any kind of treatment. On the contrary, like all kinds of poisoning, of which this is one, time is required both for an elimination of the deleterious agent from the system and for a subsidence of the morbid phenomena, such as depraved secretions and perverted innervation to which it gives rise.

Symptomatic and other varieties of salivation not mercurial. — We sometimes meet with salivation either occurring spontaneously or from other medicines than mercury. In these cases the salivary glands, though excited, and in some cases even paler than natural, are not inflamed. Spontaneous salivation is also called idiopathic. Occasionally, this variety is accompanied by all the symptoms, even to fetor, which are supposed to be diagnostic of mercurial ptyalism. More frequently the increased and continued flow of saliva is symptomatic of disease of some other organs. We must regard as proofs of continuous sympathy the salivation that accompanies the chewing of various substances, and some diseases, such as tonsillitis and certain varieties of angina; and, also, diseased tooth, or irritation of the gums, as in infantile ptyalism. Not dissimilar, although the original irritation be somewhat more remote, is the ptyalism often met with in dyspepsia, and particularly in pyrosis, the immediate source of the latter of which may be regarded as an excess of salivary secretion. Gastric derangement, the result of intoxication, frequently causes temporary salivation; a torpid state of the bowels has given rise to the same result. Abundant salivation has been seen in consequence of deranged or excited states of the nervous system, as in nervous and hypochondriacal subjects, and in those who had imagined that they had taken mercury. Manifest sympathy is noticeable between the salivary glands and the uterus. Under these circumstances we must not be in haste to check the flow of saliva, as dangerous effects have followed attempts of this nature.

Critical salivation forms an important part of the study of semeiology. I can only advert to it just now; and dismiss it with mentioning that it occurs in some fevers, small-pox, gout, phthisis, angina, glossitis, mania, and some other cerebral diseases, and dropsy.

Various medicines, besides mercury, act as remote sialogogues. Of

these we may mention iodine and its salts, chlorine and bromine, and some of their compounds, digitalis, arsenic, the salts of antimony and lead, the terchloride of gold, prussic and nitric acids, nux vomica, and watery infusion of hemlock when injected into the veins of a horse. For numerous interesting particulars relating to the physiology and pathology of the saliva, I would refer you to an elaborate paper by Dr. Wright, in successive numbers of the London Lancet for 1842.

LECTURE VII.

DR. BELL.

DISEASES OF DENTITION. — Predisposition to numerous diseases in early infancy. — Causes besides dentition. — The susceptibility of the organs of the child, and peculiar exposure to external agents. — Sympathies of the dental apparatus — direct and remote. — Treatment during dentition — hygienic and medicinal. — The measures chiefly demanded.

DISEASES OF DENTITION. — There must, almost of necessity, be some vagueness in the ideas associated with the expression, *Diseases of Dentition.* They are often confounded with the diseases of the period of dentition, and particularly of that which elapses from six months after birth to the appearance of the deciduous teeth. This is the period of the greatest mortality, of course, that in which the probability of life is less than in the years immediately succeeding it. Dentition is one of the contributing causes; but it is only one, and even though it were the chief, there would remain many diseases, the origin of which must be traced to other sources. The excessive activity of the organs of nutrition, and impressibility of the nervous system in early infancy, and the excitement, so apt to become morbid in consequence of the change of food from that of the mother's breast to various articles of a more stimulating and heterogeneous nature, throw the system of the young being open, in a peculiar degree, to irritation of any kind, and *à fortiori* to that from teething. If to these we add the extremes of heat and cold, to which, from the ignorance of parents and the carelessness of nurses, infants are so much exposed, we can have some idea of the strain upon the tender organization and naturally great susceptibility of the child during the period of first dentition.

You need hardly be told of the great vascular and nervous supply to the dental apparatus, and the excitement of both the nerves and blood-vessels during the growth of the teeth. The direct sympathies, by means of the great and important sensitive nerves of the fifth pair, between the dental arches and all the senses, and the readiness with which febrile action must occur under the excitement of these parts during their nutritive erethism, are inferences which, irrespective of positive experience, might almost be drawn *à priori*, from a survey of the anatomical relations between the teeth and adjoining organs of the face and head. The indirect and reflex sympathies by which, through the irritation of the brain consequent upon morbid excitement of the dental apparatus, remote organs suffer, is also explicable though not so immediately obvious. In this way the stomach and digestive apparatus generally, the respiratory and secretory

organs, including under this latter the skin, are so often affected during painful and laborious digestion. It may be made a question, whether the functions of these organs are deranged in consequence of the primary excitement transmitted by the dental apparatus, or are predisposed to be morbidly excited by other and common agents, such as cold and moisture giving rise to catarrh, bronchitis and pneumonia, great heat to gastric and intestinal diseases, wrong food to similar affections, and diseases of the skin, &c. On a review of all the premises, we should lean to the latter of these two opinions, while we cannot deny that at times dentition seems to be the direct exciting cause, since the disease is developed without any notable or sometimes any obvious or appreciable change in the qualities of the ingesta or sensible states of the atmosphere.

Your physiology will have taught you the obedience of the muscular to the nervous system, and that any undue excitement of the latter is immediately followed by violent and irregular action, spasmodic or convulsive, of the former. Now, with an irritation of large branches of the fifth nerve continued for many months, acting on a susceptible brain, we cannot be surprised that at any moment of this period a slight exacerbation of the irritation should cause a reflex action on the muscles, manifested by convulsions. Not seldom, during this period, the cerebral irritation and its reflexion on the muscles are the consequences of morbid impressions transmitted from an excitable stomach or intestine, and caused by food irritating either by its indigestibility or its excess.

With this view of the subject you cannot be either ignorant of the nature of the morbid phenomena as they present themselves during dentition, or negligent of the appropriate means of relief. Topical irritation is manifested by increased heat and swelling of the gums, and its extension to the salivary glands causing an increased flow of saliva, one of the most common and generally accredited symptoms of teething. There are great differences among children as to the time when this process begins, as well as the ease with which it is accomplished. Dr. Ashburne (*Med. Gaz.*, 1833–34) gives the following table, as exhibiting the average order of the appearance of the teeth of the first dentition :—

Periods.	*Teeth.*
Seventh month from birth . .	Two central lower incisors.
Eighth " " " . .	Two central upper incisors.
Ninth " " " . .	Two lateral lower incisors.
About ninth or tenth . .	Two lateral upper incisors.
" twelfth or fourteenth . .	Four first molars.
" seventeenth, eighteenth, nineteenth, or twentieth	Two upper canine.
Twenty-third to thirtieth . .	Four last molars.

There are many examples of children born with some of their teeth cut; and some of those who had not any till they were twenty months old: Duges (*Dict. de Med. et de Chir. Pract.*) states his having seen a young person who did not cut them until she had reached the eleventh year of her age; and Smellie cites a case in which they were not even visible until the twenty-first year.

The child experiences a troublesome itching of the gums prior to the eruption of the teeth, which prompts to rubbing them with its own, and

to willingly submit to this being done by others' fingers, or by hard bodies, such as coral, &c. Morbid heat of the gums and mouth makes the application of cold bodies to them, or mouthfuls of cold water, grateful to the child. The irritation at this time is often transmitted to the nose, and by the Eustachian tube to the ear, causing symptoms of coryza and pain in the ear, and a frequent turning and tossing of the head, and also to the eyes, as manifested by their watering. Starting in the sleep, and occasional twitches of the muscles of the face or contraction of the hands, are not uncommon during this period. Alternations of drowsiness and morbid vigilance succeed each other. Sympathetic disorder of the digestive canal is indicated by occasional ejection of the contents of the stomach, and sour and bilious discharges from the bowels. The skin is often hot and the pulse frequent, constituting a state of things approaching to the febrile,—the more evident if the heat and redness of the gums be increased and salivation suspended. The urinary secretion is very irregular; more commonly less, sometimes more copious than natural. There is often a circumscribed redness of the cheeks, and blotches or papular erythemæ on this part of the face, and on the thighs, hips, &c., and eruptions on the scalp. "A symptom less common than any of the foregoing, and appearing in certain habits, is," as Underwood apprises us, "a swelling of the tops of the feet and hands: it is seldom, however, of much importance, and goes away upon the appearance of the teeth." Where this symptom persists with aggravation, dentition is slow and painful; and there is a greater call for purgative medicines to remove the frequently accompanying costiveness. Another occasional effect of, or at least associated disease with, dentition, is *laryngismus stridulus* or spasm of the glottis, on which I shall have occasion to address you more fully hereafter. Bronchitis is at times developed apparently under the direct excitation of teething; but more frequently the bronchia and pulmonary mucous membrane acquire a morbid irritability from this cause, which renders them peculiarly sensible to atmospheric changes.

Lancing the Gums.—The *treatment* of the disease of dentition must of course be modified by the organ or the apparatus which suffers most and the degree of morbid excitement. As in the case of all symptomatic fever of irritation, we attempt a removal, or if this is impossible, a mitigation of the force of the local and exciting cause. On the present occasion, we direct our attention first to the gums, and if we find them redder than natural, swelled, and painful or spongy, we can have little hesitation in lancing them, either with the shoulders of a common lancet or with a gum lancet. In performing the operation we cut down direct on the tooth, and do not stop until we feel the edge of the instrument grating on it: nor can we be content with one incision, but must make another intersecting the first, at an angle more or less approaching a right one. In cutting down on the tooth, the incision should be not entirely on the summit of the gum, but also somewhat on the anterior face of this latter,—very much as the swelling points and the tooth is seen to protrude, when it does rise from the gum. The fears entertained by some that, if the tooth does not soon appear after scarifications of the gum, the cicatrix will be an additional obstacle to its progress outwards, are groundless; for this, like all newly formed parts, is more readily absorbed than the original structure. Ulcerations of the gum, spoken of as a sequence of lancing it, are thought by experienced writers, such as Underwood and

Hamilton, to be more frequent in cases in which this operation had never been performed, than in those in which recourse has been had to it.

There are cases in which, even though the gums be not swelled or protruded by the tooth, it will be advisable to cut down on this latter. The resistance to the passage of the tooth, as where dentition is backward, may be greater from a hard and not inflamed, than from a prominent and inflamed gum, and there will be greater necessity for removing this resistance, and also the irritation by pressure, which the confined tooth produces in the subjacent nerve. Hence, when we are called to a child from eight months to twenty months old, and are required to prescribe for the relief of some violent disorder, such as vomiting and purging, or high fever, or great restlessness, spasms, and general convulsions, it will be prudent, on inspection of the mouth, to lance the elevated gum when this presents; or if it does not, to make our incisions in that part corresponding with or covering the expected tooth or teeth. Even if we have not thought it necessary to begin the treatment in this way, it will be highly advisable to have recourse to it, when we find that the disease for which our assistance was invited does not yield soon to the common and generally recognised appropriate remedies. Not unfrequently, no other treatment is required for convulsions of violent and frequent recurrence, than free lancing of the gums and a warm bath.

The persistence of heat, and flushing of the face and preternatural excitement about the head, in dentition, will justify, in addition to scarifying the gums, the application of a few leeches under the angles of the lower jaw or behind the ear, and the administration of laxative medicines and cooling drinks with a restricted regimen; and, also, warm pediluvia. Convulsions when violent, and recurring after the gums are lanced, will require venesection, the warm bath and opium. This last, after we are assured that the stomach and bowels are cleared of any indigestible or other irritating matters, is essentially required for preventing the return of convulsions, by allaying the exquisitely morbid irritability in some children of a nervoso-lymphatic temperament, when vascular and local determination to any important organ are not evident. With the same view tonics, such as the sulphate of quinia and the simple bitters, are useful: they should be given early in the day,—and the warm bath or a mild opiate, such as a portion of Dover's powder, in the evening. With the combination of sulphate of morphia and tartrate of antimony, in a solution of camphorated mixture, I have had great reason to be pleased in cases of spasms, occurring either in children or in adults.

Diseases of the stomach and bowels, manifested by vomiting and purging, and depraved secretions, will be met by the treatment adapted to them in other cases. But both in these, and in the affections of the thoracic viscera during the period of dentition, we cannot expect a reduction of the morbid excitement by the same direct and frank treatment as we would in subjects more advanced in life, and in whom the nervous system is not so continually excited. The predominance of nervous symptoms, or rather the greater share which the nervous has than the vascular in the diseases of dentition, require of us to address our remedies more to the first than the second. In our hygienic as well as therapeutical treatment, we should constantly bear this fact in mind; and accordingly we shall avoid exposing the child either to extreme cold or high heat, both of which are inimical to the nervous system; but endeavour to give it tone by tepid bathing

and fresh air. In its dietetic regimen, care must be taken not to confound nutritive with diffusible stimulants. The former are tonic; the latter, whilst they excite fever, also tend to provoke and keep up nervous disturbances of various kinds.

Among the most troublesome diseases of dentition are eruptions on the face and scalp, sores of the ears, &c. These are really less alarming than other internal diseases, but they often excite more solicitude on the part of the mother,—by the disfiguration of features which they cause to her little favourite,—mixed with anxiety and impatience to have them removed. Now, if it be ever required of us to avoid the charge of *nimia medicina*, or an impertinent interference with nature at the risk of the patient's life, it is in these cutaneous affections of children. Not that we are forbidden to use remedies on the occasion; but these must be directed to an improvement of the digestive and nutritive systems by general treatment, rather than any specific one, to carry off the eruption or dry up sores. I shall not pretend to particularise the different eruptions which harass infants during dentition, but proceed to the more important part of my subject, an indication of the best measures to be pursued for their treatment. If we bear in mind the fact, that the remote irritation which keeps up these diseases of the skin being that of dentition, must last for a considerable period, we shall be less tempted to urge the use of heroical or violent remedies; but rather content ourselves with moderating its intensity, and calling off the secondary irritation of the skin by revulsion to the bowels and increasing the secretions generally, than by having recourse to repellent remedies of any description.

The warm and tepid bath, according to the degree of excitement and the powers of reaction in the little patient, with mucilaginous applications to the skin, occasionally laxatives to maintain a regular state of the bowels, the use of small doses of calomel with chalk, and the chalk mixture or chalk powder, alternating with small doses of bitters and iron, will constitute the outline of the therapeutical treatment. The hygienic will consist in taking the patient out in the fresh air, giving it good cow's milk diluted with water, and in which some farinaceous powder has been mixed, in addition to, or in place of the breast of the mother, according to the period of lactation. But if, in addition to the cutaneous disorder, the child be puny, without suffering from fever or phlogosis, and its teething slow and painful, we may every now and then with advantage direct a somewhat more nutritive and varied diet,—such as animal jellies and broths; and counter-irritation to the skin on parts remote from that which is the seat of the eruption.

In the preceding remarks, you will see that no attempt is made to lay down a specific plan of treatment for children during the period of dentition. This must vary with the constitution of the child and the particular disease, as well as the stage of disease, under which it may be suffering. Your intercourse will often be with those who are over-fed, and in whom a plethoric state is induced by this means, which throws them open to inflammation of the brain and convulsions, or to gastric and intestinal disorder, and troublesome pustular eruptions. The mother will sometimes boast of the quantity of milk, in addition to that furnished from her own breast, which her child takes daily, as if the measure of capacity for liquid aliment were in fact the measure of strength. It will be difficult to persuade her, in advance, that she is doing wrong to her offspring; and even

when disease, such as bowel complaint, comes on, she will be prone to give broths in addition to milk, and condiments to flour in order to strengthen the digestion of the little sufferer, whose bowels she supposes to be disordered because they are weak. Often, all that is necessary in such a case, is a reduction to a third of the original quantity of food, and an increase of exercise, or of airing at least, in order to restore health and obviate many impending and alarming maladies.

Dr. John Clarke, in his Commentaries on the Diseases of Children, is disposed to attribute most of the diseases of dentition to over-feeding and consequent plethora, and to improper kinds of food which produce irritation. To these he adds another cause, too often overlooked by experienced medical men in their attendance on sick children, but which is undoubtedly one of a serious nature. It is, keeping the head too warm. I have had frequent occasion, as indeed almost every observing practitioner must have had, to notice the sores and eruptions on the scalp and behind the ears kept up by the unnatural and unreasonable and cruel fashion of wearing caps, and these often worked and embroidered so as to render them still more rough and irritating to the tender heads of infants. There are few instances of more expressive natural language, than that of the little being in its desire to tear off its cap under the annoyance of itching, heat, and other irritation caused by this covering, or in its pleasure when freed for a while from this incumbrance. I have found it, in some cases, impossible to cure sores and scalding of the ears so long as a cap was worn; but in a few days after this was laid aside the disease was almost entirely removed, without there having been scarcely anything applied to quicken the curative process.

Contrasted with the practice of keeping the head too warm, by giving it a covering in the house which it does not require, since, independently of its natural covering of hair, the abundant supply of blood to this region and its great vascularity insure a continued evolution of animal heat, is that of leaving the limbs, and particularly the lower ones, without adequate protection by clothing. Vitality in this part is relatively feeble, and extrinsic aid is required by friction, bathing, and warm covering for the feet and legs, the latter of which are, commonly, exposed when the child is in the nurse's or mother's arms. After the little being is old enough to run about, the circulation is rendered more active in the lower limbs, and there is then less call for the precautions just stated, which are indispensably necessary before this time. Of one elementary principle of physiology there is very general ignorance among the community, and oversight by too many physicians. I refer now to the established fact, that animal heat requires for its evolution a certain degree of energy of function of the nervous as well as the vascular systems, and that one of the best means of excitation of these two systems, for such evolution, is external heat and the retention of animal heat itself by warm clothing. In the young of all animals, there is less activity of calorification than in older and adult ones; and hence the necessity of additional means of protecting the former from the depressing influence of external cold, and of fostering by external aids the generation of animal heat. The young of birds are covered in a close nest by their mother's body and wings, until they have acquired their own natural covering and protection—their down and feathers—against atmospheric extremes, and especially that of cold and moisture. Provision is made by the parent for imparting some of its own warmth to

its young, in the case of the mammalia which are not born with a hairy covering quite adequate to their wants in this particular. It is only in the beings of our own species that instinct does not meet the exigency of the case, and false reasoning fails to supply the omission. During the night, the child is covered in excess with body and other clothes, in a warm and often close and illy-ventilated room: during the day it is imperfectly clad, —its legs and arms, and breast and shoulders, are bare, and exposed part of the time to cross currents of air. Catarrhs, croup, bronchitis and pneumonia are common effects of this unequal and inconsistent exposure, which is as adverse to plain and well-ascertained physiological principles as it is to medical experience. Children require more external covering, more warmth than adults: they have less energy of calorification and less ability to take sustained and regular muscular exercise, by which the nervous and vascular systems and respiration are excited and animal heat is evolved. Even when acute disease is not produced by this exposure of some of the most sensitive parts of the body to cold and moisture, there is a deterioration of the functions of nutritive life, and impediment to regular and easy dentition, with additional probability, if not the direct occurrence, of scrofulous tumours, and even of tubercles.

The plain hygienic precept for avoiding many of the evils which I have just sketched, is, to protect the child by suitable clothing, and with this view to cover all parts of the skin which in after-life are kept covered. The breast and shoulders and arms ought to be clothed, as they are among the most susceptible parts of the body to atmospherical vicissitudes and extremes. The common and hacknied but ill-founded excuse of a wish to harden the child, is not applicable to the practice of leaving naked and exposed these portions of the body; for, it is not meant that they should remain so after the child leaves the nursery, nor ever be so subsequently in any period of after-life; at any rate in the male sex. In the texture of the garments we shall be guided by the season; as to fashion, they ought to be always loose.

It may perhaps be said that these considerations and details belong to the nursery, and are beneath the consideration of a Professor of the Theory and Practice of Physic. But, a little reflection will soon convince you, without any argument from me, that the theory of medicine involves, in fact imperatively requires, a study of all the probable causes of disease and of the circumstances which give them additional activity or in any way modify them. As the highest and noblest aim of ethical philosophy is premonition and prevention, so, in medical philosophy, it is both more humane and more intellectual to devise means to guard against disease, than to display skill, learning, and research in trials to cure, uncertain as we must be of a successful result, and knowing often that our best-devised efforts, in some cases, will almost certainly fail.

LECTURE VIII.

DR. BELL.

DISEASES OF THE THROAT.—Their various origins and complications.—RETRO-PHARYNGEAL PHLEGMON—Difficulty of diagnosis, and danger of this inflammation—Cases.—ANGINA SIMPLEX—Its causes, symptoms, and treatment—Sometimes associated with typhoid fever.—*Chronic angina*—Inflammation sometimes located in the uvula, sometimes in the palate—Treatment of the same.

CONTINUING my notice of the diseases of the mouth and throat, I shall next direct your attention to those which consist in an inflammation of the mucous membrane lining the palate and pharynx and covering the tonsils. To these the generic designation of angina or strangulation has been applied from *angere*, to suffocate or strangle, or rather from the radical term ἀγχω, *I strangle;* this being regarded as the sensation or symptom of the greatest moment and danger. *Cynanche* is also a generic term for the same class of affections; it having the same root, with the prefix *cy*, the real meaning of which we may, with Dr. Good, regard as doubtful, and hardly justifying at any rate the common explanation of its being from κυων, *a dog;* under the idea either that dogs suffered much from this kind of disease, or that the noise they occasionally made when thus afflicted suggested the recollection of that made by the human subject, when suffering under throat affections. The name used by Hippocrates of *paristhimia*, or throat affection, *morbus faucium*, is sufficiently plain and general; and its equivalent has been given by the older writers in our own language, under the title of quinsy, or rather squinsy or squinancy. The French corresponding term is *esquinancie*. I would apologise for thus occupying your attention with philology in place of medical description and narrative, were I not desirous of showing you that there is no real meaning concealed under these terms of learned sound, and that critical refinements of language are no substitute for pathological and therapeutical knowledge. Of late years, more precise ideas of the seat of affections of the throat are conveyed by referring them to their anatomical seat; and hence, although some writers still retain the generic title of angina or cynanche, the specific and true designations are those of *palatitis*, *tonsillitis*, *pharyngitis;* and for affections of the air-passages, *glottitis*, *laryngitis*, *tracheitis*, and *bronchitis*.

It may readily be supposed, however, from a very slight inspection of the mucous membrane, continuous as it is from the mouth to the œsophagus, and analogous to each other as the several portions of it are in this space, both in texture and organic function, that its morbid state is seldom restricted entirely to any one of these portions. On this account it is occasionally convenient to use a term which shall serve to designate the inflammatory condition of the mucous membrane of the palate, isthmus of the fauces, tonsils, and pharynx, even although its use be arbitrary, and its acquired meaning different from its original and radical one. Angina and anginose, therefore, to a certain extent, hold

their places in the medical descriptions of the present day, but in a very subordinate relation to that which they once had. A physician is not now afraid of being thought illiterate, even though he should talk in English of diseases of the throat, instead of using Greek terms: but then it will be expected that he shall be able to show, when occasion requires, the anatomical seat and characters of these several diseases.

Throat affections differ not only in the seat and extent of the mucous surface inflamed, but also in their intensity, origin, and complications with other organic diseases. Often slight and of small moment, they are also at times violent and alarming; sometimes very painful without corresponding danger; and, again, with little complaint on the part of the patient, they prove suddenly fatal. They are either acute or chronic, primary or symptomatic; but whenever they appear as symptomatic or secondary, they complicate the disease and add to its danger. Thus, in scarlatina, small-pox and measles, angina, particularly in the two first of these diseases, is of common occurrence; and we measure often their danger by its persistence and violence. It is met with in some of the worst forms of acute gastritis, and when established in chronic gastritis makes us less confident of a cure, — at any rate, of a speedy one. The same remark applies to certain forms of enteric disease. Sometimes angina accompanies fatal affections of the heart, and it is the only symptom of any note which arrests the attention of the physician, when it appears some hours before sudden and unlooked-for death. Common and pellicular or membranous inflammation, and ulceration of the fauces and pharynx, are frequently associated with, and aggravate not a little, disease of the air-passages, and particularly of the larynx and trachea. This complication is most generally met with in an epidemic form. It is very obvious, therefore, from these considerations, that our prognosis in diseases of the throat should be guarded, and especially so if we cannot detect, after a careful inspection, adequate correspondence between the local inflammation or other organic change, and the impediment of function of the part and remote or sympathetic disturbance.

Retro-Pharyngeal Phlegmon. — *Post-Pharyngeal Abscess.*—In some cases of an obscure nature, an abscess forms in the sub-mucous cellular tissue of the posterior pharynx, which, by pressing on the glottis, produces great distress, and unexpectedly has caused death, without the physician being able to form a correct diagnosis of the disease. On this point I would refer to Porter on the *Pathology of the Larynx and Trachea.* An interesting case of this description is related by Dr. Caspar Morris, and recorded in the first Quarterly Summary *of the College of Physicians of Philadelphia*, 1842. The patient, a female near her term of utero-gestation, was seized with a severe chill, slight cough, and much greater difficulty of swallowing than could be attributed to the apparent condition of the throat, which was examined with great care, the tongue being depressed and the mouth well open. She could not lie down from a dread of strangulation. On the third day from the attack, she drank with tolerable ease, but was unable to swallow liquids or to lie down: she was unable to raise the natural tones of her voice; the uvula was slightly swollen, and there were some small deposits of lymph upon it. There was little cough. On the fourth day there was entire aphonia, slight cough, and utter inability to swallow. "Gargles were applied with a syringe, and always with some relief; and frequently she was able to

swallow small portions immediately after their use." Dr. Morris "examined the fauces and neck at each visit, but without being able to ascertain any cause for the urgency of the symptoms." About 11 o'clock in the evening the labour commenced. In the intervals between the pain she spoke freely with her natural tones of voice. Under the care of Dr. Hodge she was delivered on the following (Thursday) morning, at 7 A.M., being the fifth of her anomalous disease. A few hours afterwards she was able to sit up so as to allow of a weak solution of sulphate of copper to be injected into her throat, "which she threw again from her mouth, but could not swallow. Her voice was hoarse, but there was but little cough, and no difficulty of respiration." At 11 o'clock on Friday morning she expired: having been visited frequently from the preceding afternoon up to this time by Drs. Hodge and Meigs in conjunction with Dr. Morris. The treatment consisted in free bloodletting on the second and third days of the disease, and leeching the throat a few hours after the first venesection; and in the administration of morphia, and towards the last of stimulating and nutritious enemata. I shall give the conclusion of this narrative in Dr. Morris's own words.

"The interesting points in this case are the intensity of the arterial excitement, the dysphagia and aphonia, without a corresponding difficulty of respiration, or sufficient swelling and inflammation in those parts of the throat within sight and commonly affected, to account for these symptoms. It was not laryngitis, nor bronchitis, nor pharyngitis, nor tonsillitis. The examination of the body revealed the whole mystery. Upon opening the trachea and larynx, the traces of inflammation were so slight as hardly to be recognised; and we were disposed at one time to seek the causes of death in the brain, or some other organ. It was, however, determined to remove entirely the pharynx, together with the base of the tongue, in order to look at them carefully from behind; in doing this an abscess was opened, situated between the œsophagus and the vertebra, containing about half an ounce of purulent matter, and so immediately behind the glottis as to account most satisfactorily for the difficulty of swallowing, and dread of strangulation expressed by the patient, from the time the disease first assumed a serious character. There were also minute depositions of pus between the arytenoid and cricoid cartilages, showing the cause of difficulty of speaking." p. 17.

Dr. Ballot, physician to the Hospital of Gien, reports (*Archiv. Gén. de Méd.*, Oct. 1841) a case analogous to that of Dr. Morris, the chief features of which I have just detailed to you. The subject was forty years of age, and in robust health but for the deterioration caused by excess in drinking: he was in his calling much exposed to atmospherical vicissitudes. He had suffered for some days from an affection of the throat when he entered the Hospital of Gien on the 27th of September, 1837. Dr. Ballot found, on examination of the patient, that there was redness and dryness of the pharynx, but without appreciable swelling of any visible part of the throat: the pulse was full, and beat 100 in a minute: there was some difficulty in deglutition and respiration; the latter of which was somewhat hissing, especially during inspiration: the voice was muffled. The patient complained of a feeling of uneasiness in the larynx, as if there was something which interfered with freedom of swallowing and breathing, particularly when he inspired. Dr. B., in carrying his finger far down into the pharynx, detected on a line with the upper part of the larynx a resisting yet

elastic tumour, which seemed to be lost in the borders of the glottis, and which sensibly obstructed the opening of this latter. From time to time there is a short, dry, and wheezing cough. The patient, though a man of fortitude and energy, is sad and restless; his face is pale, and expressive of anxiety.

Sept. 27th, morning.—The treatment was begun by venesection to the amount of twenty-five ounces (500 grammes) in the morning. No relief following this evacuation, the same quantity of blood was taken away in the evening; and a mucilaginous gargle, veal water for sole food, and mustard pediluvia prescribed. On the following day, thirty leeches were applied to the sides and front of the neck; pediluvia in the evening, and a large blister to the nucha. On the 29th the respiration was very laborious, and the patient sometimes had fits of suffocation. Deglutition was not more affected than on his entrance into the hospital; an emetico-cathartic potion was given, which caused abundant evacuations both upwards and downwards. A new exploration of the pharynx did not indicate any change in the supposed laryngeal tumour.—30th. Twenty leeches on the front of the neck; purgative draught; mustard pediluvia. On the four following days large doses of emetic tartar were given, and this seemed to prevent the increase of the symptoms, by prolonging the intervals between the fits of suffocation, during which latter the inspiration was always made with extreme difficulty,—incompletely, and with an evident hissing sound: but this slight amelioration was temporary only, and on the 6th and 7th of October, Dr. Ballot applied a large moxa on each side of the larynx. Notwithstanding these measures, the entire closing of the glottis was more and more imminent; and suffocation being threatened, the operation of laryngotomy was resolved on, after consultation with a colleague who examined the state of the pharynx and larynx, and agreed with Dr. Ballot in opinion respecting the affection of this latter organ.

There was this peculiarity attending the operation, that, although the crico-thyroidean membrane was largely opened, the breathing was imperfectly restored; and it was only until the canula was introduced, through which the air passed freely, that the patient felt himself better. Unfortunately, it was difficult to prevent frequent displacements of the instrument; and notwithstanding the care taken by Dr. B., and his injunctions to be watchful, it was partially displaced during the night, and the patient expired from suffocation.

Twenty-four hours after death, a *post-mortem* examination was made. On opening the larynx in front, through its entire length, the mucous membrane and the cartilages were observed to be perfectly healthy, and there was no œdema of the *rimæ glottidis;* but the opening itself was almost completely closed by a fluctuating tumour, of the size of a hazelnut, which projected at the upper part. This tumour extended downwards to the cricoidean cartilage, and encroached on the cavity of the larynx: it was a continuation of a collection of white and well-concocted pus, in contact with the anterior face of the vertebral column and on the posterior coat of the œsophagus: thence the purulent fluid had diffused itself along the sides of the larynx, so that, on the left side, it was only separated by a few lines from the upper angle of the incision made in the middle of the crico-thyroidean space. Here is found an explanation of the projection met with by the finger, on introducing it into the pharynx, and which was attributed to the swelling of the borders of the glottis, and

also of the difficulty of the air passing through the opening made in the crico-thyroidean membrane, as well as of the continual tendency of the canula to slip out from the opening. Dr. Ballot was prevented by special engagements from completing in detail the *post-mortem* examination, but he ascertained the state of the lungs, and that the posterior part exhibited a hypostatic congestion, and was emphysematic over almost its entire surface.

The above case, as Dr. Ballot remarks, although not really œdematous laryngitis, serves to confirm the accuracy of the advice given by Bayle, to have recourse early to the procuring of artificial respiration in this disease. Even if we commit an error in diagnosis similar to that which Dr. B. made, the operation may still be most serviceable to the patient: only in place of having recourse to laryngotomy, as recommended by Bayle, a preference ought to be given to tracheotomy.

The editors of the *Archives* refer to analogous cases recorded by different writers. In some, the purulent collections were formed behind the deep cervical aponeuroses, and spreading more towards the thorax, offered but little impediment to deglutition and respiration. An instance of this kind is given by M. Meandre-Dassit. (Thèses de Montpelier, 1836, No. 78.) In other cases, the tumour being more superficial, or in the cellular tissue, between the vertebral column and the pharynx or œsophagus, may acquire so great a size as to induce suffocation. Many examples of this nature, under the name of *retro-pharyngeal* or *retro-œsophageal abscess*, have been furnished, such as that by M. Prion, recorded in the *Bulletins de l'Academie de Médécine*, 1830, and *Archiv.*, 1re Series, t. xxii., p. 413, Mars, 1830. In this case, puncture of the abscess gave issue to half a pint of pus of good quality; a second opening was followed by the discharge of the same quantity, of the colour of wine lees, and the patient was cured in a short time.

Dr. Ballot's case was analogous to those in which the chief seat of the abscess was between the vertebral column and the upper part of the œsophagus; but in consequence of sinuses formed in the sides of the latter, and of their prolongation towards the trachea and upper portion of the larynx, it bears some resemblance to the abscesses mentioned by Dessault (*Œuvres Chirurgicales*, par X. Bichat, 2e partie, 1798, p. 256). M. Vernois records a case similar in its nature and fatal termination to that which has been detailed, although the progress was slower (*Traité de la Phthisie Laryngée*, par Trousseau and Belloc, p. 73). Dr. Carmichael has likewise published a case of the same kind (*Edinb. Med. Trans.*, 1820). A woman was seized with pain in the throat, dysphagia and dyspnœa, threatening suffocation. Tracheotomy was performed, but it did not prevent a fatal issue. The abscess was opposite to the seventh cervical vertebra, compressed the œsophagus and upper part of the trachea, and opened by a narrow orifice near the summit of the larynx.

In the case reported by Dr. Ballot, the editors of the *Archives*, whose bibliographical notices I have just been repeating, think that if it had been possible to discover the real cause of the disease, and that tracheotomy had been practised in place of laryngotomy, the success would probably have been more durable and complete.

Dr. Peacock, at the first meeting of the London Pathological Society (1846), exhibited a preparation of a post-pharyngeal abscess, which occurred in the case of a female child, seven months old.

Our diagnosis is the more difficult in cases of dysphagia and aphonia, as these affections are sometimes the results of a temporarily depraved condition of the nervous system, and pass off without leaving any organic trace; although at the time they are not a little alarming.

I have thought it right to prepare you by these views and cases for appreciating better the details under the head of each separate disease of the throat; to which I now proceed to direct your attention.

Angina Simplex *vel* Diffusa, called also guttural angina. Some writers speak of this disease under the name of *Erythematic Pharyngitis;* but they attach to this latter a more extensive meaning than would be inferred from it anatomically. All agree in speaking of it as a simple inflammation of the mucous membrane of the throat, commonly affecting that part which covers the *isthmus faucium*, the *velum palati*, uvula and tonsils, and to a certain extent the pharynx; or the disease may be almost exclusively seated in the latter, and only a slight redness and irritation manifested in the other parts. Of itself, simple and diffused angina has little gravity. The *symptoms* are dryness of the throat, with frequent and painful attempts to swallow; the inflamed membrane is at first red, dry, shining, and tumid, except at the uvula, which is relaxed, and resting on the basis of the tongue stimulates to continual efforts to swallow and sometimes to vomit, and excites cough. After a while, the dryness of the membrane is succeeded by a secretion of stringy mucus The membrane covering the tonsils is coated with a greyish layer. If the inflammation extends into the nasal cavities along the Schneiderian membrane, the voice is affected and becomes nasal; there is, also, sneezing, and a sensation of heat and dryness of the part, followed, as in the case of the mucous membrane of the throat, by an increased secretion, which gives relief to these unpleasant feelings. As breathing through the nose is not easy at this time, the patient sleeps with his mouth open, and, in consequence, when he awakes, the throat is dry by the evaporation of the mucus, and the first efforts, at this time, to clear it by hawking and spitting are troublesome and rather painful. Cough with hoarseness may be associated symptoms, when the inflammation spreads to the glottis and larynx.

Causes.—This kind of angina is most common in spring or in an open and damp winter; and it is most frequently excited by sudden exposure to changes of temperature, and particularly from heat to cold, and more by partial application of the cause, as, when a person is much heated, and afterwards sits in a current of cool air from a window, or door, or crevice, than if he were blown on in all directions. Alcoholic drinks, very hot or very cold liquids, caustics, irritating vapours, are also exciting causes. Sometimes, it comes on without any obvious cause; but this is more especially the case when it prevails, as it does, at times, epidemically. The subjects most readily affected with this kind of angina are the youthful and those of a sanguineo-lymphatic temperament.

The symptoms have been already described. It may be well to know in addition, that simple angina is not so readily recognisable in young children, whose mucous membrane lining the throat is habitually of that degree of redness which would simulate the colour of inflammation. It is, therefore, with subjects of this class, the more necessary to inquire carefully whether there is fever, any difficulty in deglutition or regurgitation of food, and alteration of the voice; and also, whether the redness, in place of being general, is not in patches or circumscribed.

The *termination* of simple angina is, for the most part, in resolution; although sometimes suppuration takes place in the uvula or arch of the palate. When an abscess forms in the uvula it is known by the increased size, while abscess of the velum is easily distinguished by the difference in the size and shape of the two halves, the one being depressed and convex, the other raised and of a concave or semilunar form. The presence of matter will also often be indicated by the sensation communicated on the application of the finger, as if it pressed on a soft or fluctuating substance. Commonly the abscess is left to break of itself; but if it should be troublesome by its size and duration, so as to offer much impediment to deglutition, it ought to be opened by a bistoury with a sharp point and dull or covered edges.

Our *prognosis* in simple or diffused angina is favourable; but as the disease is sometimes symptomatic of scarlatina, our opinion must be expressed with more caution if the latter disease be prevalent at the time; for of its results we cannot commonly speak with confidence, varying as it does in its character from season to season. If the inflammation be restricted to the pharynx, remembering the possibility of suppuration taking place, and the risk of pressure on the glottis and its consequences, we should be careful not to speak lightly of the disease, nor to hazard a favourable prognosis without some qualifying considerations.

Another, but happily rare, variety of diffused angina, is *gravida;* the symptoms of which are more violent, but of an analogous character to those of the common variety. It runs its course with rapidity, sometimes destroying the patient in two days.

Treatment.—In the milder and common cases of angina, rest in a medium temperature, abstinence from exciting food, and restriction to the use of demulcents and mucilaginous drinks, with a laxative, such as a Seidlitz powder, and warm pediluvia, will generally suffice for a cure. But if there be fever, much soreness of the throat and pain in swallowing, and the habit full and plethoric or sanguine, a more decided impression must be made on the system by venesection, followed by purgatives; or if the constitution illy bears general bloodletting, leeches may be applied beneath the angles of the jaw, and afterwards fomentations or cataplasms to the throat; and, the disease persisting, the part is then to be rubbed with stimulating liniments. I think that I have seen marked beneficial effects, both in this and other forms of angina, from the leeches being applied on the back part of the neck, or below and behind the mastoid processes towards the occipital protuberances. Failing to procure leeches, cups to this last mentioned region and on the nucha will form a very good substitute. An abatement of the more urgent symptoms having been procured by these means, we may trust the treatment for the remaining period, until resolution is completely effected, to mild antimonials and salines; and for the relief of the local irritation, to the inhalation of the vapour of warm water and vinegar, which is less fatiguing to the throat, and answers the indications better than gargles.

In some years more than others we meet with diffused angina associated with a fever of a low kind,—hot skin, frequent and soft or readily compressible pulse, loaded and white tongue, gastric uneasiness, and some thirst and headache. The chief noticeable symptoms are those of the affection of the throat, although I think we must regard this as rather a part or an effect of the derangement of the system generally, than as the

main disease. Under these circumstances an emetic is often serviceable, both by its relieving the stomach and abating the irritation of the throat. Stimulating liniments externally, and gargles, such as of the chlorides and of capsicum, are also to be had recourse to. These applications are the more called for, if the bright redness of the mucous membrane at the onset of the disease be soon succeeded by grey or ash-coloured spots. The bowels will be acted on by some of the stimulating purgatives,—calomel and jalap, senna and salts, or the compound colocynth pills. Mild diaphoresis induced by the acetate of ammonia, Dover's powder and the warm bath, will in these cases be entitled to confidence, after suitable evacuations of the bowels. Akin to these remedies are counter-irritants to the lower extremities—sinapisms, stimulating pediluvia, &c. Seldom is bloodletting called for—most generally indeed it will be injurious in the variety of angina now under notice, or that which is commonly called typhoid.

Sometimes the diffuse or simple angina becomes chronic: its chief features are a puffiness, owing to some slight sub-mucous infiltration and a relaxation of tissue, alternating with dryness of the parts. In these cases, moderate action of the bowels induced by the blue mass, and rhubarb and magnesia, or infusion of senna, and gargles of solution of sulphate of copper, or of alum, or tannin, will suffice. If it still persist after this treatment, the iodide of potassium in solution, and touching the parts with the nitrate of silver, will be used with success.

Without any difference in the cause or in the nature of the disease, the force of the inflammation is spent at times on the soft palate, or the *velum palati*, or on the uvula, which parts become excessively enlarged. I have had a case in which the uvula was the size of one's little finger, and hard and rigid; but although the symptoms were severe, the disease was quite amenable to venesection and purgatives. The uvula was slow in returning to its natural size. Neither palatitis nor uvulitis requires a peculiar treatment, or one differing from that of simple inflammatory angina. The relaxation and elongation of the uvula after frequent returns of catarrhal inflammation may become so troublesome, by irritating the epiglottis and exciting cough, as to require strong astringents and stimulating gargles to be used, or even excision of a part of it with a scissors or other instrument. That which I prefer is the one introduced by Dr. J. K. Mitchell, of the Jefferson Medical College.

LECTURE IX.

DR. BELL.

Tonsillitis—Most common in young subjects—Symptoms, duration, treatment—Importance of bloodletting—Purging—Gargles.—Chronic Tonsillitis—Inconvenience and even danger in this disease—An indirect cause of spinal curvature—Treatment, local and general; by caustics and inunction and internal remedies—Diseased follicles of the tonsils—Morbid secretion,—how distinguished from tuberculous matter.—Morbid states of hearing and deafness caused by enlarged tonsils, and diseased mucous membrane of the throat.—Voice and speech modified from similar causes.—Change of voice after extirpation of tonsil.

Tonsillitis; or *Amygdalitis — Angina* or *Cynanche Tonsillaris*. — To this variety of angina the popular term of quinsy is more especially appli-

cable. Often the inflammation in angina affects at the same time the tonsils, commonly on the surface, but sometimes, also, in their substance, as manifested by some enlargement of these bodies. The remark just made respecting *palatitis* and inflamed uvula, is applicable to a moderate degree of tonsillitis. The case is one of simple angina, and is to be treated as such. But it frequently happens, also, that the tonsils are the chief seat of inflammation and of swelling, to such a degree as to render deglutition excessively painful, and for a while impossible; — the fluid being either rejected by the mouth, or returned by the way of the posterior nares through the nose.

Tonsillitis is one of the most common inflammations to be met with in northern and middle latitudes, in which the vicissitudes of weather, particularly in the spring and autumn, are so frequent. Sometimes it recurs periodically, and it is known, also, to prevail epidemically, and especially after the prevalence of measles or of scarlet fever. Its most usual cause is transition from heat to cold and moisture when the body has been previously heated. It often appears in women just about the time of the menstrual flux, if they have been suddenly chilled, or even after immersion of the hands in cold water. It may appear under the operation of the other causes, already enumerated, of simple angina. But it must be acknowledged that sometimes this disease shows itself without obvious cause.

Tonsillitis affects all ages and both sexes, but it has been said to more frequently attack children and women. This popular belief is not, however, sustained by the observations of MM. Louis and Rufz, who found that, of sixty-four cases of tonsillitis, thirty-nine were met with in men and twenty-five in women. It would also seem to be the result of inquiries, instituted with the view of determining the question, that the disease is more common among boys than girls in boarding schools. Do not these results coincide with the experience of most physicians, deduced from their own practice? The inflammation is seldom confined to one tonsil. Out of forty-eight cases, both tonsils were affected in forty-one.

Symptoms.— Tonsillitis may come on without precursory symptoms, or *prodromi*, and manifest itself by a sensation as if there was some extraneous substance in the throat, and by a difficulty of swallowing. More commonly it is preceded by the characteristic symptoms of all inflammations; such as chills, headache, thirst, loss of appetite, and febrile reaction. After a period of variable duration this state is succeeded by pain in the throat, and a continual but often ineffectual desire to swallow. Deglutition is painful and difficult; the efforts to hawk and spit are frequent, and alternate with a hoarse and guttural cough; the mucus expelled is clear and stringy; the voice is muffled or entirely extinct. If the swelling of the tonsils be great, so that they nearly meet, respiration is impeded, and on occasions, to an alarming degree.

On inspecting the throat, a duty never to be omitted in any disease, however slight, of this region, by depressing the lower jaw and keeping the tongue down with the handle of a spoon, or a paper folder or spatula, we see the enlarged and inflamed tonsils and their investing membrane of a deep red or scarlet colour and dry, or presenting whitish concretions or an exudation of lymph. The uvula and palate are commonly more or less affected at the same time, and the former, particularly, is inflamed and elongated, and thus largely contributes to the frequent efforts at swallow-

ing and desire to cough. Inflammation extending to the Eustachian tube, the hearing is affected, and sometimes even temporary deafness is the result; there is also complaint of ear-ache.

With the local are associated, also, general symptoms of more or less intensity, such as headache, flushed face, tumid and glistening eyes, thirst, nausea, morbid heat of the skin and other concomitants of the febrile state. The bowels are constipated; and the urine, of a high colour, is not discharged without some feeling of heat or scalding.

The duration of tonsillitis is from six to eight days: its termination is for the most part by resolution; but it is far from uncommon for it to be in suppuration. We infer that this latter has taken place when, without diminution of the swelling, the pain is considerably abated, and yet the difficulty of swallowing and of respiration is as great as ever. Inspection at this time shows that the abscess is pointing, or by its ready yielding to pressure manifests fluctuation. The bursting of the abscess is sometimes brought about by efforts of retching, or in coughing, and sometimes it takes place when the patient is asleep. The pus is generally of a fetid odour, and at times fetor is the announcement of the bursting of the abscess. It is not often that both tonsils suppurate. There are instances of the opening for the discharge of the matter being external in place of into the throat. This is an unusual termination of tonsillitis; but I have had a case of the kind in the person of a beautiful girl, whose neck was much scarred by the cicatrix of the sore, which was slow in healing, and assumed for some time a scrofulous appearance. I did not see the patient until the tumour had attained considerable size externally, and the fluctuation was so manifest as to leave no choice but to give issue to the pus by a lancet.

Treatment.— Without some strong contra-indication depending on the temperament and shattered constitution of the patient, or the exhaustion caused by prior disease, we may safely begin the treatment of tonsillitis by venesection. The earlier we have recourse to this remedy after the disease is fairly established, the greater the probability of its terminating in resolution. Sydenham used (in quinsy) to "bleed plentifully in the arm, and presently after in the veins under the tongue." I pass over his mention of the gargle and liniment which he directed, in order to repeat what he says again about bloodletting and purging. "I bleed again in the arm the next morning," he says, "unless the fever and difficulty of swallowing be in some measure abated, in which case I give a gentle purge, much experience having taught me that this is highly necessary and useful after bleeding." Nor does he even yet put aside the lancet; for he proceeds: "If this fever and other symptoms are like to be violent even after purging, which yet seldom happens, they are to be quieted by repeated bleeding, and applying a large and strong blister to the back." Here, in a few words, we find the rule of treatment of tonsillitis laid down which has been generally followed since the time of Sydenham by British and American practitioners. Sir John Pringle was content to adopt the practice of his distinguished countrymen in the treatment of quinsy, as it appeared in the British army in Flanders. He tells us—"Its tendency to bring on suffocation requires speedy and large bleedings, purging, and blistering." He added another, and still a popular remedy, viz., the application of a strip of flannel moistened with volatile liniment to the throat, renewed every four or five hours.

I have found that, notwithstanding recourse has been had to one or even two bleedings from the arm, the inflammation will sometimes persist, and with so much accompanying distress in deglutition and breathing as to require farther and active treatment. Under such circumstances, I do not hesitate to direct a considerable number of leeches, say from twenty to thirty on each side, to be applied under the angle of each jaw on a spot corresponding externally with the tonsils inside. In the course of a few hours after the application the greatest relief is obtained; either resolution takes place, or the suppurative process is accelerated, and the abscess breaks. Pringle was no stranger to the value of leeches in this disease, as he informs us that, at times, he has applied seven or eight leeches under the fauces; and he adds, in confirmation of the practice of Sydenham, "when the patient has been brought low by the loss of much blood from the arm, I have opened one of the veins under the tongue, and taken away two or three spoonfuls." Small as the quantity of blood here mentioned may seem, and few the leeches applied, a moderate acquaintance with the phenomena of disease shows us that a slight hemorrhagic effort, as in a very small discharge of blood from the nose or from hemorrhoidal tumours, will sometimes be followed by an abatement, if not removal, of symptoms indicating violent disease of the brain or some other vital organs. By leeches in the vicinity of a diseased part we may sometimes simulate a critical hemorrhage, and procure speedy and complete relief far beyond that which would follow on the loss of a much larger quantity of blood from the arm. This remark, as far as it is meant to recommend leeching to your favour, is applicable chiefly, in the disease before us, to tonsillitis with little accompanying fever, or to that stage in which this state of the system has been materially diminished by venesection. In well-marked tonsillitis, attacking the young and robust, and associated with fever and a full and active pulse, we cannot hesitate, at least in the beginning of the disease, to give a preference to the lancet over leeches. Sometimes, it will be desirable to apply the latter to a remote organ, to the vulva or anus, in cases of tonsillitis succeeding suppressed menses or hemorrhoids.

Purging ought to follow bloodletting, as pointed out by Sydenham. In the extent to which the former is to be carried, as well as in the selection of purgatives, we must be influenced by the temperament and functional habits of the patient. If he be of a lymphatic temperament and bowels habitually slow, we should purge freely with calomel and jalap, compound powder of jalap, infusion of senna and salts, &c. If, on the other hand, he be of a sanguine, or sanguineo-nervous temperament, and liable to, or suffering at the time from, chronic gastro-enteritis, we shall be content with a common laxative of rhubarb and magnesia, or of castor oil, and occasionally an enema to relieve the bowels. After bloodletting in this class of persons, febrile and inflammatory action is kept down by emetic tartar with neutral mixture, and Dover's powder. In all cases, after the abstraction of blood, warm, or even hot and stimulating pediluvia are to be employed. This measure is the more necessary after leeching the throat, in order to prevent an additional afflux of blood to this region; an inconvenience which sometimes occurs after the operation of leeching.

In cases in which local bloodletting is indicated, and leeches cannot be procured, the method practised by Pringle might be had recourse to with advantage: or, preferably still, cups applied to the back of the neck and

behind the ear. Blisters to the throat, as sometimes used by Pringle, and still a favourite remedy with some, I hardly ever employ.

The local treatment of tonsillitis is for the most part simple; the inhalation of the vapour of hot water, warm water held in the mouth for gargling is too painful, and fomentation or cataplasms to the throat externally, after v.s. and leeches, being the chief means in the acute state. When the disease persists in a sub-acute form, or when acute supervenes on chronic inflammation of the tonsils, and deglutition is impeded and respiration also interfered with, it becomes sometimes necessary to scarify freely these bodies. This is done with a sharp-pointed bistoury, covered with muslin up to within an inch of its point; or what is safer in less experienced hands, a bistoury concealed in a sheath or a canula, from which the former is protruded when it rests on the tonsils. The point or edge will be used according as we intend either to puncture the abscess, or scarify by incisions the inflamed tonsil. If the swelling be accompanied with infiltration, and the redness not intense, touching the tonsils with nitrate of silver will occasionally stimulate the parts to a more vigorous absorbent action, and cause a diminution, if not removal, of the enlargements. Should more active applications than simple vapour or warm water be thought desirable, as the disease advances and the inflammation abates, and when there is a secretion of tough viscid mucus, causing constant efforts by hawking and spitting for its expulsion, a solution of acetate of ammonia or acetous acid may be added to the water; to the hot for the purpose of inhaling the vapour from the mixture, and to the warm, but of less strength, to be held in the mouth as a *quasi* gargle. The free secretion and discharge of mucus may itself become a means of diminishing the inflammation; and hence some stimulating solutions applied to the mucous membrane of the throat will be of service, to aid the elimination of the viscid phlegm, and favour its farther secretion. But we cannot promise ourselves much or indeed any benefit from gargles, in the common fashion of using them by the patient himself. The solution, of whatever nature it may be, as of chloride of soda or of lime, or of acetate of ammonia, alcohol and water, or even astringents, such as of alum, or the compound infusion of roses acidulated with diluted sulphuric acid, to be usefully applied must be directed on the parts by the aid of a syringe. This method, which some may regard as a refinement of late date, is especially recommended by Pringle, who tells us, that he found "little benefit from common gargles," or rather, it should be said, from the common method of using gargles. His "composition is thirteen ounces of barley water (or sage tea), with two ounces of *mel rosarum*, and one ounce of vinegar." Sometimes he added a spoonful of mustard for a greater stimulus. In all cases, whether of simple quinsy, or of *angina maligna* hereafter to be described, Sir John directed five or six syringefuls to be injected, one after another, as far into the throat as the patient can bear, and the operation to be repeated three times a-day.

Chronic Tonsillitis—*Enlarged or Hypertrophied Tonsil.*—In saying that enlargement of the tonsils is characteristic of, or equivalent to, chronic disease of these organs, we indicate one of the most common symptoms; but with this may be associated morbid secretion or disease of the follicles, or morbid growth of the cellular tissue, or inflammatory engorgement kept up by vascular injection. Although hypertrophy of the tonsils is commonly the effect of frequent attacks of acute inflammation, it is some-

times congenital, or readily induced by slight catarrhal irritation, and maintained without apparently adequate cause. This is more especially true in reference to children and other young persons of a strumous or scrofulous habit.

But although originating from slight causes, and in its course productive of little pain or distress, this early enlargement of the tonsils cannot be regarded with indifference nor treated with neglect. It is a frequent sustaining cause of a troublesome cough in children of the habit already specified; and with some of them becomes indirectly the origin of spinal curvature posteriorly. The continued cough tends to draw up the shoulders, and throw the head forwards, and to cause a strain upon the walls of the thorax which extends to the spine. The little patient becomes round-shouldered, stoops, and after a while exhibits posterior curvature of the upper dorsal vertebræ. Hence, so soon as we discover enlarged tonsils in a delicate child of a lymphatic temperament, it becomes our duty to use all appropriate means, not only to remove this local affection, but to build up by wholesome food, pure air, and moderate exercise, the osseous system and locomotive apparatus generally, whilst attending also to the state of the digestive system as an important step towards the attainment of our object. Iodine has been recommended under such circumstances, and I have myself derived considerable advantage from prescribing it. Adapted as it is to correcting the predisposition to scrofula, of which we see so many evidences in the enlarged cervical glands, tumid lips, and other characteristics, we shall be the more encouraged to employ it for the removal of hypertrophied tonsils. This medicine is to be administered in the form of iodide of potassium, both by inunction of the neck at the part corresponding externally with the tonsils, and also in solution internally. Chalybeate preparations are indicated on such occasions; but more than all, must we lay stress on light yet nutritive food, much, but not fatiguing play and exercise in the open air, and the tepid salt bath, with frictions in the length of the spine. A similar treatment is applicable to older and adult subjects with chronically enlarged tonsils. To such persons we can give, in addition and with more freedom, narcotics; sometimes combined with purgatives, sometimes with tonics, and at times, but after mature deliberation, and with great caution, blue mass or calomel. The tonsils may also be cauterised with nitrate of silver, butter of antimony, &c. Extract of green walnut shells in the proportion of one drachm, dissolved in a pint of water, has been recommended, as a lotion externally and as a local application to the tonsils.

All proper medicinal agents, general and topical, having been applied, but without success, we invoke the aid of surgery for the removal of enlarged and hypertrophied tonsils. This is done either by the ligature or by excision. The latter is now the mode generally preferred. Various instruments have been devised or modified after the discoveries of others, for this purpose. That which I prefer myself for use, is the one devised or improved by Dr. Fahnestock. But as there is a very natural aversion to submitting to an operation for the removal of the tonsils, which really has quite a formidable appearance, although in general it is comparatively easy and safe, a physician is only justifiable in urging it on the patient whose health is materially injured, if not life endangered, by these morbidly enlarged glands. There are some persons in whom the tonsils are so hypertrophied as almost to meet together, and to render deglutition

difficult, and breathing through the mouth during sleep laborious. With them a slight additional enlargement, as may readily happen from catching cold, will bring on the worst features of acute tonsillitis, and extreme suffering if not imminent danger. After some abatement of the phlogosis, an operation is both proper and imperatively required. There are cases, on the other hand, and particularly in children whose tonsils remain enlarged after scarlatina or even acute tonsillitis, in which, finally, and without any treatment, these glands recover their normal size. A knowledge of this fact, which I have had occasion to note within the circle of my own practice, as well as to be apprised of analogous ones by other physicians, will very properly induce us to pause before we recommend excision unless the call be urgent; and this can hardly be considered such, unless both tonsils are much enlarged and tend to a close approximation. In many cases, the removal of one, even where both are diseased, will serve to render the patient comfortable.

It has been already intimated that, associated with hypertrophy of the tonsils, there may exist a morbid state of their follicles. This is manifested by depraved secretions, as of a fatty or sebaceous matter, or concretions consisting either of indurated mucus or of saline substances, such as phosphate of lime. The mucous concretions are susceptible of a change to such a degree as to become putrid and give rise to an insupportable fetor of the mouth, constituting one of the causes of "bad breath." The true concretions sometimes distend the tonsils, and dilate the opening of the lacunæ to such a degree that they may be seen with the naked eye, and even touched with a probe, if the mouth be opened and the tongue depressed. Persons who are thus troubled, sometimes spit them out, after they have fallen into the mouth or the pharynx. M. Blandin (*Dictionnaire de Médecine et de Chirurgie Pratique*) states, that he frequently extracted concretions of this nature from the tonsils of a young man affected in this way. The operation, when necessary, is readily performed by means of a long and delicate forceps. The annoyance may be so great, from the number and size of these morbid formations, as to make it desirable to remove their cause by the extirpation of the tonsils.

There are persons, otherwise in good health, from the follicles of whose tonsils and pharynx are secreted fatty masses, which have a general resemblance in colour and consistence to the granules of phthisical expectoration. "From these latter, however, they may be at once distinguished by heating the substance on paper: if the secretion be derived from the follicles of the pharynx or tonsils, it is sebaceous, and leaves a greasy stain on the paper, which is not the case with pulmonary or tubercular granules." (Tweedie—*Cyclop. Pract. Med.*)

Impeded hearing.—A morbid state of the mucous membrane of the throat and enlarged tonsils are not unfrequent causes of impeded hearing, and even deafness. Mr. Yearsley (*On Deafness from Morbid Conditions of the Mucous Membranes of the Stomach, Throat, and Ear, the Effect of Cold, Scarlatina, Measles, &c.*) points out the various circumstances under which these morbid causes are operative. One of the most striking causes of deafness, and fortunately one most easily remedied, is that in which, after catarrhal inflammation of the Eustachian tubes, the tubes and middle ear are gorged with thickened mucus, which often remains fixed the whole life-time, unless accidentally displaced by a sudden respiratory action, as sneezing, or during the effort of vomiting. The most rational way of

cleansing out the obstructed cavities would seem to be the injection of tepid water through an Eustachian catheter, as performed by Wathen. The same end is obtained, and much more agreeably to the patient, by the injection of compressed air, after the manner of Deleau. Mr. Yearsley adopts the latter, and finds that a few operations, or even one, will break down the agglutinated mucus, and admit air to the tympanum, so as to reproduce the hearing in a most remarkable manner.

Morbid growth of the tonsils is a more frequent cause of deafness, in Mr. Yearsley's experience, than has ever yet been supposed. Simple inspection is not enough to apprise us of the degree of projection of the tonsils, as they are often hidden by the anterior pillar of the palatine arches and the soft palate. Were the parts examined, as they ought to be, by the finger, the enlarged tonsil would not unfrequently be detected, growing upwards and encroaching on the mouths of the Eustachian passages.

The enlargement, on the other hand, which is productive of thickened speech, strikes the eye immediately on the mouth being opened, and extends downwards in a direction opposite to that which is calculated to produce deafness. If the upper margin of the morbid growth be visible, thick speech only is the result ; but if the growth ascend so as to interfere with the movements of the uvula and soft palate, then we may have, associated with the thickened speech, *nasal speech*. The enlarged tonsil which interferes with swallowing is that which projects into the pharynx, almost or entirely meeting its fellow ; and each is generally attached to its site by a narrow base.

In those cases, continues Mr. Yearsley, where the enlarged glands have an extended base, reaching from the vicinity of the Eustachian tubes to the bottom of the pharynx, we may look for defective speech, hearing, and breathing, associated altogether, more particularly if the uvula participates in the diseased condition of the parts.

With such a state of the throat, on getting up in the morning the sensations are most disagreeable. The vitiated mucus collected during the night, and adhering to the throat, produces nausea, or even vomiting for some time, till the tenacious phlegm can be expelled by hawking or coughing. A person thus affected does not often feel himself fitted for the duties of the day until an hour or two after rising.

Of the persons most liable to tumefied states of the throat, children of a strumous diathesis rank foremost. Enlargement of the tonsils may often be inferred to exist from the presence of glandular swellings of the neck.

Frequently, when the tonsillary growths are not so large as to interfere materially with the freedom of the Eustachian tubes, their diseased state excites a morbid secretion of mucus, both in the tube and tympanum, which of necessity obstructs the hearing. In this state, catheterism and the air-douche will effect a temporary restoration, but, as the cause of the disease remains untouched the deafness is speedily re-established.

In old age, when absorption is much more active than the deposition of new matter, enlarged tonsils invariably disappear. Mr. Yearsley has never seen a case where the enlargement remained after the fiftieth year ; but, unfortunately, the removal of the morbid growth, as age advances, does nothing towards a restoration of hearing, when this sense has been impaired by the long existence of the evil.

As it does not come within the scope of my design at this time to treat formally of deafness, I will just remark incidentally, that, where this disease

is connected with a morbid state of the mucous membrane of the throat, manifested by thickening and perverted secretions in the throat, nose, and ear, we may advantageously recommend a few leeches, one or twice a week, either behind the ears, or within the nostril to the side of the *septum narium*, followed by moxa, blister, or emetic-tartar applied behind the ear or along the inner margin of the lower jaw, and catheterism with the air-douche. If this diseased state of the auditory function and of the throat be complicated with depraved digestion and nutrition, excellent effects are obtained from the iodide of potassium (hydriodate of potassa) given in small doses, as of one or two grains largely diluted. No medicine, within the knowledge of Mr. Yearsley, has an equally beneficial effect on the ear with this. In such high praise I willingly concur, from having been repeatedly witness of the good effects of the iodide under such circumstances.

While on the subject of morbidly enlarged tonsils, and adverting to the means of relief occasionally had recourse to by their excision, it is proper that I should prepare you for finding sometimes a change of voice in your patient after this operation. The fact is one of some interest, and has been lately introduced to the notice of the College of Physicians, of this city, by Dr. Isaac Parrish (*Quarterly Summary of the Transactions, &c.*) The modifications of the voice is of a peculiar kind, — a hissing or whistling sound.

LECTURE X.

DR. BELL.

Angina Membranacea—Its varieties.—The simple and the malignant—Symptoms and treatment of Angina Simplex—Malignant Angina or Diphtheritis—Earlier notices of it—*Causes*—Connexion with scarlatina—Persons most liable—Epidemical and endemical, and sometimes sporadic—*Symptoms*—*Diagnosis*—Its anatomical characters. Membranous exudation—Is sometimes ulcerous and gangrenous—*Prognosis*—Age, temperament, particular exposure and lodging modify result.

In addition to the common inflammation of the mucous membrane of the throat, the chief varieties of which, as far as they may be supposed to depend on the part specially affected, I have described in my last lecture, there is inflammation of a particular, perhaps we might venture to say, specific kind. Its distinctive anatomical trait is membranous or pellicular exudation, and hence its designation of *angina membranacea* or *pseudo-membranosa*. The exudation is sometimes preceded and accompanied by mild constitutional disease; at other times, and more frequently, with symptoms of violence and danger which the result does not by any means belie. I shall speak of these two varieties under separate heads, and first of —

Angina *vel* Pharyngitis Membranacea Simplex. — *Simple or Benignant Membranous Angina.*—This has been called, also, *acute* membranous angina, but not, as I think, with propriety; for the next and formidable variety is also acute; eminently so, indeed, if we allow this word to designate a disease which sets in with great violence, at least with great perturbation of function, and often runs its course with rapidity to a fatal termination.

Simple membranous angina begins, like the diffused variety, with some uneasiness in deglutition, increased redness of the mucous membrane of the pharynx and palate, and swelling of the tonsils. A membranous exudation, at first in patches, and afterwards continuously diffused, soon appears, and the difficulty of swallowing is increased, but the pain not in a corresponding degree. The preceding and accompanying symptoms are those of common guttural or anginose inflammation: the pulse is moderately full, but without much frequency, and the skin is warm.

In some instances, as first more distinctly pointed out by M. Guersent, the exudation appears in the form of portions of lymph on the inner surface of the throat, of a grey or yellowish-white colour, of a soft consistence, easily detached and seized by any hard body, and easily renewed. They readily extend to the œsophagus, but never to the larynx. To this variety the term *angina pultacea* or *caseiformis* has been given by M. Guersent; but we do not see in the difference of the form of morbid secretion or of exudation any adequate cause for regarding this as a distinct variety, requiring a separate name.

The *treatment* of simple membranous angina is not different from that of the diffused angina without membrane. If the subject is robust and of sanguine temperament, we bleed at once without hesitation; or if there be no contra-indication, in weakness of habit or from special exposures, and the symptoms of febrile excitement are considerable, we still have recourse to the lancet. Purging, the cooling regimen, and mild antimonials with warm pediluvia, will generally complete the cure. Local depletion by leeches or cups, in the manner already indicated, may be sometimes necessary after venesection; sometimes also in place of this operation. Calomel in moderate doses, repeated at short intervals, exerts a good effect on this, as I shall have occasion to tell you, it does on the other variety, or malignant angina.

Angina Membranacea Maligna. — *Cynanche* vel *Angina Maligna.* — *Putrid*, or *Ulcerated*, or *Gangrenous Sore Throat.* — *Diphtherite* of Bretonneau, and *Angine Gangrenous*, or *Pharyngite Couenneuse* of some French writers — *Secondary croup* of Dr. Stokes.

In giving the above titles to the disease of which I am about to speak, I do not by any means affirm that they are synonymous, or that the symptoms are identical; but merely that there are traits enough in common to justify us, for the present, in speaking of them together. Although the term *diphtheritis* be of recent introduction into medical literature, the lesions which it is intended to designate are not by any means of such modern date. Few epidermic anginas, especially those called malignant, either separate, or, as was most commonly the case, combined with a cutaneous febrile eruption, have proved fatal, without numerous instances having occurred of the complication of a diseased state of the mucous membrane of the fauces and pharynx with that of the larynx and trachea.

In the novelty of nomenclature and refinements of morbid anatomy, there is some danger of our forgetting that the disease in question is one which has been fully described by several English as well as continental writers, anterior to the present century. There is no malady which, at times, has committed more ravages and been less amenable to medicine than malignant angina or putrid sore throat. The accounts of it are numerous, and have been detailed with accuracy in nearly all particulars, and the treatment laid down as ably in the generation preceding our own,

as we can lay claim to for our own day,—except in two important points. The first, as respects description,—in our having learned that the diseased mucous membrane is neither ulcerated nor gangrened in the cases generally met with, even when of a fatal kind: the second, as respects treatment, is in the greater stress laid on topical applications to the throat itself. Huxham, about the middle of the last century (1751), Quarin, of Vienna, and Fothergill in the last quarter of the century (1781 and 1784), have severally left us full histories of this disease. Nor has it been overlooked by the cautious and practical Heberden in his "Commentaries." I say nothing of Cullen, Pinel (*Nosographie Philosophique*, t. ii., p. 248–58), and other systematic writers up to the present time, a reference to whose productions is so easy.

It may be convenient to admit two principal varieties of this disease, viz., the primitive, and the secondary, restricting the latter to the anginose phenomena supervening in the exanthemata, typhoid fever, and sometimes in pneumonia.

Causes.—The close connexion between angina or cynanche maligna and scarlatina has been generally noticed. Heberden remarks on this point: "It seems highly probable that they are both names of the same distemper, with some little variety in a few of the symptoms; and this opinion is confirmed by our finding that they are both epidemical at the same time. Even in the same family, where a number of children have been ill either together, or immediately after one another, some have had the distinguishing symptoms of the scarlet fever, and others of the malignant sore throat." Cullen believes them to be specifically different; but he admits their affinity, and that there may be scarlatina anginosa resembling cynanche maligna *sine eruptione*, just as on the other hand we see scarlatina *sine cynanche*, or without an affection of the throat. That angina depends upon a specific contagion, identical with that of scarlet fever, is a common belief. By some this opinion has been modified, into affirming an analogous but not identical cause; and they tell us of the eruption which accompanies malignant angina, and which makes its appearance sometimes on the first, and at other times not until the fourth day of the disease of the throat. It generally shows itself first about the neck and breast, and sometimes with itching of the skin, more frequently without this symptom. The eruption, often attended with some degree of swelling, gradually spreads over the trunk and extremities. As in the case of scarlatina, it comes out in stains which, when nearly inspected, appear to be composed of small prominent papulæ, with the interstices of a natural colour. Their prominence may be distinguished by the eye, but more readily by the touch. It rarely happens, however, that the eruption is uniformly diffused in severe cases of malignant membranous angina; but it more generally comes out in blotches or small points scattered over the trunk and extremities, which are of a dark purplish or livid hue, and terminate in a very scanty desquamation.

The class of persons most liable to this disease, children and young persons, would seem to favour the idea of its analogy to scarlatina; but, on the other hand, we cannot overlook the fact of its being both endemical, as in parts of France (Touraine and Picardy), and epidemical, and of its prevailing chiefly in moist situations in the spring months,—as well as in hospitals and workhouses; and in these places it is confined to young children; the first cases occurring in the most crowded wards. Under

these last circumstances it spreads with frightful rapidity. When adults are attacked, it is often after being exposed to the operation of similar causes, viz., a close, impure atmosphere, the effects of which had been increased by accidental wetting of the body or feet, and mental anxiety and depression. Whether sporadic or epidemical, or obeying the influence of seasons, we shall generally find angina maligna to have resulted from causes which attack "the springs of life,"—prostrate the nervous system, deteriorate, if not poison, the fluids, and pervert all the secretions. Now, while we know that contagion is eminently calculated to produce these effects, we cannot deny that other agents will produce analogous ones, and of these the most potent is impure and noxious air.

Under epidemical and complicated influences, or if there be unity of cause it is as yet beyond our ken, angina maligna is not by any means confined to children or those of tender age. I have seen adults and old persons in large numbers sink under it, with more or less of the complications hereafter to be described. At such times angina will be found to be the precursor, sometimes the associate of epidemic catarrh or of measles, as well as of scarlatina proper. In some of the worst cases of small-pox which I have had under treatment, the fatal complication was evidently that of membranous angina, in which the exudation extended to the larynx and trachea, and in this way destroyed the patient, at a time when he was apparently out of danger from the eruptive fever.

As respects the immediate cause of the membranous exudation, M. Roche (*Dictionn. de Méd. et de Chir. Prat.*, Art. Angine) is inclined to believe that it is colourless fibrin thrown out by a hemorrhagic inflammation of the mucous membrane, the engorgement of which, with dark blood in patches, visible when the membrane is detached, is cited as farther evidence to the same point.

Symptoms.—Angina maligna, *diphtheritis* (from διφθέρα, *skin*), as it was first called by M. Bretonneau, of Tours, or the secondary croup of Dr. Stokes (*A Treatise on the Diagnosis and Diseases of the Chest*, 2d edit., Philadelphia, 1844, p. 190), commences with stiffness in the muscles of the neck, pain in the throat, difficulty of swallowing, and general febrile symptoms. Inspection of the fauces shows us that the tonsils are swelled and reddened, and have upon their surface patches of thick, opaque, whitish concretions, which at this period of the disease are easily detached from the mucous membrane. If allowed to go on unchecked, the inflammation and the membranous exudation spread by continuity to the adjacent parts, the soft palate and pharynx; the glands at the angle of the jaw begin to swell, and deglutition becomes more difficult, the face is puffed, and the eyes glistening and watery. If the concretion be detached from the mucous membrane beneath, the redness is greatly augmented on the denuded parts, and another and thicker concretion is soon formed, which adheres to the mucous surface with more tenacity than before. Frequently it happens, that, some days after the commencement of the attack, the disease becomes milder, is less disposed to spread, and even ceases altogether without reaching the air-passages, in which case there is very little reason to fear the consequences. In most instances, however, at the end of four or five days laryngeal symptoms begin to display themselves, such as a hoarse cough, alteration of the sound of the voice, and dyspnœa. From this time the patient has every appearance of suffering from severe croup, with the addition of an almost complete inability to swallow; the breathing becomes quite laborious and sonorous, the

voice is soon extinct, the countenance livid, and pulse small and intermitting; paroxysms of suffocation take place, till, in one more severe than the rest, death closes the scene. Delirium is frequently associated with these symptoms.

The appetite is often not lost during the whole course of the disease; and the digestive system is undisturbed by vomiting and diarrhœa. There is frequently but slight febrile excitement.

The pseudo-membranous concretion is detached and renewed several times. Sometimes the disease is terminated by resolution and the false membrane is absorbed. Commonly the last formed becomes softer and is expelled in fragments mixed with sanguinolent mucus. The extension of the inflammation to the nasal fossæ is followed by a discharge from the nostrils of a serous, yellowish, bloody, and very fetid matter. The anginose affection often engages exclusive notice, to an oversight of the broncho-pneumonia which is sometimes associated with it, even though the laryngeal symptoms be not very intense, and which destroys the patient when he is thought to be out of danger.

The duration of diphtheritis is various. In some instances it has caused death in the course of a few hours: generally when the angina is complicated with laryngitis the patient sinks under the disease from the third to the seventh day. If the inflammation is restricted to the pharynx and fauces, it may last for two or three weeks. It is rarely chronic, although M. Roche says that he has seen a case of eight months' duration in a female, and M. Girouard relates one of a membranous inflammation of the tongue and fauces which lasted two years. In both these cases the false membrane was from time to time detached, and replaced by a fresh one.

As regards the precise seat of the false membrane, we learn, from MM. Barthez and Rilliet, that out of twenty-one cases, it was found, in the tonsils alone, in six; in the tonsils and a small part of the palate, in four; in the tonsils, *velum palati*, and pharynx, in six; and in the tonsils and pharynx, in five cases.

Diagnosis. — The chief anatomical character of diphtheritis is the false membrane, or lymphatic exudation, which gives a name to the disease: it is either continuous or in patches, occupying sometimes the nasal fossæ, the *velum palati*, tonsils, pharynx, œsophagus, larynx, trachea, and even the divisions of the bronchia. M. Guersent has seen it extend into the frontal sinus, and M. Bretonneau once to the concha of the ear. Sometimes, the exudation is found in the stomach, with an interruption of continuity, however, on the œsophagus. Often, if not in a majority of cases, its range is more circumscribed, covering only the pharynx and tonsils; sometimes extending to the epiglottis and rima-glottidis, but without passing this latter. It is commonly adherent to the *velum palati*, the tonsils and the pharynx, whilst, on the other hand, it is, for the most part, loose, or hanging in shreds in the trachea. In thickness it varies from that of a leaf of paper to a line. Its colour is whitish, greyish, or slightly yellow, giving the appearance designated by the term lardaceous. Contrary to what was generally imagined, before a careful inspection of the parts in late years, the subjacent mucous membrane is neither ulcerated nor gangrenous. The numerous patches with which it is studded, and the central depressions on these, and the dark-red colour of the mucous membrane, together with the extreme fetor of the breath, gave rise at one time to a belief that these organic changes were the consequences of gangrene, and hence one of the names of the disease, *gangrenous sore*

throat. But there was error in all this—the pseudo-membrane is the result of either inflammation or of hemorrhage, which does not even end in gangrene.

Diphtheritis is occasionally sporadic, but much more frequently epidemic. It attacks individuals of all ages; displaying, however, a marked preference for children of either sex from the age of four or five to the time of puberty, and more particularly for boys. According to M. Bretonneau it is decidedly contagious, and especially when combined with, or secondary to, scarlatina, which is one of its most frequent complications. We must regard as diptheritis the epidemic croups which are on record. The epidemic which prevailed during the winter months in successive years, from 1813 to 1816, in so many parts of the United States, presented numerous examples of diphtheritis, in which the pneumonia and bronchitis were sometimes apparent, but in other cases they were completely masked by the anginose symptoms. Then, however, although but a student, I remember very distinctly that adults and those advanced in life were the greatest sufferers and most numerous victims; in some of the oldest persons the anginose symptoms were chiefly predominant. But, whilst admitting this complication, it is a refinement beyond the facts, it seems to me, to believe, that all epidemic anginas are real diphtherites in the sense laid down by M. Bretonneau, viz., the extension of the membranous formation to the air-passages. Still less tenable is the position, that croup and diphtheritis are one and the same disease.

In admitting that angina membranacea maligna, or diphtheritis, is the same disease with cynanche maligna or angina, and that scarlatina simplex and scarlatina anginosa, and scarlatina angina or maligna and the sore throat without efflorescence on the skin, are merely varieties of the same disease, as affirmed by Dr. Tweedie, we cannot see a common origin nor symptoms identical in all. That angina maligna appears at times without specific contagion, we can hardly doubt — certainly diphtheritis does; and, as regards the complication of membranous inflammation of the throat and air-passages, which is thought to distinguish diphtheritis, although this is met with also in many cases of malignant membranous angina, it is not in all. In *scarlatina anginosa*, we are told expressly by Rayer, that although the exudations of lymph often extend to the lateral parts of the pharynx and occasionally as far as the œsophagus, they are never observed after death in the larynx or trachea. This coincides with the experience of Dr. Tweedie, who has not seen in the dissections of scarlatina with anginose inflammation which he has made, an instance of membranous exudation extending to the larynx.

In diphtheritis, there is no ulceration nor gangrene; the removal of the membrane leaves the parts beneath entire, with some of the mucous lacunæ larger and more open than usual. In the malignant sore throat of scarlatina or secondary angina maligna, on the other hand, cases occur in which, on the clear testimony of Huxham, Fothergill, and Heberden, and more recently of Barthez and Rilliet (*op. cit.*, t. ii., p. 288), there are deep ulcerations, the consequence of gangrenous eschars, which cannot be confounded with any crust or coat formed and spread on the mucous membrane itself. Sometimes the uvula and portions of the palate are entirely destroyed in this way.

The tendency to affections of the larynx and trachea by the spreading of the inflammation from the pharynx was pointed out and known long

before MM. Bretonneau and Guersent indicated the fact. Dr. Johnstone had many years ago (1769) proposed, on this account, to divide the disease into the cynanche maligna tonsillaris and cynanche maligna trachealis. But that which the British writers, and I might add the name of Heberden to the list, regarded as occasional, the French pathologists insisted on being a constant and diagnostic feature of the disease. Opposed to this extreme view is the recent testimony of MM. Rilliet and Barthez (*Archiv. Gén. de Méd.*, Dec., 1841), who give a case of membranous angina with gangrenous *ulcerations* of the pharynx, in which the nasal passages were lined by a pseudo-membrane. They present also cases in which a *diffused gangrene* occupied the *velum palati*, the half-arches, the tonsils, and the pharynx. You may expect, therefore, after what I have laid before you, to meet with simple membranous pharyngitis or angina, alone, and also with malignant membranous angina or malignant angina; this latter sometimes restricted to the throat, sometimes extending into the larynx or trachea — generally without ulceration, rarely with ulceration and gangrene. In epidemic angina or diphtheritis, it is common to find the face and the glands of the neck swelled. In sporadic diphtheritis, as in the case recorded by M. Marié (*Archives Gén.*, Mars, 1841), there was no swelling of these parts, but the whole throat and air-passages, from the nasal cavities to the bronchia inclusive, were lined with a false membrane.

Prognosis. — Stress has been laid, by some, on the appearance and fluctuations of the eruption, as guiding us in our augury of the kind of termination of malignant angina; but in this there are no certain rules. Thus, while it is said that a florid colour, uniform diffusion and large desquamation, give us a good prognosis, we learn, at the same time, that the eruption may be full and high-coloured, and yet death ensue, as in cases related by Huxham, in which the patients were covered with "the most fiery rash" he ever saw, and yet they died in this disease "of a phrensy." So, also, Heberden observes, that where this redness was the most florid, the patients have not seemed at all the better, nor have they been apparently hurt where it has faded and disappeared. Increase of anxiety, coma, difficult respiration, with impaired tone of voice or aphonia, and an aversion to take any food or drink, are unfavourable signs. Hemorrhage from the intestines, nose, mouth, or ears, is of bad augury; so, also, are exhausting diarrhœa, and the excretion from the mouth of mucus mixed with blood and sanies.

A general moisture of the skin about the time of desquamation; a copious sediment in the urine; the pulse preserving its fulness and becoming slower; the breathing clearer and less hurried; the fauces and pharynx losing the lividness of colour, which they may have previously acquired; increased ease of deglutition; saliva rather than bloody mucus flowing from the mouth; abatement of the swelling of the parotid and cervical glands, are encouraging signs, and may allow us to utter a favourable prognosis. We are not, it will be readily understood, to expect to see all or a majority of these signs at once. The presence of any two or three will give us hope.

"The younger the patients are the greater is their danger," is a remark of Heberden, the correctness of which is generally proved by the issue of the case. But there are many exceptions to the opinion advanced with some confidence by Fothergill and others, that not only are adults less

subject to the disease, but it seldom proves fatal to them. In the winter epidemic of 1814–15, in Virginia, to which I have already referred, the proportion of adults attacked was greater than that of children; and the deaths among the former were unhappily very numerous. A lymphatic temperament and previously sickly habit are unfavourable. We shall have less hope of a happy result if the patient is in a close and crowded room, and have suffered from penury and destitution, before the coming on of the disease. The prognosis will be more encouraging towards the decline than at the beginning of epidemic angina. Great differences are met with in different epidemics, in regard to the rapidity and violence of the attack.

Termination.—The mortality in this disease, in all its visitations and under all modes of treatment, is excessive. To the affection of the throat and air-passages is superadded a malignant form of fever, either of which is sufficient to destroy life. The disease generally reaches its height at the sixth or seventh day. In fatal cases it has terminated in two or three days. In favourable ones it will remain for fourteen days, although the imminent danger is over in half this time.

LECTURE XI.

DR. BELL.

ANGINA MEMBRANACEA MALIGNA—(*Continued*).—*Treatment*—Bloodletting sometimes admissible—Emetics—Revulsives—Stimulants—Calomel—Blisters, under what indications required—Topical treatment—Stress laid on it in malignant angina—Chief articles employed.—Summary of treatment in some of the worst cases marked by suddenness of invasion and prostration of the powers of life.—ANGINA *vel* PHARYNGITIS GANGRENOSA—Two varieties—The *circumscribed* and the *diffused*.—Circumscribed gangrenous angina described—Its defined limits—Diffused variety.—Its anatomical characters, *seat, symptoms, diagnosis, prognosis, causes, and treatment.*

TREATMENT.—If we carry in our minds the antecedent and accompanying circumstances by which diphtheritis is modified, we shall begin the treatment with less hesitancy, certainly with less chance of serious error than they have done who, under the influence of an exclusive pathology, insisted either on its being a disease of pure asthenia, with a rapid tendency to gangrene, or on its being a phlegmasia. In persons of a feeble frame and exhausted constitution, who have been badly fed and lodged, the prostration is great and the reaction slight. On the other hand, the strong plethoric, and sanguine, exhibit, with great severity of the local symptoms, a frequent, full, and resisting pulse, and a general and almost acrid heat of the skin. In some, the angina is associated mainly with symptoms of gastric disorder: in others, the membranous exudation extends, in the manner already described, into the air-passages, and the chief complications will be laryngitis, or broncho-pneumonia. Now it is very obvious that the same treatment cannot be applicable to all these varieties, and that, while venesection may be imperatively required in cases of the latter it would be eminently prejudicial, if not fatal, in the former; and so, also, local and general stimulants, which might be clearly indicated in one kind, would be worse than useless in the other. In the same epidemic to which

I have already referred, and in which, from the necessity of the time I was allowed to act a part as well as to entertain an opinion, I well remember the opposite views and practice adopted by physicians. Some, who saw the anginose character predominate, and the accompanying cold skin, feeble pulse, and general prostration, would not admit the safety of any other remedies than of emetics, stimulating gargles, blisters to the neck, and diffusible stimulants. Others, witnesses to distinct pneumonia and less marked angina, shaped their practice accordingly, and bled their patients. Some, again, who met with a predominance of gastric disorder and hepatic derangement, relied on calomel and purgatives.

In premising, that bloodletting is less called for in malignant, plastic, or membranous angina, than in other inflammations of the pharynx, tonsils, and larynx, we ought not, however, to exclude it entirely from our list of remedies. The plethoric and the sanguine, or the cases in which bronchitis or pneumonia is complicated with the angina, will be benefitted often by venesection. M. Roche, among others, gives cases of the benefit of this practice, and I have tried it myself with advantage. In more doubtful circumstances, but in which the pulse has still some fulness and resistance, and in which there is evidence of great determination to the throat, marked by redness and swelling, leeches may be applied under the angle of the jaw and on each side, and in front of the neck, or cups to the nucha and under the mastoid processes. Even the cautious and skeptical Heberden says on this point; "Yet, in some few persons, whose strength seemed able to bear it, and whose heat and headache, and manner of living, seemed to require it, I have known blood taken away once, and even twice, in the beginning of the distemper, with safety, and perhaps with advantage." Here, as in acute laryngitis, we should have a definite object in view in detracting blood, viz., to produce a decided impression on the diseased membrane; failing to do this, we only aggravate the disease by encouraging a morbid reaction. Hence, if the first leeching or cupping do not produce the effect proposed, the operation should be repeated after a brief period.

In the cases, on the other hand, in which the patient has but little vital energy, owing to his having been badly nourished or exhausted by prior disease, as phthisis, for example, or in which there is little or no augmentation of action of the pulse, but on the contrary a cold skin, yet slight pain of the throat, and the voice nearly extinct, bloodletting, either general or local, is clearly contra-indicated, and could hardly fail to be prejudicial. In this state of disease, revulsives of various kinds are serviceable; among which emetics are entitled to a trial first, provided the stomach be not inflamed. A combination of ipecacuanha and of the infusion of polygala senega would be preferred here to the tartar emetic, the use of which is applicable to the cases distinguished by vascular excitement and calling for previous detraction of blood. In croupal complications, the emetic practice is still more requisite. Carrying out the revulsive treatment, we prescribe calomel, conjoined with jalap or scammony or colocynth, in such doses as shall purge freely. Medicines of this order are entitled to a preference over salines, which exhaust by copious watery evacuations without exciting to active secretion the intestinal mucous follicles and the liver. With a view of continuing consistently the course thus begun, we should endeavour to stimulate the lower extremities by warm pediluvia, sinapisms and liniments, and to excite the cutaneous function generally by

the warm bath, and by the warm infusion of polygala or eupatorium. Calomel has been extolled as admirably adapted to bring about a removal of the membranous exudation in secondary, as it is believed by so many to do in primary croup. Its administration with this view will not be incompatible with the employment of the remedies just named. It should follow purging, and be conjoined with the external revulsives, already named, as well as with those to be next specified: the dose may be a grain every hour or two, with a very minute fraction of opium if the bowels are loose, or of ipecacuanha. Among the revulsives, vesication has always been a favourite. Like certain other remedies, however, it has retained its vogue from very opposite causes. Some prescribe a blister in angina, because it has been prescribed by others; some, because they have seen positive good result from its application; and others, because they do not know what else to advise. It would argue prejudice, on my part, were I to tell merely of the frequent suffering without any corresponding adequate relief which I have seen to be caused by blisters applied in the common fashion on the anterior part of the neck, under the chin: and yet my earlier reminiscences of this kind are much more distinct than those of any decided good from the practice. On the nucha, or over the trachea just above the sternum, is a preferable spot for the application of a blister; and if counter-irritation be still thought advisable near the affected part, an ammoniacal or turpentine liniment may be rubbed on the neck, from the angle of the jaw downwards and forwards over the larynx.

But, whilst a trial is made of some, or all, of these remedies in succession, we ought to be aware of the importance, from the first, of making applications to the diseased mucous membrane of the fauces, tonsils, and pharynx,—not because, as M. Bretonneau would persuade us, this is the main and almost sole plan of treatment, but because it is of no little moment for preventing the farther spread of the plastic exudation, and thus far saving the larynx, and air-passages generally, from dangerous participation in the disease. The chief topical remedies are hydrochloric acid, nitrate of silver, and alum. Of these, the two latter are to be preferred. The safest and easiest of application is the alum, blown on the part by means of a tube, with gauze applied on the end next the throat, or reduced to a paste by mixture with water and honey, and applied to the diseased surface by means of a small brush, or the handle of a tea-spoon. It, as well as sulphate of copper, may be inhaled through a tube, one end of which is carried back to the fauces or pharynx. The nitrate of silver may be used in the same way, or that which will be found to be more expedient and complete, is to fasten a piece of the caustic, properly secured to a quill, and run it rapidly over the mucous surface; the mouth being kept open by means of a spoon pressed on the tongue. Gargles have always been largely used in diphtheritis, as well as the simpler forms of angina. The popular one, composed of vinegar, salt, and capsicum, is often well adapted to the disease in question. The chlorides of soda and of lime, of late years, have been a good deal used, and with results which warrant a ready repetition of the practice. Creosote has, also, its eulogists at the present time. As a preventive measure of the farther spread of diseases of the throat, we can only anticipate benefit from topical means in the membranous variety. In the ulcerous and gangrenous they are of less efficacy: when used they should be introduced by means of a

syringe. In secondary maligna or membranaceous angina, as in scarlatina, the exudation is sometimes in large lumps, slightly adherent to the tonsils and pharynx, which interfere greatly with deglutition and respiration. In such cases the physician ought, however, to use a rod, with a piece of sponge or fold of linen tied to one end, and, while washing the throat with a gargle, to detach the exuded matter. The usual attendants in the sick room will be too timid to attempt this little manipulation. The same end may be accomplished by the introduction of the index finger, the end of which is suitably covered, and the application of the powder or gargle to the tonsils.

Before I conclude this outline of the treatment of angina maligna, I must impress on your minds the necessity of making your practice quadrate with the pathological view which supposes in some cases a deterioration of the system, a poisoning, as it were, by which the blood and fluids are depraved, and the nervous system depressed and almost prostrated. The affection of the throat is but secondary to, and merely symptomatic of, the violence of the general disease, just as black vomit is of the worst forms of yellow fever, and the blue stage of fatal cholera. The sufferers have been exposed to depressing passions, loss of sleep, a close and almost pestiferous atmosphere, as in crowded court-rooms, jails, and certain places misnamed asylums and hospitals:—their food has been scanty, or of bad quality; and, in fine, the functions of digestion, respiration, circulation and innervation so interfered with, that neither good chyle is formed, nor is the blood adequately changed in the lungs: this fluid now circulates in a more than usually carbonated condition, deteriorating and almost poisoning the organs. When the patient complains of his throat, and his friends are solicitous about him, and the physician is sent for, the mischief has been done. What are the resources of art on this occasion? The routine of practice will little avail against the weakened heart, the feeble and frequent pulse, the illy elaborated blood, the poisoned nervous system and brain, with depraved and impeded sensation and intellect, muttering delirium, &c. We may give an emetic to empty the stomach, and really, under the olden faith of evacuating it of sordes, at least of matter, which only interferes with vitality, and can no longer be converted into a homogeneous and nutritive chymous mass, and chylous fluid. But how alter the diseased blood, unless by inducing the patient to inhale the freshest and purest air,—and perhaps by a free use of saline drinks. The skin may be changed from its now morbid state of dryness, burning and acrid heat, or, in regions, unnatural coldness, by the prolonged use of the warm bath, and preferably, if it can be got ready, the vapour, followed by frictions or sponging with dilute hydrochloric, or nitric acid, or of solution of one of the chlorides.

The nervous system already depressed, or rather stunned, requires no sedatives, and has not strength enough to bear much stimulus. It may be appealed to by remedies applied to the skin, such as those just mentioned, and by stimulating pediluvia, frictions of stimulating liniment on the spine; to the stomach, by substances readily soluble and absorbed, and possessed of some stimulant property, without their causing much excitement, such as by acetate of ammonia in solution, carbonate of ammonia, turpentine with spirits of nitre, and small doses of the fluid chloride of soda. In the intervals between these you will give minute portions of calomel, and if the mind be very disquieted and restless, or there be muttering deli-

rium, small doses of Dover's powder; its effect on the skin, to be aided by light and pleasant drinks—of such a temperature as the patient himself may crave. If penury and want, deficiency of food, or impeded nutrition from other diseases, have preceded and contributed to bring on this form of anginose fever or plague, and the skin be cold, and capillary excitement less than natural, wine whey will come in most timely in conjunction with carbonate of ammonia. We must, however, carefully watch its effects, so that they shall not transcend the line of proper excitement, for if they do, and hence the disadvantage of diffusible stimulants of the alcoholic class, the nervous system is enfeebled, and digestion and hematosis are more or less impeded, whilst the vitality of the membranes, dependent so much on that of the capillaries, suffers in an especial manner. In those cases where there is an urgent call for increase of tone, the sulphate of quinia should be given early, in small and repeated doses.

If the skin be of an acrid heat, and the pulse excessively frequent, but without fulness or force, we may abate the morbid excitement of the heart by small and repeated doses of digitalis, and indirectly by sponging the surface with tepid, or even cool water, to which a little mineral acid or common salt has been previously added. By this means we determine to the kidneys, and procure discharges, more or less meriting the name of critical. The mineral acids diluted with sweetened water or mucilage have been given with advantage. The hydrochloric acid, in a more especial manner, was freely prescribed on the strength of the recommendation of Sir William Fordyce, who used to promise his patients a cure if he could have time to pickle their juices with the spirit of sea-salt. The bowels should be acted on by enemata, at first laxative, afterwards saline, and, if the strength sinks, terebinthinate.

During all this time we are not to forget the throat; but whilst making suitable applications to it, we must ever remember that this is but a secondary part of the treatment. Of the various substances to be used, as gargles, the chlorides will be entitled to the preference in the variety of disease now under notice.

Angina *vel* Pharyngitis Gangræosa.—I have already adverted to the existence of gangrenous sore throat in angina, while admitting that it is a rare disease. MM. Barthez and Rilliet, quoted at the time, have, in their late valuable and extended work, to which reference has been repeatedly made by me in these lectures, given a description of the morbid anatomy, symptoms, progress, semeiology and treatment of this division of angina, as it appears in children. To them I shall be chiefly indebted for the following brief summary:—

Gangrene of the pharynx, for so the disease is specifically designated by them, presents itself under two forms, viz., *circumscribed* and *diffused*. The first, or the circumscribed pharyngeal gangrene, is seated at the lower portion of the pharynx, where it unites with the œsophagus; and at other times at its anterior surface on a line with the angle formed by the thyroid cartilage. Its figure and size vary; being sometimes oval, sometimes round; as does its size, which is seen to be as minute as small peas, and again as large as a twenty-five cent piece. The gangrenous patches are depressed, are of a deep grey or brown, or even quite black, and exhale an odour characteristic of gangrene; their borders are jagged and of a yellowish hue. On removing the gangrenous portion, we find that the

mucous and sub-mucous tissues have disappeared; and sometimes even the muscular coat is denuded. This latter exhibits its usual colour, and has undergone no change.

The contiguous mucous membrane is noways altered; nor is it covered by any pseudo-membranous exudation. The gangrenous eschars, although restricted at the beginning, may extend to the epiglottis, and even penetrate into the larynx; continuing, however, to exhibit the same regularly rounded and defined appearances as in the pharynx.

When the eschar is detached, the ulcerated surface becomes covered with false membranes, which, it might be alleged, was of anterior formation to the gangrene; but, as MM. Barthez and Rilliet have noticed, these appearances of gangrenous spots and false membrane only occur consecutively in subjects who have perished from eruptive fevers (measles or scarlatina). They have, both of them, the same form and extent and the same seat.

Sometimes the gangrene is confined to the tonsils, which then assume a greyish or brown colour, are soft and almost liquefy under the slightest pressure; or they leave between the fingers a pulpy, amorphous and fetid detritus.

Diffused gangrenous angina does not present those regular eschars met with in the circumscribed kind. The gangrene seizes on the entire extent of the *velum palati* and its arches, the tonsils and the pharynx: and the limits between the sound and gangrenous tissues are not well defined. It is sometimes superficial, sometimes deep-seated, and generally of considerable extent, and tending to enlarge itself; so that it reaches, occasionally, the parietes of the mouth, the tongue and gums; and, in another direction, it has been known to attack the mucous membrane of the epiglottis, the superior part of the larynx, and even to penetrate into the cavity of this latter. The diffused is more frequently met with than the circumscribed gangrene.

In all the cases analysed by Barthez and Rilliet, gangrene of the throat was consecutive on some other morbid condition, and in many instances was coincident with gangrene of other organs; as when gangrenous angina occurred at the same time as gangrene of the lungs, or of the vulva, or even of the mouth; healthy surface intervening between this latter and the disease of the pharynx. Tubercles were frequently found in subjects affected with gangrenous angina.

The *symptomatology* of this disease is by no means easy, especially in that variety in which the lower part of the pharynx, that out of sight, is attacked. When the palate and tonsils are the seat of lesion we can detect the dark violet line running into a decided black, and a lacerated and jagged appearance of the soft parts. The breath at the same time exhales a fetid odour. This latter symptom is one of great value, since it is that which sometimes is the first to excite suspicions as to the real nature of the disease; and is, at times, the only appreciable one; but it is not pathognomonic, as the breath is fetid, also, in gangrene of the lungs, and even in some cases of membranaceous angina. Still, it is desirable that the physician should approach his face to the mouth of the young patient, and smell the breath in cases in which the diagnosis is otherwise doubtful.

Pain may be supposed to be a common enough symptom of the inflammation preceding gangrene; but it is not sufficient to indicate the imminence or presence of this latter. General symptoms belong more to the

primary disease than to the gangrene itself. Sometimes a great alteration of the features has been noticed, with prostration, and a small and weak pulse.

Pharyngeal or anginose gangrene makes rapid progress, and often before we have reached a satisfactory diagnosis, the disease has destroyed a considerable extent of parts. Its duration is variable; being from two to six days.

In doubtful cases, a *diagnosis* may be reached by applying caustic to the suspected spot. If it be simply the seat of membranaceous angina, the exudation will come away and leave the mucous surface exposed and entire.

The *prognosis* of this disease is discouraging; not only on account of the organic changes themselves, but, also, of the alarming diseases or state of the functions, anterior to the appearance of the gangrene. More hopes of cure may be entertained in circumscribed than in diffused gangrene.

In my preceding remarks, when speaking of gangrenous angina as a secondary disease, I have, in a measure, anticipated a specification of *causes*. These are, eruptive fevers, and particularly measles and scarlatina, alone or complicated with small-pox. It may also occur in the latter stage of other acute febrile diseases, such as secondary pneumonia, peritonitis, diphtheritis, and typhoid fever; and it has been seen to supervene on hooping-cough and tuberculisation. The angina, which is one of the symptoms in eruptive fevers, might seem to be an adequate cause of the gangrene in these cases; but when we find that other parts, besides the throat, are liable to be struck with gangrene in the exanthemata, we must seek for a general cause, and this will be found in the extreme debility, and the deterioration of the blood at this time.

The *treatment* of gangrenous angina is similar to that of the membranaceous kind with typhoid fever. Emetics are recommended to detach the gangrenous eschars and to expel from the stomach putrid matter that may have been swallowed, and might otherwise be absorbed into the circulation. The mortified parts are to be cauterised with hydrochloric acid, or preferably, to be subjected to repeated applications of the chloride of lime, in the manner already described. Infusion and tincture of bark are to be used as gargles or injected into the throat; and the strength is to be kept up by these preparations taken inwardly. It will be desirable also, indeed indispensable for a cure, that the patient be removed from the deleterious influences of bad air or deficient ventilation, and of scanty or unwholesome food, to which he may have been previously subjected.

LECTURE XII.

DR. STOKES.

PATHOLOGY AND TREATMENT OF DISEASES OF THE DIGESTIVE SYSTEM—Different forms of gastritis—Pathology of this disease imperfectly understood by the ancients—Gastritis and enteritis not always found in connexion—Phenomena characterising acute gastritis—Symptoms and sympathetic relations—Diagnosis—Gastritis simulating other diseases.

GASTRITIS. — The consideration of the pathology and treatment of diseases of the digestive system will occupy our attention to-day. I shall

commence with the study of gastritis, and to this subject I would entreat your undivided attention; not that I have anything very new to communicate, but because I believe that many of the statements, which are connected with this disease, will be found to rest on the basis of fact and truth, many of them will be found useful in your future practice, and this subject, I fear, is not sufficiently considered in schools of medicine of this and the sister countries.

The older authors describe gastritis as occurring under two different forms, one of which they termed *phlegmonous*, and the other *erysipelatous*. The advanced students know the meaning of these terms, and that they are admitted as significant of different modifications of the inflammatory process, but to those who are not advanced I shall state that it is very difficult to give an accurate idea of these terms, so far as they are applicable to cases of internal disease. But we may attempt a general definition by saying, that phlegmonous inflammation occurs in a good constitution, and under favourable circumstances, that it is an inflammation of a bold and distinct character, requiring and admitting of depletion, and, like that on the external parts, terminating in healthy suppuration, or adhesion. Erysipelatous inflammation is (described to be) a disease of a different kind, occurring in bad and debilitated constitutions, and under such circumstances that the same treatment, employed in the phlegmonous form, is more or less inadmissible; and when stimulants are necessary, if not in the commencement, at least at a very early period of the disease. It is quite impossible to found any system of pathology on this division into phlegmonous and erysipelatous; we are, however, sometimes obliged to make use of it for want of a better. The terms themselves are highly calculated to mislead. *Healthy inflammation*, which is all but a contradiction in terms, may occur in a debilitated constitution, and *erysipelatous* in a strong one. The latter of these, too, is particularly erroneous, as we now know that erysipelas may occur under opposite circumstances. In the one case, requiring the lancet and leeches, and purgation; in the other, demanding a stimulant and tonic treatment. In speaking of gastritis I do not intend to adopt this division, because it would be likely to embarrass you, and, in truth, it is unnecessary, as there is no difference in the (principles of) treatment, whatever may be the form of this inflammation. The proper way to consider gastritis is to look upon it as a disease, presenting, on the one hand, symptoms of extreme violence and urgent danger; on the other, feebly shadowed out by the phenomena of ordinary and slight indigestion. Between these there are many shades and numberless gradations. The phlegmonous gastritis of the old authors implied a violent and extensive inflammation, in which all the coats of the stomach were implicated; but, in treating of the subject of gastritis in these lectures, I shall only allude to inflammation of the mucous membrane and glandular apparatus of the stomach. The other tissues are sometimes engaged, but the mucous membrane, constituting the most important of these tissues, and forming an exquisitely delicate vasculo-nervous expansion, is, in the great majority of cases, the principal seat of inflammation, and to this I would direct your particular attention.

The true pathology of gastritis was but very imperfectly understood by the ancients. They knew enteritis and gastritis as intense inflammations of the coats of the stomach and intestinal canal, accompanied by violent pain and fever, but they had no conception of their various shades and

modifications. For a knowledge of the true nature of gastritis, and of its numerous varieties, we are indebted to modern pathology, and it is the boast of pathological anatomy to say, that in this instance its labours have shed a broad and vivid light on a class of diseases previously involved in deep obscurity.*

---

* [Dr. Stokes has only mentioned, incidentally, the anatomical lesions in gastritis. Valuable observations, on this head, and especially as applicable to the diseases of the digestive system in children, are given in the late work of MM. Barthez and Rilliet. The chief characters of inflammation are pointed out by these gentlemen as follows :—

1. *Redness.*—One of the essential characters of inflammation, but not of itself sufficient to establish this pathological state, is a more vivid hue of the mucous membrane. Whatever may be its other changes, it is not inflamed unless it be reddened. But redness alone will not suffice to insure correct diagnosis; for it then merely indicates (with some rare exceptions) a sanguineous congestion, or a hyperemia.

Inflammatory redness is exhibited in three forms: 1, in venous arborizations, with or without stellated ecchymoses: 2, in bands or vascular or pointed lines: 3, uniformly intense redness. These two last are always inflammatory, and they are generally accompanied by softening, and often by thickening of the mucous membrane.

2. Next, and almost of equal importance to redness, is *inflammatory softening*, without the existence of which it would be difficult to prove the reality of inflammation. Sometimes it is carried to such a degree that the slightest scraping of the mucous membrane reduces this latter to an amorphous pulp, leaving the sub-mucous tissue exposed; and hence the rubbing of the scalpel or enterotome, when laying open the digestive cavity, may sometimes carry off patches so as to induce a belief in the minds of those inexperienced in *post-mortem* examinations, that there are erosions or ulcerations.

It is only, however, in certain cases of great gravity that softening is manifested in such a high degree. More generally, the mucous membrane preserves some degree of consistence, but still it yields to a moderate scraping, and is easily removed, but not in any strips.

3. *Thickening.*—When thickening is joined to redness and softening, the two latter being themselves characteristic symptoms, there can be no doubt of the existence of inflammation. For the most part the thickened patches project somewhat from the surrounding healthy tissue. It is only in some cases of chronic disease that the tissues subjacent to the mucous are altered by thickening. We must not confound with this morbid state the contraction in different parts of the digestive tube.

These three diagnostic characters united constitute the most simple and ordinary kind of inflammation of the gastro-intestinal canal; such as we see in gastritis, enteritis, and more frequently still in erythematic colitis.

4. A product of inflammation of the digestive mucous is *false membrane*, which occurs more frequently than might be supposed, liable as it is to be carried away by the stream of ingested liquids and the abundant mucous or purulent secretion, as the case may be, when it is not very adherent or extensive. It may be, in cases of simple enteritis, that there had been false membrane, although this was not revealed by *post-mortem* inspection; just as, in some cases of croup, we find no pseudo-membranous exudation after death, although it was seen to be discharged during life.

It has been stated, that it is impossible to separate the symptoms of gastritis from those which characterise enteritis, and the reason given for this

---

5. *Ulceration.*—This is by no means an uncommon termination of inflammation of the gastro-intestinal surface. We meet with it in typhoid fever, and in tuberculisation of the intestine. The variety now to be considered is that of the mucous membrane itself or of its intestinal follicles. The former are sinuous in their direction, and resemble the track made by a worm on linen. Their borders are soft, sometimes redder than the rest of the mucous membrane; their bottom, of a whitish-grey, is formed by the sub-mucous tissue, which itself is only thickened but not ulcerated.

6. *Pustules* is the last but happily uncommon variety of inflammatory lesion of the gastro-intestinal surface. MM. Barthez and Rilliet have only met with it after the administration of tartar emetic.

7. There remains to be noticed, besides the organic changes, such as congestions and hyperemia already adverted to, a lesion which is not inflammatory, but which is of no unfrequent occurrence in the digestive mucous membranes. We refer now to simple softening other than the cadaveric, or that resulting from the entire loss of vitality of all the tissues and partial putrefaction of some of them.

There are some distinctions, in reference to the region which is the object of inspection, worthy of remark. In the case of the stomach, for example, we may expect to meet with both cadaveric and morbid softening; but if under evident conditions of elevated temperature or lapse of time from death to the autopsy, varying from twenty-four to forty-eight hours, we discover softening of the great curvature of the stomach, we are authorised to infer the probability of its being cadaveric or putrefactive rather than morbid.

In the instance of the intestinal mucous membrane the reverse of this proposition obtains; and it may be assumed as a general rule, that simple softening is more frequently morbid than cadaveric. In cases, it is true, in which we see evident signs of putrefaction of the body, as when there is a diffuse and deep discoloration of the chest and abdomen, and when the intestines themselves are of a dull red colour in bands or in patches, there will be strong suspicion of the alteration being cadaveric or the result of the putrefactive process.

Non-inflammatory softening is of the simple variety when the gastro-intestinal surface presents its customary appearance; but yet is softened to such a degree as to allow of no strips, or, if any, only those of extreme minuteness, being torn from it. In such cases, there is usually a slight grey discoloration prevailing over the spot; and the membrane, especially at the curvature, is notably thinner than common: indeed it is sometimes entirely wanting.

A more serious variety of gastro-intestinal softening is that in which the mucous membrane has become almost transparent, resembling mucus, or rather a colourless and tremulous jelly. This change is designated by the terms gelatiniform softening. It does not often reach such an extreme degree; and it has been noticed by MM. Rilliet and Barthez only in the great curvature and the cæcum: but in the first degree it often implicates the larger part of the gastro-intestinal mucous membrane.

There is yet a third variety of softening, in which the mucous membrane is nearly of its natural thickness and of a milk-white colour; its surface

is, that the two affections frequently coexist. This is a proposition of vast importance. It is said, that in cases where you have gastritis, the chances

---

and polish being normal; but it presents the appearance of a layer of concrete albumen mixed with the mucous tissue.

In summing up the different descriptions, we find that the morbid alterations in question are exhibited under three distinct varieties, viz., 1, simple or pultaceous softening; 2, gelatiniform softening; 3, white or opaline softening. The two first of these may coexist with a dull rose colour through imbibition; and may, also, occur in the order mentioned. It would seem probable, indeed, that the second is but a more advanced degree of the first variety.

There is not unfrequently coincidence of inflammation and simple softening in the same subject, which is not the case with the gelatiniform variety. It may happen, indeed, that inflammation, not being completely resolved, passes by successive stages into a lesion which is not at all inflammatory. It is thus that we find tubercle, which is not itself an inflammatory process, does yet succeed to inflammations.

8. *Fluid Secretions.* The mucous membrane in its morbid state is often lined with a coat of mucus. In its normal state this secretion is transparent, colourless, ropy; sometimes it is turbid, although it still retains its other characters. At other times, again, it becomes thick, grey in colour, grumous, and adherent; and in such cases it is usually very abundant.

Extreme secretions of mucus must be regarded as morbid, and sometimes the result of inflammation. But inflammatory secretion is not always mucous alone; it is purulent or muco-purulent, and of a mixed grey and yellow colour, thinner and more fluid, and more miscible with other matters in the digestive canal.

Gastritis and softening of the Stomach.—Most of the lesions above described, as common to the gastro-intestinal canal, are, of course, met with in the stomach. By a kind of reaction, or swing from one opinion to its very opposite, it is the fashion just now, with some pathologists, to speak of gastritis as an exceedingly rare disease, and of the stomach as possessing an immunity against inflammation, and especially against the effects of irritants directly applied to this organ itself. This assertion, true in the main, as regards adults, is incorrect in the case of children. Still, it must be admitted that primitive or idiopathic gastritis is comparatively not a violent disease in this latter class of subjects; but it is often an accompaniment, an epiphenomenon, or even a sequence, of other violent diseases. It is generally, in children, an acute disease.

MM. Rilliet and Barthez differ from some other estimable writers on the subject, in their belief, that softening of the stomach is very seldom a primitive disease, or one that subjects the whole economy to its influence, or is distinguishable by special symptoms and a regular march. They do not admit that there are diagnostic signs between inflammation and softening of the stomach.

Acute erythematic gastritis most frequently shows itself in the shape of red and softened lines or bands at the summit of the longitudinal folds of the stomach, in both directions, commonly along the greater curvature; but it is seldom limited to one region.

Pseudo-membranous gastritis does not constantly occupy the cardiac region. The false membrane is seldom of any extent.

are that there is more or less of enteritis; but, according to this doctrine, if a man has gastritis the probability is that he has inflammation of some other portion of the intestinal canal. Broussais, in the 138th proposition, makes the following observations: "Inflammation of the stomach, or, as it is called, gastritis, is never found except in conjunction with disease of the small intestine. It is better, therefore, to give it the name of gastro-enteritis; and even in those cases in which we have enteritis, we have gastritis as the irritative." Now if this proposition is true, it is one of very great importance, and entitled to a large share of our attention, in studying the phenomena and treatment of inflammation affecting the digestive tube. Pathology, however, has proved that these inflammations are not always found in connexion. Andral gives many cases, in which disease existed separately in one or other portion of the intestinal canal; when it was found in the stomach and not in the duodenum or ileum, and when it was found in the ileum, but not in the duodenum or stomach. I myself have seen many examples of gastritis without disease of any other part of the digestive tube, and disease of various parts of the digestive tube without the coexistence of gastric inflammation. But I believe the proposition is generally true, particularly in cases of fever, in which you have secondary inflammation of the digestive tube during the course of the disease. When inflammation attacks the intestinal mucous surface during the progress of a fever, you will, in most cases, have these two diseases combined; the patient generally presenting symptoms of gastritis, and, at the same time, symptoms of enteritis affecting the lower third of the ileum.*

Symptoms.—Let us now proceed to investigate the phenomena which characterise acute gastritis. Here I must remark, that, as an idiopathic disease, acute gastritis is extremely rare. This is a very curious circumstance. When we compare the stomach with other viscera, we shall find that one of the most remarkable differences between it and other organs is, that it is much less liable to be attacked by violent inflammation, as an idiopathic affection. This is an interesting fact. So rare, indeed, is the violent form of gastritis, that our knowledge of the symptoms which indicate intense gastric inflammation is principally drawn from the study of cases of acute gastritis caused by swallowing corrosive poisons. We very seldom meet with an inflammation of the stomach, presenting those decided characters so frequently witnessed in similar affections of other organs. We may attempt to explain this fact, by considering what the functions of the stomach are, and by recollecting that it is the organ of the body, whose functions require that it should be most frequently in a state of great vascular excitement. Every one is aware that the vascularity of the stomach is amazingly increased during the act of digestion; but it is to be remembered that this is a physiological and not a pathological condition. If the stomach were as liable to inflammation as other organs, it could no longer carry on its functions with safety; every meal would prove a stimulus sufficient to excite inflammation—every digestion would be followed by gastritis. Nature has provided against such accidents.

Let us take a brief review of the symptoms of acute gastritis:—Intole-

---

Ulcerous gastritis is not uncommon: it exhibits erosions or linear ulcerations, less tortuous than those of the intestines; and, also, ulcerations with multiform surfaces.—B.]

* [A state of things this very common in our remittent fevers, as well bilious as those which soon assume a typhoid character.—B.]

rable thirst, desire for cold and acidulated drinks, constant nausea and vomiting, pain and burning sensation of heat about the stomach, and fever —these are the symptoms of a violent gastritis. It has been stated, that in gastritis the fever is at first inflammatory and afterwards typhoid. If authors mean by this, that the patient rapidly falls into a low typhoid state, the observation is true. There is no form of inflammation, except that which accompanies severe peritonitis, in which the typhoid state comes on so rapidly. Inflammations of the digestive tube differ, in general, from similar affections of other organs, chiefly in this—prostration rapidly supersedes excitement. A patient labouring under inflammation of the brain will exhibit, for a long time, the decided symptoms of high excitement, and of what has been termed the *phlogistic diathesis;* acute pneumonia and inflammatory affections of other parts will go on for days, without prostration, and require the use of the lancet: but gastritis is a disease in which the inflammatory symptoms, as they are called, last but for a very short time. In violent cases the irritation of the stomach is excessive, and everything is rejected. I have seen cold water thrown up almost immediately; I have seen effervescing draughts rejected the moment they were swallowed, and make the patient evidently worse. The epigastric region and the left hypochondrium are exquisitely tender on pressure, and the tenderness differs from that of peritonitis in this, that it is almost always localized. The patient screams with agony when you touch the epigastrium, but will bear pressure freely on the lower part of the abdomen.

Now, with respect to the sympathetic relations of gastritis, I have to remark that they are very numerous. First, as to respiration—it is extremely quick and hurried; the heart, also, is violently excited; and hence gastritis has sometimes been mistaken for pneumonia and pericarditis. Sometimes we have bronchitic cough; the patient is restless, gets no sleep, and is extremely uneasy; his skin is hot, his bowels confined, his pulse rapid and small. In the second stage, he is beginning to sink, his features become contracted, his skin cold and pale, his extremities sunk below the natural temperature; he now bears pressure; the vomiting is changed for regurgitation of everything he swallows: low delirium supervenes, and he dies.

It is of the greatest importance to attend to the sympathetic relations of gastritis, for this reason, that in many cases the local symptoms are all but wanting, and the disease is only to be known by its sympathetic relations. Before I enter on this subject I shall make one or two remarks on some symptoms which have not been attended to by many practitioners. One of these is an incapability of swallowing, sometimes so great that all ingesta, whether fluid or solid, are rejected. This will sometimes arise from spasmodic stricture of the œsophagus or cardiac orifice of the stomach; and, as there has been no other cause revealed, by dissection, in several cases in which this symptom was present, we must admit this as one of the causes of the dysphagia, which, on some occasions, attends gastritis. This symptom is most commonly accompanied by tightness and oppression about the præcordia. The patient, feeling a load or weight, as he expresses it, in this situation, thinks it would be relieved by vomiting, and begs his medical attendant to give him an emetic, which is sometimes administered, and produces very bad effects. There is only one case in which an emetic can be given in gastritis, and that is,

where indigestible or irritating substances in the stomach give rise to irritation, and when we cannot expect a favourable termination until we effect their removal.

There is another most disagreeable and distressing symptom, generally occurring in cases in which there is inflammation about the cardiac orifice of the stomach—I mean hiccup. Hiccup is a most harassing symptom; it does not allow the patient a moment's rest; in his brief and uneasy slumbers he is conscious of it, and is constantly awakened by it. Now, this is also one of the results of gastritis, with inflammation about the cardiac orifice. I say this, because I have seen it in many cases, in which there was distinct evidence of inflammation about the cardiac orifice of the stomach; and, in three instances, I have verified it by dissection. I do not mean to say that every case of hiccup is indicative of disease of the cardiac orifice, but I believe it is a very frequent accompaniment. The case of a celebrated professor of languages was a remarkable example. A short time previous to his death, he came from Liverpool in one of the steam-packets. He was always subject to sea-sickness; but on this occasion he was extremely ill, and vomited during the entire passage or sea-voyage. He complained of his stomach for some time, and then got hiccup, which resisted every kind of treatment, and continued without any abatement up to the time of his death. On opening the stomach, this organ was found in a state of intense inflammation, particularly about the cardiac orifice. You can see the stomach (of which a very good preparation has been made by Dr. Houston) in the museum of the College of Surgeons. There was another very remarkable case in the Meath Hospital. A patient was admitted who had laboured under acute pneumonia, for which he was treated with tartar emetic, and the symptoms rapidly declined, but vomiting and hiccup came on, and the latter symptom continued until death. We opened the body eighteen hours after his demise, and found the lung quite healthy; but the stomach, and the cardiac orifice in particular, were, as in the case I have just mentioned, in a state of intense inflammation. When hiccup is the result of inflammation of the cardiac orifice, you will also frequently observe that the patient complains of pain in the lower part of the chest, along the course of the diaphragm. These are some of the relations of gastritis, their connexion with which is proved by their being relieved by draughts of cold water, leeching, and every other means calculated to remove inflammation of the stomach.

We come now to consider the state of the tongue. A vast deal of error and misconception prevails among British practitioners on this subject. Nothing is more common, than from the condition of the tongue to form an opinion as to the state of the alimentary canal. For instance, whether it is in a state of inflammation, whether there are sordes present or not, and whether it requires this or that medicine. All this is behind the actual state of medicine, and it is melancholy to think what a vast quantity of mischief is done by those practitioners who take the tongue as the index of an inflammatory or non-inflammatory condition of the intestinal canal. The schools of Abernethy and Broussais are wrong in stating that the tongue will point out the state of the digestive tube. The connexion between the state of the tongue and that of the stomach has been lately made the subject of extensive clinical investigation by M. Andral: listen to his sentiments on this point. From the experience of

a vast number of cases, he declares, "that there is no constant relation between the state of the tongue and that of the stomach." In the next place he states, "that there is no modification of the one corresponding with any special modification of the other." Thirdly, the stomach may be found in a certain state after death, with various conditions of the tongue during life." "Fourthly, we may have a diseased stomach with a healthy condition of the tongue, and a diseased appearance of the tongue with a healthy state of the stomach." These are facts of the greatest importance. Let us now refer to Louis. In giving an account of the gastritis which accompanies fever, he states that in many of the worst cases the appearance of the tongue was natural; in fact, that there was not the slightest relation between the tongue and the stomach. It is fair, however, to observe here, that both these pathologists drew their information only from cases of gastritis, occurring in fever. But it has also been frequently observed, that even in idiopathic cases there is a want of correspondence between the condition of the tongue and stomach, and we have seen several instances of this in the Meath Hospital. I believe we should be wrong in taking the tongue alone as our guide in the treatment of intestinal derangement, whether existing in the stomach or any other portion of the tube; and this I state as the conclusion which I have drawn from my own experience, in gastric and enteric inflammation. Yet how many will you see taking the tongue as the unerring index of various conditions of the digestive tube? Hundreds and thousands. It is unquestionably true, that in certain cases of gastritis, particular morbid appearances, as redness, dryness, pointing and a tremulous state of the tongue, are observed, but what I wish to impress on you is, that it is *necessary that these phenomena should coincide with other symptoms.* I do not wish you to believe, that the inspection of the tongue, or the knowledge derived from its appearance, is useless, particularly in cases of fever: the state of the tongue is never to be overlooked, but you should understand on what principle it is to be examined. You should examine the tongue not so much as to guide to the knowledge of local disease, but *as an index of the condition of the general system.* For instance, if during the course of a fever, the appearance of this organ changes and becomes more favourable, it is a sign that the whole disease has taken a favourable turn, and *vice versa.* This is the proper way to look at the tongue in fever, not as reflecting any particular state of the intestinal canal, but as being indicative of some modification of the whole economy.*

---

* [I know well a person, who, for twenty-five years, never had an entirely clean tongue; and who for years used to awake every morning with his tongue dry, furred, and yellow, or often brown, and sometimes giving out a little blood mixed with the first saliva. In fact, the tongue of this individual often resembled that of a patient in the advanced stage of typhoid fever; and yet he has been seldom laid up by sickness. His digestion was regular, but slow and laborious; and was particularly troublesome in the colon, in its being attended with flatulence and alternate diarrhœa and constipation. His renal secretion was habitually disordered by the presence of uric acid. He was a moderate eater, and abstinent generally from all kinds of intoxicating liquors. He found that the appearance of his tongue and the dryness of his mouth, together with

Symptoms derived from the Respiratory and Nervous Systems. — Let us now consider the sympathetic relations of the nervous and respiratory systems in gastritis. This is a very curious and interesting point in the study of gastric disease. I may mention here, that these relations are subject to considerable variety, and differ according to the peculiar predisposition of the individual. If a person of nervous habits gets gastritis, he will be very liable to have sympathetic affections of some part of the nervous system: but if he is a person with unsound lungs, the irritation will be transferred to the respiratory apparatus. Can we define these irritations? I believe the best definition we can give of them is, that they are affections of some organ, which are the result of sympathy; and that they are at first functional, but afterwards become organic. A person of nervous habit, labouring under gastritis, will frequently have his head sympathetically affected; he will complain of headache, more or less intense; toss about and get no sleep: still he has no actual disease of the brain. But let the cerebral irritation go on, let the pain and uneasiness and watchfulness continue, and he will finally get arachnitis. So, too, with respect to the lung; the patient has hurried breathing and cough, without any of the stethoscopic signs of pulmonary disease; but if these symptoms continue for any length of time, or if the irritation be severe, he will get pneumonia or bronchitis. Observe the importance of this law with reference to treatment, because it shows you that you cannot always expect to remove sympathetic affections by attacking the original source of disease; for if functional derangement, produced by sympathetic irritation, has gone so far as to become organic, you must direct your attention to parts which have been secondarily engaged, as well as to those which are primarily affected. Every one is aware of the effects of particular states of the stomach on the brain, and of the influence which the brain exercises over the stomach. Most individuals know, that by grief or strong mental emotion the appetite is completely removed; and that after a surfeit, or from taking bad and indigestible food, a person will get sick headache. If this happens every day under ordinary circumstances, and where the original affection is so slight that it does not interfere with the usual avocations of the patient, you can readily conceive how intense the sympathetic irritations may be in a case of violent gastritis. The headache is frequently intense, the patient is extremely restless, there is considerable intolerance of light,

---

epigastric heat and tenderness, were increased much more evidently by late hours of even quiet study, than by indulgence in suppers, or the occasional excesses of the table. Of late years, his brain and nervous system have been less continually excited, and he now awakes in the morning with a moister and less morbid tongue; although his dyspeptic symptoms are nearly as before. But whilst thus adducing evidence in support of the opinion advanced in the text, I ought to add, that any unusual article of food, salted or smoked meat, pastry, or an apple at dinner, will cause disturbed sleep and a drier tongue the next morning in the individual. A circumstance worthy of notice, in his case, is, that, when he happened to awake in the night, or at two, or three, or four o'clock in the morning, his tongue was moist, and his mouth without any feeling of dryness or discomfort; but after the last sleep, and at the common hour of rising, the tongue and mouth would be dry and parched, and otherwise changed, as above described. — B.]

delirium, tetanic spasms, and other symptoms characteristic of inflammation of the brain. There are numerous cases on record in which these symptoms were particularly noticed, and it was supposed that the brain was in a state of inflammation, but on dissection there was no disease found except in the mucous membrane of the stomach. There are many cases, too, in which medical men, not aware of the extent of these relations, looked upon the disease as a pure cerebral affection, and directed their whole attention to the brain. They certainly succeeded in modifying the apparent disease, but as they took no steps to remove its cause, the patients generally sank from an unsuspected gastritis. There is one important law with respect to inflammation of the stomach, which perhaps may be fairly applied to all inflammatory affections of the digestive tube. When inflammation of the stomach or any other portion of the intestinal canal has continued for some time, and when the disease has attained a certain degree of violence, the local symptoms may subside, and the gastritis or enteritis will be represented by disease of some other organ, by symptoms of an affection of the brain or its investments, or by symptoms of disease of the lining membrane or parenchymatous tissue of the lung. I shall endeavour to explain this. Here is a case taken from the *Clinique Médicale* of Andral.

"A middle-aged man, four days before his entrance into the hospital, was seized with bilious vomiting, epigastric pain, and fever. (Here is a certain case of gastritis.) In about twenty-four hours after the invasion of these symptoms, he first perceived a difficulty in depressing the lower jaw, and a violent trismus was established, which continued for the two following days; at the end of this time he entered the hospital in the following state:—Trismus, the head drawn backwards and forcibly retained in this position by the muscles which are inserted into the occipital region; rigidity of all the extremities; abdomen hard as a board; intellect perfect. Notwithstanding the trismus, the patient could articulate with sufficient distinctness to give the above account of his case. *From the time when the first tetanic symptoms appeared the vomiting and epigastric pain ceased.* He died on the evening of his admission. On dissection no appreciable alteration of structure was found in the brain or spinal marrow; the meninges of the brain were very slightly vascular, but those of the spinal marrow pale. The whole surface of the stomach presented an intense red colour, which was at first concealed by a thick layer of mucosities. The remainder of the digestive tube was perfectly healthy, and the thoracic organs were natural." This may be called a case of tetanus; and it is a curious fact, that when the tetanic spasms came on, the vomiting and other symptoms of gastritis subsided. Now this is what I wish to direct your attention to. A man dies with symptoms of an affection of the brain, the head is opened after death, there is no trace of cerebral disease found, but the whole surface of the stomach is discovered to be in a state of intense inflammation. That the stomach was inflamed is proved by the vomiting and epigastric pain which existed during life, as well as by the vascularity which was revealed by dissection; and there can be no doubt that this condition was the result of an intense inflammation, as there was no other cause to produce it.

Last year a patient was admitted into the Meath Hospital, labouring under violent maniacal excitement, his eyes bloodshot, and his aspect ferocious. He had thirst, a dry, fissured tongue, a quick, weak pulse,

and constipated bowels. There was no epigastric tenderness, no vomiting, in fact none of the prominent symptoms of gastritis complained of. On the third day the belly was slightly tender and tympanitic. The cerebral symptoms increased so as to require the use of the strait waistcoat, and continued with violence until a short time before death, which occurred on the eighth day. On dissection there was no appearance of inflammation found in the brain or its membranes, but there was a vast extent of disease in the digestive tube. The splenic extremity of the stomach presented several patches of vascularity, and its mucous coat was softened; the lower half of the ileum, the cæcum, and part of the ascending colon, were in a state of intense inflammation, and dotted all over with numberless ulcerations.

You observe of what importance the knowledge of these facts will be to you in practice, and how much it should become the object of your study, since you will thereby be able to make the diagnosis of gastritis from the sympathetic relations, though the usual symptoms are more or less absent. Even in cases of this kind, in which the symptoms have subsided on the appearance of these sympathetic irritations, the judicious practitioner will not be diverted from directing his attention to the source of the original mischief; nor will he, because the local symptoms have disappeared, conclude that the disease has therefore been removed from the stomach. Many examples of this *apparent* transition of disease are to be seen in cases of children, in which an inflammation of the upper part of the digestive tube frequently simulates hydrocephalus, and where the headache, delirium, and intolerance of light, are completely removed by the application of leeches to the epigastrium. I have seen this occur many times, and would entreat your particular attention to it. I believe many children are lost from the want of correct notions on this subject on the part of their medical attendants.* The phenomena present in such

* [Unless we are fully acquainted with the precursory symptoms and the admitted cause, such as external injury, sun-stroke, &c., of cerebral affections, whether manifested by delirious ravings and jactitation, or by convulsions, either in children or in adults, we shall find the gastric to be the safer pathology, and we ought to prescribe accordingly. Among other instances which might be related, I remember, very distinctly, the case of a child between three and four years old, whom I found with flushed face, eyes shining and injected, and somewhat incoherent and raving, with occasional spasms, short of convulsions. The mother of the patient thought that it had been eating stramonium seeds. I believed, on inquiry, that it had made too free with cherries, and, accordingly, gave it an emetic, which made it throw up a goodly number of this fruit, and brought, in consequence, speedy and complete relief. The symptoms, a little before, would have justified bleeding, cold applications to the head, &c.

A case which occurred under my observation, when I was yet a student of medicine in Virginia, made a permanent impression on my mind. A child, about two years old, had eaten of some fruit, the kind I do not remember, which caused violent convulsions, followed by coma and strabismus, in which state it remained for three days. At last, to the wonderment both of its physician, who barely hoped, and of the attending crones, who had been moaning, and croaking death around its cradle, it revived, and ultimately recovered its health.

cases are certainly those which characterise hydrocephalus; but you should always investigate them with care, and ascertain whether the disease has commenced with symptoms of inflammation of the mucous membrane of the stomach, or bowels; and if you find that it has originated in this way, and that the cerebral symptoms have not gone too far, direct your treatment in the first place to the digestive tube. It is extraordinary how rapidly all the symptoms of apparent cerebral disease subside under this plan of treatment. I must mention here to you a very remarkable case of enteritis, which simulated local disease of the substance of the brain. A girl who had received an injury was admitted into the Meath Hospital; she was treated with purgative medicines, and was "*discharged cured!*" In a few days afterwards she was re-admitted with pain in the head, *and violent spasmodic contractions of the forearm, by which the fingers were bent so forcibly that the nails were driven into the hand.* There was no thirst, vomiting, or abdominal tenderness. She died a few days after her admission; and on dissection the brain was found perfectly healthy, the viscera of the thorax were in the normal state, the stomach presented nothing remarkable, but the ileum was almost one sheet of deep and recent ulcers. The result of this case is important, also, in another point of view. You know that spasmodic contractions of the upper extremity are believed by certain pathologists to point out an inflammatory softening of the optic thalamus, and its prolongations. Here we had the symptom, at all events, without the corresponding lesion.

I shall reserve the subject of sympathetic irritations of the respiratory system until my next lecture, when I expect to be able to finish the pathology and treatment of gastritis.

LECTURE XIII.

DR. STOKES.

GASTRITIS.—No one symptom decidedly indicative of the particular condition of any organ.—Sympathetic irritation liable to terminate in organic disease.—Sympathetic relations as connected with the viscera of the thorax.—*Treatment* of simple acute gastritis.—Antiphlogistic remedies.—Purgative medicines injurious.—Enemas and injections.—Use of ice beneficial.—Effervescing medicine hurtful.

YOU recollect that at our last meeting I endeavoured to lay before you some of the general facts connected with the pathology of gastritis, and showed you that the statement made by Broussais, that inflammation of the mucous membrane of the stomach is always accompanied by a similar affection of some part of the intestines, has not been confirmed by the investigations of more recent observers; but, on the contrary, that their experience goes to disprove, in various instances, the validity of this

---

In other cases, although the offending substance may have been ejected from the stomach, this organ soon after becomes inflamed, and the cerebral symptoms return with violence. Then must we have recourse to leeches to the epigastrium, and other means of removing the gastritis; and in so doing, we shall find that there is a subsidence of the disorder of the brain.—B.]

assertion. But, when I say that this statement has been disproved, it is only as taken in the general and extended sense. The fact of their frequent coexistence has been proved; the statement that they are always associated has been found incorrect. Another thing connected with this, which has been also established by repeated observation, is, that the cases in which they are commonly combined are those in which a secondary affection of the mucous surface of the digestive tube comes on during the course of a fever; so that, if in fever a gastritis supervenes, you will commonly have enteritis; or if the fever be complicated with enteric inflammation, the mucous surface of the stomach will partake in the diseased action.

I have described some of the more prominent symptoms of gastritis, and directed your attention not only to the ordinary symptoms, as mentioned in books, but also to others which have either been passed over, or slightly noticed, by authors; as, for instance, dysphagia, oppression and sense of constriction about the præcordia, globus, pains relieved by cold and acid drinks, &c., and that obstinate hiccup, which, in cases where there is reason to suspect gastritis, marks inflammation of the cardiac orifice of the stomach. I stated that hiccup alone does not prove the existence of inflammation of the cardiac orifice of the stomach, unless where symptoms, indicative of gastric inflammation, prevail at the same time. I laid before you the actual state of the case with respect to the value and certainty of diagnosis, as derived from an inspection of the tongue; and showed you that no reliance can be placed on it, since it has been proved that we have the most opposite conditions of the digestive tubes, accompanied by a similar condition of the tongue; and that there is no peculiar modification of the one, corresponding exactly and constantly with any peculiar modification of the other. The conclusion to be deduced from these facts is, that in the treatment of inflammatory affections of the digestive tube, we are not authorized, and would frequently err, in taking the tongue alone as our guide in practice; and you may lay down this as a rule, and an important one;—if we look through the whole range of the history of medicine, we shall scarcely be able to point out any symptom which, taken singly, is decidedly indicative of any one particular condition of an organ. You will find that this proposition is not only extensive in its scope and relations, but also of extreme value in its application. You will commonly hear persons saying, that is such a disease, for this symptom is present, and that is such a disease, for such a symptom is extremely well marked. But there is no single symptom which points out, with certainty, any peculiar condition; and to arrive at a just and well-grounded diagnosis, you must always take the whole group of existing phenomena, connect the lights which they connectively throw upon the case, and then make a cautious decision. It may be objected to this that there are particular signs; as, for instance, the stethoscopic, which point out distinctly particular states of organs. It is said that *gargouillement* is decidedly indicative of a phthisical cavity, that *ægophony* points out a particular stage of pleuritic effusion, and that *metallic tinkling* is an unequivocal proof of pneumothorax. This, however, is not the fact; even in these cases you are not authorized to depend on any sign or symptom *taken alone*. If you ground your decision on any individual sign, you will very often fail in arriving at the truth.

I showed you that the sympathetic irritation of gastritis varied according to the peculiar character of the disease, and the habit and degree of sus-

ceptibility of the patient; that, generally speaking, the more intense the disease is, the more numerous are its irritations; but that, in all cases, they are considerably modified by predisposition (I use this term for want of a better), the sympathetic irritation being reflected on the lungs in cases where these organs are naturally unsound, and on the brain, where the patients have a tendency to disease of that organ. I endeavoured, also, to impress on you the fact, that these irritations are at first functional; but when long continued, or marked by extreme severity, they are very apt to terminate in organic disease. I illustrated this point by several examples; I shall give a few more of this kind before I enter on the treatment of gastritis.

If a patient labouring under acute gastritis has a bad cough, if respiration be very much hurried, and the distress of the chest great, and that these symptoms are overlooked or neglected, you will find that the cough, which was at first only a result of functional disease, will at last point out an organic affection of the lung. Again: let a patient, labouring under gastritis, have severe headache, restlessness, and irritation; suffer these symptoms to go on and increase in violence, and the great probability is, that they will terminate in arachnitis. The obvious deduction from these facts is, that when a sympathetic irritation has existed for some time in a state of considerable intensity, it is very probable that there is more or less of organic derangement produced, and we are not to expect to be able to remove it by merely attacking the original seat of the disease.

The last great rule which I endeavoured to impress upon you was, that where these sympathetic irritations, these affections of the nervous, respiratory, and circulating systems, were extremely well marked, the ordinary local symptoms were more or less wanting, but that this does not by any means imply the subsidence of the original disease. This is a most important law in pathology.

Sympathetic Thoracic Irritations.— In my last lecture, I entered into a detail of the sympathetic irritations connected with the brain and other parts of the nervous system; to-day we shall consider the sympathetic relations, as connected with the viscera of the thorax. If you look to the cases of acute gastritis, mentioned in works on toxicology, you will find that in cases of gastritis, produced by swallowing corrosive poisons, the patient has often frequent, hard cough, the breathing is at first hurried, then becomes protracted and laborious, and that death is generally ushered in by tracheal rattle. The same symptoms are observed in cases of acute idiopathic gastritis; hurried breathing, extraordinarily hard and almost laryngeal cough, sometimes occurring in paroxysms, sometimes constant. For the first few days it is, generally speaking, dry; as it progresses, there is more or less expectoration. At first, it is the result of sympathy; there is as yet no organic affection of the respiratory system, and the disease is purely functional; still it is of importance, and entitled to your particular attention, because, in consequence of the apparent identity of the symptoms, it is often mistaken for disease of the substance of the lung, or its mucous lining. The existence of a gastritis is frequently overlooked; the ordinary symptoms of pain in the region of the stomach, tenderness on pressure, and thirst, are overlooked, and the sympathetic relations alone are attended to. Observe what mischief may result from this error. The treatment of acute affections of the lining membrane, or parenchymatous tissue of the lung, is very different from the treatment of a gastritis. In the one case bleeding is necessary; in the other, its efficacy may be doubt-

ful, or the practice even dangerous. In one, tartar emetic is one of the best and most expeditious means of effecting a cure; in the other, the use of antimonials has the worst effect. It will strike you that in such cases percussion and the stethoscope are of inestimable value. You are called to attend a patient in fever; you find he has cough, hurried breathing, and perhaps pain in the chest; from a consideration of the history of the case, and the primary symptoms, you have reason to think the case is one of gastritis, and you wish to know whether the symptoms be purely sympathetic, or caused by organic disease of the lung. In such a case, a person without the knowledge of the stethoscope is completely helpless, and unable to decide the point. This, I assure you, is a very common case, and should be a strong inducement to the study of the stethoscope. What advantage does a knowledge of the stethoscope give? It leads to the formation of an accurate diagnosis; it points out either that there is no disease in the lung, or if there be, that it is not sufficient to account for the symptom, and therefore that you should look for its cause in some other situation. You find a person with laboured and rapid breathing, perhaps fifty or sixty a minute; you are struck with the apparent lesion of the respiratory system, but on percussing the chest, and using the stethoscope you find the respiration perfectly clear, or perhaps a slight bronchitis, insufficient to account for such violent symptoms. Where such phenomena are observed, you will often find that they are connected with a gastritis, particularly where there is fever, and the local signs of a gastric inflammation. I can tell you, from a most extensive experience, that in such cases you can inform the patient's friends, that the most sudden and decided relief will be experienced from the use of iced water, and the application of leeches to the epigastrium. You can have hardly an idea of the rapidity with which all the symptoms of pulmonary irritation are removed by this practice. Cases of this extraordinary sympathetic irritation are very common in children, but you will also frequently meet with them in adults.

Diagnosis of Gastritis and Pneumonia.—I have been called to decide the question, whether a disease was pneumonia or gastritis, where there was a difference of opinion between two practitioners. Now, it is very easy to come to a proper decision in such cases. There is one point which you should always hold in view, and that is, *the length of time the symptoms have lasted.* If symptoms of pulmonary disease have been going on for four or five days, and, at the end of that time, you find that there is no perceptible organic disease of the lung, you may be certain that it is gastric irritation; because if it were organic disease of the lung, it would have shown itself before that time, and could be detected by percussion or by the stethoscope. We have had many cases of these sympathetic irritations of the lungs in the Meath Hospital, which recovered under the treatment for gastritis; and where the patients, by some excess or error in diet, brought on the pulmonary symptoms again, they were removed a second time by putting them on a low diet. Before I quit this subject, I wish to make one remark, by way of caution. When you have discovered the existence of those sympathetic irritations, you should not be thrown off your guard, and consider them only as functional affections. You should examine the next day and the day after, for you may find that in a very short space of time actual disease of the lung has taken place. You should be, therefore, watchful, and never omit making a daily exami-

nation ; for if the sympathetic irritation be severe, it is very apt to run into actual organic disease.

We now come to speak of the treatment of simple acute gastritis. Here there are three principal indications. One of these is to remove inflammation as speedily as possible. You cannot, as under other circumstances, leave this disease to nature ; the organ affected is one of the utmost importance to life ; and if you do not cut it short at once, a typhoid state comes on, to which the ordinary and efficient means of antiphlogistic treatment are inapplicable. The first indication, then, is to cut short the inflammation as speedily as possible. The next thing is to prevent the introduction of anything into the stomach which will excite the physiological action of that viscus. You are aware, that while the stomach is engaged in the process of digestion, its vascularity is very much increased, and that this, which in health is merely a physiological condition, is unaccompanied by any kind of danger. But in a state of disease it proves a source of violent excitement, and superadds very much to the existing inflammation. You must, therefore, be extremely cautious with respect to what enters your patient's stomach, and carefully remove everything capable of adding to the excitement which always attends gastritis. The third indication in the treatment is to modify and remove the sympathetic or secondary irritations.

Treatment of Gastritis. — Now I shall suppose that we have to treat a case of simple acute gastritis, not produced by the swallowing of corrosive poisons, or indigestible food. Here we have a patient labouring under violent inflammation of one of the most important organs in the body ; and the question is, are you to adopt the ordinary and usual mode of stopping inflammation by opening a vein in the arm ? I must here state, that we are very much in want of a series of well-established facts to guide our practice on this point, and to inform us how far general bleeding is useful in acute inflammation of the stomach. At the present period, the question is by no means settled, and the practice is uncertain. I believe, however, that when we are called in at an early period of the disease, where the patient is young and robust, the stomach previously healthy, the fever high, and the pain great, we may have recourse to general bleeding with advantage ; bearing this in mind, however, that you are not to expect to cut short the inflammation by the use of the lancet. Inflammations of the mucous membrane of the stomach and bowels, and perhaps of the lungs, are not to be overcome at once by the lancet ; the only cases in which you can expect to cut short an inflammatory attack, are those in which the parenchymatous tissue of an organ, or its serous membrane, is affected. This is a general and important law. You will often be able to cut short a hepatitis or pneumonia by a single bleeding, but you will not by the same means be able to repress a bronchitis or an inflammation of the mucous membrane of the intestines. If you bleed in gastritis, bleed at an early period ; not too largely, or with the expectation of cutting short the inflammation, but in order to prepare your patient for the grand agent in effecting a cure — local bleeding. This is the principle on which you are to employ the lancet.

In the treatment of gastritis there is nothing more useful, nothing more decidedly efficacious, than the free and repeated application of leeches, whether the case be idiopathic, or produced by the swallowing of a corrosive poison. In this treatment of acute gastritis, you will frequently see, perhaps, the most striking instances of the rapid and decided utility of

medical treatment; you will see the vomiting subside almost immediately, the epigastric pain and tenderness disappear, the cough and headache relieved, the fever subside, and the tongue change, after the application of leeches. To remove the symptoms, the best and most effectual means are leeches; and these must be applied again and again, according to the duration and obstinacy of the symptoms. Here I wish to make one remark of importance. From an opinion, very prevalent in former times, that pain and inflammation were inseparable, the older practitioners thought that when the pain ceased the inflammation also ceased; and hence many of our predecessors, and I fear some of our contemporaries, never think of re-applying leeches, no matter what the existing symptoms may be, if pain has been relieved by the first application. Nothing is more erroneous than this practice. It frequently happens that the pain and epigastric tenderness are removed by the first application of leeches, but the breathing is still quick, the fever high, and the thirst ardent. So long as these symptoms remain, the inflammation of the stomach is still going on. The mere subsidence of pain or tenderness of the epigastrium should never prevent us from resorting to the application of leeches. In leeching the belly for inflammation of the stomach or bowels, it is a common practice to apply a poultice over the leech-bites, with the view of getting away as much blood as possible. I am not inclined to approve of this practice. The weight of a poultice is frequently troublesome, and the heat produced by it disagreeable; the patients desire cold, and for this purpose they will often throw off their bed-clothes, feeling a degree of relief from exposing the epigastrium to a stream of cool air. Some practitioners have applied pounded ice over the stomach with good effects, and we see it frequently applied to the head with the same results in cases of encephalitis. Again: the application of poultices causes an oozing hemorrhage, the amount of which it is impossible to calculate, which is often hard to be arrested, and which, in debilitated persons and children, has the effect of lessening the powers of life without removing the original disease. It is much better to leech again and again than to do this. Where there is not much epigastric tenderness, you may apply a cupping-glass over the leech-bites with advantage, as you can get away as much blood as you choose, and the tendency to after-hemorrhage from the leech-bites is diminished by the application of the cupping-glass. In very young subjects, the tendency to obstinate hemorrhage from leech-bites is so great, that many practitioners are afraid to use leeches, and I believe some children have been sacrificed to this fear. The best mode of managing this is, if the leech-bites cannot be stopped by the ordinary means (and in very young children they seldom can), to stop them at once by the application of caustic. Do not lose time in trying to arrest the flow of blood with flour, or lint, or sticking-plaster; wipe the blood off the bite with a piece of soft, dry lint, plunge into it a piece of lunar caustic, scraped to a point, give it a turn or two, and the whole thing is settled; and you can generally go away with the agreeable consciousness of having prevented all further danger, and without being uneasy lest your patient should bleed to death in your absence.*

* [A simple and efficacious means of arresting the bleeding from leech-bites, consists in taking up a fold of the skin, to include the orifice, and hold it for a while, with moderate pressure between the thumb and the fore-finger.—B.]

Management of the bowels.—With respect to the management of the bowels in acute gastritis, a few observations will suffice. You will always have to obviate the effects of constipation; both in the acute and chronic forms of the disease there is always more or less constipation; in fact the same condition of the bowels is generally observed in both. Now, if you attempt to relieve this constipation in acute gastritis, by administering purgatives, you will most certainly do a vast deal of mischief. Nothing can exceed the irritability of the stomach in such cases; the mildest purgatives are instantly rejected, even cold water, or effervescing draughts are often not retained, and a single pill or powder is frequently thrown up the moment it is swallowed.* Under such circumstances, it is plain that the administration of purgative medicine is totally out of the question. Even though the stomach should retain the purgative, you purchase its operation at too dear a price; for it invariably proves a source of violent exacerbation, kindling fresh inflammation in an organ already too much excited. In this state of things, the best thing you can employ to remove constipation is a purgative enema, repeating it according to the urgency or necessity of the case. Where there is no inflammation in the lower part of the intestinal canal, you may employ injections of a strong and stimulating nature, with the view not merely of opening the bowels, but also of exercising a powerful revulsive action. I shall mention here an interesting fact, proving that stimulant injections have a decided revulsive effect; and that their influence extends not only to other portions of the intestinal tube, but also to distant parts of the system. In South America, where, from the heat of the climate, and the prevalence of bilious affections, sick headache is a very common and distressing symptom, a common mode of cure is to throw up the rectum an extraordinary enema, composed of fresh capsicum and other aromatic stimulants. The irritation which this produces acts as a very efficacious and speedy revulsive, causing the almost immediate removal of the cerebral symptoms.

In those cases of gastritis, where not only purgatives, but even the mildest substances, are rejected, the plain common-sense rule is to give nothing. Where cold water is borne by the stomach, it may be taken in small quantities, as often as the patient requires it. Solid ice, too, may be given with decided benefit. There is a mistake which prevails with respect to the employment of ice in gastritis, which I wish to correct. Some persons object to its use, and reason in this way:—Persons who have taken a quantity of cold water, or ice, when heated by exercise, have been frequently attacked with gastritis and fever, and consequently the use of these substances must be attended with danger in case of gastric inflammation. This, however, is false reasoning; you need not be afraid to order your patient ice, *ad libitum;* depend upon it, there is no danger in employing either ice or cold water in gastritis. There is nothing so grateful to the patient as ice. Let a quantity of it be broken into small pieces, about the size of a walnut; let your patient take one of these pieces, and, having held it in his mouth for a few moments to soften down

* [I have, in some cases, after venesection and leeching, given calomel with advantage in gastritis:—its action on the duodenum, liver, and large intestines, renders it decidedly revulsive. I prefer it alone, to its union with opium, under these circumstances. I can speak favourably, also, of a laudanum enema in gastritis after sanguineous depletion.—B.]

its angles, let him swallow it whole. The effect produced by this on the inflamed surface of the stomach is exceedingly grateful, and the patient has scarcely swallowed one portion when he calls for another with avidity. It will be no harm if I should here mention to you a secret worth knowing. There are few things so good for that miserable sickness of the stomach, which some of you may have felt after a night's jollification with a set of pleasant fellows, as a glass of ice; Byron's hock and soda-water are nothing to it.

After the first violent symptoms of the disease have been subdued, I believe the very best thing which can be given is cold chicken-broth.* The point which we are always to keep in view is, to remove inflammation from the stomach, and this should regulate the use of everything taken into the stomach. I believe we might derive much advantage from anodyne injections in gastritis. I cannot say that I have ever employed them in such cases; but if I were to reason from their utility in other forms of abdominal inflammation, I should be induced to look upon them as entitled to some consideration. There is another point to which I will briefly advert. In the treatment of acute gastritis, there is nothing more commonly used than effervescing draughts; yet I have frequently seen them produce distinct irritation of the stomach. In cases where gastric irritability is excessive, I would not advise you to give effervescing draughts, or if you do, watch the immediate effect; see how the first one has agreed with the stomach before you venture to give any more. Patients labouring under this disease should be kept extremely quiet, as frequently a slight motion brings back the vomiting. Everything which is swallowed should be in small quantity; a large quantity of any substance frequently causes a return of the vomiting, by distending and irritating the stomach. One of the best things you can give, and the best way of giving it, is iced lemonade, giving a table-spoonful from time to time. The extremities, which are generally cold in cases of intestinal disease, should be swathed in warm flannel.

I shall mention here a rule which should be carefully observed in the after-treatment. A patient has recovered from the violent symptoms of the disease: the fever, thirst, pain, epigastric tenderness, and sympathetic affections, have subsided; but he still is confined to bed, and in a state of great debility. Some patients, under these circumstances, have been unfortunately lost by allowing them to sit up in bed, or on the night-chair. The nurse will sometimes, through ignorance, suffer a patient, thus enfeebled, to risk his life by sitting up in bed; sometimes, during the course of the night, she is overcome by sleep; the patient has a call to empty his bowels; and not wishing to disturb her, attempts to get up, and is found, some time afterwards, sitting on the night-chair quite dead. This is an unfortunate termination for the physician as well as the patient. A German author, Hoffmann, has written a treatise on the danger of the erect position after acute diseases; and in the course of the work, which is a very interesting one, he cites numerous instances of its bad effects. Not very long since a patient was lost in the Meath Hospital, by the nurse allowing him to sit up after a severe attack of enteritis. Such, also, was

* [There are cases of gastritis in which even this simple animal food is inadmissible thus early in the disease, and before convalescence has set in.—B.]

the melancholy cause of death in the case of the late Mr. Hewson, one of my best and earliest friends. He got a severe attack, which was subdued with difficulty, and his convalescence was doubtful and protracted. One night, in the absence of his attendant, he got up for the purpose of emptying his bowels, and was found, some time afterwards, on the night-chair, nearly dead. He was immediately brought back to bed, and the necessary means employed to relieve him, but without much benefit, for he never recovered the effect produced on his debilitated frame.*

LECTURE XIV.

DR. STOKES.

PATHOLOGY AND TREATMENT OF GASTRITIS—Application of Blisters—Emetics can be seldom used in acute gastritis—Hematemesis and delirium tremens complicated with gastritis—Treatment of these affections—Dyspepsia, or chronic gastritis—Hypochondriasis—Termination of chronic gastritis.

THERE is one point connected with the treatment of gastritis which I have not yet touched upon—the use of blisters; and as this is the first time I have spoken of them, I shall make a few remarks on their general application.

It is a great error to think that blistering is a matter of course in inflammatory diseases, or that the proper period for their application should not be carefully marked. It is a common idea, that if a blister does no good it will do no harm; that it is probable some benefit may result from its employment, and that you may try it at all events. I need not tell you that all this is wrong, and that we must be guided by exact principles in this as well as in every other part of practical medicine. I am afraid there is a great deal of loose reasoning and empirical practice connected with this subject, even at the present day. Here is the general rule by which you should be invariably guided. No matter what kind of disease you have to deal with, if it be inflammatory, blistering in the early stage of it is decidedly improper. I might amplify this rule, and say, that if the disease be inflammatory and in its early stage, or if, under such circumstances, the symptoms require the general or local abstraction of blood, blisters cannot be used with propriety. The truth is, that many persons take a very limited view of this subject; they look upon blisters as merely revulsive agents, which, by their action on the surface, have the property of diminishing visceral inflammation. This I am willing to allow is true to a certain extent, but there is abundant evidence to prove, *that blisters have sometimes a direct stimulant effect on the suffering organ.* That this

* [Not only in cases of great prostration from hemorrhage, cholera, &c., but in the advanced stage of *all* diseases of an acute character, the patient should be prevented from rising or even sitting up in bed. A bed-pan slipped under him will be the substitute for a close-stool; nor should any foolish prejudice—a thing not uncommon with persons who have heretofore enjoyed good health—prevent its use.—B.]

occasionally occurs has been established by many facts in medicine; and I have not the slightest doubt that the application of a blister over an organ in a state of high inflammatory excitement will certainly be productive of injurious consequences.* But if you apply them at the period when stimulation is admissible and useful (and there will always be such a period in every inflammation), you then act on just principles, and will generally have the satisfaction of finding your practice successful. The greatest empiricism is sometimes practised in the application of blisters to the head in acute inflammation of the brain. You will see, in Mr. Porter's admirable work on the Pathology of the Larynx, how strongly he is opposed to the early use of blisters in acute laryngitis. Dr. Cheyne, also, may, among many others, be quoted in support of this doctrine.

If there is one system more than another likely to be injured by early blistering, it is the digestive. Broussais says that blisters should not be applied in any of the stages of acute gastro-enteritis, and that in the early stage their application is the very height of malpractice. I do not go so far as to say that they should not be applied in any period of the disease, for when the skin is cool, the pulse lessened, and the local inflammation so far reduced as not to require the abstraction of any more blood, I think you may employ them with very considerable advantage. I shall again return to the subject of blisters; and will for the present merely remark, that blistering is almost always mismanaged, in consequence of persons who apply them being ignorant of their stimulating effects on organs. They generally allow them to remain on too long, and the consequences of this are often, violent excitement of the organ over which they are applied, great constitutional irritation, strangury, and bad sores. The best mode of using them is to direct the person who prepares the blister to cover it with a piece of silver-paper before it is applied, and having put it on with the paper next the skin, to let it remain until a decided sense of smarting is produced, when it should be immediately removed. By adopting this plan, you will save yourself and your patient a great deal of inconvenience; you will have no strangury, stimulation of the whole economy, or excessive local irritation, and the inflamed surface will heal kindly. The mode (too often practised) of applying a blister sprinkled all over with an additional quantity of powdered cantharides, and leaving it on for twelve, twenty-four, or even thirty-six hours, particularly in the case of females, is nothing better than horse-doctoring. During a seven years' experience in the hospital at Tours, Bretonneau, by attending to

* [Both in primary gastritis and in gastritis as a complication with fever, some practitioners, either from not fully recognising the nature of the disease, or not appreciating the operation of blisters, are in the habit of applying them forthwith, so soon as the patient complains of heat and pain or tenderness of the epigastrium. This is bad practice in a double sense: bad in itself, as tending to aggravate the disease; and bad indirectly, by preventing the application of leeches, and of ice or cloths immersed in cold water. We cannot afford to give away the epigastric surface in this manner, in the first stage of either gastritis, gastro-enteritis, or of fever generally. The judicious practitioner will regard a blister as among the remedies to be the last employed in most of the acute diseases. See Article *Epispastics*, in *Practical Dictionary of Materia Medica*, by John Bell, M.D.]

this plan, never had a case followed by these troublesome symptoms, and yet he never failed in producing the necessary degree of counter-irritation. The active principle of cantharides, being soluble in oil, exudes through the silver-paper in sufficient quantity to produce the necessary effect on the skin, without exposing the patient to the risk of having too much irritation excited by the direct application of the blistering plaster to the cutaneous surface.*

With respect to emetics, I need not tell you that they can be very seldom used in acute gastritis, and that all your efforts should be directed to obviate and remove vomiting. But are we to interdict their use altogether? There are some few cases where we are compelled to use them; as, for instance, in cases of acute gastritis caused by swallowing corrosive poison, or by the irritation of indigestible food remaining in the stomach. The first step to be taken in a case of corrosive poisoning, is to evacuate the stomach. In the same way, when you are called to treat a case of gastritis produced by indigestible aliment, you must commence by giving an emetic. But even here the emetic is admissible only in the early period; and you should never trust to its operation for removing the gastritis altogether, unaided by other therapeutic means; nor are you to conclude that because you have produced vomiting you have succeeded in curing the disease. The same principles apply to the use of purgatives in enteritis as to emetics in gastric inflammation; we should never have recourse to them except where inflammation is kindled and kept up by the presence of irritating matter.

Hematemesis and Delirium Tremens.—There are two cases in which certain affections are complicated with an acute gastritis; and as these complications are not sufficiently known, and have been scarcely noticed by systematic writers on gastritis, I am anxious to draw your particular attention to them. One of these is *hematemesis*, the other that disease which has been termed *delirium tremens*. There are cases of vomiting of blood, which are little more than acute gastritis, in which there is a copious secretion of blood from the mucous surface of the stomach. Vomiting of blood may arise from various causes. It may be vicarious, as in the case of females, where the menstrual flux is suppressed; it may be accidental, as from the rupture of a bloodvessel; or it may be caused by mechanical obstruction to the circulation, either in the liver, spleen, heart, or lungs. But there is a species of gastritis, in which there is a copious vomiting of blood; or there is a hematemesis, of which the cause is gastric irritation. How are you to recognise this form of the disease?—The patient is vomiting blood; but then he has fever, hot skin, and excited pulse. Again, you will see some peculiar modification of the tongue; you will find ardent thirst and longing for cold drinks; you will observe fulness and tenderness of the epigastrium; you may have severe local pain; finally, you will have all these symptoms occurring in a person

* [M. Trousseau has recently recommended an ethereal extract of cantharides, which is obtained from the action of sulphuric ether on the powder of cantharides. Portions of blotting-paper of various sizes are imbibed with this extract and form so many blisters. Blistered surfaces may be kept running by applying to them the extract of cantharides mixed with yellow wax, in the proportion of the former of one-twentieth to one-tenth.—B.]

who, previously to the attack, exhibited nothing capable of accounting for the hematemesis. Here, then, we have a hemorrhagic gastritis, very little known, and too often improperly treated. The ordinary practice, in such cases, is to give astringents. Astringents are very good and useful where they are clearly indicated; but there are many forms of disease where their routine employment is productive of a great deal of mischief; and I believe lives are sometimes lost by looking upon this affection as a simple hematemesis, and by practitioners contenting themselves with the use of astringents. But where you have the symptoms of this form of gastric irritation present, where, in addition to the vomiting of blood, you have fever, and thirst, and hot skin, and pain, and epigastric tenderness, you may be sure that it is a gastritis, and that the best treatment is leeches, iced water, and the other means recommended in the treatment of gastric inflammation. It may happen that, under this treatment, the vomiting of blood will not entirely subside; but the pain, the thirst, the fever, and epigastric tenderness will subside, and then you can with propriety give astringents. The best thing you can do in the commencement is to leech freely, give iced lemonade, and cold water; prohibit everything purgative, stimulant, or astringent; and then, when you have reduced inflammation, if the hematemesis continues, have recourse to astringents.

A few words now with respect to the other complication—*delirium tremens*. You have all seen cases of *delirium tremens*, but you are not, perhaps, aware that it arises under two opposite classes of causes. In some cases, a patient who is in the habit of taking wine or spirituous liquor every day in considerable quantities, meets with an accident or gets an attack of fever. He is confined to bed, put on an antiphlogistic diet, and in place of wine or whiskey-punch gets whey and barley-water. An attack of delirium tremens comes on, and symptoms of high cerebral excitement appear. Another person, not in the habit of frequent intoxication, takes to what is called a fit of drinking, and is attacked with delirium tremens. In the first case the delirium arises from a want of the customary stimulus, in the second from excess. In each the cause of the disease is different; and, consequently, with this view of the subject, it would be a manifest departure from sound practice to treat both cases in the same way. Yet, I believe, this error is frequently committed, even by persons whose authority is high in the medical world, and is part of a system not yet exploded—*the system of prescribing for names and not for things*. The patient is treated for a disease which has been called delirium tremens, the present symptoms are only attended to, and the cause and origin of the affection are overlooked. What are the true principles of treatment?—In the first variety, where the delirium is produced by a want of the customary stimulus, there is no doubt that patients have been cured by the administration of the usual stimulants, by giving them wine, brandy, and opium. Indeed, this seems to be the best mode of treating this form of the disease. But is it proper or admissible in the second variety, where the delirium is caused by an occasional excess in the use of ardent spirits?—Certainly not. Yet what do we find to be the ordinary practice in hospitals, when a patient is admitted under such circumstances?—A man, who has been attacked by delirium tremens after a violent debauch, is ordered a quantity of porter, wine, brandy, and opium; and the worse he gets, the more is the quantity of stimulants increased. Now this practice seems to me as ridiculous as the old prin-

ciple of treating a case of hydrophobia with a hair of the dog that bit. Let us consider what the state of the case is:—A large quantity of stimulant liquors have been taken into the stomach, the mucous surface of that organ is in a state of intense irritation, the brain and nervous system are in a highly excited condition from the absorption of alcohol, or in consequence of the excessive sympathetic stimulation to which they have been subjected. Are we to continue this stimulation?—I think not. What would be the obvious and natural result?—Increased gastric irritation, encephalitis, or inflammation of the membranes of the brain. The supervention of inflammatory disease of the brain in delirium tremens is not understood by many practitioners, and they go on administering stimulant after stimulant, totally unconscious that they are bringing on decided cerebral disease. I have witnessed the dissections of a great many persons who died of delirium tremens, and one of the most common results of the dissection was, the discovery of unequivocal marks of inflammation in the brain and stomach. Broussais considers all such cases as merely examples of gastritis, and ridicules British practitioners for inventing a "new disease;" but in this he is certainly wrong, for there have been several cases in which no distinct marks of gastric inflammation could be discovered. In all cases, however, where the delirium supervenes on an excessive debauch, there is more or less of gastritis; and though it may occasionally happen, that a patient under such circumstances may recover under the stimulant treatment, yet I am convinced that the physician will very frequently do harm by adopting it.

This complication of delirium tremens with gastritis is also exceedingly curious in another point of view, as it illustrates how completely the local symptoms are placed in abeyance, and as it were lost during the prevalence of strong sympathetic irritation. The patient's belly will not be tender; the tongue may not be red; the symptoms present may be indicative of a mere cerebral affection, and yet intense gastric inflammation may be going on all the time, and all the appearance of cerebral disease be quickly removed by treatment calculated to subdue a gastritis. Is this all theory? No; for we have practised on this principle with the most extraordinary success in the Meath Hospital. We have seen cases of violent, outrageous delirium subside under the application of leeches to the epigastrium, and iced water, without a single drop of laudanum. I beg of you, if you meet with any cases of delirium tremens under such circumstances, to make trial of this mode of treatment, and record its effects, for it is important that they should be more extensively known. I have seen the whole train of morbid phenomena, the delirium, the sleeplessness, the excessive nervous agitation, all vanish under the application of leeches to the epigastrium. In some cases where, after the sleeplessness and delirium were removed by this practice, and the tremors alone remained, we have again applied leeches to the epigastrium, and succeeded in removing the tremors also. On the other hand, where a stimulant plan of treatment was employed, and the patients died, we have most commonly found inflammation in two places, in the stomach, or in the brain or its membrane. The rule, then, is this—in a case of delirium tremens from the want of a customary stimulus, use the stimulant and opiate treatment; but when it comes on after an occasional violent debauch, such remedies must be extremely improper. Adopt here everything calculated to remove gastric irritation. We have facts to show that most decided advantage may

arise from the application of leeches, even where the symptoms of gastritis are absent.*

Chronic Gastritis.—We come now to consider chronic gastritis, an extremely interesting disease, whether we look upon it with reference to its importance, its frequency, or its Protean character. It is commonly called dyspepsia, and this term, loose and unlimited in its acceptation, often proves a stumbling-block to the student in medicine. Dyspepsia, you know, means difficult digestion, a circumstance which may depend on many causes, but perhaps on none more frequently than upon chronic gastritis. In the great majority of dyspeptic cases the exciting cause has been over-stimulation of the stomach, either from the constant excess in strong, highly-seasoned meats, or indulging in the use of exciting liquors. Persons who feed grossly, and drink deeply, are generally the subjects of dyspepsia; by constantly stimulating the stomach they produce an inflammatory condition of that organ. Long-continued functional lesion will eventually produce more or less organic disease; and you will find that in most cases of old dyspepsia there is more or less gastritis. But let us go farther, and inquire whether those views are borne out by the ordinary treatment of dyspeptic cases. When you open a book on the practice of physic, and turn to the article dyspepsia, one of the first things which strikes you is the vast number of cures for indigestion. The more incurable a disease is, and the less we know of its treatment, the more numerous is the list of remedies, and the more empirical is its treatment. Now, the circumstance of having a great variety of "*cures*" for a disease, is a strong proof, either that there is no real remedy for it, or that its nature is very little understood. A patient afflicted with dyspepsia will generally run through a variety of treatment: he will be ordered bark by one practitioner, mercury by another, purgatives by a third; in fact, he will be subjected to every form of treatment. Now all this is proof positive that the disease is not sufficiently understood. What does pathology teach in such cases? In almost every instance where patients have died with symptoms of dyspepsia, pathological anatomy proves the stomach to be in a state of demonstrable disease. It appears, therefore, that, whether we look to the uncertainty and vacillations of treatment, or the results of anatomical examination, the case is still the same; and that, where dyspepsia has been of considerable duration, the chance is that there is more or less of organic disease, and that, if we prescribe for dyspepsia, neglecting this, we are very likely to do mischief. I do not wish you to believe that every case of dyspepsia is a case of gastritis. This opinion has brought disgrace on the school of Broussais. His disciples went too far; for whether the gastric derangement depended on nervous irritation, or

* [In my own practice, in former years, I have met repeatedly with gastritis in women brought on by the secret use of mixed liquors, cordials, &c. In one of these cases the attack was exceedingly severe, requiring the most energetic means for relief. As too often happens, I was kept, at the time, in entire ignorance of its cause. Those vile compounds, true poisons, sold and drank by the common people, and in greater proportion by females, under the name of cordials, have been, to my knowledge, frequently causes of gastritis, both acute and chronic. The prevalence of better hygienic notions on the subject of alcoholic drinks has, however, happily abated this evil.—B.]

anæmia, or disease of the liver, or mental emotion, they prescribed leeches and water-diet, and thus very often brought on the disease they sought to cure. We may have functional disease, independent of structural lesion in the stomach, as well as in any other organ; it is no unusual circumstance, and the practical physician meets with it every day. A great deal of confusion, however, arises from the similarity of the symptoms. I remember an accomplished friend of mine getting into disgrace with one of the members of a board of examiners on this subject. He was asked to tell the difference between the symptoms of chronic gastritis and dyspepsia, and in reply stated that he could not. For this he was nearly rejected; but, I believe, on a candid review of the circumstances, you will agree with me, that he knew more of the matter than the learned professor. In ninety-nine cases out of a hundred of chronic gastritis there is no fever, scarcely any thirst, often no fixed local pain, and this leads persons away from any idea of the existence of an inflammatory condition of the stomach. What are the symptoms of a chronic gastritis? pain of occasional occurrence, flatulence, acidity, swelling of the stomach, fetid eructations, sensation of heat and weight about the epigastrium, and perhaps vomiting. Well, these are also the symptoms of dyspepsia, whether it be accompanied by inflammation or not. How, then, when called to a case of this kind, are you to determine the point? I must mention to you here, that it is often hard to do this with certainty. There are two circumstances, however, which you should always bear in mind, as they will afford you considerable assistance in coming to a correct diagnosis; first, *the length of time which the disease has lasted;* secondly, the result of the treatment which has been employed. You will find, that where the disease is a chronic gastritis, that it has been of some duration, that it has come on in an insidious manner, and that it has been exasperated by the ordinary treatment for dyspepsia. Many persons think, that if you give a patient medicine, without regulating his diet or issuing a prohibition against full meals, that you can cure him, and that, as he has no fever, and can go about his usual business, there is no necessity for antiphlogistic regimen. But as the disease goes on, he complains of pain in the stomach during the process of digestion, feels uneasy after dinner, there is an unpleasant degree of fulness about the epigastrium, he also experiences a variety of disagreeable symptoms, sometimes being annoyed with pain in the chest, sometimes he says he feels it in the region of the heart, and sometimes about the cartilages of the eighth and ninth ribs. These symptoms subside after the process of digestion is completed, but during its continuance they harass the patient. Very often relief is obtained by vomiting, and hence some persons are in the habit of throwing up their food for the purpose of relieving themselves, and consequently can have no benefit by it.* In some cases digestion goes on until the food seems to reach a particular point, and then an acute feeling of pain is experienced. In these cases the gastritis is generally circumscribed, and is likely to terminate in circumscribed ulceration. Various fluids are rejected from the stomach during the course of a gastritis: sometimes acid, sometimes alkaline, sometimes insipid and sweet, sometimes bitter and bilious. There

* [I have been told by a person who was in the habit of familiar intercourse with Lord Byron, in Italy, that this was a common practice of the noble poet.—B.]

is generally a degree of fulness about the stomach, and the epigastrium is tender on pressure, but no decided tumour, either of the pylorus, liver, or spleen, although the epigastrium presented that appearance of fulness and tension termed by the French "*renitence.*" The bowels, too, are constipated, and this is a matter worthy of your attention, for it sometimes unfortunately happens that the practitioner, mistaking the gastritis for simple constipation, goes on prescribing purgative after purgative, until the patient gets incurable disease of the stomach. I know a case of a lady who gets one stool a week by taking eight drops of croton oil. Some years ago she was in the enjoyment of excellent health; her bowels happened to get confined, and she was treated by a systematic practitioner with continued purgatives; her bowels are now completely torpid, except when they are subjected to this unnatural stimulus. There are thousands of persons treated in this way, because practitioners look to consequences and not to causes.

One great difference between Acute and Chronic Gastritis. — There is one remarkable difference between acute and chronic gastritis, which deserves your attentive consideration, as it exemplifies a law applicable to all viscera under similar circumstances, and this is, that the sympathetic irritations are not so frequent or so distinct in chronic inflammation as in the acute form, and hence, in a case of chronic gastritis we almost never have fever, and the affections of the nervous respiratory or circulating systems are by no means so well-marked. It may even go on to actual disorganization of the stomach, and yet the patient will not complain of any particular symptom during its whole progress, which you could set down as depending exclusively on the sympathetic irritation of gastritis. Some of these cases, called dyspeptic phthisis, by Dr. W. Philip, are most probably examples of the sympathetic irritation of the lungs from chronic gastritis. Another case, respecting which much error prevails, is what has been called hypochondriasis. Persons labouring under these affections are condemned to run the gauntlet of every mode of treatment; sometimes (and fortunately for themselves) they are sent to travel, sometimes they are treated with musk and antispasmodics, then with the mineral acids, then with purgatives and mercurials, and lastly, with bark, nitrate of silver, and stimulants. They go about like spectres from one practitioner to another, trying remedy after remedy, alternately sanguine with hope or saddened by disappointment, until at last they die, and to the astonishment of all the doctors, the only disease found, on dissection, is inflammation and thickening of the mucous surface of the stomach. A condition which, under these circumstances, it was difficult to say whether it was the original disease, or produced by "*fair trials*" of a number of powerful agents. Hypochondriasis is not always gastritis; but it is now found that in many cases, it commences and terminates with disease in the upper portion of the digestive tube and the assisting viscera. This you must always bear in mind.

Chronic gastritis terminates in various ways. Sometimes the inflammation is limited to a particular spot of the stomach, and here we frequently discover circumscribed ulcerations. In very bad cases these ulcers go on perforating the various coats of the stomach, until at last the contents of that organ escape into the serous cavity of the abdomen, and the patient rapidly sinks under a fatal peritonitis. It does not follow, however, that, in all cases of perforation, the contents of the stomach get

into the peritoneum, causing death. Very often adhesions are formed, and the base of the ulcer is the serous covering of some other portion of the digestive system, or a false passage may be formed into the colon. One of the most common terminations of a chronic gastritis is, that the inflammation extends to other viscera; the patient gets disease of the liver, spleen, peritoneum, or lungs, and sinks under a complication of disorders. It was somewhat in this way that Napoleon died. He laboured for a considerable time under chronic disease of the stomach, which seems to have been overlooked by his medical attendants, and this terminated in the extension of disease to various other organs.

LECTURE XV.

DR. STOKES.

TREATMENT OF CHRONIC GASTRITIS.—Frequent excitement of the vascular system necessary to the performance of the functions of the stomach—Local bleeding—Regimen—Counter-irritation over the stomach—Treatment of Broussais—Use of vegetable tonics—Oxide of bismuth—Acetate of morphia—Friction with croton oil—Attention to diet during convalescence—Organic disease of the stomach—Principles of treatment—Diet and attention to the bowels.

I SHALL begin to-day with the treatment of chronic gastritis, and I beg of you to bear in mind what I mentioned at my last lecture, that this disease, in its true and pathological meaning, is not sufficiently recognised. In general, it gets some wrong name or other; and as many practitioners are in the habit of prescribing for names, it generally meets with wrong treatment. It is called everything but what it is, and its remedies are as numerous and as various as its appellations. By some it is called dyspepsia, and is treated with bitters, astringents, and stimulants; by others, it is termed constipation, and treated with purgatives; the school of Abernethy look upon it as an affection of the liver, and prescribe blue pill and black draught; others give it the name of hypochondriasis, and exhaust the whole catalogue of nervous and anti-dyspeptic medicines in attempting its removal; in fact, it is called everything but what it is, and the result is an unsteady and mischievous empiricism.

You will recollect a fact, to which I alluded in my last lecture, that the physiological condition of the stomach requires that it should be subject to frequent excitements of its vascular tissue, and that this increased vascularity being the consequence of a natural process, digestion is, generally speaking, exempt from any kind of danger. If the brain or lungs were to experience an equal increase of vascularity, sensibility, and excitement, the consequence would be dangerous, or perhaps fatal, and we should have pulmonary and cerebral diseases produced. But though the stomach enjoys such a remarkable exemption from the liability to acute inflammation, under circumstances of repeated vascular excitement, yet the slow, insidious, chronic gastritis, is an exceedingly common affection. I feel convinced that many persons die of it, or of the extensive class of fatal diseases which it frequently induces. But I rejoice to say, that we have good reason to hope that the progressive amelioration of medical science

will materially diminish the amount of human suffering from this cause. As physiological medicine advances, the number of those who die of unrecognised chronic visceral disease will be less and less, because diagnosis will become more extended and certain, and practice more simple and successful.

The first thing you should do when called to treat a case of dyspepsia, is to ascertain whether it be a purely nervous disease, or a chronic gastritis. The majority of practitioners give themselves no trouble about this matter, not recognising the fact, that of the number of dyspeptic persons who seek for medical advice, a considerable proportion are really labouring under a chronic gastritis, and forgetting, that, in consequence of long-continued functional injury, what was at first but a mere nervous derangement may afterwards become complicated with organic disease. You must also bear in mind, that the stomach is perhaps placed under more unfavourable circumstances for bringing about a cure than any other organ, because the life of the individual demands that the stomach, though in a state of inflammation, should still continue to perform its functions. In treating disease of other organs, you will have the advantage of a comparative state of rest; but, in a case of the stomach, if you wish to preserve life, you cannot prohibit nutriment, and, consequently, you must run the risk of keeping up those periodic vascularities which its condition requires, which, though harmless in health, become a source of evil when the stomach is diseased. The obvious deduction from this is, that the cure of chronic gastritis depends as much upon regimen as upon medical treatment, and particularly where the symptoms have arisen from long-continued excitement, as in the case of persons who live highly. Here the treatment chiefly depends on regulating the diet, and if your patient has sense enough to live sparingly for a few weeks or months, you may be able to effect a cure without other treatment. The great error is, that most practitioners attempt to cure the disease by specifics, and when these fail, they then go to the symptomatic treatment, prescribing sometimes for acidity, sometimes for nausea, sometimes for flatulence, sometimes for constipation, or "the liver," or debility.

You should be careful in the examination of such cases, and should try to ascertain whether these symptoms may not depend upon inflammation of the stomach; for as long as the patient is in this state, the less you have recourse to symptomatic or specific treatment the better. It is hard to mention one single medicine, which, in this state, will not prove stimulant, and if the stomach be unfit for stimulants, it must be unfit for the generality of medicines. There are numbers of cases of persons labouring under chronic gastritis, which have been cured by strict regulation of diet, and by avoiding every article of food requiring strong digestive powers. We find that articles of diet vary very much in this respect; some are digested with ease, some with pain. We might express this otherwise, by saying, that some require very little excitement of the stomach, and others very great vascular excitement. Patients, in this irritable state of stomach, can scarcely bear any kind of ingesta; and when you consider the great vascularity, thickening of the mucous membrane, and tendency to organic disease, you will be induced to think that everything entering the stomach should be of the mildest kind, and not requiring any powerful determination of blood to that organ.*

* [This course, so conformable with reason and experience and so readily understood by the attentive inquirer, is, however, the most diffi-

If you continually prescribe for symptoms, neglecting or overlooking the real nature of the disease, giving arsenic to excite the system, and iron to remove anæmia, and bitter tonics to improve the appetite, and alkaline remedies for acidity, and carminatives to expel flatus, you will do no good; you may chance to give relief to-day, and find your patient worse to-morrow; and at last he will die, and you may be disgraced. On opening the stomach, after death, you are astonished to find extensive ulceration, or, perhaps, cancerous disease. Very often, in such cases, practitioners say that it is cancerous disease, and that no good can be done. But the thing is to be able to know, when you are called to a case, whether it is a case of mere nervous dyspepsia, or chronic inflammation of the stomach. Some of the best pathologists think that most of the cancerous affections of the stomach are, in the beginning, only chronic inflammations of that organ.

I believe we have not yet in this country adopted the plan of moderate application of leeches to the epigastrium in cases of chronic gastritis. I have seen, in many cases, great benefit result from the repeated application of a small number of leeches to the epigastrium, at intervals of two or three days. Here is a point which you will find very useful in practice. You will meet with cases which have lasted for a long time; cases where there is strong evidence of organic disease, and which have resisted the ordinary dyspeptic treatment. You will be called frequently to treat these three different cases: — where the disease has been of long duration; where there is distinct evidence of organic disease; and where the disease has resisted the ordinary dyspeptic treatment. Here is a case of a patient labouring under what is called indigestion, and which has resisted the stimulant, and tonic, and purgative treatment. Here is one fact. In the next place, the disease is chronic, and the probability is that there is inflammation, and consequently that there is chronic gastritis. Now if, in such a case, you omit all medicine by the mouth, apply leeches to the epigastrium, keep the bowels open by injections, and regulate the

---

cult to be carried out in practice. Our patients will take every kind of nauseating drug without much grimace; they will consent to be blistered and cauterised and punished, after every medical fashion; but, so soon as we wish to substitute a regulated and restricted diet for this polypharmacy, they all at once discover innumerable difficulties in the way. We then become cruel, starving doctors; without good bowels of our own, it is believed, and of course without compassion for the bowels of others. In fact, a physician will be much more likely to preserve his reputation in a family, whilst, bringing on chronic, perhaps incurable, gastritis, by the needless administration daily of arsenic, than whilst he is successfully attempting the cure of a case of this disease by a very restricted diet. After all, however, it will be found with this, as with many other prejudices of the people, that they are but the reflection or echo of former opinions and now exploded hypotheses of the profession. If physicians, generally, would cease, indolently perhaps oftener than ignorantly, to administer to the whims of their dyspeptic patients, the latter, seeing a general concert of opinion among medical men, would be less reluctant to follow out literally the advice of their immediate professional directors, and slower to yield their credence to the confident promises of ignorant yet deluding quacks.—B.]

diet, you will often do a vast deal of good. I have seen, under this treatment, the tongue clean, the pain and tenderness of the epigastrium subside, the acidity, thirst, nausea, and flatulence removed, the power of digestion restored, and all the symptoms for which alkalies, and acids, and tonics, and purgatives, were prescribed, vanish under treatment calculated to remove chronic inflammation of the stomach.

What is next in importance to regulated regimen and local bleeding? A careful attention to the bowels, which in chronic gastritis are generally constipated, and this has a tendency to keep up disease in the upper part of the digestive tube. Is this to be obviated by introducing purgative medicine into the stomach? No. If you introduce strong purgative medicine by the mouth, you will do a great deal of mischief. You must open the bowels by enemata, or, if you give medicine by the mouth, by the mildest laxatives in a state of great dilution. A little castor-oil, given every third or fourth day, or a little rhubarb, with some of the neutral salts, will answer in most cases.* The diet, too, can be managed, so as to have a gently laxative effect.† The use of injections is, however, what I principally rely on. I have seen many cases of gastritis cured by the total omission of all medicine by the mouth, by giving up every article of food which disagreed with the stomach, and by the use of warm water enemata. I have seen this treatment relieve and cure persons whose sufferings had lasted for years previous to its employment, and who had been considered by many practitioners to labour under organic disease of an incurable nature. It is important that you should bear this in mind. The old purgative and mercurial treatment of gastritis, I am happy to say, is rapidly declining; and British practitioners are now convinced that they cannot cure every form of dyspepsia by the old mode of treatment. I do not deny that many diseases of the digestive tube may be benefitted by the mild use of mercury and laxatives, but I think I have every reasonable and scientific practitioner with me in condemning the unscientific routine practice, which was followed by those who took the writings of Abernethy and Hamilton for their guide. I do not say that, where cases of gastric inflammation, treated after the plan of Mr. Abernethy, have proved fatal, the medicines have destroyed life; I merely assert that the patients died of inflammation, over which these medicines had no control; and the error lay in mistaking and overlooking the actual disease, as much as in its maltreatment. You will find some practitioners (they are becoming fewer in number every day), who seem to have but two ideas, the one a purgative, the other a potful of feces; but the connecting link — the gastro-enteric mucous membrane — that vast expansion, so complicated, so delicate, so important, seems to be totally forgotten. But practitioners are now beginning to see that purgatives are not to be employed empirically; that they should be administered in many cases with great caution, and with

* [Salts are often singularly unfriendly to the stomach of a dyspeptic. Rhubarb and soap pill, or rhubarb and carbonated magnesia in powder, well mixed, with a little cinnamon or ginger, are preferable. — B.]

† [And for this purpose bran or rye bread, rye mush and milk for breakfast, and spinach for dinner, are among the best articles. Butter-milk in season, and molasses and water for occasional drink, will tend to the same end. — B.]

a due attention to the actual condition of the alimentary canal, and that they have been a source of great abuse in the medical practice of these countries.

Next to leeching, and a proper regulation of the bowels, is the employment of gentle and long-continued counter-irritation over the stomach. This may be effected by the repeated application of small blisters, or by the use of tartar emetic ointment. I have been in the habit of impressing upon the class, that the tartar emetic ointment used in these countries is too strong, the consequence of which is an eruption of large pustules, which are excessively painful, and often accompanied with such disturbance of the constitution as amounts to symptomatic fever. In fact, tartar emetic ointment of the ordinary strength produces so much irritation, that few patients will submit to it long. The form which I recommend you to employ is the following: — Take seven drachms of prepared lard, and, instead of a drachm of tartar emetic, which is the usual quantity, take half a drachm, directing, in your prescription (this is a point of importance), that it be reduced to an impalpable powder; and you may add to it, what will increase its action, one drachm of mercurial ointment. This produces a crop of small pustules, which give but little pain, and are easily borne; and the counter-irritation may be kept up in this way for a considerable time, by stopping, for a few days, until the eruption fades away, and then renewing the friction. I have often seen the utility of this remedy exemplified in cases of chronic gastritis, where the symptoms of gastric irritation, which had subsided under the employment of friction with tartar emetic ointment, returned when it was left off, and again vanished when it was resumed. The case of the celebrated anatomist, Beclard, furnishes a very remarkable proof of the value of a well-regulated diet and repeated counter-irritation in the treatment of this disease. While he was engaged in the ardent prosecution of his professional studies he got an affection of the stomach, which he considered to be a chronic gastritis, and immediately put himself under a strict regimen, using, at the same time, repeated counter-irritation. He kept up the counter-irritant plan for a considerable length of time, for he found that, when he discontinued it, the gastric symptoms had a tendency to return. In this way he got completely rid of the disease. Several years afterwards he died of an attack of erysipelas; and, on opening his stomach, the cicatrix of an old ulcer was discovered in the vicinity of the pylorus, which was exactly the spot to which he had referred his pain during the continuance of his gastric affection.*

There is, perhaps, no science in which the motto, "*medio tutissimus ibis*," is of more extensive application than in medicine. Some physicians on the continent, particularly the disciples of Broussais, having repeatedly witnessed the advantages of strict regimen and local depletion in chronic gastritis, have pushed this practice too far. They seem to forget that the system requires support and nutrition, which can be effected only through the agency of the stomach; they saw the evils which result from the use of stimulating food in cases of chronic gastritis; and, looking to these alone, they ran into the opposite extreme, the consequence of which was, that they kept their patients so long upon low diet that they actually pro-

* [For additional means of producing counter-irritation, see my lecture on *chronic rheumatism*. — B.]

duced the very symptoms which they wished to remove. The patients became dyspeptic from real debility of the stomach and the whole frame. You remember a general law of pathology to which I have alluded on a former occasion, and which I shall again mention, as it illustrates this point, namely, that opposite states of the economy may be accompanied by the same symptoms. Thus, we observe that palpitation may depend on two different causes—on a sthenic or asthenic condition—on the presence of too much or too little blood in the heart. Now, it frequently happened that patients, labouring under chronic gastritis, and who had been treated for a long time after the strict plan adopted by the Broussaists, finding themselves not at all improved, went to other physicians who had different views, and were rapidly cured, by being put upon a full nutritious diet. In this way numerous cases, which water-diet and depletion had only aggravated, were relieved, and the consequence was, that a mass of facts was brought forward and published, not long since, by a French author, against the antiphlogistic treatment of dyspepsia and chronic gastritis. It must be stated, however, that the cases which he published were chiefly those in which the depleting system had been carried to excess, and that they cannot, therefore, be received as proofs of the value of a stimulating diet in the treatment of chronic inflammation of the stomach. Bear this in mind; the sooner you can put your patient on a nutritious diet the better will it be for him. It would be absurd to keep a patient for many months, as the Broussaists have done, on slops and gum-water. It will be necessary for you to feel your way and improve the diet gradually. Commence by giving a small quantity of mild nutritious food; if your patient bears it well, you can go on; if the gastric symptoms return, you can easily stop. If a small portion of the milder species of food rest quietly on the stomach you may increase it the next day, or the day after, and thus you proceed to more solid and nutritious aliment, until the tone of your patient's stomach regains the standard of health. Never lose sight of this fact, that you may have a case of dyspepsia depending on a chronic gastritis, in which, though you remove the *inflammation* by a strict antiphlogistic treatment, you may not by this remove the *dyspepsia;* and if you continue to leech, and blister, and starve your patient, *after the inflammatory state be removed*, you will do great injury. Such a patient, falling into the hands of another practitioner who treated him on a different system, might be relieved, and his case quoted against you and your treatment, though this, at the commencement, was judicious and proper.

With respect to internal remedies, the school of Broussais think that there is nothing required but cold water and gum. This is going too far. In a former lecture, I have drawn your attention to the fact, that in the treatment of acute inflammation there is a point where antiphlogistics should cease, and where tonics and stimulants are the most efficient means of cure. Of this fact, the disciples of Broussais appear to be ignorant, and they consequently declare against every remedy for chronic gastritis except leeches and cold water. Now, is this right? I think not. We find that, in all cases of gastric inflammation, a change in medication seems to be useful at some period of the disease, that is, a change from antiphlogistics to tonics and stimulants; and I believe that in cases of chronic gastritis these remedies may be used with very great advantage, having, of course, premised depletion and counter-irritants. I believe, too, that most of the remedies, which we see every day unsuccessfully

employed, would have acted beneficially, if the preparatory treatment, which I have mentioned, had been adopted. Among the best remedies of this kind is the oxide of bismuth; I have seen more benefit from the use of this than of any other medicine, after the treatment already alluded to. Generally speaking, the list of internal remedies for chronic gastritis is very small, but after the use of antiphlogistics, you may prescribe the vegetable tonics and oxide of bismuth with advantage. The most decidedly valuable remedy, however, in the after-stage of a chronic gastritis, is the acetate of morphia, which, I am convinced, has a very powerful effect in allaying chronic irritation of the stomach. Dr. Bardsley, of Manchester, in one of his published works, entitled "Hospital Facts and Observations," adduces many cases of gastric irritation which were completely relieved by the use of this remedy, and I am perfectly satisfied of the truth of his statements. It may be said that Dr. Bardsley's cases were only instances of dyspepsia. But as his cases were extremely numerous, some of them of long standing, and the symptoms very severe, the great probability is, that some of them at least must have been cases of chronic gastritis. I know very few books, the perusal of which I would more strongly recommend to you than Dr. Bardsley's accurate and instructive work. The great besetting sin of medical writers is, that their statements of successful practice are grounded on a very limited number of cases, or that, in publishing the result of their practical investigations, they only give their successful cases, and leave out those in which the treatment recommended has been found inefficacious. Yet this is a circumstance which should never be neglected. If a man declares that he has discovered a cure for gastritis, or dyspepsia, and brings forward one hundred cases in which the remedy has done good, the statement is still unsatisfactory and insufficient, because there may be one thousand cases in which it has totally failed. Unless he comes forward and gives both his successful and unsuccessful cases, of what value are his statements? Dr. Bardsley, with the candour and good sense which always characterize the philosophic inquirer, gives the result of *all* his cases, forms them into tables, and then leaves his readers to judge for themselves. From an inspection of these tables, you will be convinced of the efficacy of acetate of morphia in the treatment of chronic gastritis. I have been in the habit of using it with the most gratifying results after leeching, regulating the diet, and paying proper attention to the state of the bowels. There are some forms of the disease in which it is more useful than others. The particular form, in which it proves more serviceable, is where there is a copious secretion of acid from the stomach (that form in which all kinds of alkalies have been exhibited), where severe pain and constant acidity are the prominent symptoms. Here I have seen the acetate of morphia act exceedingly well. You may begin with one-twelfth of a grain made into a pill with crumb of bread, or conserve of roses, twice a day; the next day you may order it to be taken three times, and you may go on in this way until you make the patient take from half a grain to a grain and a half in the twenty-four hours. I shall here mention the circumstances of a case, which I do not mean to bring forward as an instance of cure, but as an illustration of the extraordinary power which acetate of morphia possesses in relieving gastric irritation. A gentleman of strong mind and highly cultivated intellectual powers, which he kept in constant exercise, got a severe chronic gastritis; his appetite completely declined;

he had frequent vomiting of sour matter; fetid eructations; and such violent pain in the stomach, that he used, when the attack came on, to throw himself on the ground, and roll about in a state of indescribable agony. He applied to various practitioners, had several consultations on his case, and the opinion of the most eminent medical men was, that he had incurable cancerous disease of the stomach. These symptoms continued for several years, but for the last two or three years they were quite intolerable. He had repeated cold sweats, vomited everything he took, even cold water, was reduced to a skeleton, and led a life of complete torture. Under such circumstances he tried for the first time, by my advice, the acetate of morphia. He tried it first in doses of one-tenth of a grain three times a-day, and experienced the most unexpected relief. On the third day all his bad symptoms were gone. He had no pain, no vomiting, no sweats; his spirits were raised to the highest state of exhilaration, and he thought himself perfectly cured. He went out in the greatest joy, visited all his friends, and told them that he had at last got rid of his tormenting malady. In the evening he joined a supper party, indulged very freely, and next morning had a violent hematemesis, to which he had been for some time subject. All his old symptoms again made their appearance. He again had recourse to the acetate of morphia, and again immediately experienced relief, but the vomiting of blood again returned, so that he discontinued the remedy. This gentleman is now in the enjoyment of good health. He regulated his diet, left off all medicine by the mouth, used warm water injections, and thus recovered from his supposed cancer.

I do not bring this case forward as an instance of the curative effect of acetate of morphia, but as an instance of its powerful effect in allaying gastric irritation. I could adduce other cases in proof of its value in the treatment of the after-stage of chronic gastritis, and particularly of that form in which pain and acidity are the prominent symptoms; but I perceive my time has nearly expired.

In speaking of the employment of counter-irritation in cases of chronic gastritis, I forgot to mention the use of friction with croton oil, which has been found beneficial in many cases of chronic inflammation. It has been extensively used by many practitioners in the treatment of chronic affections of the joints, and in various forms of pulmonary disease; and I have employed it myself in some cases of chronic gastritis with benefit. I cannot say that the cases in which I have used it presented all the symptoms of chronic gastritis, but they were certainly cases of chronic gastrodynia, with severe local pain, nausea, and loss of appetite. It is an excellent counter-irritant, and gives very little pain. The mode in which I employ it is this—take a few drops of croton oil, five or six, for instance, drop them on the epigastrium, and rub them in with a piece of lint or bladder, interposed between your finger and the skin, and the next day you have an eruption of small papulæ, which you can increase at will. There is one interesting circumstance connected with the use of croton oil frictions, which you should be made acquainted with. The liability to produce counter-irritation, seems to depend upon the absorption or non-absorption of the croton oil; if it be absorbed it will purge, but if it be not it will produce counter-irritation. In cases of this kind, therefore, where it produces the necessary degree of irritation in the skin, the chances are, that it will not act disagreeably by bringing on catharsis. I have

only seen one case where there were both the eruption and catharsis. This was a gentleman who had lately suffered from dysentery in warm climates.

I may also mention, that, in convalescence from an attack of chronic gastritis, you must pay great attention to diet for a long time, because there is no affection of any organ in the body, in which an error in diet so rapidly induces a return of the original symptoms, as in diseases of the stomach, while each return of the disease renders the attack more dangerous and unmanageable, until at last disorganization takes place.

Organic Disease of the Stomach.—This leads me to speak of organic disease of the stomach. On this subject I shall be very brief; the best mode of communicating information will be to exhibit these preparations; you will derive more instruction from their inspection than from any lecture I could deliver. (Dr. Stokes here exhibited a number of beautiful preparations from the Park-street museum, illustrative of various organic lesions of the stomach.) Here is a case, which some pathologists would call cancer, others chronic gastritis. I may remark here, that pathologists are divided as to what is the cause of cancer of the stomach, but the best informed are of opinion that in those cases of gastric disorganization which are called cancer or scirrhus, all that can be demonstrated by the knife is referable to the results of chronic inflammation. This is a different proposition from saying that chronic inflammation *alone* will produce cancer. As yet we know little of cancer; dissection of cancerous organs gives but scanty information; but this seems certain that, in particular conditions of the economy, an inflammation of the stomach will end in cancerous disease. Here is an excellent preparation of the stomach of a person who died of cancer of that organ. For several years before his death he had a jaundiced look, an emaciated appearance, frequent vomiting, and severe pain towards the termination of the digestive process, a circumstance which denotes disease of the pylorus. He also had hematemesis. You see, the inner surface in the vicinity of the pylorus presents ulcerations of the mucous membrane and thickening of the sub-mucous cellular tissue. The pylorus itself does not appear to be at all contracted, but the parts around it are in a state of extraordinary disease. Look at the preparation again, and say what could bitters, or acids, or alkalies, or tonics, have effected in a case of such extensive disease. Here is a stomach in a state of long-continued chronic inflammation, and exhibiting lesions, which some would designate as cancer of that organ. Now, though I do not know the treatment which this patient underwent, I would venture to say that he took plenty of the usual anti-dyspeptic medicines. Yet, in a vast number of cases, where enormous quantities of these remedies are taken daily, the stomach is in as bad a state as that preparation exhibits, and I feel the more strongly convinced of this, because I am aware that many persons die after having gone through the whole routine of anti-dyspeptic practice, and, when they are opened after death, incurable disease of the stomach is discovered. Here is an example of vast cancerous disease of the stomach; here is a very interesting specimen of chronic gastritis, chiefly representing a most remarkable and circumscribed ulcer at the termination of the stomach. Here, you see, is the ulcer, with raised, thickened, and introverted edges. Now, in all probability, this ulceration was exceedingly chronic, for you perceive nature has been at work with it, and has made some attempts at reparation. It is in such a case as this

that patients generally refer their pain to a particular part of the stomach: digestion goes on without any pain until the food reaches a certain point, when acute pain is felt, and this continues until it is relieved by vomiting. The occurrence of this symptom, after an attack of acute gastritis, would lead you to suspect the formation of one or more ulcers, and the persistence of this localized pain should induce you to persevere in employing every means in your power calculated to remove the disease. The preparation which I now exhibit is interesting, as it shows the effect of corrosive poison on the stomach. The patient, to whom this stomach belonged, died in consequence of swallowing a quantity of sulphuric acid; here you see the consequences—the mucous membrane is black and disorganized, exhibiting this ragged appearance. In some cases of malignant fever we have found the stomach presenting somewhat similar appearances; and the same state of the stomach is described by some writers as occurring in cases of intertropical fever. Here is a preparation which you should inspect; chronic gastritis with a large ulcerated patch in the centre of the stomach. Here is another example of extensive cancerous disease.

A very few words will suffice for the state of the science on the subject of cancer of the stomach. It is very hard, nay, even almost impossible, to draw a line of distinction between the symptoms of cancer of the stomach and chronic gastritis, and I believe it is admitted on all hands that the same causes give rise to both. Long-continued irritation will, in one case, produce cancer of the stomach, in another, chronic gastritis. Again, it is admitted by many, that what is called cancerous ulceration of the stomach has no appreciable difference from ulceration in various other organs; and hence some other persons have gone so far as to say that there is no such thing as cancer of the stomach (separately considered); and that all the cases adduced of it are nothing more than so many forms of chronic gastritis. In the present state of medicine, we are not, indeed, possessed of any data which would enable us to come to a final determination on this question. It is certainly impossible to determine this point; but if there be anything peculiar in cancerous matter, similar to tubercular or melanotic matter, there is no reason why, under the influence of inflammation, it should not be developed in the stomach as well as in any other part of the body. But whatever views we entertain on this subject, we must confess that, in the majority of cases, there is a chronic gastritis, and that the principles of treatment which would alleviate the patient's sufferings and prolong life, *are those which are calculated to prevent the occurrence of gastric inflammation.* The more you approximate the treatment of cancer to that of chronic gastritis, the greater comfort will you afford your patient, and the more will you prolong his existence.

The most celebrated case on record of this affection is that of the Emperor Napoleon He died with extensive ulceration of the stomach, which, of course, was called "*cancerous*," and there were also distinct traces of disease of the liver, the mucous coat of the intestines, and the lungs. His disease was believed by himself to have originated in the stomach, and to this opinion he adhered, notwithstanding the results of some solemn consultations, at one of which his affection was declared to be an "*obstruction of the liver*," with a "*scorbutic dyscrasy.*" At another it was pronounced to be a "*chronic hepatitis*," and a course of mercury recommended! When we reflect on this, and read in the account by Gaubert (which you will see in the *Examen des Doctrines Médicales*), the regimen

which was used, and the list of stimulating medicaments employed, you will not wonder at the words of this great man, when he was pressed to take more drugs, to swallow the universal nostrum, mercury, to which he had the greatest aversion. "Your disgusting preparations are good for nothing. Medicine is a collection of blind prescriptions, which destroy the poor, sometimes succeed with the rich, but whose whole results are more injurious than useful to humanity." But he got mercury, notwithstanding, mercury for his "digestive organs;" to "excite the liver;" to "remove its obstruction," and mercury to create bile, and purgatives to remove it; and tonics, and antacids, and stimulants; and he died in torture, and his body was opened, and the stomach was found "*cancerous.*"

I should not omit mentioning to you, that in those cases of chronic gastritis which run on to an incurable stage, the best treatment consists in a careful regulation of diet, in keeping the bowels open by enemata, or the very mildest laxatives, and in avoiding everything capable of producing excitement. You will also derive advantage from the employment of gentle counter-irritation, and from the internal use of narcotics which in such cases appear to have a more beneficial effect than any other class of remedies. With the exception of these, I do not know any other kind of medicine you can safely employ; and I believe that, in the majority of cases, you will find that the patients have taken already too much medicine. Anxious for relief, and urged on by the hope of obtaining some remedy capable of relieving their sufferings, they have recourse to every grade of quacks, are persuaded to swallow every kind of drug, and are subjected to every form of harassing and mischievous treatment. The diet which you prescribe for such patients should be sparing but nutritive; give the stomach as little to do as will be consistent with the support of life and strength; and you may take it as a general rule in the treatment of all chronic affections of the digestive tube, whether cancer of the stomach, scirrhus of the pylorus, or stricture of the intestines, that there are two great principles of general application—preserving a gently open state of the bowels, and allaying inflammatory excitement.

LECTURE XVI.

DR. BELL.

DYSPEPSIA.—*Causes*—Temperaments and constitutions most liable to the disease—Habits of life inducing it—Concomitant diseases—of brain, liver, skin, lungs, uterus, and kidney—These are sometimes causes, sometimes effects of dyspepsia—A complex disease, sometimes caused by, sometimes causing spinal irritation—Modification of treatment required—Andral's case and reflections—Dr. Chapman's notice of chief causes—Tobacco, its injurious tendency and effects—High excitement of brain in England and United States.—DYSPEPSIA WITH MORBID GASTRIC SECRETION—*Pyrosis* or *Water-brash*—Its causes and treatment.—*Cardialgia*, its mixed nature and treatment—Mercury—Ipecacuanha—Sulphuret of potassa—Gunpowder.

DOCTOR STOKES has pointed out, with his usual judgment, the frequent dependence of dyspepsia on chronic gastritis; but in making this latter the subject of his lecture, he has not had scope for exhibiting the various functional disturbances that give rise to and keep up a state of the stomach which is not inflammatory, but which entails on its possessor all the hor-

rors of dyspepsia or indigestion. I shall endeavour, in this and the two following lectures, to point out the chief causes and concomitants of this disease, or series of disorders, and the remedies best adapted to each particular class of cases.

Causes and Concomitants. — Dyspepsia (from δυς, difficulty, and πεψις, digestion, and primarily, πεπτω, *I digest*), that kind of functional derangement which interferes with the conversion of aliment into chyle, is found in all temperaments, but more in the sanguineo-nervous and the nervoso-bilious than in others. The varieties are numerous. I shall mention only *apepsia*, *bradyspepsia* (from βραδυς, slow, and πεψις); *pyrosis* (from πυρ, fire); and *bulimia* (from βους, an ox, and λιμος, hunger); *cardialgia* (from καρδια, or κηρ, heart, and αλγος, pain); *gastralgia* (from γαστηρ, stomach, and αλγος, pain;) *gastrodynia* (from γαστηρ, the stomach, and οδυνη, pain). The lymphatic and the nervoso-lymphatic are less frequently sufferers, and, when attacked, their cases are more readily cured than those of the other temperaments just indicated. In some, the stomach suffers by irregular innervation,—its nervous system at times over-excited, and at others wanting its appropriate nervous stimulus,—as we see in nervous and hysterical persons of either sex, for hysteria in all its essential phenomena is far from being confined to females. Persons of this class, particularly if they are of a rheumatic diathesis, often suffer from a sudden transference of irritation to the stomach, with pains and cramp. So, also, we can readily believe that there is, at times, an original deficiency in the secretion of gastric juice, just as there is of cutaneous or renal secretion: and that, although the stomach is fully competent to digest, in limited quantity, any kind of food, yet it suffers if more is introduced in it. This state of things exists where the digestion is very slow, but is unaccompanied by pain, eructation, heat, thirst, or distress of any kind during the entire period from ingestion to defecation.

Of the acquired predispositions, that induced by sedentary life in a constrained posture, with the mind intent on some exclusive subject, and its possessor inhaling a close or impure air, merits the first notice: and of the exciting causes which operate directly on the stomach, the continued use of alcoholic liquors is entitled to conspicuous mention. Dr. Beaumont has shown, in his experimental observations on Alexis Martin, that all these drinks irritate the gastric mucous membrane and pervert the secretion of gastric juice. The same remark applies to spices and condiments, and in degree to coffee and tea. Of course, therefore, whatever may have been the habits of the patient anterior to the disease, he is bound to desist from all these articles when he is actually suffering under it—provided he is honestly intent on getting cured. Impure air, which I have mentioned as a predisposing, is also frequently a powerfully exciting cause of dyspepsia; so much so, indeed, that I should dread its secondary effects on the stomach more than its primary ones on the lungs, even though the latter were also weak and predisposed to disease. Late hours, deprecated for the invalid by physicians and writers of hygiene, are chiefly hurtful, if he be exposed, as in a crowded company, or even in his own room or study, to close, impure and imperfectly renewed air. Nor can we suppose that adequate atonement for this kind of exposure is made by those who pass the night in a close and badly ventilated chamber.

Among the concomitants, which are sometimes causes and sometimes effects of the disorder of the stomach constituting dyspepsia, may be

enumerated derangements in the functions of the brain, skin, lungs, uterus, and kidneys. Anterior even to these, in the opinion of some, is that deficient action of the lower bowels marked by constipation. Dr. Burne, in his "*Treatise on the Causes and Consequences of Habitual Constipation*," has enlarged on this theme. But we shall find it difficult to determine how far this state is a cause or a concomitant and consequence of dyspepsia. That it is not necessarily a cause, we are assured by the knowledge of cases in which, with obstinate constipation, there is vigorous and complete gastric and duodenal digestion.

Continual excitement of the brain, in the mere exercise of intellect, and, still more, in the conflict of passions, exerts a prejudicial influence over the stomach, and is a too common, though not yet sufficiently recognised cause of dyspepsia. Nor is the evil confined to those whose aspirations are for this world's wealth and honours alone. An over-heated imagination, extreme direction of the feelings to the subject of religion, intentness on doctrinal disquisitions, devotion to an excessive routine of external observances and the acerbity of sect, in place of the active discharge of personal and social duties under religious guidance, induce a morbid state of the nervous system, which is often felt in irregular and painful digestion. Persons, under these influences, are too prone to forget that, in their eagerness to do what they believe to be acceptable to the Deity, by carrying out the various observances of form, they act in direct opposition to the natural laws which are also his, and a conformity with which is a necessary condition for their enjoying health. They act, often, as if they believed that an exception to these laws would be made in their favour: and that meetings, night after night, during which they respired over and over again the same close air, and encountered transitions from excessive heat within doors, to the coolness and dampness of the outer air, and often amidst the greatest inclemencies of weather, would not be productive of the customary bad effects on the bodily frame, because their mental was in such zealous exercise. If worship were penitential, instead of the offerings of gratitude and entreaty for protection and aid, we might admit that people are consistent in subjecting themselves to present suffering and future disease by this voluntary privation of air, and by over-excitement and subsequent languor and lassitude of the body generally, and of the nervous system in particular.

Derangement of the hepatic function is a cause of dyspepsia, but not nearly to the extent that it has credit for. I would say that the cause, when present, is adequate, but that it does not really exist in a majority of those cases in which its presence is assumed. Hepatic disease is often, as I will show you hereafter, supposed to be present when the real derangement is duodenal dyspepsia. The circumstances of atmospheric exposure and of irregular living, including errors both of physical and moral hygiene which bring on hepatitis, are also well calculated to give origin to dyspepsia.

Great and manifold are the gastric disorders of all kinds, from simple heartburn to chronic gastritis,—that are produced by impeded function of the skin, by which I do not mean merely suppressed perspiration, but that low degree of vitality kept up by continual exposure to cold and moisture and unclean things, without adequate clothing and even common ablution. There is no viscus that does not suffer in every imaginable degree by this neglect, and the stomach more, if we except perhaps the lungs, than any

other. In maritime exposures, and particularly during the prevalence of easterly winds, people are greatly troubled with dyspepsia, which assumes a variety of shapes, and becomes so aggravated as to simulate scurvy itself. Under such circumstances the morbid impression is first and chiefly made on the skin.

The influence of the lungs in the process of digestion will be generally understood by reference to their function of hematosis, any impediment to which, by causing imperfectly elaborated blood to circulate and reach the stomach, must modify injuriously its vitality, and prevent the requisite secretion of gastric juice. In another way, also, or by sympathy, the direct deleterious impression of impure air on the mucous membrane of the lungs is transmitted to the analogous membrane of the stomach, both organs being supplied by the same nerve, the *par vagum*, and both also, having other intercommunication by means of the ganglia and plexus of the sympathetic. It is in these two ways that want of ventilation is so injurious to the gastric function, and is so frequent a cause of dyspepsia.

In the suspended or perverted function of the uterine system, as in amenorrhœa and menorrhagia, and even in the plenitude of its exercise, as in pregnancy, we have frequent occasion to note the injury done thereby to the stomach, which is, at these times, singularly capricious and irregular in its appetites and powers. Derangement of the uterine functions is truly a concomitant of dyspepsia; being at one time an obvious cause, at another an equally evident effect of this latter disease. Nor is it by any means easy always to declare the order of causation.

Impeded or perverted function of the kidneys is, we know, of late years, a more common cause of disordered digestion than was at one time dreamed of. The fact that it was a frequent effect of gastric disorder we were tolerably familiar with, but it was reserved for the more careful observations of modern pathology, aided by chemistry, to show that chronic disease of the kidneys, as in their state of albuminous secretion, injures permanently the function of the stomach. The sympathetic irritation transmitted by the kidneys, in a state of acute inflammation, to the stomach, was noted by every tyro in pathology,—I was going to say, by every reader of nosology.

A very slight knowledge of physiology and observation of morbid phenomena prepare us to find all the organs already enumerated, which cause, by their morbid state, dyspepsia, becoming themselves functionally disturbed, and even undergoing lesion of tissue in consequence of protracted gastric disease. Of gastric origin are the depression, gloom, and terrors of the hypochondriac; as likewise the irascibility and violent, passionate excitement in other cases,—all manifesting a sympathetic morbid state of the cerebral functions. Continued irritation of the stomach and duodenum is a frequent cause of hepatic derangement, which singularly aggravates the primary disease. What a tribe of cutaneous disorders, to say nothing of the perversion of the functions of secretion and absorption, and the modification of sensibility of the skin, result from chronic disease of the stomach, in dyspepsia. So, likewise, we meet with a host of disorders of the lungs, from simple hurried breathing after a full meal on to confirmed phthisis pulmonalis, as consequences of gastric derangements. When tubercles follow prolonged dyspepsia, as in some cases they undoubtedly do, we must attribute this effect to the imperfectly elaborated

blood and interruption to nutrition, rather than to a direct sympathetic irritation of the lungs with the stomach. Continuing our illustrations,—we are able to point out the readiness and frequency of uterine derangement after gastric disorder, and to show how entirely obedient, in many cases, the uterus is to impressions, at first morbid and afterwards therapeutical, made on the stomach.

In all these cases the stomach, whether transmitting morbid impressions to, or receiving them from other organs, may be in a state of chronic phlogosis, or it may manifest functional disturbance without manifest organic lesion. Hence, although attention to the concomitants of dyspepsia is of paramount importance, both in investigating this disease and in aiding us to devise a proper treatment for its removal, they alone will not indicate the actual condition of the stomach. So, neither will the remedies be always essentially or materially different, according as the dyspepsia is primary or the result of reflex irritation on the stomach from some other organ. We may have, for instance, dyspepsia connected with chronic gastritis from errors of regimen directly affecting the stomach, or a similar morbid condition from mental causes, an over-excitement of the brain indirectly affecting the stomach. From the operation of the same causes, direct and indirect dyspepsia may result, without any inflammation or equivalent morbid change of gastric mucous tissue.

In thus directing your attention to this large circle of morbid associations with dyspepsia, and of its possible numerous causes, my aim is to show the necessity of a careful inquiry into all the antecedents of the disease which may have given rise to it, and all the concomitants by which it may be supported. Dyspepsia is a complex disease, the chief and most annoying feature of which is generally, but not always, gastric distress and disturbance. The stomach is often the centre whence radiate irritations to numerous other organs, whose functions are troubled in various ways; but it is, also, often that centre to which converge irritations from these same organs. At one time you will see it, by its transmitted irritation, forcing the spinal marrow and its motor nerves into a state of morbid excitement, evinced by irregular contractions and spasmodic movements of some part of the muscular system; at another, into indirect debility from prior excitement, and then there is inability to move,—partial paralysis, in fact, in some of the limbs. And again the stomach is itself the recipient of spinal irritation, and it is tormented with pain and spasms, which disappear with the removal of the primary disease. For details, with illustrative cases of these various sympathies, I refer you to Dr. Langston Parker's treatise — "The Stomach in its Morbid States, &c."

The successful treatment of a disease, or one might say congeries of diseases, such as dyspepsia is, must obviously be rational rather than empirical: it must be also hygienic as well as therapeutical, and often partake more of the former than the latter. He who bases his treatment on the belief that dyspepsia is uniformly the effect of chronic gastritis, is not more in error than he who contends that the stomach in such cases is never inflamed, but that its derangements of function depend on debility and imperfect or irregular secretion of gastric juice. The duty of every physician, who feels his responsibility as he ought, is to ascertain, by a careful observation of all the symptoms, whether the stomach of a dyspeptic patient be in a state of chronic inflammation, or whether the disease depends on transmitted irritation from other sources, but yet without causing

any organic lesion. If inflammation be present, then will he refer to the excellent remarks in the two preceding lectures by Dr. Stokes. In illustration of the other condition of things — severe and even fatal dyspepsia without inflammation — you will thank me for repeating the following case from Andral's *Medical Clinic*, as translated by Dr. Spillan,— volume *Diseases of the Abdomen*, Amer. edit.

"A woman, thirty-eight years of age, entered the Pitié in the month of April, 1831. She stated that since the last seven or eight months she entirely lost her appetite; every time she took food she felt an insupportable weight in the epigastrium, and occasionally rather an acute pain. From time to time she vomited some whitish mucus. Strong pressure on the epigastrium produced no painful sensation in this region. The remainder of the abdomen was soft and free from pain: the patient was habitually constipated; tongue natural; no disturbance of any other organ; the patient was very much emaciated and very feeble. She mentioned that she had begun to lose her appetite and her powers of digestion after having been subjected to severe mental distress.

"We considered this woman as labouring under chronic gastritis, and in consequence of the perfectly natural appearance of the tongue we apprehended the existence of a cancerous degeneration of the sub-mucous cellular tissue. We prescribed milk diet, and established a seton over the epigastrium. The woman wasted away gradually, and eventually died without presenting any new symptoms. Towards the latter period of her life she even refused to take milk, and admitted nothing else into her stomach except a few spoonfuls of gum-water.

"*Post-mortem*. The brain, lungs, heart, and abdominal viscera were all found in a perfectly healthy state, as also the trisplanchnic and pneumogastric nerves."

The reflections on this case by M. Andral himself are so pertinent, and at the same time corroborative of the strain of my own remarks, that I shall repeat them to you.

"Thus, in this case, anatomy was entirely unable to reveal to us the cause of the symptoms and of death. This stomach, so very much disturbed in its functions, was perfectly healthy in its texture.

"It was not therefore of chronic gastritis that this patient died; for gastritis leaves behind it traces of its existence. Was there in this case neurosis of the stomach, or atony of this organ? Who could prove it? We know so little by what forces chymification is accomplished, that we cannot appreciate all the causes which prevent its going on.

"On the other hand, the sympathetic connexions between the stomach and the other organs are so numerous, that the disturbance of one of these organs must necessarily modify the functions of the stomach, without this modification being necessarily an inflammation, or even simple irritation. May it not be in this respect the same with the gastric mucous membrane as with the skin? As in the course of most chronic diseases the cutaneous covering is often found considerably modified in its several secretions, without its being in the slightest degree inflamed or irritated; why, under such circumstances, might not the functions of the mucous membrane of the stomach be also more or less seriously altered? In a word, by virtue of this wonderful law of synergy, of which the animal economy presents us with such continual examples, it seems that the functions of the stomach, in which the act of assimilation commences, must tend to become sus-

pended, for this sole reason, that other organs of nutritive life (small intestine, lungs, liver, &c.) have themselves ceased to fulfil their functions. Of what use, in fact, would it be that chyme should be formed, if the further changes of the aliment could not be produced, if it could become neither chyle, nor blood, nor an integral part of the tissues of the individual? Professor Berard, of Montpellier, seems to have expressed this idea with as much strength as accuracy, when he said that the system digested by means of the stomach."

I have, in the remarks already made, anticipated much of what would be regarded as belonging to the etiology of dyspepsia. The causes more directly operating on the stomach, are errors in diet. On this point, I shall borrow the expressive language of Dr. Chapman, in his lectures on dyspepsia. (*Lectures on the Most Important Diseases of the Thoracic and Abdominal Viscera*, 1844.) "The causes of this affection are such as act directly in the stomach, or indirectly through the intervention of other portions of the system. Of the first, among the most operative, are indulgences in eating and drinking, so as preternaturally to stimulate or distend the stomach—or the use of unwholesome or imperfectly cooked articles, or an undue limitation of diet, as is practised to reduce obesity, or to subdue protracted diseases. The most opposite modes of living, the full or stimulating, or the penurious and abstemious in extremes, are alike productive of indigestion."

"The most pernicious articles in excess, are acid, vinous, malt, or spirituous drinks, especially in the shape of punch, or strong green tea or coffee—exclusive vegetable matter, if it be crude or flatulent—or gross animal food, whether fresh or salted, or smoked—many of the condiments, and nearly all the things included in the term dessert.

"Taking, habitually, drugs, conduces to the same end, as the frequent repetition of emetics or purgatives, or opiates, or other narcotics. Tampering, however, with any medicine or medicines, so much the practice with some people of valetudinary dispositions, is very detrimental. Every ache or discomfort, real or imaginary, must be relieved by a recurrence to some supposed remedy, till, finally, the powers of the stomach are worn out, and derangements, either functional or structural, take place."

On the detrimental effects of that vile weed, tobacco, which the members of all the professions, the clergy among the foremost, consume, as it were, in rivalry, Dr. Chapman holds the following language :—

"The most common of the causes of disease, in certain parts of our country, is the enormous consumption of tobacco in its several forms. Certain I am, at least, that a large proportion of the cases of it, which come to me, are thus produced. It is usually very obstinate, and sometimes of a truly melancholy character. Easy as it were to cite numerous instances to this purport, I must be content with a limitation.

"By a member of congress from the west, in the meridian of life, I was some time since consulted, who told me that he laboured under the greatest physical and moral infirmity, which he was utterly unable to explain, and that, from having been one of the most healthy and fearless of men, he had become, to use his own phrase, 'Sick all over, and as timid as a girl.' He could not present even a petition to Congress, much less say a word concerning it, though he had long been a practising lawyer, and served much in legislative bodies.

"By any ordinary noise he was startled, or thrown into tremulousness,

and was afraid to be alone at night. His appetite and digestion were gone—he had painful sensations at the pit of the stomach, and unrelenting constipated bowels.

"During the narrative of his sufferings his aspect was ghastly, approaching the haggard wildness of mental distemperature. On inquiry I found that his consumption of tobacco was almost incredible, by chewing, snuffing, and smoking. Being satisfied that all his misery arose from this poisonous weed, its use was discontinued, and in a few weeks he entirely recovered."

Dr. Chapman relates other cases in which symptoms of *delirium tremens* were induced by the use of this poison.

Even when it is not an exciting cause, it very often becomes a predisposing one; and the stomach and nervous system, deteriorated by tobacco, are readily excited into open disease by some other cause which, but for this morbid predisposition, would be either relatively innocuous, or produce merely temporary disorder. Vain will be our hopes of permanent cure, or even of marked amendment, of dyspepsia, so long as the patient wilfully persists in the use of tobacco.

Of external causes, compression of the chest and abdomen by corsets is not an unfrequent one among females. Dr. Chapman says that he is "habitually consulted for dyspepsia and its associate affections assignable to this fantastic usage."

I have already adverted to the influence of the brain, through the intense and exaggerated manifestations of its faculties, including intellect, sentiments, and propensities, in the production of dyspepsia. With some modifications, the picture drawn by Dr. Dick (*On the Organs of Digestion:* Philadelphia edition), of the combination of the causes as operative in England, will apply to the state of things in the United States.

"All the moral concurrents which are fitted to excite human passion are rife in our country. A free government; unbounded license to social and individual enterprise; an unrestricted press, permitting zealots of all sorts to stimulate prejudice, political and religious; a daily press ministering, with systematic art, fuel to feed the flame of parties; vast wealth in juxtaposition with dire poverty: all the feverish anxieties and terrible reverses incident to commercial adventures and negotiations, conducted on a scale greater than elsewhere through the earth; perpetual monetary fluctuations; an over-populated country; wherein well-educated and respectable youth of both sexes cannot in many cases make bread by honourable means, but are almost literally reduced to the dreadful alternative to beg or die of want; high civilization and refined education, by which the intellectual faculties are apt to be cultivated at the expense of the physical, and the moral affections to be quickened into a false sensibility, rather than fortified and purified; great religious and political fears and dissensions. Such is the heated moral atmosphere in which the people of this country live: and who can wonder that digestion, the earliest of all the actions of the body to be affected by moral causes, should be, in such circumstances, strongly predisposed and prepared for derangement, on the appearance of exciting causes?"

I regret to be obliged to say, that the remark which immediately follows this passage is so strictly applicable to the United States, which must divide with England the disgrace of neglect of such paramount questions as those of mental and physical recreation, since they are part of the grand

problem of education, both in its physical as well as intellectual and moral aspects.

"I have to add," continues Dr. Dick, "that there is in no civilized country in the world in which the art and duty of mental and physical recreation are less understood and less cultivated than in this; and that, at the same time, there is none in which attention to that art can be with less impunity dispensed with."

DYSPEPSIA WITH MORBID GASTRIC SECRETIONS.

Pyrosis — *Symptoms and Causes.* — Noticing, first, the forms of dyspepsia depending on morbid states of the stomach itself, and passing over gastritis as already adequately commented on by Dr. Stokes, we meet with the variety which consists in a disease of the mucous follicles of the stomach, and hence it might be called follicular dyspepsia. It is that form designated by the term *Pyrosis*, or water-brash, — the leading symptom of which is the discharge from the mouth by eructation, of a tenacious, ropy mucus, possessing sometimes acrid properties, preceded by a burning heat at the epigastrium. It is common and sometimes endemic in the northern countries of Europe, and from time to time presents itself among our dyspeptics at home. The persons most liable to it are those under middle age; it seldom appears before puberty, and very rarely in advanced life. Females are more frequently affected with it than males; and of the former, the single more than the married, although it sometimes occurs during pregnancy. The combination of cold and moisture with a poor diet, may be regarded as a more common cause than any other. Extraordinary mental emotions are, also, an occasional cause. It is rendered very probable, that pyrosis is often the effect of an excessive activity of the salivary glands, by which their secretion, poured out in excess, and being swallowed, is, after accumulation in the stomach, rejected. Often, indeed generally, the salivary glands are themselves irritated from sympathising with gastric disorder. Belonging to this class of glands, and, doubtless contributing its share to the disease, is the pancreas in a state of hyper-secretion. (See Wright, *ut supra.*) The symptoms have been well described by Cullen. "The first symptom of it is a pain at the pit of the stomach, with a sense of constriction, as if the stomach was drawn towards the back. The pain is increased by raising the body into an erect posture, and therefore the body is bent forward. The pain is often very severe; and after continuing for some time it brings on eructation of a thin, watery fluid in considerable quantity." In inveterate cases, the rumination, as observed by Dr. West (*On Pyrosis*), runs into vomiting, and sometimes into the true erythematic gastritis. The paroxysms usually come on in the morning and forenoon, when the stomach is empty.

Morbid Anatomy. — The appearance of the stomach in cases in which it has been examined after the death of those who had suffered long from pyrosis is variable. Sometimes the mucous membrane has been found perfectly natural, or of a uniformly morbid colour, as red or brown, or darkened, like melanosis. In a case which came under Dr. Watson's observation (*Lectures on the Principles and Practice of Physic*, Amer. edit., p. 697), and in which not less than three pints of the tasteless liquid was brought up every day, the stomach, after death, was found to all appearance healthy: but it had been pressed upon by an enormous liver

At other times the mucous follicles are observed to be remarkably developed and pale; and again, together with the enlargement, we see vascularity. In some cases, again, there is hypertrophy of the mucous membrane of the stomach, or thick and adherent mucous exudation, with or without specific marks of inflammatory action.

The inference to be deduced from these different states and appearance of the gastric mucous membrane in pyrosis, is, that this disorder is rather symptomatic than primary, and, at any rate, that, like other forms of dyspepsia, it exhibits frequent complications which are not essential to the production of the ordinary symptoms.

Treatment. — The treatment of pyrosis will consist of the occasional administration of an emetic of ipecacuanha, to expel the mucus which often remains for a length of time in the stomach, and is a cause of irritation during all this period; and also to modify somewhat the secretion of the gastric mucous follicles. Partly with the same intentions, and also to remove an occasional accompaniment, costiveness, a laxative compound of blue mass and rhubarb will be advisable, alternating with aloes and some aromatic bitter. Astringents have had their eulogists, but we must believe, on speculative grounds, and under an impression that excessive discharge was the chief symptom to be combated. We shall gain little, however, unless we remount to the original cause, — a morbid state of the mucous follicles of the stomach, or, as some would persuade us, of the pancreas, the secretion from which, say they, constitutes the matter discharged from the stomach. Opium has been found useful, alone and in combination with soap, rhubarb, and extract of gentian. Linnæus, who saw much of pyrosis, recommended nux vomica in doses of ten grains three times a-day. Granting the value of this remedy, it will be safer to prescribe it, in the beginning, in much smaller doses. Strychnia, as an article of uniform strength and easily measured, to the extreme of subdivision, would seem to be still preferable to the nux vomica; and it has accordingly been used in these cases with benefit, in the dose of from a sixteenth to a twelfth of a grain, two or three times a-day. The success attending the use of the sub or tris-nitrate of bismuth in gastrodynia, prompted to trials of this medicine in pyrosis, and with results quite encouraging. Dr. Bardsley, of Manchester (*Medical Reports of Hospital Practice*), believes it to exert a local and specific action upon the organs of digestion, restoring the stomach to a state of vigour and consequent healthy secretion, essential to the removal of the symptoms of acidity, spasm, and pain. Acetate of lead and spirits of turpentine are also recommended on occasions. Baillie, who was skeptical of the curative power of any medicine in this disease, tells us, that a drachm of compound tincture of benzoin, rendered miscible with mucilage, was found by him to be the most efficacious.

Reference being had to the salivary origin of pyrosis, remedies calculated to give tone to the glands (sub-maxillary and parotid, &c.) will be called for. With this view, various astringent gargles have been used with advantage, if there be relaxation and paleness of the buccal mucous membrane. Rose water with tincture of myrrh and catechu answers the indication very well; or the following, as used by Dr. Wright:—℞. *Decoct. cinchonæ*, ℥vii.; *Tinctura Myrrhæ*, ℥ss.; *Tinctura conii*, ℥ss. *Fiat gargarisma, sæpe utendum.*

If we look for a radical change in the secretory apparatus of the stomach,

we must procure it by means of a regulated diet and attention to the function of the skin. With this view acescent vegetables, common fruits, much or imperfectly prepared farinaceous matter, fermented drinks, tea and coffee, condiments, and smoked meat or fish, are to be abstained from, and in their stead will be eaten a small portion of plainly dressed animal food, with stale bread or biscuit and milk, or milk and water and bread, sago, or arrow-root. To meet the latter indication, warm clothing, active exercise in a dry air, and frictions and the salt water bath are to be enjoined on the patient, for his adoption.

CARDIALGIA.—This term, of Greek origin, signifying pain of the heart, has been repeated in the language of the different nations of modern Europe in the same sense. Thus, we have the corresponding term in English of *heartburn*, in French of *mal de cœur*, and German, *hetzensangst*, or heart-pain. Greek writers were accustomed, however, to call the upper orifice of the stomach *cardia*, or even *cor* (κῆρ), and to this part did they refer the morbid sensations by which the disease in question was designated.

Cardialgia is akin to pyrosis, and is the *anorexia humoralis* or *pituitosa* of the nosologists, and the follicular gastric dyspepsia of some late writers. The greater regularity of discharge of a viscid fluid in the morning, and the addition of cramp and a sensation of gnawing complained of in anorexia, are not, I think, grounds for any specific difference between this variety and pyrosis, or between either of these again and cardialgia. The differences are more in the temperament and constitution of the persons affected than in any organic change or peculiarity of functional disturbance of the stomach. All these affections exhibit the characteristic in common, of pain with more or less heat, and the secretion and discharge of a morbid mucus, sometimes insipid, at other times acid and acrid. They belong to the *Diacrises* of Gendrin (*Traité Philosophique de Médecine Pratique*, t. iii.), and are regarded by Good, with all his fondness for nosological refinement, as kindred disorders, the treatment of which need not be studied separately. The painful sensation at the cardiac orifice, as of heat and scalding, and which has given the popular name of heartburn to *cardialgia*, is often an evidence of the morbid sensibility of this region of the stomach rather than of any peculiarly acrid qualities in the fluid secreted. Sometimes this is manifestly acid, at other times neutral. Gendrin speaks of the varieties of cardialgia under the head of acescent or cardialgic dyspepsias. The origin of this fluid is not accurately determined: since by some it is regarded as a peculiar morbid secretion; by others the result of chemical change of healthy secretion in the stomach, and by a third party, again, as a depraved state of the gastric juice itself. We can hardly doubt that cardialgia, marked as it is by morbid sensibility and morbid secretion, may depend on different states, or at least degrees of vascular and nervous irritation of the mucous membrane and mucous follicles of the stomach. In one case, there is merely a morbid condition of the nerves of organic life, and accompanying a morbid secretion, with but little exaltation of the nerves of animal life and those of sensation. In another, these latter are greatly excited and the pain is considerable; while in a third, again, associated with disorder both of secretion and sensation, we meet with capillary excitement and incipient phlogosis.

The first symptom of an attack of cardialgia is pain in the epigastrium, felt under the xiphoid cartilage, and often extending into the right hypo-

chondrium. The pain is either dragging or pulsative and burning,—beginning usually a short time after eating, and increasing in violence progressively for two or three hours, and then gradually declining so as to reach its minimum in four to five hours after the meal. During this time the patient complains of dryness and heat of the throat, nausea, and often a strong desire to vomit. Some relief is given by eructations, either tasteless or acid and burning. The salivary glands are excited to the secretion of a viscous liquid, which is continually discharged by spitting. The tongue is large, moist, and trembling. The patient complains of headache, and exhibits an anxious expression, with tumid features and leaden complexion. He is easily fatigued, and is subject to vertigo on making the least intellectual effort. The appetite is usually diminished, at any rate irregular during acute cardialgia. Constipation is a common and troublesome symptom.

Treatment.—Obviously must our treatment vary with the varying condition of the stomach in these cases. Simple nervous cardialgia—some pain and acid eructation and vomiting, without increased heat of skin or activity of pulse, will require opiates and other narcotics, or preferably quinia, iron and bitter tonics, in alternation with carbonate of ammonia and other antacids. If, on the other hand, the fluid be acrid, and evidences of morbid irritation be present, so far from discountenancing the use of herbaceous vegetables and an acidulous diet, which were prohibited in the first variety, these may be even recommended with good effect. In morbid capillary excitement of the gastric mucous membrane, manifested by a red tongue, tenderness of the epigastrium, dry skin, and an ever-craving thirst, leeches below the ensiform cartilage ought to precede other treatment. Inability to procure these, or prejudices against them, will authorize the substitution of a succession of small blisters in their place. After this, if the disease is not cured, we have recourse to other general means adapted to the presumed state of the organ and its mucous secretors.

Mercury is generally prohibited in dyspepsia, but on a very imperfect pathology of this disease. No doubt that, in strumous habits and in nervous temperaments and subjects, in whom the skin is cold, and there is little or no vascular excitement,—the tongue moist and clean or simply loaded, and the urine secreted in its customary abundance,—mercurial preparations are seldom called for, indeed ought to be withheld. But in more mixed cases of excitement with morbid secretion, dry, and occasionally hot skin, and imperfect renal discharges, small doses of the blue mass, or of this with ipecacuanha, or mercury with chalk, will exert a very beneficial effect. In making this remark, let me add, however, a caution against continuing this medicine, or giving it in such doses as will affect the constitution by the production of ptyalism or of nervousness and muscular weakness.

Ipecacuanha, made popular by Daubenton, has, since his time, been much used by practitioners in the treatment of dyspepsia, when characterized by morbid sensibility and depraved gastric secretions. The French practitioner just mentioned, gave the medicine in small doses, or from a quarter of a grain to two grains early in the morning fasting. Dr. Thomson was accustomed to divide a full dose of ipecacuanha into several equal parts, which he directed to be taken in the course of twenty-four hours. This article is sometimes conveniently combined with an aperient, some-

times with an alkali. Both these indications may be fulfilled by its union with rhubarb and soap, as in the following prescription:—

℞. Pulv. ipecac. gr. xii.
Pulv. Rhei,
Sapon. āā. ʒss.
M. ft. mass. in pil. xviii. dividend.

Give a pill morning, noon, and night. Where nausea is easily excited, we ought to give in combination with the medicine a little carbonate of ammonia, aromatic powder, cayenne pepper, or sulphate of quinia. With this last, joined to ipecacuanha, I have had frequent cause to be pleased, in the treatment of the forms of dyspepsia now under notice. The prevalence of acidity will call for lime-water, and if the system be in an atonic state, subcarbonate of ammonia or aqua ammonia with the ipecacuanha.

The sulphuret of potassa is another remedy which has enjoyed the credit of exhibiting a specific operation on the diseased mucous follicles. It is given alone, when not contra-indicated by too great gastric sensibility, in doses of from a few grains to half a drachm, or it is combined with subcarbonate of ammonia, bitter extracts, aromatics, carminatives, or with rhubarb, aloes, or pil. galban. comp. I have at different times, in cases of dyspepsia with amenorrhœa, derived very good effects from the combination of sulphuret of potassa and sulphate of potassa with aloes, in such doses as to act on the bowels. Sulphurous waters have been found to be efficient remedies in the varieties of the disease now under notice.

For heartburn with eructations, gunpowder has been recommended by Dr. Dick (*On the Digestive Organs*, p. 128, Phil. edit.) in very decided terms, as exerting not only good effects on the intestinal, but also as restoring simultaneously, the action of the bowels, that of the skin, kidneys, and lungs. During its employment, an occasional dose of castor oil or of magnesia may be interposed. The gunpowder should be of a fine quality, and ought to be taken dry, or in some glutinous vehicle, as molasses, jelly, or a solution of gum.

LECTURE XVII.

DR. BELL.

GASTRODYNIA, OR GASTRALGIA.—Its symptoms—*Diagnosis*—*Causes*—*Treatment*—Hygienic means the first to be attended to—Alleviation of pain—Caution respecting stimulants—Draughts of hot water—Blending of gastritis and gastralgia—Hydrocyanic acid—colchicum—emetic tartar in small doses—oil of turpentine—subnitrate of bismuth—oxide of zinc—subcarbonate of iron—carbonated chalybeate waters—nitrate of silver.—Periodical gastrodynia requires sulphate of quinia.—Danger of alcoholic stimulants.—Superiority of water as a drink.—Attention to the lower bowels.—The kind of food proper.—Regulation of the cutaneous functions.—Mental habits to be studied.—Change of scene and travel.

ALLIED to cardialgia by some of its symptoms, but best characterized by excessive morbid sensibility of the stomach, and often concomitant spasm or cramp, is *gastrodynia* or *gastralgia*, the *irritable gastric dyspepsia* of

Dr. Todd (*Cyclopædia of Practical Medicine*), and the *morbid sensibility of the stomach* of Dr. Johnson. In the same case we may have a succession of morbid states, indicated first by the symptoms of pyrosis, then those of cardialgia, and, finally, of gastrodynia. The last is sometimes a termination, also, of common inflammatory dyspepsia.

Gastrodynia is marked, not only by a pain in the stomach but by varieties of this pain, which is at one time acute and gnawing, at another obtuse, and again burning, as in cardialgia. It may be brought on, and sometimes alleviated, by eating. It is relieved, but not uniformly, by pressure. On occasions, the morbid sensation consists of coldness, or of itching, tickling, or formication. Its accompaniments are, often, yawning, anxiety, feeling of fulness and tension, and pulsation at the epigastrium. Its usual time of paroxysmal accession is early in the morning, or any time after midnight. The slightest causes,—physical or moral,—an unpleasant dream, unexpected news, the impression of cold, a simple change of posture, will suffice to bring it on, or to aggravate it when present. Abnormal sensations, often of an exquisitely painful nature, are complained of in other organs, sometimes coincident with, but more commonly replacing, the gastralgia; such are pain of the head, alternations of heat and cold on the cutaneous surface, horripilation, frequent palpitation, distension of the abdomen, feeling of suffocation, or of being strangled, &c.; spasmodic pain in the uterus, bladder, or urethra, or neuralgic pain in some part of the body, in the uterus, testicles, or rectum. Frequently a fit of hysteria even in men, supervenes. Or the patient may feel restless and unquiet, or be seized with a fit of depression, or of ungovernable impatience or anxiety. These symptoms generally terminate with the completion of digestion, but they may be renewed by taking the mildest food: they are usually accompanied with coldness of the extremities; and early in the attack a discharge of pale limpid urine takes place.

The appetite is capricious; often voracious, sometimes wanting, or craving unaccustomed articles. The tongue is pale and moist; at times covered with a mucous coat and larger than natural. Although under active irritation it may be dry, yet no thirst is complained of. There is, in fact, a deficiency of saliva, but the patient is endeavouring to get rid of a white frothy secretion which covers the tongue and lips. At times the tongue is furred as if, to use the comparison of Dr. Todd, a fine white gauze were thrown over it: "sometimes it is covered with a thin, milky-white fur, as if the patient had just been drinking milk, and sometimes it is besmeared with a thin, frothy mucus." In a majority of cases the bowels are obstinately constipated.

So exquisite, after a while, is the sensibility of the stomach, that not only does it receive the impression from the ingesta when swallowed, and during their mutation into chyme, and the passage of this into the duodenum, but, also, as a Parisian lady, suffering under the disease, told Pinel: it feels pain, pleasure, and all the moral affections. A disobliging look struck her sensibly, as it were, on the stomach,—"I think even by the stomach," was her expression.

Diagnosis.—Gastralgia, or gastro-enteralgia, has often been confounded with gastritis and gastro-enteritis. Sometimes the two diseases attack at the same time, and then it is not easy to unravel their complications. In a majority of cases, however, the symptoms are sufficiently contrasted to enable us to establish a correct diagnosis. Thus, the natural or pale and

moist tongue in gastro-enteralgia contrasts with the red and furred appearance of this organ in gastritis. In the latter the appetite is deficient or wanting entirely, and there is an aversion both to stimulating food and drinks, which are often sought for with avidity by the gastralgic patient. When vomiting occurs in gastro-enteralgia it is of glairy mucus and simple fluids, — in gastritis it is of alimentary substances. There is no thirst, the skin is soft and satiny, and of a natural temperature, the pulse natural or slow: fever, if it appears at all, is intermittent and with morning paroxysms in gastro-enteralgia. In gastro-enteritis, on the contrary, the thirst is troublesome, the skin is dry and harsh and often hot, the pulse is frequent and the fever continued, or if it exacerbates, it is in the evening. The physiognomy is little changed, and the fulness of habit not materially reduced in gastro-enteralgia, whereas the features have a pinched appearance, and the complexion is muddy, and there is often great emaciation in gastro-enteritis. The disposition, often singularly altered, the patient becoming fitful and irascible, in gastralgia, is little affected in gastritis. The diagnosis in the former is obscure, and the prognosis favourable; in the latter the diagnosis is easy, and the prognosis is of an unfavourable nature. Between gastralgia and pneumonia in anemic habits it is not easy at first to distinguish, when in the former the pains dart, as they sometimes do, through the chest and impede respiration, and are accompanied with cough. Not unfrequently violent derangement of the action of the heart, to such a degree as to induce fears of organic disease, is associated with gastralgia.

Causes.—Various are the causes of gastralgia. Among those depending on errors in the use of ingesta, the most conspicuous is poor and indigestible food, as restriction to potatoes, from which cause the Irish peasantry are often afflicted with this disease and pyrosis, and to oatmeal, which produces similar effects on the Scotch. The poor in large cities are frequent sufferers in this way,—and certainly in their case the chief cause is stint quantity and unwholesome quality of the food which they do partake of. Long fasts come in as a powerfully contributing cause, with those persons already enfeebled, even when their scanty nutriment is taken regularly. Sudden transitions from high to low living, and even refinement in restricting one's-self in the choice of food, are recognised causes. Certain ingesta, as green tea and coffee, drastic purgatives, interruption in the use of narcotics, as of opium and tobacco, also bring on this disease. Small, however, is the temporary discomfort from ceasing to use these narcotics, compared to the manifold ailments and distresses which follow in their train, in certain temperaments, such as the irritable or nervous, who are so open at any time to an attack of the disease, while persisting in their use. In such persons, moral causes, as anxiety, jealousy, morbid indulgence of sentiment, &c., are apt to induce gastralgia, which reacts with fearful force on the temperament and morbid frame of mind, aggravating all their ills, and investing common events with the most malign features. Exhausting discharges, as by hemorrhage or venesection, predispose the stomach to be perniciously affected by certain articles, which, although of difficult digestion, would hardly have displayed those morbid effects but for the predisposition thus induced. Transmitted irritation from other organs, of which I spoke in a preceding lecture as causes of dyspepsia, sometimes brings on gastralgia of considerable intensity. Such are dysmenorrhœa, leucorrhœa, pregnancy, hysteria, inflamed kidney, strictured urethra, irritable testicles, and other painful local complaints.

Spinal irritation, or as it is more appropriately called, of late, dorso-intercostal neuralgia, of which I shall have occasion to speak more in detail hereafter, manifested by tenderness on pressure of one or more of the intercostal spaces, is occasionally associated with, if not a cause of gastralgia. I have had patients, particularly nervous females, who have complained grievously of pain in the gastric region, when the affected space, or sometimes vertebra, was subjected to slight pressure by my finger. In such cases there is a vitious circle; irritation begun on the gastric organ being continued to the sentient spinal nerves and thence to the spinal marrow, and returning by the motor-spinal nerves to the stomach.

Treatment. — A knowledge of the causes of gastralgia or gastrodynia will suggest much that is necessary and useful towards its cure. Errors in regimen must be corrected by the substitution of nutritive for poor food; and of that easy of digestion for the crude and the gross: abstinence from noxious beverages is to be enjoined; and the entire mode of living altered or brought back to the standard sanctioned by general experience, as deduced from sound physiology and hygiene. Under these heads are included a due control of and direction to the feelings, healthy occupation of mind as well as of body, and an avoidance, of course, of all excesses and extremes, whether of mere sensual indulgence, or of privation from a mistaken sense of duty. The hygienic means of cure, instead of being regarded as secondary or incidental, ought to have the precedence over the pharmaceutical, which latter, although they may alleviate and soothe, and procure intervals of repose, are incompetent, alone, to remove the disease.

The period at which gastralgia often makes its attack, — early in the morning, and when the stomach is empty of alimentary matter, — would naturally suggest the administration of food, as a means of temporary relief at least; and, in fact, a few morsels of common food — a biscuit, a crust of bread, or small piece of meat, adequately masticated — has sufficed to relieve. Anything which stimulates the stomach, as an aromatic or spice, in substance or infusion, or a bitter tincture, will, on occasions, have the same effect. Vomiting, although it merely expels some mucus, will give a lull to the symptoms. A draught of hot water, camphor mixture, water of ammonia, I have found, each, to answer this purpose. Alone, or in combination with some one of the articles already mentioned except emetics, opium and its preparations are most and deservedly relied on, to remove the more intense pain and often accompanying cramp in severe gastralgia.

The first and most urgent call, during the paroxysm, is for an alleviation or removal of pain; and this is proposed to be brought about generally by stimulants, anti-spasmodics, and opiates or narcotics. But even at the very outset, and during the imminency of distress, we ought, if possible, to take early note of all the circumstances, — concomitants and complications, — which modify the character of the disease. If gastralgia be, as it sometimes is, a sequel, or one of the accompaniments, of dysmenorrhœa, in a full and plethoric habit, stimulants of all kinds ought to be withheld: first, because they generally fail even to alleviate the pain; and secondly, because they increase subsequent distress, light up fever, and endanger phlogosis both of stomach and uterus. More is gained, in such cases, by repeated draughts of hot water, or by emptying the sto-

mach by draughts of warm water, or of salt and water, and by pediluvia and an opium pill.

Sometimes, there is a blending of gastralgia and gastritis, in which case we must endeavour to reduce the disease to its simplest or nervous element by removal of the phlogosis. A few leeches to the epigastrium, a laxative by the mouth, or a purgative enema, simple mucilaginous drink and an opiate — will greatly contribute to this end, which will be further expedited by the warm bath. In these mixed cases some remedies are applicable to meet both indications, viz., to abate neuropathia and capillary excitement. Hydrocyanic acid, colchicum, and minute doses of emetic tartar, are of this class ; and they have the additional advantage of producing an impression beyond the period of the paroxysm, and protracting that of its return. Of hydrocyanic acid I know little from personal experience, but the good opinion of its efficacy in gastrodynia, originally expressed by Dr. Elliottson, has been confirmed by too many persons since to allow me to doubt it. Dr. A. T. Thomson has recommended it as an adjunct to tonics, in those forms of dyspeptic irritability of stomach which are accompanied with heat and soreness of the tongue. But, the great difficulty of preserving this acid of a suitable and equal strength, the danger from differences in recognised formulæ, and the uncertainty of therapeutical effect under the most careful administration, are drawbacks which we cannot overlook when it is the subject of our deliberations. Hydrocyanic acid, prepared according to the processes directed in the last United States Pharmacopœia (1842), contains two per cent. of pure anhydrous acid. The objections on the score of want of uniformity of formulæ, and change by keeping, are obviated by the use of the hydrocyanate of potassa, as in the mode recommended by Magendie, in which one drachm of the liquor of the medicated cyanuret of potassium is dissolved in a pint of distilled water, sweetened with an ounce and a half of white sugar. With the good effects of colchicum, in the shape of vinous tincture of the seeds, in doses of twenty or thirty drops every two hours, or of half a drachm twice or thrice a-day, mixed with some aromatic water, I am more familiar. The same may be said of emetic tartar, and particularly when combined with minute quantities of opium ; an addition, this last, which enhances, in the circumstances now before us, the virtues of the colchicum. In enteralgia, I know of no remedy equal to the colchicum, when united to magnesia, or alternating with one of the alkalies. In gastralgia, if there be heartburn or cardialgia, these last mentioned remedies may be advantageously conjoined with the wine of colchicum seeds. Strychnia, as advised in pyrosis, will, sometimes, be found to be decidedly remedial in this disease.

In cases in which the disease has been of long duration, and the patient exhausted by its violence, I have found the oil of turpentine, in drachm doses every hour or two, mixed with simple mucilage, give earlier and more complete relief than any one article with which I am acquainted. If constipation be present, a larger dose, or from two drachms to half an ounce, joined to half an ounce of castor oil, may be given, with the double view of relieving the gastric pain and emptying the bowels. A long interval of ease will sometimes follow this single dose.

For permanent effect various mineral preparations are prescribed in gastralgia. Of these, subnitrate or trisnitrate of bismuth, oxide of zinc, carbonate of iron, nitrate of silver, and arsenical solution, have been

the most extensively employed. If the former be prescribed, it should be at first in a dose of four or five grains, gradually increased to twenty grains. Some French writers speak of prescribing it familiarly in quantities of eighteen, thirty, and even seventy grains in the course of a day. (Trousseau and Pidoux, *op. cit.*) The observations of Odier of Geneva, on the subnitrate of bismuth in pains and cramps of the stomach, recorded in 1786 (*Journal de Médecine*), seem to have been quite forgotten, if we may form an opinion from the emphatic reference to writers of our own time on this subject. Our obligations are, however, due to M. Bretonneau for a more precise and definite description of the circumstances under which this remedy can be used with the greatest advantage. The subnitrate of bismuth is more particularly adapted to laborious digestion, accompanied with nidorous eructations and tendency to diarrhœa. When the eructations are acid or the flatus inodorous, the medicine almost always fails. It is indicated in chronic vomiting, without fever, which follows acute gastritis, indigestion, or the effect of an irritating medicine, and in the gastralgia complicated with this state. But, on the other hand, if gastralgia be accompanied by habitual constipation, and there is no vomiting, or only that of a glairy, insipid, or acid mucus, and complication of chlorosis, or facial neuralgia, or rheumatism, or of leucorrhœa and hemorrhoids, or any other flux, except diarrhœa, the subnitrate is of small service.

In the vomiting to which children are subject, during dentition, and which so often precedes softening of the mucous membrane of the stomach, and, also, to that which is caused by over-feeding and accompanies the muguet (*stomatitis with altered secretion*), this medicine displays its curative agency in a very satisfactory manner.

Chalybeates are best, if not exclusively, adapted to gastralgia in persons of an anemic habit, and especially in females of a lax and delicate frame, and who suffer from amenorrhœa and leucorrhœa. The ammoniated iron and the *vinum ferri* have been recommended on these occasions. Preferable to both is the subcarbonate (precipitated carbonate), in conjunction with aromatic powder, or a little ginger alone. It has been found that the carbonated chalybeate waters are often successful when no officinal preparation of iron can be borne; and hence a visit to Ballston, or Bedford Springs, and drinking the chalybeate waters there, will give the patient a double chance of restoration; first, by the journey and its concomitants, change of air and scene, and change of thoughts and feelings; and, secondly, by the medicinal effects of the waters themselves.

Nitrate of silver has of late years been tried, in cases of morbid sensibility of the stomach, by Dr. James Johnson (*Morbid Sensibility of the Stomach and Bowels*), and is well spoken of by Autenrieth, Rueff, and others, in this disease. For Rueff's practice, see *Amer. Journ. of Med. Science*, May, 1837. By the latter it has been given, not only in gastrodynia but in cases of nervous vomiting and other derangements of the digestive organs so common in young infants, and, also, as a palliative in cancer and scirrhus of the stomach. The dose of the nitrate is a sixth of a grain, gradually increased to three or four grains three times a-day,—given in the form of pills made of bread-crumb. Objection has been made to this latter, on account of the chloride of sodium which it contains; but the decomposition by this agent, considering its extremely minute quantity, must be inconsiderable, if it takes place at all. Some mild

vegetable powder with mucilage may be preferable to the bread. We must enjoin on the patient the precaution not to take common salt or salted food, either immediately before or immediately after swallowing these pills. The dose of the nitrate has been carried as far as fifteen grains by Dr. Powell. I may have occasion, when treating of epilepsy and the remedial value of nitrate of silver in that disease, to speak of the discoloration of the skin of a blue or slaty hue caused by persistence for a length of time in the use of the remedy. Dr. Johnson, on this point, however, asserts, that there is no instance on record where the complexion has been affected by the medicine, when restricted to three months' administration. It will be more prudent, however, to desist, for a while, from its use after a month.

Where the association, to which I have already referred, exists between spinal irritation or dorso-intercostal neuralgia and gastralgia, a few leeches to the seat of the former, followed by a small blister, or friction with croton oil, will be productive, in some cases, of prompt relief. Certain substances, with anodyne and tonic properties, may be carefully applied to the skin of the intervertebral space denuded by a blister, in place of their being exhibited by the mouth.

Gastrodynia, assuming a distinctly periodical character, or occurring endemically as it sometimes does, and at the same time with periodical fever, will be advantageously treated with sulphate of quinia, or a watery infusion of Peruvian bark and a little laudanum; and, if the bowels are torpid and the secretions unhealthy, blue mass and a little aloes should be used occasionally. When neuralgia of the stomach alternates with facial or temporal neuralgia, and the system is weakened by their duration, or by other causes, sulphate of quinia in tolerably full doses, as of five grains, exerts a very good effect. Indeed there would seem to be no adequate substitute for this medicine in such cases, although I know that arsenic will be at once suggested by more than one practitioner.

Most stimulants, and especially alcoholic ones, ought to be regarded with great mistrust in gastralgia. That they will often give speedy, though temporary relief, is undoubted; but the habit of using them, begun in this way, is so often prejudicial in other respects, and so apt to lead to downright intemperance, as well as ultimate aggravation of the disease, or at any rate a conversion of gastralgia into gastritis, that, in no case ought the physician to allow discretionary privilege to his patient for recourse to them without advice specifically given, and never to direct their continuance beyond the urgency which seemed to call for them at the time of suffering. How many have acquired habits of drunkenness, how many of the habitual use of opium or laudanum, owing to the careless advice of their physician, to take a little tincture of bark or some aromatic tincture, or a glass of brandy and water, or a few drops of laudanum, whenever they felt the approach of gastrodynia, or other form of neuralgia, or of erratic gout! Medical ethics require a supervision on this point, so as to quicken the sensibilities of physicians to their responsibility for the habits of their patients after convalescence from disease; for these habits are often the result of formal advice, as well as of casual suggestion, offered by medical men at this time.

There is no other drink than water for habitual, that is daily, use, which can be taken with any permanent advantage. Drunk quite hot it will often relieve the violence of the paroxysm; and if, in common, its cold-

ness should offend the stomach of a gastralgic patient, it is easy to correct this by having it boiled, and a piece of toast infused in it, or the rawness removed by placing that which is to be drunk in warm water for a few minutes. I speak now, of the daily drink, both that at meals and at other times. When toast and water is directed, the toast should be slowly made, be quite brown and dry, and only allowed, in warm weather particularly, to remain for an hour in the water which had been previously boiled; after which time this latter should be strained, or carefully poured into another vessel.

The state of the lower bowels always demands our attention in gastrodynia. Generally torpid, they require to have their action quickened in some way or other. This is best performed by mild means,—such as simple enemata, where the stomach is very irritable, and in common by a combination of rhubarb and magnesia, with ginger, in powder, or of aloes, blue mass and soap, or hyosciamus with aloes and soap, in pills. A tumblerful of hot water, with a tea-spoonful of carbonated magnesia, and a few drops of aqua ammonia mixed in it, taken at the time, will often answer a good purpose. Sometimes a little rhubarb and magnesia with a simple bitter, such as gentian or columba, will be found beneficial, by its effects both on the stomach and the colon. But here, again, hygienic means are the only ones on which we can rely for permanently removing constipation. Something will be gleaned from the patient's own experience, something suggested by the physician, in the selection of suitable ingesta. Stale wheat bread, that is, bread baked on the day preceding that in which it is eaten, or bran crackers, ought in all cases to be preferred to fresh, and especially warm bread, than which there is no article more injurious to the dyspeptic, and above all to the gastrodynic stomach. In some cases the bread of Indian corn-meal agrees better with the stomach than that of wheat. If butter be added to fresh or hot bread, or to hot toast, and eaten as part, and sometimes the chief part of a repast, no medical skill is equal to devising means of cure of the disease in question. The same difficulty will be interposed by the use of green tea and coffee. Nor can chocolate, with its oily ingredients, be received as a substitute for these beverages.

On the subject of food generally, it is not easy to specify the articles which will be found to be adapted to every case of gastrodynia, as there are notable differences in gastric sensibility as well as digestive capability among persons affected with this disease. Milk, often beneficial, is at times positively noxious. Occasionally, boiling it, or diluting it with hot water, or the admixture of a little rice or arrow-root, or even wheat flour when it is boiling, will render it more digestible for adults, as it is found to be, by these means, for children. If milk be used, it ought to be for breakfast or early dinner; but not in the evening. Cures have been brought about by restricting the patients to a very small quantity of this nutriment, as one or two table-spoonfuls of skimmed milk at a time. Dr. Barlow of Bath reached the same good result, by confining his patient to a diet consisting wholly of fresh-made, uncompressed curd, of which she took only one table-spoonful at a time, repeating it as often as she found it advisable. Dr. Johnson has found gruel in some cases to be equally successful.

In simple gastrodynia and where the inflammatory element, if it had existed, is removed, a small portion of some plainly dressed meat with a

vegetable addition, is admissible at dinner. From the latter, however, I would exclude potatoes, which I have seen repeatedly to bring on and keep up gastric pain and spasm, both in children and in adults. Spinach, though *à priori* it would not seem to be adapted to dyspepsia, is often very serviceable, by preserving a regular state of the bowels, without, at the same time, offending the stomach, as the *brassica* or cabbage tribe so commonly do. Lettuce, with a little good vinegar and salt, is not unfrequently both grateful and wholesome to the patient affected with gastrodynia; but the addition of oil and of mustard, and still more of egg, renders it of doubtful value, if it does not make it positively detrimental. Rice will be found less liable to produce acescency than any other article of vegetable food; and hence, in cardialgia as well as in gastrodynia, it is entitled to a preference. Akin to it is hominy, so favourite an article with our southern fellow-citizens.

Fruits must be eaten with reserve by the dyspeptic, and particularly by him who suffers from gastrodynia. Those most apt to derange the stomach, are the melon, the plum, the apple, and the strawberry. The apple, in its simple state, without having been subjected to any culinary process, is a frequent source of pain and spasm of the stomach, and of disorder to other parts of the digestive canal. I have found, on different occasions, that nearly complete exemption was procured from annoying and oft-recurring gastrodynia by an abandonment of the use of potatoes and of apples. Preserved fruits are generally oppressive, and pastries of all kinds are inadmissible.

But, however precise and correct we may be in the selection of suitable articles of aliment, little will avail if their quantity or bulk and their complete mastication be not considered at the same time. The stomach will be fully as much, in many instances more, injured in its digestive functions by undue distension than by physiological excitement of its mucous surface. Hence, not only solids but even the simplest fluids must be taken in moderate quantity at a time.

Attention to the cutaneous function, necessary in all the forms of dyspepsia, is peculiarly so in that now under consideration. In order to do justice to this part of the treatment it would be necessary not only to direct suitable clothing, including flannel next the skin and a flannel roller round the abdomen, but, also, a removal from damp lodgings and locality, and the enjoyment of a dry and pure air. The daily use of the tepid bath, and, during the paroxysms, of the warm, will aid not a little towards this object. In some persons whose viscera are sound and in whom reaction readily occurs after its use, the shower-bath or momentary immersion in a cold bath deserves a trial.

Coincident with a reform in the diet of the patient with gastrodynia must be that in his mental habits, if, as may be inferred from the announcement of causes already specified, these are in any way irregular or extravagant. And here the physician must invoke the aid of ethics, and be not unmindful of the benefit to his patient of proper religious convictions, which impart that sobriety of thought and feeling so necessary to preserve the nervous system, and through it the digestive, in their healthy condition. One knows not which is most injurious to health—passionate outbreaks at irregular intervals, or that continued undertoned and sometimes silent fretting and discontent at any and everything which thwarts the humour of the hour, or interferes with any preconceived scheme of

doctrine or practice. The first is declared to be wrong,—the latter is too often practised by those whose professions would imply very different conduct. Punishment awaits both kinds of wrong; and in no way more obviously than in keeping up dyspepsia with hypochondriasis in its train, and sometimes giving rise to mental aberration.

As operating both on the body through the mind, and on the mind through the body, travel and change of scene are curative means, which ought if possible to be enlisted for the removal of dyspepsia, both of the atonic kind and of that marked by morbid secretion, as well as by gastrodynia. But in the acute form of dyspepsia, depending on inflammation of the stomach, and accompanied with fever and thirst, travelling or active exercise of any description is injurious, and has often, together with the use of chalybeate and stimulating mineral waters, exasperated the malady, and brought these very admirable curative agents into disrepute in other varieties of the disease in which their good effects cannot be contested.

LECTURE XVIII.

DR. BELL.

GASTRO-DUODENAL DYSPEPSIA.—Relations of the duodenum—Varieties of duodenal disease—the *acute* and the *chronic* or *atonic*—General characters—Particular symptoms—direct and sympathetic—Causes—common in the United States—Necessity of a better pathology of diseases called bilious and hepatic—*Treatment*—depletion if acute disease be present—Counter-irritation—Emetic tartar—castor oil—nitrate of potassa—mercury—taraxacum—mineral acids.—In the atonic variety, purging—suitable food—exercise—laxatives—tonics, and alteratives.—*Follicular duodenal dyspepsia*—Its symptoms, progress, and treatment.—*Strumous dyspepsia.*—Its course, complications, and treatment—General directions.

GASTRO-DUODENAL DYSPEPSIA.—The important changes to which the chyme is subjected in the duodenum, by its admixture with the secreted fluid of this portion of the intestinal canal and the bile and pancreatic juices, are known to every student of physiology. Supplied with nerves of animal life or branches of the par vagum, the duodenum has, in consequence, sensibility analogous to that of the stomach, whilst by the nerves of organic life it resembles the rest of the small intestines, whose sympathies with other organs are less active and acute than either those of the stomach above or the large intestines below. The duodenum, receiving the matters passed from the stomach, is dependent very much on the integrity of function of this latter for the due performance of its own; and hence the difficulty of distinguishing between simple gastric dyspepsia and duodenal dyspepsia, or even indicating that form of disease which is gastro-duodenal. The duodenum is subject to the same series of irritations as the stomach; but it does not of course betray them with the same readiness and diffusiveness: its mucous membrane may be inflamed, its follicles excited to morbid secretion and inflammation, and its nervous filaments, and even their ganglia, take on that *algos* which will throw them into a state analogous to gastralgia. But although the symptoms coming directly from this intestine are fewer and less evident, it makes its disorder known through other organs, and especially the liver and the chyliferous apparatus. Transmitting by continuity of surface, and, to a

certain extent, of tissue, its excitement along the *ductus choledochus*, disorder of the duodenum is participated in by the liver, whose secretion is either hurried or impeded in consequence. The absorption of the fluid part of the chyme, soon to become chyle, is modified also by the state of the duodenum,—and hence hematosis is affected, and the secretions, depending as they do so much on the blood, are in consequence apt to be vitiated or altered.

Symptoms.—Guided by these premises we can tell with tolerable accuracy that the stomach is no longer the seat, at any rate the exclusive seat, of dyspepsia, when the patient manifests the following symptoms. I am the more desirous of placing them before you in distinct relief, because you will see in them the picture of what our practitioners in the country are so fond of calling liver disease. The pain or uneasiness, distension, and oppression, are not so acute, nor are they referred to the same region, as when the stomach is disordered. A longer time elapses than in the latter case, commonly two to four hours after taking food, before complaint is made or uneasiness experienced. The appetite is generally little impaired; sometimes, on the contrary, it is keen, and even ravenous; the urine is sedimentous, feces more or less unnatural in appearance.

I shall not divide duodenal dyspepsia into varieties, such as *atonic*, *inflammatory*, *irritable*, *follicular*, and *strumous*, in the manner of Dr. A. T. Todd, in his excellent article (Indigestion), written for the *Cyclopædia of Practical Medicine;* but, whilst availing myself of his labours, I shall proceed to designate the chief features by which you can yourselves judge of the degree of duodenal disease and shape your measures accordingly. Duodenal dyspepsia will manifest itself, for the most part, by a sense of weight and uneasiness, sometimes of pain, in the right hypochondrium, extending to the back, frequently between the spine and the right scapula, or under the right scapula; or it is accompanied with a dull pain at the top of the shoulder, and numbness extending down the right arm, to the elbow, wrist, and little finger,—more rarely with pain of the right hip, extending down the right leg. The uneasy feeling in the right hypochondrium sometimes extends round the right side to the spine, like half a zone, giving the feeling as if the right side were begirt and compressed by a girdle. I have had quite recently a patient who described his sensation as if he were begirt with something round the body in the line just described. Often the cause of the pain may be traced with anatomical accuracy in the course of the duodenum downwards and backwards in the direction of the right kidney. Examination of the right hypochondrium, more particularly when the patient is in an erect posture, will exhibit a fulness more or less perceptible through the whole hypochondrium, and most evident when compared with the left: a circumscribed puffiness even is perceptible on the site of the duodenum, more particularly just before the cartilage of the eighth rib, in which situation it is observed that pressure is disagreeable, sometimes occasioning a sense of oppression and dyspnœa. This puffiness will readily disappear under the operation of a brisk purge, but to return again, and become so obvious as to be observed through the clothes, more especially in females. At times, there is a soreness, or a sense of fulness below the pit of the stomach, in the situation of the arch of the colon but deeper-seated. On other occasions, again, a sensation of fulness is felt at the lower bowels, leading to ineffectual efforts to relieve them; and, not rarely, there is spasmodic stricture of the rec-

tum. These affections occur in paroxysms, as if connected with the stage as well as state of digestion; for the symptoms are more or less mitigated by full evacuations from the bowels, and relief is even experienced as soon as the upper portion is put in motion, and often long before an evacuation. The tongue, in the more acute form of duodenal dyspepsia, is more or less furred, and of a glossy red colour at the point and margin; in the atonic or chronic varieties this organ is large, broad, soft, and flaccid, covered with a yellowish-white mucous fur towards the root; but moist, slimy, and of a dull red colour towards the point and margin, presenting, in general, a flabby and sodden appearance. There is no particular thirst: the appetite is often voracious. Although nausea is not a common symptom, yet, in the acute stage, when this is felt and vomiting comes on some hours after eating, we may suspect that these symptoms are those of duodenal dyspepsia. The bowels are costive, more rarely alternating with occasional diarrhœa; and the evacuated matters, in the former case, are hard, dry, and adust, of a dark brown, or dull olive or greenish-black colour. If the discharges be loose, they are generally of too light a colour and devoid of their natural smell; or sometimes nearly tape-like, or of a faint yellow colour, floating upon the water. In some cases the discharges are dark and pitchy, and fetid. In the interval between the periods of digestion, the pain and uneasy feeling of the right hypochondrium are considerably less sensible, seldom amounting to more than a sense of heat, gnawing, or sinking towards the epigastric region, with a frequent desire to take food, which often corresponds with a sense of heat, smarting, or blistering at the tip of the tongue, and with watering of the mouth.

Among the sympathetic affections of diseased state of the duodenum, are a general, painful, confused headache, increased by stopping or by holding the breath, or a dull pain in the back part of the head, which feels tightly bound, or painful pulsation of the head excited by the least effort of attention: vertigo is also a very common symptom. The senses are impaired, and the intellect enfeebled, and even the whole mind is so disordered that mania may be the final result.

Irritation of the larynx, producing a short, dry cough, and imperfect expectoration, a sense of constriction and laborious breathing, even to simulate spasmodic asthma, and the supervention of phthisis pulmonalis, are recorded among the effects of duodenal disease. Not less sensible are painful affections of the heart from this cause. Various pains in the joints, of a rheumatic character, are also noticed to follow in its train. Early struck with the connexion between these pains and abdominal disease, my first essay, being that for introduction into the Philadelphia Medical Society (in the winter of 1815–16), was on what I then termed 'Hepatic Rheumatism.' At that time I attributed, as is still too much the case, to the liver, what was due to gastro-duodenitis of a sub-acute and chronic nature. Disorders of the skin, such as *herpes zoster*, *acne induratum*, *urticaria*, *lichen*, *psoriasis*, and *pityriasis*, &c., are external indications at times of disease of the duodenum.

The pulse, in the acute form of duodenal dyspepsia, is either quicker than natural or easily accelerated; and it exhibits the quality of hardness or tension. In other cases it is but slightly altered from that of health. The temperature of the body is unequally distributed and variable; sometimes there is fever, or feverish heat — sometimes chilliness; hands and

feet cold in the day, but the palms and soles become hot after meals or in the night, when there is a tendency to partial heavy sweats, especially towards morning.

Among the sympathetic irritations may be mentioned those at either extremity of the digestive tube. Relaxation of the uvula, and ulceration of the fauces at the upper: *prurigo-podicis*, hemorrhoids, and spasmodic stricture of the anus or rectum at the lower extremity.

But, as Dr. Todd justly observes, whatever may be the particular sympathetic affections resulting from the disorder of the duodenum, there is one general and constant, which belongs and gives character to them all,—hypochondriasis, despondency, and dejection of spirits, the mind constantly intent upon and occupied with the bodily feelings.

Causes. — The most frequent cause of gastro-duodenal dyspepsia is an inability in the stomach to bring about the requisite changes in the ingesta, so as to convert them into a properly elaborated and homogeneous chyme. A consequence of this is the passage into the duodenum of crude and necessarily irritating substances, which stimulate unduly its mucous membrane, and throw it into a state of erethism, which is transmitted to the liver, and disturbs its function. Sometimes, even healthy aliment, from its being taken in too great quantities by hearty eaters, or from its being imperfectly masticated, is too much for the stomach to manage; and although it may at first be refused a passage by the pylorus, yet after a while it fatigues this sense, and finds entrance into the duodenum.

Enchelosis, or the mutual action and reaction of chyme, bile, pancreatic and intestinal juices, which results in chylosis, cannot, under these circumstances, be regularly performed. The duodenum, irritated, passes on its offensive contents into the next portion of the intestine, and there ensues more or less disturbance along the whole tract, and diarrhœa. Or if it retain, as it is apt to do after a while, by a diminution of its contractility from over-excitement, the imperfect chyme and bile, it transmits its disturbance more permanently to the liver and other organs, and presents continued obstacles to complete chylosis. The bile is interrupted in its excretion through the duct, and there ensues more or less discoloration of skin and approach to jaundice in consequence,—as will be explained hereafter by Dr. Stokes in his lectures on jaundice. But excessive chymosis, or the pouring into the duodenum a disproportionate quantity of even the healthiest chyme quicker than the process of *enchelosis* can go on, will be followed by identical effects with those just sketched. "This is the reason," says Dr. Todd, "that children are proportionately more subject to duodenal dyspepsia than adults; for, having in general a good appetite and powerful gastric digestion, they are wont to eat at all hours and seasons, taking a second meal before the first is digested, so that the duodenum becomes distended with chyme, which it cannot transmit, interrupts the discharge of bile, and accumulation takes place. Any cause which abridges the peristaltic action of the small intestines, prevents the transmission of the chyme downwards, and leads to accumulation in the duodenum, to distension, and to all the consequences of duodenal dyspepsia. The accumulation of feces in the colon, which, in some constitutions, induces, by sympathy, atonic gastric dyspepsia, also, by its pressure upon the duodenum, mechanically interrupts its free action, and prevents it from discharging its contents. Certain postures, by which the body is habitually bent, produce the same consequences; and hence the frequency of

the kind of dyspepsia now under notice in shoemakers, tailors, engravers, and also in clerks and literary persons, who lean much over their desk or table. Women, also, in their sedentary occupations, as when engaged with their needle, suffer in the same way; still more prejudicial is the pressure from corsets or tight-lacing.

The duodenum may, of course, be affected by the common causes of diseases of the stomach and of other organs, — such as suppressed perspiration, exposure to cold, particularly in dry weather: its irritation may also be a sequel of catarrh, and a frequent consequence of the retrocession of eruptions of the skin.

In placing before you this picture of gastro-duodenal, and more particularly of duodenal dyspepsia, I will not vouch for the entire accuracy of all its details; but I introduce it here, because I believe it to be a representation of the series of disorders which commonly pass for hepatic in the United States generally; and because an amended pathology will lead to a more rational treatment, if in no other particular than in preventing the prodigal, and I must add, empirical, and often cruel administration of mercury. In our country, more than any other, are the people exposed to the causes of duodenal dyspepsia: they are great eaters, and fast and frequent eaters of the most substantial and often stimulating and various aliment, and they use, at the same time, the strongest drinks (Bell on *Regimen and Longevity*, p. 95), which, although not adverted to before among the causes of the form of dyspepsia now under notice, must be regarded as exerting a powerful agency in its production. At first disturbing chymosis, by chemically modifying the gastric juice, and then irritating the mucous follicles, they cannot fail, when they pass the pylorus, to exert analogous bad effects on the duodenum, and interrupt, by their action on the bile and intestinal mucus, the process of enchelosis. Alternating often with the operation of this cause, and employed with a view to correct its effects, but really aggravating them as far as regards irritation of the duodenum, is the frequent use of mercurial and drastic purgatives. We commonly find those addicted to alcoholic potations manifest some, and often many, of the characteristic symptoms of duodenal dyspepsia. The sallow complexion, muddy conjunctiva, and furred tongue, with occasional stitch or dull pain in the side, are more frequently symptoms of this disease than of hepatitis.

Treatment. — In approaching a case of duodenal dyspepsia, with a view to institute the proper curative indications, the first object is to determine whether it be of a phlogistic nature, or not; as on this point the preliminary treatment will turn. If, therefore, the pulse be tense, and frequent or full, the pain in the right hypochondrium severe, and much heat and dryness of the mouth, with fur and redness of the tongue, venesection is to be practised, as a means of present and considerable relief, and as preparing the affected region and the system generally for the benecial operation of other remedies. "When the symptoms indicate a state of plethora of the abdominal circulation, such as a full or varicose state of the veins of the lower extremities, swelling of the feet, pain in the loins, more especially in the sacrum, indicative of a hemorrhoidal disposition, dark-coloured or sedimentous urine, a large tongue seemingly swollen with blood, and eruptions of the skin, the congestion is more speedily subdued, and with less exposure to the constitution, by very small bloodlettings repeated at intervals of a fortnight, than by any other method." In

cases in which there are few symptoms of general morbid activity of circulation, or of abdominal plethora, but still those of duodenal excitement, cups on the right hypochondrium, or leeches over this region or tender part of the epigastrium, will answer a good purpose; their repetition to depend on the persistence of the symptoms which first indicated their use. When hemorrhoids are present, leeches to these tumours, or to the verge of the anus, will often afford, by derivation, great relief to the upper bowel. Succeeding these means, is counter-irritation by common warm plasters, or those of emetic tartar or blisters, and, in extreme cases, setons in the direction of the false ribs. Contributing to the process of reduction of excitement, are minute doses of emetic tartar, continued for a period of several days, and after suspension, its use to be again renewed. Vegetable acids, colchicum, and hydrocyanic acid, are also of value; the two last particularly, in a morbidly sensible or irritable state of the upper portion of the alimentary canal. Dr. Todd speaks highly of the soothing, and almost sedative, effects of castor oil administered in small doses in this disease. The medicine should be given in doses of a drachm, repeated once in the twenty-four hours: in the evening, if "its soothing and antiphlogistic effect upon the mucous membrane," in the morning, if its aperient action, is desired. "In obstinate chronic cases of this disease, we have known a small tea-spoonful of castor oil taken every night at bed-time, as long as the stomach could easily bear it, a remedy attended with the most signal success." The effects of castor oil will vary with the condition of the mucous membrane; producing nausea and vomiting in atonic dyspepsia, griping in the irritable variety, and soothing in vascular excitement of the membrane. It may be here, as in so many other cases, allowably combined with a mild carminative water, or given in emulsion, or with a little liquor potassæ. Dr. Todd attaches considerable value to the nitrate of potassa, for its power of abating vascular excitement of the mucous membranes; it may be given in doses of from five to ten grains, three times a-day, in an ounce of water, to which may be added a small quantity of mucilage of gum arabic. Our common antimonial powder, in which the proportion of emetic tartar need not, however, exceed the twelfth of a grain, and the nitre ten grains, will answer a very good purpose. If there be pain, or irritability, or restlessness, narcotics, such as the tincture or extracts of hyosciamus, of lettuce, or of conium, will be had recourse to; and a dry skin will be met by minute doses of ipecacuanha powder or wine, or even of Dover's powder. Conjoined with these remedies, and adding not a little to their good effects, will be the warm bath, either early in the morning or at noon — that is to say, when the stomach is empty, — an indispensable condition for the salutary use of a bath of any description. To be more explicit, I ought to say, that a bath should never be taken after a full meal, although some cases of inertia and sluggish circulation, or of nervous debility, may require that the fast shall have been broken by a little simple food, an hour or two before the bath.

Mercurials, to which our American practitioners have recourse at once in this form of the disease, or "bilious disorder or hepatic derangements," as they generally term it, had better be withheld until morbid excitement, both local and general, has been abated if not entirely removed. Then the blue mass, given at bed-time in doses of from three to five grains, will, I know, exert a very calming, and indeed it might be truly termed

anodyne effect. A still milder preparation is the *hydrargyrum cum cretâ*; or, if a combination be required which shall act both on the diseased mucous membrane and on the skin at the same time, the blue mass and ipecacuanha, in the proportion of three grains of the first and half a grain of the second, in pill, two or three times a-day, will be found to answer our expectation very happily. Taraxacum, as auxiliary to mercury, and in the opinion of some a substitute for it, displays, every now and then, a very sensible effect in soothing the mucous membranes. The extract may be given in infusion of hop, chamomile, or orange-peel, or the compound decoction of sarsaparilla, and to nervous patients in a camphor mixture, to which may be added, according to the intention, a small quantity of nitrate of potassa, or of sulphate of potassa, or compound decoction of aloes. The following is a good formula for its administration:—

℞. Extract. Taraxaci, ℥ij.
Potassæ Nitratis, ℥ss.
Spiritus Æth. Nitrici, f℥i.
Infus. Cort. Aurant. f℥vi.
M. Dose, a table-spoonful, two or three times a-day.

As useful aids towards a cure, we may occasionally have recourse to nitric and nitro-muriatic acids, and the solution of chlorine. Internally they may be used in decoction of liquorice, or compound decoction or syrup of sarsaparilla.

In fulfilment of the second indication, or to render the function of digestion easy of performance, attention must be paid—1st, to the diet of the invalid; 2d, to the preserving an open state of the bowels; and, 3d, to assisting the digestive function by mild tonics and adequate air and exercise. These indications are as important in the atonic duodenal dyspepsia as in the acute form, and the directions for one are applicable to the other. It will be proper before giving these to indicate some modifications of treatment required in the duodenal dyspepsia, in which there is little or no excitement, either in the abdominal circulation or in the system at large.

In this atonic form it will be proper, in the first place, to unload the duodenum, or to relieve it of the irritating pressure of an over-loaded colon. Early observation induced me to concur in the opinion that senna is the medicine which deserves the preference for emptying the duodenum. In bilious colic, and in febrile affections of considerable violence, I have not succeeded in procuring permanent relief for the patient, until this intestine was unloaded of feces of a dark and pitch-like appearance and consistence by means of senna with some adjunct, such as salts or cream of tartar. I had long ago adverted to this fact, as well as to the occurrence of duodenal dyspepsia, in my Inaugural Dissertation (On the Liver: *Its Influence over the Animal Economy in Health and Disease*, 1817). The following extract will show that the views now placed before you were very early adopted by me: I had just been speaking of dyspepsia. "We are in these cases too hasty in assigning the stomach as the sole seat of the disease. It is highly probable that many of the morbid changes, productive of much distress, take place in the duodenum or *second stomach* (as it is properly termed by some), where the process of digestion is completed, and where the alimentary mass is mixed with the pancreatic and biliary fluids.

"If these are deficient or depraved, the chyme will undergo a kind

of decomposition, evinced by the spasm and flatus which will be felt in many cases extending under the seventh or eighth rib, passing deep and stretching towards the right hypochondrium, and which is often the more distressing from the manner in which the intestine is braced down by the mesocolon." p. 33.

The griping effects of senna may be obviated by adding to the infusion some carminative water, or some bitter, such as the Virginia snake-root, which I frequently prescribe in this conjunction. A few drops of *liquor potassæ*, or *spiritus ammoniæ aromaticus*, added to each dose of the senna infusion, are deemed to be still stronger correctives. Rhubarb comes next to senna, and it may be given in substance combined with sulphate of potassa or tartarised soda.

To procure regular alvine discharges, after the bowels have been unloaded by purgatives, in order to meet the special exigency of over-fulness and accumulation, an enema of tepid water, morning and evening, or, this failing, the addition of aperients, the best of which is aloes, will be had recourse to. The compound galbanum pill, to which rhubarb has been added, is well adapted to a torpid state of the bowels. But we must bear in mind, and unceasingly impress on the patient, the fact, that permanent relief and the establishing of a healthy habit can only be procured by hygienic means — a proper selection of articles for food, — reference being had both to their digestibility and their bulk, — regular and somewhat active exercise in the open air, and riding on horseback is the best, simple water for drink, with the addition, occasionally, of some slight bitter or aromatic infusion.

The diet in the acute or inflammatory form of dyspepsia should be of a mild vegetable nature; farinaceous articles constituting the basis, and garden vegetables added according to the taste and digestive habit of the patient. In some cases a restriction wholly to a fluid diet is necessary; but in common gastric, and in chronic or atonic duodenal dyspepsia, a small portion of plainly dressed animal food, with stale bread or biscuit, or well-boiled rice, is both proper and beneficial. To render any kind of solid food digestible it must be well and slowly masticated, so as to insure not only its comminution, but its mixture with the saliva. One of the first duties of the dyspeptic, and that of which he is too often oblivious, will be, therefore, slow eating. If he can do this with cheerfulness, and in pleasant company and conversation, so much the better.

Follicular Duodenal Dyspepsia is described, in its general character, by Dr. Todd, to be marked by symptoms of painful or difficult digestion, felt chiefly a considerable time after taking food, most frequently observed in phlegmatic habits; occasional alvine discharges of mucus in various morbid states; acute attacks of gastrodynia or jaundice sometimes intervening. The appetite is deficient in this form of duodenal dyspepsia, even to loathing. "There is no remarkable loss of flesh, but the appearance of the skin is much altered, the complexion becomes bloated, loses its colour, is dull and cloudy, sometimes swarthy, frequently clammy, greasy, or waxy, as if covered with a thin film of melted wax; or the skin is sallow and somewhat jaundiced; it feels generally cold, moist, and clammy, the hands and feet particularly so. The lips and gums are generally pale; the tongue is moist, pale, and flabby, covered with a pearly white, mucous coating, but seldom much loaded; sometimes there is a thick, shaggy, cottony fur. The mucous coating of the tongue often has the appearance

of a false membrane, which, falling off in pieces, leaves patches quite clean, sometimes red and morbidly tender. The bowels are almost always constipated, but diarrhœa is sometimes though rarely observed." The characteristic feature of the evacuation, is considerable quantities of mucus, which are discharged in various morbid states and forms; sometimes it resembles transparent jelly, or is glairy like the white of an egg; sometimes it assumes the solid form, appearing in concrete masses, varying in size and figure, frequently resembling small bits of tallow, wax, or bits of the blanched kernels of walnuts; sometimes, again, shreds, apparently parts of a membrane, and even perfect tubes of considerable extent, are passed. These discharges of mucus appear to take place periodically, and as it were critically, being in general preceded by considerable aggravation of the symptoms; and the recovery is attended with evacuations of quantities of mucous or glutinous substances.

"In these attacks the patient is sometimes suddenly affected with acute spasmodic pain in the right hypochondrium, darting through to the back, frequently accompanied with vomiting, or a hard, dry cough, by either of which the pain is greatly exasperated. Often there is sudden and excessive pain towards the epigastrium, returning with vomiting or violent paroxysms. These pains are occasionally rather relieved by pressure; but the parts are frequently so sensitive, that the slightest touch cannot be borne; and, even during the intervals of the pain, the patient complains of great tenderness and soreness in these parts. The tongue, already coated with a white fur, becomes dry, the pulse accelerated, the stools white, the urine turbid, and of a dark red colour like blood. As the pain remits, the patient is bathed in a profuse perspiration. After a day, sometimes longer, the skin becomes jaundiced, and on examining the evacuations, instead of gall-stones, as he expected, the physician finds copious flakes of mucus in various forms, which are passed with considerable relief to the patient. This mucus, sometimes fluid and approaching to pus in appearance, has, in connexion with the foregoing symptoms, frequently imposed the disease upon attendants for the rupture of an abscess of the liver; but the same symptom and the same discharge occasionally occur without jaundice, or any symptom of hepatic obstruction." The pulse is, except during the attack, always weaker than natural, generally slow and small, more rarely frequent and small, or wiry and fluttering.

It is with regret that I find myself obliged to curtail the admirable description of this disease by Dr. Todd, who very properly remarks, that the secondary affections sometimes cause both patient and physician to overlook its seat. Among these are a remarkably altered state of the temper and feelings, manifested in a great variety of ways, from languor and apathy to great irritability and moroseness. The organs of respiration and of circulation are greatly troubled; and the nervous system so much affected as to be seized with chorea or even paralysis. Associated with the intestinal disease, for we cannot pretend to restrict it to the duodenum alone, are rheumatic gout and rheumatic paralysis; and among the disorders of the skin, erysipelas, erythema, acne, and impetigo. "The unfavourable progress of the disease leads to a state of general cachexy, *cachexia pituitosa*, which sometimes terminates in anasarca."

Pathology.—The seat of this disease is implied in its title. Although noticed and described by Marcard and Stoll, admitted to be a cause of death by Theden and Hoffman, and its anatomical features detailed by

Bonnet, Morgagni, and others, it is to Kampf, a Dutch physician, that we are indebted for a description *ex professo* of this disease, under the title of *infarctus*. The mucous glands of Peyer and the follicles of Brunner are often unusually developed, frequently they contain a whitish concrete matter, more or less friable, bearing a due resemblance to the caseous or lardaceous matter of tubercles; at other times a great number of small, white bodies are found disseminated over the surface of the intestines, corresponding to the grub or *emphragma sebaceum* of the skin; for they are nothing more than the follicles filled with concrete mucus. From these bodies is secreted a thin, greyish mucus, which sometimes collects in astonishing quantities in particular parts of the intestinal canal; or, spreading itself in every direction, forms a thick mucous coat over a considerable part of the surface of the intestine, which, on first view, might be easily mistaken for the mucous membrane itself in a white and healthy state. Occasionally the mucus is of a brown colour and tenacious, or a concrete matter, either spread in the form of a membrane, or forming solid masses. These secretions would at first seem to be, and perhaps at times are, the product of inflammation, but often they acknowledge no such origin. They resemble the pultaceous and pseudo-membranous stomatitis, which I have described in preceding lectures, in their nature and mixed character; and still more the exudation which often overspreads the mucous coat of the intestines in malignant cholera. In the disease before us, the disordered state of the follicles occurs in two ways: in the first secretion is suppressed or retained; and second, in which it is excessive or overflows. It is easy to conjecture how the mucous membrane, according as it is denuded of its appropriate mucus, or sheathed and coated by it, will either acquire morbid sensibility and give rise to most painful affections of the intestinal canal, and by sympathy rouse other organs into action; or excite disorders of another kind by the mechanical causes of irritation furnished in its morbid secretion.

The subjects of follicular duodenal, or rather enteric dyspepsia, are most frequently females and children, in whom the mucous follicles are most developed. It prevails most in cold, humid seasons and climates; and therefore, prepared by the influence of winter, it often declares itself in early spring, and on the return of cold in autumn. "Sedentary employment, or confined and impure air, with neglect of personal cleanliness, are the circumstances most powerful in producing it; to which may be added unwholesome food. When the predisposing causes have been in operation, it is generally excited at once by colds, errors of diet, drastic purgatives, fatigue, watching, anxiety, alarm, and bodily accidents. Constipation of the bowels, while it is a consequence, is, also, one of the exciting causes of this disease."

Treatment.—We begin the cure of follicular enteric dyspepsia by the administration of certain purgatives which exert a more particular effect on the mucous follicles, such as senna, rhubarb, scammony and aloes; and of other agents, such as chloride of sodium, alkalies, iodine, mercurials, chalybeates, colchicum, and ipecacuanha. There being no signs of intestinal irritation present, we may give rhubarb with sulphate of potassa, or the compound powder of scammony, or the infusion of senna; this last sometimes being combined with compound infusion of gentian, and receiving ten to twenty drops of *liquor potassæ*, repeated so as to produce four or more stools in the twenty-four hours. Small doses of

mercurials are no bad preparatives for the administration of purgatives. Iodine in the shape of iodide of potassium will, also, in conjunction with sulphuret of potassa, exert a good effect in altering the morbid state of the follicles. Chalybeates are also recommended, and in this disease, instead of rendering the feces darker, restore them to their natural colour. The mineral acids or chalybeates ought to follow, or occasionally alternate with, the employment of purgatives.

Among the corrective and restorative means, bathing will stand high on the list; the kind of bath, shower or immersion, and its temperature depending on the constitution and habits, in this respect, of the patient. The tepid, or warm salt water bath will, generally, however, be entitled to the preference.

As might be inferred from a knowledge of their effects in other forms of dyspepsia, and in glandular obstructions generally, mineral waters have been found to display virtues in this variety superior to all other remedies. The sulphurous class are especially to be relied on; and of these our own country furnishes abundant opportunities for the invalid to avail himself of their virtues.

Strumous Dyspepsia, as defined by Dr. Todd, is that form of the disease which belongs to the scrofulous constitution; and the features of which are more distinctly marked than might be inferred from the want of any good portrait which has yet been made of it. Whatever may be the temperaments in which scrofula presents itself, and it is met with in all of them, this form of dyspepsia will there be found. Of late years it has been described by Malfatti of Vienna, under the name of *latent scrofula;* by Dr. Ayre, under that of *chronic marasmus;* and most faithfully by Sir James Clark, under the term *tubercular cachexy;* it has also been sketched by Dr. Marshall Hall, under the title of *disorder of the general health in tuberculous affections.* It has not, however, Dr. Todd thinks, been connected by any of these physicians with a special disorder of the chylopoietic viscera.

I cannot repeat the very lucid and detailed, yet not over-charged, description of this disease by Dr. Todd, but must content myself with a brief summary; premising, that I can vouch for the accuracy of all his details, from the disturbance of digestion during the first dentition, to the formation of scrofulous deposits, some years afterwards. The complexion loses its colour, the skin its tone, the flesh is soft and flabby, the abdomen tumid; uneasiness soon follows exercise or play; the temper is fretful or capricious; the intellect exceedingly precocious, or unusually dull. The sleep is seldom calm or composed. Costiveness and diarrhœa alternate, although the former is the prevalent derangement. As the child grows, sore throat with tonsillitis is a common complaint, together with a frequent tickling cough, and itching and picking of the nose and lips. The hands and feet are usually cold and clammy, or, on the least cold, turn of a dark, livid, purple colour, and the child is exceedingly subject to chilblains, even sometimes in summer. Diseases of the skin and eyelids, and abscesses of the cellular tissue, still further complicate the disorder and increase the sufferings of the patient.

I have seen the nutritive functions so entirely perverted by a continuance of these disorders, that spinal irritation resulted, and all the symptoms of pulmonary tubercles manifested.

In adult life the disease is modified in various ways — although the same

general character is obvious. The appetite is good, sometimes voracious, and eating does not produce a feeling of repletion and content. The bowels are torpid; sometimes, but more rarely, loose; the urine generally deposits a whitish sediment, sometimes mucus. The pulse, always weak, is small, and accelerated by the least emotion or exercise, although generally it is slow and weak. The sleep is seldom natural; there is listlessness and drowsiness by day, and the patient is commonly timid, nervous, torpid, or hypochondriacal. The lymphatic glands of the neck and groin, and the thyroid gland, are large and swollen, but not painful. In women, leucorrhœa, painful or deficient menstruation; and in men, a disposition to hemorrhoids are observed; but the usual progress of the disease is to *tabes mesenterica* or phthisis pulmonalis.

Pathology.—In a constitution in which the solids are lax, the general circulation feeble, and the tone of the system low, it is obvious that any part much and habitually stimulated will become the centre and seat of afflux and congestion. Now, this is precisely what takes place in the case of children of a strumous habit; the wants of nutrition are unceasing, but the aliment is not assimilated as it ought to be. The natural excitement is not diffused through the different apparatus of organic life, as it is in health, but is restricted to the first or digestive; and the continued irritation of the gastro-enteric mucous membrane causes a congestion which interferes with a due circulation of the system of the *vena portarum*, and produces a plethora in its roots and branches. The liver thus disturbed in its structure, is equally so in function, and contributes to the deterioration of the system, by preventing chylosis and healthy hematosis. Consequent on this disturbance and irritation, arise a host of sympathetic derangements in other and remote organs,—the brain, nerves, muscles, &c. Not dissimilar to these are the views expressed by Dr. Ayre in the following extract: "Diseased mesenteric glands occur in children from acrid condition of the duodenal contents; the liver, pancreas, and duodenal glands become diseased from congestion, and irritation will be propagated to the brain, giving rise to hydrocephalus, spasms, convulsions, vomiting, contortions of the countenance, affections of the sight, violent headaches, faltering voice, chorea, palsy."

Treatment.—It is seldom necessary to begin the treatment by bloodletting in order to relieve the congestive state of the liver; but when there are evidences, in a dry and red tongue and fulness of the right hypochondrium, of febrile excitement, the application of a few leeches will afford speedy relief and prevent the necessity of administering active agents internally. In general, a light or simple diet, even when abstinence is not enjoined, and nitrate of potassa in small doses, with free dilution preceding and accompanying laxatives, will constitute the requisite antiphlogistic treatment. *The hydrargyrum cum cretâ*, and a small quantity of ipecacuanha, or ipecacuanha and chalk, are good formulæ, to follow after these medicines. Small doses of castor oil, and a little electuary of senna, are useful adjuncts to the mercurial preparation, to which may succeed a course of taraxacum, or sarsaparilla, or both united. It is in this form of dyspepsia, more than any other, that we may look for the alterative and recuperative effects of the iodide of potassium, or of the iodide of iron, or of the former alternating with the subcarbonate or the muriated tincture of iron. I have tried both modes of practice with satisfactory results. Saline chalybeate water is a still preferable mode of

using the iron, and allows of its continued use for a longer period than when procured from the shop. Dr. Todd recommends a combination of iron and iodine, as follows:—

℞. Tinct. Ferri Chloridi,
Tinct. Iodini, āā. f℥ij.
Aquæ Puræ, f℥ss. M.

Dose, ten to thirty drops three times a-day, in common syrup, or simple bitter infusion.

Bathing must be put in requisition, aided by frictions and moderate, but by no means fatiguing, exercise, in order to give tone to the skin, and by directing the blood to this organ, as well as to the muscles, to make them diverticula for the congested liver and portal system generally.

The food should be small in bulk, but of adequately nutritive substances. Milk will not often agree without dilution. Farinaceous food—stale bread, biscuits, rice, arrow-root with cream at the morning repast, and a small portion of animal flesh at dinner, are best adapted to the patients suffering under this form of dyspepsia.

I shall reserve for another occasion the remarks which might find place now on that other troublesome form or common accompaniment of dyspepsia called colonic, in which the large intestine is the chief seat of irritation and the cause of disorder of the digestive function.

In concluding, I cannot give you better parting counsel for your guidance, than by repeating the expressive language of Dr. Chapman, in the lectures already quoted.

"But what will all I have said accomplish, unless the remote and exciting causes of the disease be carefully avoided. Let it, therefore, be imperatively inculcated on a patient, that he is altogether to renounce those habits and pursuits, which, directly or indirectly, may have contributed to the production or maintenance of his case. If he be intemperate, he is to become sober: if he use tobacco, opium, or any other baneful article, he is to relinquish it: if he be luxurious, he must institute a reform in his way of living: if he be indolent, he should be awakened to enterprise: if he be studious, he is to abandon the midnight lamp: if he be afflicted, we must soothe his misfortunes by holding out to him the promises of hope, and the gilded prospects of the future.

"These cases are often very troublesome and trying to the patience of a practitioner, from the great predominance of hypochondriacism. Exceedingly querulous, from the very nature of the disease, the dyspeptic is eternally complaining of the most preposterous feelings, and is apt, after a time, to exhaust our benevolence and sympathy. But this is wrong. Whatever may be the extravagance of his conceits, they arise from the intimate dependence of our moral nature on our physical constitution—and being the result of diseased action, become legitimate objects of medical care. Treat him, therefore, kindly, and even with tenderness. Encourage him to the last with the expectation of cure—and never, on this or any other occasion, should the patient be consigned to the horrors of despair."

"Sunt verba et voces, quibus hunc lenire dolorem
Possis et magnam morbi deponere partem."—Hor.

"The power of words and soothing sounds appease
The raging pain, and lessen the disease."—Francis.

LECTURE XIX.

DR. STOKES.

DUODENITIS—Inflammation of the jejunum.—ILEITIS—complication and nature of—Dothinenteritis—Ulceration of the mucous membrane—Symptoms and diagnosis of ileitis.—Diseases of the small intestines—Symptoms of ileitis—Occurrence of diarrhœa with fever symptomatic of this form of inflammation—Frequency and symptoms of the disease in children.—Tabes mesenterica,—*Treatment of.*

DUODENITIS.—Let us now proceed to the remaining parts of the digestive tube, of which the next in order is the duodenum. I shall not dwell much to-day on the subject of duodenitis; as I shall revert to its consideration when speaking of jaundice, because inflammation of the duodenum is a common cause of jaundice, perhaps the most common, if we take the whole of its cases together. You are not to suppose that I wish to inculcate the doctrine that jaundice is a necessary complication in duodenitis, but it has been proved that there is an extraordinarily frequent coincidence between both, and that jaundice very often seems independent of any mechanical cause, such as an obstruction of the biliary ducts. So far from this, that, in some cases, particularly those which are produced by, or accompany, a duodenitis, we have intense universal jaundice at the same time that the bile is flowing freely into the digestive tube.

The researches of the immortal Bichat gave the first hint which directed the attention of practitioners to the circumstance, that, in many cases where jaundice had existed during life, there was no obstruction or disease in the liver or biliary ducts, but that in such cases there was always more or less inflammation in the part of the digestive tube into which the bile was immediately discharged; and this led ultimately to the discovery of the connexion which exists between inflammation of the duodenum and jaundice. In treating of the sympathies which depend upon continuity of surface, Bichat refers to the connexion which exists between the surfaces of mucous membranes and the ducts which open on them, and endeavours to show that the natural mode of excitement in all secreting glands is a stimulus applied to the surface on which their ducts open. As examples of this, he instances the effect which food and other substances, applied to the mucous membrane of the mouth, have in stimulating the salivary glands; the effect which stimulants applied to the conjunctiva, or nose, have on the lachrymal gland, and many others. Hence Broussais concludes that, when the mucous surface of the duodenum is thrown into a state of excitement, we may have a consequent affection of the liver, for the duodenum bears the same relation to the liver as the mouth does to the parotid glands. That this is frequently the case, I think, is very probable. It is now established, that the cause of the yellowness in what has been called yellow fever, is disease of the upper part of the digestive tube, in which the duodenum is always involved; and that the fever itself (the typhus icterodes of the nosologists) has been found to be greatly connected with inflammation of the stomach and duodenum. During the epidemic of 1827, we had in the Meath Hospital a

great many cases which bore a striking resemblance to the yellow fever of warm countries, and particularly in this, that they were accompanied by intense jaundice, and inflammation of the upper part of the digestive tube. You will see in the works of Rush and Lawrence, two of the best American writers on yellow fever, that, of the numerous bodies they examined, there were scarcely any in which the jaundice was found in connexion with liver disease, but that in all cases there was intense inflammation of the digestive surface. I shall return to this subject when I come to speak of liver disease.*

---

* [M. Curling (*Med. Chir. Transact.* 1842, and *Bull. Med. Science*, 1843) has directed attention to ulceration of the duodenum, following extensive burns of the skin. He gives the records of ten cases of this nature, four of which came under his own observation. The ulcerative action is of an acute character; it having occurred in periods varying from seven to seventeen days, dating from the occurrence of the burn to the death of the patient. In three of the cases, death was occasioned by the ulceration going on to perforation, and in six by hemorrhage consequent upon the lesion of a bloodvessel. The ulceration usually takes place in that part of the duodenum where it passes in front of the head of the pancreas, and the anterior pancreatico-duodenalis is the vessel from which the bleeding occurs. Another case came under the care of Mr. Luke, of the London Hospital (*Lancet*, and *Bull. Med. Science*, 1844), in which death also resulted from hemorrhage, fourteen days after the accident. The patient complained, a week after the burn, of pain in the epigastrium and bowels. In this case the ulcer was at the posterior part of the duodenum.

The symptoms described by M. Curling are scarcely diagnostic; they are, a pain of the side midway between the cartilages of the right side and the umbilicus, uneasy digestion, and sometimes vomiting; and when ulceration ensues by dark bloody stools. In connexion with this morbid state of the duodenum from burns, I may refer to a case of chronic ulceration of this intestine, and of perforation, related by Dr. Little (*Lancet*, and *Bull. Med. Science*, 1844). Death took place in twenty-four hours from the first seizure in the midst of full health. Antecedently, it is true, twice during the previous week the patient had made some complaint of indigestion, from which he was relieved by aperient medicines. On the day preceding the attack he assured his medical friend that he was perfectly well, and on the day itself he had partaken of his usual breakfast of meat, bread, tea, and coffee.

The posture preferred during the brief period of attack, until he became exhausted, was, sitting on the edge of the bed, the right foot resting on a stool, one hand applied to the epigastrium, and the other supporting his head. He complained of excruciating pain, increased by pressure, referred to the region of the ascending colon and epigastrium; afterwards to the left side of the umbilicus. At one particular spot of the epigastrium, to which he pointed with a single finger, the patient evinced a horror of the slightest touch. The ulcer was well defined and exhibited attempts at cicatrisation. The perforation was found to be situated immediately below the pylorus, on the upper and anterior wall of the duodenum. No second ulcer, or other disease of the mucous membrane of the stomach or duodenum, was observed. The liver was perfectly healthy. Intense in-

With respect to the jejunum, I may state that we know very little of the symptoms which characterize inflammation of this part of the intestinal canal; and it is a curious pathological fact, that this portion of the tube is, of all others, the least liable to inflammation.

In point of fact, we have no means of ascertaining what are the prominent symptoms of inflammation of the jejunum, because, in almost every case in which jejunitis has been discovered, there has been also extensive disease of the rest of the small intestine. We have cases of simple gastritis; there have been also cases of distinct disease of the duodenum. We may have disease in the lower third of the ileum, accompanied by an affection of any other part of the tube. The same thing may occur in the case of the cæcum, colon, or rectum, but it seldom or never occurs so far as the jejunum is concerned.

Ileitis.—Inflammation of the ileum is a most important affection for two reasons; first, in consequence of its extraordinary frequency, and, in the next place, of its insidious latency, the disease generally requiring a considerable degree of tact and experience on the part of the practitioner to make out its diagnosis with certainty. In fever, it is the most frequent of all forms of intestinal inflammation; and hence Broussais, finding inflammation of the ileum of such constant occurrence in fever, concluded that fever was only symptomatic of intestinal inflammation. Further researches have shown that he was mistaken, and that the inflammation of the digestive tube is, in many cases, secondary; but it is still a circumstance of almost constant occurrence, and, in many cases of fever, is the cause of death. Now, the portions of the intestinal tube most commonly affected in fever are the stomach and lower part of the ileum; and the frequent occurrence of this in fever is very remarkable. There are few cases of typhus without it. In some cases of typhus you will, on examination after death, be astonished to find extensive disease of the intestinal canal, which, during life, had not attracted any particular notice, and this you will most commonly find in the lower part of the ileum. So common is it, that Louis says that ileitis is the grand anatomical feature of typhous fever;* that is, had he been obliged to pitch on the lesion of some particular organ as giving a character to typhus, he would say that it was ileitis. There are other diseases, too, in which inflammation of the ileum forms the principal complication. In the diseases of children, which go by the names of worm fever, remittent fever, and bilious fever, I believe that ileitis is generally the first affection, and that the fevers are only symptomatic of it. It constantly occurs at some period or other of tabes mesenterica; and I believe that in many cases it precedes the affection of the mesenteric glands. It is exceedingly common in phthisis. In every

---

flammation of the anterior wall of the abdominal cavity corresponding with the epigastrium was revealed.

My design in referring to the destructive inflammation of the duodenum, after the injury to the skin from extensive burns, is, to suggest the probability of a knowledge of this fact being made available in tracing the pathological effects of long-continued solar heat on the animal economy, and of that intense application of it called sun-stroke.—B.]

* [We must say rather of *typhoid* fever. Farther particulars, respecting the connexion between this fever and intestinal lesions, will be given, by me, in a subsequent lecture when treating of fevers as a class.—B.]

case of phthisis, where diarrhœa has lasted for some time, the probability is, that there is ulceration in the cæcum, colon, and lower part of the ileum.

Now, what is the nature of this ileitis? This preparation (*handing one for inspection*), which I beg of you to hand round, will furnish a very good illustration of the disease. Here is a portion of the intestine exhibiting various distinct ulcerations of different sizes, occupying the situations of the mucous glands. I do not mean to say that the character of the disease consists in this distinct ulceration; it is an essential disease of the mucous membrane, and of its glands, which exists in great numbers on the surface of the lower third of the ileum, and are called *solitary* and *aggregate*. These glands frequently take on the inflammatory condition, become softened, run into ulceration, and produce extraordinary sympathetic irritation of the whole system. There has been lately a great deal of discussion with respect to the question—Whether disease begins in the glands or in the mucous membrane, and whether we can separate disease of the glands from disease of the mucous membrane? This has been carried to a great extent; and a change has been attempted to be made in the name of the disease, it being entitled *dothinenteritis* by those who say that the inflammation commences in the glands. But this, I think, is a mere refinement, and is carrying the thing too far. It is next to impossible for the glands to be affected without involving the mucous membrane, or for the mucous membrane to be affected without an extension of the disease to the glands. We sometimes, however, see the mucous membrane diseased without the glands being apparently engaged; but I think the glands are never engaged without the coexistence of disease in the mucous membrane. In this preparation you see the mucous membrane is just giving way; and here is an actual slough, where the mucous and sub-mucous tonics have yielded to the inflammation. In the lower portion of the ileum we meet with an infinite variety in the size and number of the ulcerations: in some they are very close and numerous, in others there are only two or three detached ones; in some the whole circle of the intestine is destroyed; and the ulcer is nearly as broad as the palm of your hand. It is interesting to consider, with respect to the pathology of the respiratory and digestive systems, how it comes that ulceration of the mucous membrane is so much more common in the digestive apparatus than in the respiratory. For one ulceration of the bronchial mucous membrane from acute diseases, you will have one hundred of the gastro-intestinal. For this peculiarity we cannot clearly account: but there seems to be more development in the digestive than in the respiratory system, and that this over-development produces a tendency to diseases. This, perhaps, is an approximation to an explanation of the facts: and to this may be added, that the mucous membrane of the intestine is exposed to the influence of a much greater variety of agents. It is difficult to give an accurate idea of the symptoms of ileitis, as we can only arrive at a knowledge of it by negative evidence, or, as the French term it, "*par voie d'exclusion.*"

In a case of gastritis and of inflammation in the upper part of the digestive tube, the most prominent symptoms are thirst and vomiting. In this affection, too, there is thirst, but it is by no means so urgent as in the former cases, and there is generally no vomiting. In a case of acute gastritis there is always a desire for cold drinks. In this disease there is also

a desire for fluids, but the patient prefers them warm. Here you perceive two symptoms connected with the predominance of disease in the upper part of the digestive tube are absent—vomiting and the desire for cold drinks.

Now, you are aware that, in a case of inflammation of the colon and rectum, the most prominent symptoms are diarrhœa, tenesmus, and the passing of a quantity of morbid secretions. These symptoms, in a case of ileitis, are either wanting, or they are so slight as to excite very little notice. If, then, in a case of intestinal disease, we abstract the characteristic symptoms of disease in the upper and lower part of the digestive tube from the phenomena of the existing disease; if we find that it presents symptoms which do not properly belong to either the stomach, duodenum, colon, or rectum; we conclude that it must depend on a lesion of the remaining part of the canal, and we are in this way led to the diagnosis of ileitis. Let us enumerate the symptoms of an ileitis. In the first place, thirst, without a preference for cold drinks; in the next, absence of vomiting; again, in the early period of the disease, there is generally a tympanitic state of the belly, and the patient seldom complains of pain, even in fatal cases. This is a point of extreme importance. There is, however, most commonly a degree of tenderness over the ileum, which you will be able to detect by an accurate examination, and this tenderness presents a remarkable difference from the tenderness of gastritis, both in degree and situation. It is very seldom so exquisite as in a case of gastritis, the patient can bear a considerable degree of pressure, and the tenderness, in place of being towards the epigastrium, is situated between the umbilicus and the crest of the ileum on the right side; here pressure excites pain. The tongue in this affection is generally of a dirty white, pointed, and red along the edges and tip; the pulse is quick and small, and the face is contracted. As to the nature of the discharges from the bowels they are exceedingly various; there has been as yet no diagnosis founded on their appearance, and in some fatal cases they have been observed to retain an almost perfectly healthy appearance throughout. What would the gentlemen who draw their diagnosis from the chamber-pots say in such cases? I have seen perfectly natural stools in cases which immediately after have terminated fatally, and where, on examination after death, there was a vast extent of ulceration in the ileum. In addition to the symptoms just recited, the patient most commonly has *fever*, and this presents itself under various forms, frequently assuming the type of a simple continued fever; hence, in a great many cases, *the patient is merely supposed to labour under simple continued fever, and the existence of extensive inflammation of the ileum is entirely overlooked.* In other instances, there is more or less prostration, which increases with the progress of the disease, and the fever frequently receives the appellation of typhoid. Under these circumstances, the patient often gets bark and wine, every means is taken to support his strength and remove the typhoid condition of the system, the inflammation of the intestine is exasperated by neglect and maltreatment, the patient dies, and, on dissection, the ileum presents an enormous sheet of ulcerations.

In cases of this kind, where the diagnosis depends as much on negative as on positive circumstances, it is of importance to have a direct sign by which we may be able to ascertain, with some degree of certainty, the existence of a suspected enteric inflammation; and I think I have dis-

covered one, which I believe has not been as yet noticed; this is increased pulsation of the abdominal vessels. In many cases of acute inflammation of the brain, the increased pulsation of the carotids has been frequently remarked, and every one sees that under such circumstances, there is an undue excitement of these vessels, or, in other words, that there is a want of proportion between the action of the carotids and the arteries of the extremities. If your finger be attacked by paronychia the same phenomenon is observed, the artery leading to the inflamed finger beats much stronger than the artery of the corresponding one on the opposite side. From these circumstances I was led to conclude, that, in cases of acute inflammation of the digestive tube, there would be increased pulsation of the abdominal aorta; and on following up the investigation by examining several persons who had distinct and well-marked intestinal inflammation, I found that my conclusions were well-grounded. In such cases, I found not only a remarkable throbbing of the abdominal aorta, but I also discovered that this throbbing was prolonged to the femoral arteries, and that, on the other hand, there was little or no corresponding excitement in the arteries of the upper extremities.

You remember I mentioned to you that most of our knowledge of the inflammatory affections of the small intestines refers to the ileum, and that, in point of fact, we know little or nothing of disease of the jejunum. This, however, is not of much importance; of all the parts of the digestive tube, the jejunum is the least liable to disease, and is seldom or never engaged without the coexistence of disease in the ileum or duodenum. You recollect I drew your attention strongly to the extreme frequency of inflammation in the lower third of the ileum, and the importance which it derives from this as well as from its insidious latency. I showed that it was one of the most common secondary lesions in typhous fever, and a frequent cause of death. This cannot be impressed too much upon your minds—it is a point of pathology on which the best informed medical men are agreed. It may, also, and very often does, occur as a pure idiopathic affection, without being preceded or superinduced by that morbid state of the whole economy to which we give the name of fever. I said it was extremely common in children; that here it was in many instances mistaken for worms, or bilious, or remittent fever; that it constantly occurred during the progress of *tabes mesenterica*, and often appeared to have the initiative. I alluded to the discussion which has arisen as to the question whether the disease begins in the glands or mucous membrane, and stated that such discussions are useless, as it is impossible to separate the two affections in diagnosis or treatment, and practical medicine gains nothing by the distinction.

With respect to the *symptoms* of ileitis, I observed that they were those of a general affection of the digestive tube, the phenomena which indicate irritation at its upper and lower part being absent. That if you abstract from symptoms of a general affection of the intestinal canal, the vomiting and desire for cold drinks which characterize inflammation of the upper part, and the diarrhœa and tenesmus which denote disease of the lower part, you will have the diagnostic marks of an ileitis. At our last meeting I showed you some preparations illustrative of this disease; I intended to have exhibited others of the same kind to-day, but regret that I cannot lay my hands on them at present. Allow me to rehearse the symptoms of ileitis once more. Thirst, without desire for cold drinks; absence of

vomiting, and of the characteristic symptoms of inflammation of the colon and rectum; early tympanites, generally on the second day of the disease; absence of pain, but existence of tenderness on pressure between the umbilicus and the crest of the ileum; pointed tongue, of a dirty white on the upper surface, and red at the sides and tip; contracted features; quick, small pulse; fever, and, what I forgot to mention in my last lecture, scanty, high-coloured urine, a very constant symptom, so much so that I have known this disease mistaken for an affection of the kidney, and the patient treated accordingly. I must add, that the patient died, that the kidney was found perfectly healthy, the ileum in a state of violent inflammation, and the suppression of urine to be referred to this cause alone.

I drew your attention at my last lecture to the increased pulsation of the abdominal aorta and its immediate branches, and stated that I looked upon this as a direct sign of abdominal inflammation. I do not mean to say that every case of increased action of the great abdominal arteries is significant of ileitis or intestinal inflammation. We see unusual pulsation of the abdominal aorta in hysterical females, and see it subside under the use of anti-spasmodics; we see it in painters' colic; we see it in cases of extreme emaciation; we see it in disease of the aorta, or some of its first large branches. What I wish to draw your attention to, is this: where we have this symptom in addition to other signs of inflammation of the digestive tube, it is of considerable value as a diagnostic.

You may remember I stated that ileitis, from being generally attended by fever of the continued type, has been frequently supposed to be simple continued fever, and that this was one of the consequences which resulted from the latency of the disease. Petit was the first who described this disease rightly. He described it under the name of entero-mesenteric fever, that is to say, fever depending on disease of the mesenteric glands and small intestines. The following is an outline of his description: "The attacks come on with debility, irregular fever, quick, small pulse, sunken countenance, perhaps some diarrhœa, a lustrous expression of the eye." I may remark here that the occurrence of diarrhœa without any evident affection of the great intestine, and *accompanied by fever*, is almost always a sign of ileitis. It too often happens that practitioners, as I before remarked, prescribe for names. In cases of pulmonary disease, if the patient has fever, with copious expectoration, they say he is labouring under an attack of bronchitis; but in cases of intestinal inflammation, accompanied by increased secretion, it is different: they merely say he has diarrhœa, and prescribe for it without connecting it with its proper cause. The general rule is, *that when you have diarrhœa with fever, there is inflammation of the digestive tube.*

In inflammation of the ileum, the patient generally lies on his back, and avoids motion as much as he possibly can; his skin is dry and harsh; he is feverish; he has thirst, but little desire for cold drinks; he scarcely ever vomits; his alvine dejections are sometimes thin and purgative, sometimes figured and natural. But there is one circumstance which is of considerable importance in pointing out the amount of disease, even in cases where patients have considerable diarrhœa, and this is, that the diarrhœa is not sufficient to account for the extraordinary prostration. There must be some cause for the great reduction of vital power besides the mere diarrhœa, and I must state to you that there are few diseases

which bring on such rapid prostration as inflammation of this portion of the digestive tube. In the advanced stage of this disease the patients have cold skin, subsultus tendinum, petechiæ, involuntary discharge of urine and feces, low delirium, coma, gangrenous ulceration of the back, sinking of the powers of life, effusions into the head and chest, in fact all the symptoms which characterize the last stage of typhus. Generally speaking, the disease is more or less prolonged, and the patients die of exhaustion, but in some cases the approach of death is more sudden and formidable. Some of the ulcers pass deeply into the substance of the intestine, perforate all its coats in succession, the contents of the intestine escape into the peritoneum, and the patient is carried off by a rapid peritonitis.

Inflammation of the ileum is very frequently met with in children, and it is most important that you should be aware of the extreme frequency, as well as the symptoms of this disease, in those little creatures. There is one fact in pathology which seems not to be generally acted on — that there is a class of diseases which are intra-uterine, and with which a child may be born. There are a great many cases of this kind on record, but still, I must confess, there is a great scope for investigation, and that our knowledge on this subject is imperfect. I believe that any one who has the opportunity of dissecting a great number of still-born children, or of those who die immediately after birth, would, by examining the state of the different cavities, and publishing the results of his examinations, earn for himself very great reputation. It is a well-known fact that children may be born with hydrocephalus, with tubercles in the lungs, with acute inflammation of the stomach; nay, more, children have been known to be born with chronic gastritis, and with old ulcerations in the ileum and colon. When children happen to be born with gastro-enteric disease, they are puny and weak; the fact of this occurrence is generally overlooked, the case is considered to be one of general debility, and hence most of those children are lost in consequence of their medical attendants being ignorant of the real nature of the disease. It is a very curious fact, too, that where enteric disease occurs in very young children, it is frequently met with without any accompanying fever, and this is a point of great importance. Here is a fact not generally known. A new-born infant has vomiting, swelled belly, contracted features, but at the same time he has cold skin and feeble pulse; he has no distinct symptoms of fever, and a puny and feeble state of constitution appears to be the prominent symptom. He dies, and on opening the body you find distinct traces of enteric inflammation. The younger the child is, the less will be the chance of fever occurring as a sign of enteric inflammation. It seldom happens that this takes place after dentition, but before it is very common.

Now, what are the circumstances which would enable us to recognise this disease in children who have passed the period of first dentition? If you find the child vomiting, thirsty, with swelled belly, hot skin, a tendency to diarrhœa, and an erythematous redness about the anus, you may be sure that there is disease of the digestive system; if the child is restless, and you perceive that the symptoms of irritation of the head are coming on, you will be more certain, and in such cases pathology will inform you that the disease is chiefly in the ileum. In the advanced stage the diarrhœa is lessened, but the belly continues tympanitic, the child exhibits traces of long suffering, and the circumstance of the teeth

not being developed gives it the appearance of premature old age, which cannot be mistaken by an experienced eye, and is a sign of long-continued and extensive intestinal disease. In some cases the child gets a common attack of diarrhœa; this is neglected, but after going on for two or three days, symptoms of fever begin to appear. Here we arrive at a practical rule. Where a child has diarrhœa, and, after labouring under this for a few days, gets an attack of fever, you may be almost sure that it is a case of enteritis, and that you will be acting wisely in treating it as such. In the opinion of many well-informed practitioners, that form of fever which has been called infantile remittent, is only an example of this disease. In proof of this fact, Dr. Marsh, my friend and predecessor in this school, in his paper on jaundice, makes some excellent remarks on this subject. "There is yet one form of disease of very frequent occurrence, the seat of which is in the stomach and small intestines. That to which I allude, is the *infantile remittent fever*, or, as it is vulgarly termed, the *worm fever* of children. Its characteristic symptoms, if closely analysed, will be found all of them to point to the mucous surface as the original seat of morbid action." — *Dublin Hospital Reports*, vol. iii.

It would be well for medicine, if the valuable information conveyed in Dr. Marsh's paper was more universally diffused. I feel convinced that many children fall victims to malpractice under circumstances of this kind. A child gets symptoms of diarrhœa, has irregular or bad appetite, and swelled belly. The disease is called worm fever; he gets a dose of calomel and jalap, and, perhaps, passes some worms; for, when we come to speak of worms, we shall find that disease of the mucous surface is intimately connected with worms, and, in the opinion of one practitioner, worms may be the result of enteric inflammation. Well, some worms are passed; the purgative is again used; the child may not pass any more, or he may pass one or two in a week, to encourage the practice. But all the symptoms of intestinal inflammation, the diarrhœa, the tympanites, the thirst, the fever, are supposed to depend upon the presence of more worms, and these are to be evacuated by purgative medicine; and thus the affair goes on, until the child falls into *tabes mesenterica*, or gets sympathetic inflammation of the brain, and dies of hydrocephalus. I regret to add, that in many cases of this kind the head alone is opened; a little fluid is discovered in the ventricles of the brain, the doctor's diagnosis of the head is found to be correct, and all parties are satisfied. In cases of this kind, the early application of leeches to the belly, the regulation of diet, keeping the bowels gently open by enemata, and mild counter-irritation, would have saved the patient. This is not mere theory; it is but a statement of facts, supported by the experience of practical men.*

* [MM. Rilliet and Barthez describe two varieties of follicular enteritis of infants, in which the ileum is the chief seat of disease, and the plates of Peyer the parts altered. In general, the plate, or aggregation of glands, exhibits a puffed, thickened, reddish, and soft appearance. The mucous membrane is easily removed by scraping, which, if continued, carries away the entire plate, leaving the muscular tissue exposed.

These appearances are exhibited in both varieties of ileitis, viz., the simple inflammatory, and that with the acute typhoid state. The differences consist in the less intensity of the phlegmasia, in the absence of inflammation of the mesenteric glands, and in the difference of symptoms,

Tabes Mesenterica.—I wish to say a few words here with respect to *tabes mesenterica*. In a course of lectures like the present, it would be impossible to examine, in detail, the different forms of this disease; it will be as much as I can do to draw your attention to the general principles of its pathology and treatment. The term, *tabes mesenterica*, is employed to designate that species of consumption which depends upon disease of the mesenteric glands. The common idea formerly entertained

---

and of the circumstances under which the first variety is produced. But the writers just mentioned are still constrained to admit a resemblance in many features.

Among the symptoms, diarrhœa, although not of constant occurrence, should be regarded as the most important, and as indicating the commencement of the disease. The symptoms furnished by examination of the abdomen, on the score of volume, tension, and pain, are rather of a negative kind.

The greater number of the diseases of infancy may be complicated with acute enteritis; as we see in typhoid fever, and the exanthemata, and especially measles. Purgatives injudiciously administered have been admitted to be another cause of enteritis.

The *acute typhoid form* of enteritis is represented, by MM. Rilliet and Barthez, to be peculiar to infancy. It begins either with languor and loss of appetite of some days' duration, or, at once, with fever, headache, thirst, anorexia, pain in the abdomen, constipation or diarrhœa, rarely epistaxis; or, sometimes, with repeated vomiting and cephalalgia, constipation, and an appearance of meningitis.

The disease pursuing its course, the strength is lost, the little patient lies on its back, its eyes sunken, nostrils dry; the tongue, at first moist, and red at the tip, soon becomes dry, and sometimes has a yellow crust at its root; the abdomen is full and tense, and painful to the touch, especially in the iliac fossa. The fever is intense, the skin hot and dry; the pulse is frequent and regular; cough infrequent and not violent.

At a later period the typhoid aspect is quite evident. About the eighth or tenth day, typhoid spots, and, less seldom, sudamina, are seen; the tongue is now quite dry, rough, grater-like, and dark in colour; the abdominal pain persists, and the diarrhœa is more frequent and abundant; the cerebral symptoms are aggravated; there is restlessness, delirium, an anxious and suffering expression of countenance, and frequent complaints.

The diagnosis between this form of enteritis and true typhoid fever is not easy. The spleen was only enlarged in one of the six cases recorded by MM. Rilliet and Barthez, and borborygmi were not met with: the lenticular spots were smaller, less numerous, and of shorter duration than in typhoid fever.

In two of the six cases, the enteritis was completely masked by extensive pneumonia in one, and by pneumonia and gangrene of the lungs in another.

The anatomical lesions in typhoid enteritis are not always very great. Sometimes we meet with an erythematous inflammation of little intensity, and extensive and profound, but still not ulcerous disorganization. The seat is chiefly at the termination of the small intestine. The plates of Peyer were, with one exception, in their normal state; and, in all, the mesenteric glands were not affected.—B.]

with respect to this affection, and, I believe, still to a great extent, is, that the disease first commences in the mucous glands, and from these extends to the lymphatic ganglia of the mesentery, which, in their turn, become enlarged, thickened, and less pervious, so that a sufficient share of nutriment cannot be absorbed, the consequence of which is, that the patient dies of atrophy and exhaustion. With such views of the case, the principles of treatment consisted in employing a class of medicines called deobstruent, the operation of which was supposed to be efficacious in removing this obstruction, this deposition in the substance of the mesenteric glands, and the enlargement by which it was accompanied. This was, and this, I am sorry to say, is the idea still entertained by many. What is the actual state of the science with respect to this disease? It is found that the glands are certainly changed in their structure, and that they are manifestly enlarged; but this is only a link in the chain of phenomena, for it has been proved that in *the majority of cases the disease is ushered in by enteritis, and that the swelling of the glands is the result of disease, propagated along the course of the lymphatics from the mucous surface of the intestines to the mesenteric ganglia.* This preparation, which I shall send round, will give you an idea of the actual state of the disease. Here is one of the glands which has been cut through: it exhibits the cheesy texture commonly observed in this disease, but you can perceive there are a number of lines running towards each of the glands; there are the engorged lymphatics, which, you see, correspond with ulcers on the mucous surface of the small intestine. That this is the true pathology of the disease will appear from the following circumstances:—First, it has been proved that the glands of the mesentery commonly become inflamed, enlarge, and suppurate, in cases of inflammation of the mucous membrane of the intestinal canal in the adult. A patient gets enteric inflammation and dies; on dissection, we find distinct marks of disease in the intestines, and, in addition to this, we find the glands evidently diseased. Here is one fact. In the next place, it has been proved that, in a great many cases of tabes mesenterica, if you retrace the history of the disease, if you go back to its first and earliest phenomena, you will find that it began with the symptoms of what has been termed remittent fever, or that the patient had enteritis or diarrhœa, which afterwards became chronic, and that then the symptoms of *tabes mesenterica* began to appear. In the third place, you will find that, in a vast number of cases, where a fatal termination has occurred, if you pursue your dissection, and slit up the whole of the ileum, you will discover numerous old ulcerations of the mucous membrane, and find that the lymphatics which correspond with these ulcerations are in a state of manifest disease. Lastly, it has been observed that the best treatment for *tabes mesenterica* is that which is calculated to remove enteric inflammation, and that the old treatment, founded on the principle of removing obstruction by the use of alkalies, absorbents, and solvents, is erroneous and false in the majority of cases. So that we have proof of the origin of this disease in intestinal inflammation, drawn from the occurrence of analogous affections in the adult, from the phenomena of the disease in its early stage, from morbid anatomy, and from treatment. I think there can be no doubt that, in most instances, it commences by intestinal inflammation. Of course a predisposition to disease of the glandular system will favour the occurrence. But is there no case in which the disease has commenced in the glands, and where

the mucous membrane of the digestive tube is secondarily engaged? My answer to this question is, in a few cases we cannot prove that the disease commenced in the mucous membrane, and there is no reason why the glands of the mesentery should not be liable to primary tuberculous or scrofulous deposition as well as those of any other part of the body; but in a vast number of instances, the enlargement of the mesenteric glands is secondary, and resembles the inflammation of the inguinal glands which results from chancre on the penis. I would advise you to consult the Commentaries or Pathological Propositions by Broussais. On this subject, also, Dr. Mackintosh's Practice of Physic.

There is one thing more connected with this disease, which is of considerable importance, and to which I shall briefly draw your attention, and this is, that this inflammation of the glands of Peyer and Brunner, this *dothinenteritis*, as it has been called, is a very common cause of slow convalescence in fever. You will meet with cases of fever, which will go on to the 17th or 21st day, and then something like a crisis takes place; you expect that from this time forward the patient will get progressively better; but in the course of a few days you will be surprised to find no amendment, aud that he is not gaining strength; you feel his pulse, and find it quick and small; his attendant informs you that he is restless at night; and when you ask him how he feels, he says he has no particular complaint, but that he is very weak, gets no sleep at night, and has no appetite. Under these circumstances you are anxious to find out what his disease is; you inquire into the state of the heart, lungs, and brain; you find no evidence of disease in any of these organs; you run over in your mind the symptoms present, the feverishness, quick pulse, want of appetite, restlessness, and finding some degree of abdominal tenderness and tympanitic swelling, you arrive at the conclusion that the return of health and strength is impeded and delayed by the existence of a *dothinenteritis*. The first person who discovered this fact was Dr. Cheyne. "In these cases," says he, "the distress of the patient often bore no proportion to the danger he was in; the former was very little, while the latter was extreme. The disease would proceed without violent symptoms; nay, a patient would seem to be recovering, although without any critical discharge; he would call for full or middle diet, and for days take his food regularly. The only circumstance in his situation which demanded attention was, that he regained neither flesh nor strength, and he expressed no desire to leave his bed. Then, his pulse again became quick and his tongue dry; and he would complain of dull pain and uneasiness in his belly, attended with soreness on pressure, and a degree of fulness in the upper part of the abdomen. Then came on a loose state of the bowels, and great weakness. Probably at the next visit the patient was lying on his back, with a pale, sunken countenance, and a very quick pulse; his mind without energy. Then his stools (mucous) passed from him in bed, and the urine also. Perhaps a hiccup came on; next his breathing became frequent, in which case death was at no great distance." In all these cases the mucous membrane and glands were found in a state of decided disease.

Now, what was the nature of this disease? It came on as a secondary affection during the course of fever, became more marked and intense, and finally destroyed the patient. I have seen very many cases of this disease. I give you this as a general rule:—when, after the apparent

termination of a fever, your patient convalesces very slowly and imperfectly; when you find that he is becoming weak, that his pulse is quick, his belly tympanitic, his thirst still present, *and all this without evidence of disease in the respiratory, circulating, or nervous system*, you may suspect inflammation of the mucous glands of the digestive tube, which may terminate in deep ulcerations; and you will not be surprised if your patient should be carried off by rapid peritonitis, occasioned by an ulceration of all the coats of the intestine. I have witnessed many instances of the truth of this statement.

It has been objected to the doctrine, that infantile remittent fever and *tabes mesenterica* depend on inflammation of the mucous membrane of the digestive tube, because it has been found that purgatives are sometimes useful in the treatment of the disease; and those who bring forward this objection ask, "If purgatives give relief, how can it be intestinal inflammation?" Now, what are the real facts of the case? These cases, which have been relieved by purgatives, are cases in which purgative medicine has been given in the early stage, and has been productive of benefit; or, in other words, where the disease is only just commencing, and where its cause is proved to be the presence of irritating matter in the bowels. A physician is called to a case of this kind; he gives a purgative; a quantity of offending matter is evacuated, and the child gets better. You should act in the very same way, and have recourse to purgatives whenever you have reason to suspect the existence of irritating or indigestible matter in the bowels. You are to employ purgatives on the same principle as every one employs emetics in cases where corrosive poison has been swallowed; but no one is inclined to think that he will be able to cure the disease by the continued use of emetics. But, unfortunately, persons do not attend to the actual state of the digestive tube; they go on prescribing purgative after purgative, until the irritation, which was originally produced only by indigestible matter, becomes exacerbated, and terminates in ulceration of the intestinal mucous surface, accompanied by all the symptoms of *tabes mesenterica*.

The treatment of this affection is both simple and easy, particularly when the patient applies to you at an early period. In the case of children, one of the first things you have to determine is, whether you shall have recourse to the employment of purgatives or not. If you happen to be called in at an early period, or if the patient has taken no purgatives, and there is reason to suspect a loaded state of the bowels, you will be right in employing some mild laxative. You cannot commence your treatment better than by prescribing some mild opening medicine, particularly when you discover that the patient has been taking indigestible, improper food. This plan I think both reasonable and useful. You will frequently meet with cases in which all the bad symptoms will disappear after the use of a few laxatives. Here is a point on which the followers of Broussais erred. They declared that the exhibition of a single laxative would be to endanger the patient's life; and that the only treatment which could be relied upon consisted in the use of leeches, low diet, and cold water. But I think there is as much reason in giving a laxative to remove indigestible matter from the bowels in a case of this kind, as there would be in giving an emetic in a case of gastritis produced by the presence of indigestible matter or corrosive poison in the stomach. But if, after having

evacuated the bowels, the symptoms of intestinal irritation should continue, you are not to persist in the use of purgatives; change your hand, and attack the symptoms of intestinal inflammation, which have now decidedly commenced.

We should occupy ourselves, gentlemen, at our next lecture, in considering the treatment of this disease in the adult as well as children, and then go on to the disease of the large intestines.

LECTURE XX.

DR. STOKES.

TREATMENT OF ILEITIS—Advantage of leeching—Stimuli sometimes beneficial—Infantile remittent fever—Inflammation of the mucous membrane—Enteritis with diarrhœa—Effects of opium in inflammation of serous and mucous membranes—Pathology and treatment of diarrhœa and dysentery—Perforation of the intestine—Diseases of the large intestine.

WE shall be occupied to-day in considering the treatment of inflammation of the mucous membrane of the small intestine. You may recollect that in my last lecture I spoke of the employment of laxatives in this disease, and mentioned that we are to employ laxatives in enteritis, on the same principle as emetics are used in cases where corrosive poison has been taken into the stomach. We are not to expect to be able to cure the disease by the use of laxatives, nor are we to have recourse to them in every case; we employ these remedies where we have decided evidence of the existence of offending matter in the bowels. We may meet with a case in the early stage, under such circumstances that the removal of the irritating matter by judicious purgation may completely relieve the patient; and this, I believe, is the foundation on which the superstructure of the British purgative practice in ileitis and tabes mesenterica was raised. It was concluded that a laxative treatment, which had on many occasions succeeded in removing the first symptoms of the disease, would necessarily cure it in all stages and cases. This, I need not tell you, is wrong. Whenever you give purgatives or laxatives in enteritis, bear this in mind, that the effect which you have to produce is to be brought about at the least possible risk. If you can unload the bowels with a little castor oil or rhubarb, or some mild neutral salt, it is much better than to have recourse to calomel or scammony, or colocynth. As a general rule, drastic purgatives must be avoided in inflammation of the mucous membrane of the intestines. The school of Broussais committed an error, on the one hand, by never admitting the use of laxatives, and British practitioners have been wrong, on the other hand, by giving too much purgative medicine. The error of the latter arose from looking always upon purgatives as antiphlogistics, which they are certainly, so far as they contribute to relieve inflammation by causing an increased secretion from the intestinal mucous surface. But this increase of secretion can be produced only by stimulating the organ to which they are applied; and hence, before they can become general antiphlogistics, they must of necessity be local stimulants. Further; if in a case of inflammation of the digestive

tube you prescribe a purgative, and it fails in causing an increase of secretion, it will add considerably to the existing inflammation. It is, however, of very great importance that there should be no accumulation of offending matter in the bowels; and hence, when you find a degree of fulness in the belly, and the dejections scanty, you should always give a laxative and follow it up by the administration of a narcotic. By using enemata, you can do a great deal of good, and this without any injury to the digestive tube; and I think they may be always employed with benefit in disease affecting the ileum. Recollect, gentlemen, what I wish to impress upon you respecting this part of the treatment is, that laxatives are to be employed in ileitis as one of the means of cure; but you are not to expect that a cure by the use of these alone will always be a matter of constant occurrence. It is true that many cases, presenting symptoms of enteritis, have, in the beginning, yielded to laxatives; but it is true, also, that horrible mischief has been done by their continued or indiscriminate employment.

A few observations now with respect to bleeding. There is in simple inflammation of the mucous membrane of the intestines this peculiarity — it very seldom happens that it is necessary to use the lancet. The whole class of intestinal inflammations is so generally accompanied, even in the early period, with marked prostration and a typhoid condition of the whole system, that general bleeding is very seldom employed. But when the disease is recent, the constitution vigorous, the patient young, the skin intensely hot, and the pain violent (a combination of circumstances which is not of very common occurrence), you may employ the lancet with safety and with great advantage to your patient. But what I wish to impress upon you is this — you must not expect to cut short an attack of enteric inflammation by general bleeding. Over inflammations of mucous membranes in general, but particularly of the intestinal mucous surface, the lancet has comparatively but little direct power; it is in the inflammatory affections of parenchymatous tissues and serous membranes, that we generally observe the most brilliant and decided effects of venesection. Neither can you, as in parenchymatous inflammation, bleed a second and a third time with benefit. In cases of inflammation affecting the mucous membrane of the intestinal canal, you are to look upon venesection as a preparatory step to leeching. Where the pain is violent, the fever high, the attack recent, and the constitution strong, you will do well to bleed; but only bleed once, and then apply leeches in abundance over this suffering organ. There is nothing of more importance, nothing of such decided value, as bleeding by leeches in inflammation of the mucous membrane of the intestinal canal, and here we arrive at a fact, the explanation of which is involved in much obscurity. A patient is attacked with inflammation of the mucous membrane and glands of the digestive tube, twelve or twenty leeches are applied to the integuments of the abdomen, and their application is followed by extraordinary relief. This is a very curious fact when we consider that between the place where we apply the leeches and the tissue which is affected, there intervene skin, cellular membrane, superficial fascia, cellular membrane again, deep-seated fascia, muscular substance, cellular membrane again, two layers of peritoneum, and muscular substance enveloped in cellular tissue. Yet, notwithstanding this extraordinary succession of tissues, it is an undeniable fact, that the application of a dozen leeches to the surface of the belly will fre-

quently cut short an intestinal inflammation, or materially diminish its intensity. Here is a fact, the explanation of which is extremely difficult; and I tell you candidly, I cannot explain it. The school of Broussais attempt to explain it as follows. They state that it is a constant law of the economy, that there is a strong sympathy between the internal parts and their respective integuments, but they do not say why this sympathy should exist. We frequently, however, observe facts confirmatory of this law; you are aware that it often happens, that, in cases of deep-seated muscular phlegmon, mentioned by Mr. Crampton, in abscess of the liver, and in empyema, we have a swelling of the integuments, showing the existence of a sympathy between the integuments and the internal organs.

In treating a case of inflammation of the small intestine, I think you may generally commence with the application of twelve or eighteen leeches over the ileo-cœcal region.* The ordinary result of this application is, that the pain and tympanites are reduced, and the thirst diminished; but the patient still has fever, and you are to bear in mind that the mere subsidence of pain does not imply the removal of the disease. We may modify the character of an ileitis very considerably by a single application of leeches, but we are not on that account to expect that we shall be able to remove the disease entirely. In general it is necessary to apply them two or three times, lessening the number at each succeeding application, and taking care that they are applied in the proper place, that is, midway between the umbilicus and the crest of the ileum. Many practitioners are afraid of employing leeches in the advanced stage of this affection, in consequence of the great debility which characterizes the advanced stage of this, as well as inflammation of every other part of the digestive tube. But though I am quite of opinion that the school of Broussais is wrong in using them at any period, still I think they may be employed even where the disease is advanced, *particularly if they had not been used before*, and I have frequently seen leeches applied with advantage as late as the twelfth day. I have employed them myself in the Meath Hospital as late as the ninth and tenth days with decided benefit. Many physicians on the continent are in the habit of treating inflammation of the digestive system by the application of leeches to the anus, and this is said to have a very good effect, and the number of leeches required is smaller. In disease of the great intestine accompanied by diarrhœa, tenesmus, and tormina, I think this is an excellent mode, but when the disease is in the upper part of the tube, I prefer applying them to the belly over the situation of the inflamed organ.

Now, with respect to internal medicines. In this disease everything

---

* [Twice, or even three times, this number of our common American leech may be applied in such a case. If leeches are not at hand we should not be backward in having recourse to the lancet. I have employed venesection largely and repeatedly in the case of a person who was neither young nor robust, but in which there was much pain and an active pulse; and with this good effect, in addition to his recovery, that, whereas he used, previously, at not long intervals, to have frequent attacks of ileitis, he has not had a return of the disease for a period of seventeen years past. In cases assuming early a typhoid character, and in which there is little arterial excitement, leeching, or, if this cannot be done, cupping should be preferred.—B.]

that is administered should be given with the view of removing irritation, and for this purpose I know no better preparation than a combination of ipecacuanha and opium, as in Dover's powder. The exhibition of the compound powder of ipecacuanha is attended with decided advantage. You are all aware of the long-established use of ipecacuanha and opium in diseases of the intestinal canal, and I think there can be no doubt that they possess considerable utility. With this I generally combine some mild mercurial: the best you can employ is the *hydrarg. cum cretâ*. Give two or three grains of each every second or third hour, as the case may be, and you may continue this for several days. Where there is no diarrhœa, and the bowels have a tendency to be constipated, it will be necessary to order, every second or third day, a mild laxative, a little manna, or rhubarb, or some castor oil; you should insist on the daily use of enemata, and if they answer the purpose sufficiently I would advise you to be sparing of the use of laxatives by the mouth. In addition to these remedies, I am in the habit of giving a considerable quantity of gum arabic, which appears to have an extraordinary efficacy in disease of the small intestine. I look upon it as peculiarly valuable in diseases of children. The ordinary mode of prescribing it is to give a certain quantity of gum water. If this is insufficient, you should order half an ounce or an ounce of the gum to be dissolved in a pint or quart of water, which the patient is to use during the day. After the use of the *hydrarg. c. cretâ* and Dover's powder, this has a decided value in the treatment of ileitis.*

In this way by leeching, mild laxatives, prescribing mercury with chalk, and compound powder of ipecacuanha with gum water, your patient begins to improve. The tenderness of the epigastrium disappears, the tongue begins to clean, the fever diminishes, the thirst goes off, and appetite returns. This is the favourable termination. When the patient is of a weak and delicate habit, it is of great importance to pay particular attention to supporting the strength, *even from an early period of the disease.* In such a case, after the first week, the physician who neglects the proper means of supporting his patient's strength does wrong, and it has justly been remarked, that a practitioner will be right in supporting the general strength, at the same time that he is employing local antiphlogistics. It is in steering clear between these two opposite dangers that the judicious practitioner is seen; he does not allow his patient to die of inanition, while at the same time he takes care to remove local inflammation. I have seen several experienced physicians prescribe leeches to the abdomen on the same day that they ordered the patient to have chicken-broth, and even a little wine. There is nothing improper in this; an inexperienced practitioner, who has his eye merely on the local inflammation, is apt to fall into the error of overlooking the constitutional debility, and allowing it to steal upon him. He finds very little difference between the appearance of his patient this day and the next, and thinks the slight increase of debility undeserving of any attention. At last his patient begins to sink visibly, he gets alarmed and has recourse to stimulants, but it is now too late. Besides, there are several articles of diet which support strength, without increasing inflammation; as, for instance, chicken-broth, sago,

* [I have given with advantage, in ileitis, the blue mass in small doses, say two or three grains three times a-day; and have found warm fomentations by stupes and cataplasms on the iliac region serviceable.—B.]

arrow-root, strained rice, &c. These do no harm, and they prevent the patient from falling into a dangerous typhoid condition. Let us look at this in another point of view. Suppose you are called to a child who is said to have had an attack of worms, or bilious derangement, or that his bowels were costive, and purgatives were given, that the discharges were found to be bad and more purgatives were administered; or suppose you are called to a child of a weak, scrofulous habit, who had been taking large quantities of purgative medicine, for what has been termed *derangement of the bowels*, and you find the little sufferer with pale, shrunken face, a black circle round his eyes, cold extremities, rapid faltering pulse, great thirst, and evident symptoms of increased cerebral excitement; the little arms and hands are cold as death, but the belly burning, tympanitic, and very sensible to pressure, and when you compare the radial artery with the femoral, as it turns over the pubis, you will have some conception of the excited condition of the abdominal vessels; and in addition to this train of morbid phenomena, you find there is suppression of urine. Are you to attack these symptoms with antiphlogistic means? No; the first thing you are to do, is to prevent any further mischief, by totally inhibiting every kind of purgative medicine. You are next to consider carefully what the best line of treatment to be pursued is, for here you are under circumstances of difficulty, and have a great many prejudices to contend with. What I find generally to be most successful is this. I begin by taking proper steps to support the strength, ordering the patient to take chicken-broth, arrow-root or jelly; the extremities are to be wrapped up in warmed flannel; and if the patient is sinking, and has his mouth and teeth crusted with dark sordes, a little wine, watching its effects. If it produces sleep, if the pulse comes down under its use, and the fever is not increased, it will do a great deal of good, and you can gradually increase the quantity. Always bear in mind that there is a certain period in all inflammations, in which stimulants prove to be antiphlogistics, a circumstance which has been overlooked by the school of Broussais. So far with respect to constitutional treatment; but what will you do with local disease? The application of blisters is of decided use, nay, I have seen a few leeches very effective. Apply a blister to the abdomen, and dress it with mercurial ointment, at the same time you may employ frictions with mercurial ointment; you will also swathe the belly with flannel, so as to keep up a comfortable temperature. In this way you will be able to do a great deal of good. You will also prescribe *hydrarg. c. cretâ*, with Dover's powder; and if the bowels are confined, emollient injections. By steadily pursuing this plan of treatment, you will often rescue from imminent danger a case which would prove fatal under the purgative plan, and you will greatly add to your own reputation.

There is one form of this disease in which diarrhœa is a prominent symptom, where the purging is from the very commencement. On this form I am anxious that you should have clear ideas. In cases of this kind there is a copious discharge of fluid matter from the bowels. In the majority of cases you may lay down this law, that where there is a decided irritation of any secreting organ, increased discharges from the surface of that organ give more or less relief. Suppose two cases of hepatitis; in the one we have no secretion of bile, in the other the secretion is copious; the latter is certainly most favourable. Again, suppose two cases of bronchitis; in one there is copious expectoration, in the other it is

extremely scanty; now every medical man knows that the former is most easily managed. The increased secretion of any organ in the early stage is to be looked upon as a relief to the inflammation. The practical inference to be deduced from this is, that we should be cautious in adopting any means of arresting this discharge, as it is one of the modes which nature employs in relieving the irritation of a suffering organ. Well, then, suppose you have a case of enteritis, and that on the first or second day diarrhœa sets in, what does the routine and systematic physician do? He gives chalk mixture and opium with tincture of kino and catechu, and what is the consequence? The belly becomes tympanitic; the pain is increased, and even peritonitis may supervene; this is one result of the increase of inflammation; or the breathing becomes difficult, and the patient gets bronchitis or pneumonia. Diarrhœa occurring in the early period of this disease is not to be interfered with, except when it gets to such a height as to threaten the patient's life; and where it increases his sufferings by the frequency of the discharges. In the first week or fortnight, when there are only three or four discharges, or even five in the twenty-four hours, I believe it is better not to interfere by prescribing direct astringents; *but in the advanced period, when the powers of life are low, or the discharges very copious*, then the physician comes to the assistance of nature with just reason, and in such cases you should always interfere. The best mode of managing diarrhœa of this kind is to employ small, frequently repeated doses of Dover's powder, with anodyne injections. And here I may mention briefly, to such of you as have not seen them used, the best way of employing them. As these injections are used on a different principle from the common, the latter being intended to empty the great intestine and be discharged, the former to be retained, we are constantly to make the basis of our anodyne injection in such a manner that it will not prove stimulant from its bulk, or from any irritating substance it may contain. Mucilage of starch, new milk, or linseed decoction, may be used as the basis, and the quantity taken for one injection should never exceed three ounces. To this, for an adult, you add from fifteen to thirty drops of tincture of opium, for it is a curious fact connected with this subject, that opium given by the rectum has frequently been observed to exercise a much more powerful effect on the system than when an equal or even smaller quantity has been taken by the mouth. The rule then is, that when you first make trial of the remedy in this manner, feel your way cautiously, and if you find that your patient bears ten or fifteen drops, you can increase the quantity on repeating the enema. An eminent practitioner of this city thinks the narcotic effect of opium by the rectum much better marked than by the mouth, and I believe this to be true in many instances. I believe the administration of opium in this way requires a good deal of caution. I recollect the case of a man who had been for a considerable length of time in the habit of using laudanum in large quantities, and was, in fact, a regular opium eater. During an attack of illness he got an injection containing sixty drops of laudanum; this produced, in a very short time, symptoms of decided narcotism, from which the patient never recovered; in fact, he died with every appearance of being poisoned by opium.*

* [The question here brought up is still a mooted one. General observation does not, however, correspond with the opinion of the lecturer.—B.]

There is another fact with respect to this disease which I would have you to bear in mind, that under certain circumstances, inflammation of the small intestine will produce a remarkable tolerance of opium. This applies not only to the advanced stage of enteritis, but also to many other forms of disease. Some time since I made a series of clinical experiments with the view of ascertaining the power which opium possesses in relieving inflammation, and the result has been, that in many cases where the powers of life are so low that we cannot have recourse to the lancet, or any kind of depletory measures, opium alone furnishes us with a powerful means of subduing inflammatory action. When we come to treat of peritonitis, I shall have occasion to speak of the good effects of very large doses of opium, particularly in that form of disease which results from intestinal perforation. My first trials of this remedy were in affections of serous membranes, and to this I was led by some interesting clinical experiments made by Dr. Graves. I next tried it in diseases of mucous membranes, where antiphlogistics were inadmissible, and here, as in the former cases, I had many proofs of its great efficacy. I shall state the particulars of a very remarkable case. A young gentleman, a pupil of mine, and a member of the class at Park-street, of an irritable habit, was attacked with intense inflammation of the mucous membrane of the intestines. He had a high degree of fever, and his thirst was so insatiable that for two days he never ceased calling for drink. His pulse was weak but rapid; his tongue red and pointed; respiration very much hurried; but the stethoscopic signs of disease of the lung were absent. His belly was exceedingly tender on pressure; and he had another remarkable symptom—constant smacking of the lips. The case, as you may perceive, was one of severe gastro-enteritis, and it was treated in the ordinary mode, by leeches, cold water, &c., but the disease showed great obstinacy, and at the end of a month the patient was evidently in a state of imminent danger. At this period a curious revulsion took place: the chest became engaged, and the patient got bronchitis. For this he was blistered, and took the decoct. polygalæ with large doses of carbonate of ammonia, under the use of which he recovered. The bronchitis disappeared, but was almost immediately replaced by symptoms of intense gastro-enteric inflammation, thirst, quick pulse, tympanites, low delirium, and *subsultus tendinum*. In the course of two or three days diarrhœa came on, becoming more profuse as it advanced. The first day he had four discharges, the next eight, and thus it went on increasing until there was a constant discharge of thin fluid matter from the anus. The patient was quite run down, and on three different occasions his friends thought him dead. Having made an unsuccessful trial of various stimulants and astringents, I determined to try what might be expected from large doses of opium. The patient was dying, and it was necessary to do something instantly which would be likely to arrest the diarrhœa. I ordered a grain of opium to be given every hour; on the first day he took twelve grains with apparent benefit, the next day he took six, the same quantity on the third day, and on the fourth the diarrhœa had so much diminished, and the young gentleman was so much better, that I thought it might be safely omitted. From this period my patient recovered rapidly. I would not bring forward this case in proof of the efficacy of opium if there were not many others of a similar kind; and I have no doubt that this was a cure effected by the use of opium in large doses. In the treatment of

this disease by opium, there is one simple rule, by observing which you will be able to avoid all difficulties, and at the same time have a criterion to judge of the value of the opiate treatment. If the remedy produces the ordinary narcotic effects of such large doses on the system, *it will not do much good*. You begin, therefore, cautiously; and if, after the first or second dose, you find that decided narcotism is produced, or at least more than you would think the quantity given could have brought on, give it up.—It will be dangerous. But if he bears one, two, or three grains, or if, after having taken six or eight grains in the twenty-four hours, he appears to be improving, you may then persevere in the administration of opium, and it will be attended with decided advantage.

We have next to proceed to the consideration of the pathology and treatment of diarrhœa and dysentery; I shall, however, first exhibit a few preparations illustrative of the diseases of the small intestine. Here is a preparation of the affection called *tabes mesenterica*. You see here various masses of those cheesy glands which are generally supposed to be the result of original scrofulous deposition; but if you look among the folds of the intestine, you will see a vast number of engorged lymphatics running up directly to those glands, and you will perceive that these lymphatics correspond at their commencement with ulcerative disease of the intestinal mucous surface and glands. Here is an interesting preparation, exhibiting three distinct ulcers. In one of these you see the bright vascularity and turgescence of the areola, and the ulcerative process which has just begun in the centre. Close to this is another large ulcer, which has destroyed the texture of the gut down to its serous covering, through which you perceive the light is shining. The last is an example of perforating ulcer; all the coats of the intestine have been destroyed, and on turning the preparation you see evident marks of peritoneal inflammation. This preparation also exhibits one of the modes in which an ulcerative perforation of the intestine may terminate. Sometimes, at the very moment the ulcerative process has succeeded in destroying the last coat of the intestine, inflammation of the serous membrane in the immediate vicinity takes place, a quantity of lymph is poured out, and if the matter be not in great quantity, and the hole not too large, the opening is closed up by the effused lymph, and a stop is put to further mischief. Again, by the effusion of lymph the ulcerated portion of the intestine may form an adhesion to another sound portion, the effused lymph does not permit the passage of the contents of the intestine in the peritoneum, but does not prevent them from getting into the sound portion by a continuance of the ulcerative process, and in this way we have another termination, in the formation of a false passage. Here is a good example of disease of the cæcum, here is an example of disease of the colon, and here is another with a vast number of ulcerations. Here is an interesting specimen of disease of the large intestine. The patient to whom it belonged died of phthisis;—look at it and you will see what extensive ravages have been made by the ulcerative process.

We come now to take up the subject of disease of the large intestine, which, as I find my time nearly past, I must reserve until our next meeting. I shall then speak of dysentery and diarrhœa, and shall draw your attention to some new and curious facts respecting the discharge of fatty matter from the bowels. In the last number of the Medico-Chirurgical Transactions, three separate papers have appeared on this subject from Dr.

Elliottson, Dr. Bright, and Mr. Lloyd. Dr. Bright has brought forward several interesting facts, tending to show that discharges of fatty matter may be found to be indicative of certain forms of disease of the digestive tube and the neighbouring glands.

LECTURE XXI.

DR. STOKES.

DISEASES OF THE LARGE INTESTINES.—Treatment of diarrhœa—Apyrexial period of diarrhœa—Danger in suddenly arresting the discharge—Purging in Phthisis—Dysentery—Epidemic dysentery.

TO-DAY we proceed to the consideration of the nature and treatment of some of the diseases of the large intestine. You will see, in the various systematic treatises on the practice of physic, separate descriptions of the affections of this portion of the digestive tube; you will find diarrhœa in one chapter and dysentery in another; and you will observe, that a great deal of ingenuity has been expended in forming nosological differences between these affections. I fear that much of what has been written respecting them is rather calculated to puzzle and mislead than to inform the student. Viewed anatomically, there is no essential difference. You may for every practical purpose place them in the same class, and consider them as the result of the same morbid condition of the same part, namely, an inflammation of the lower portion of the digestive tube. Some persons may quarrel with the term inflammation—call it, then, irritation, if you please; but the truth is, that it is a disease of the lower portion of the intestine; the results of which are increased sensibility and altered secretion; and this description, I think, will fairly apply to one as well as the other. If a man has purging, with fever and pain, it is called dysentery; if he has purging, without pain, and without any manifest febrile excitement, we call it diarrhœa. But, in cases where persons have died, after having laboured under diarrhœa for a length of time, we *generally* find, on dissection, lesions of the mucous membrane of the intestinal canal, sufficient to account for death. There are some cases, indeed, in which the mucous surface takes on a gleety discharge, similar to that which follows gonorrhœa, and under such circumstances you will not be able to discover any distinct anatomical evidences of disease. These, however, are comparatively rare, and bear little or no proportion to those cases which present distinct traces of organic lesion.

Diarrhœa.—On the subjects of diarrhœa and dysentery I shall be very brief, as our time is short, and everything relating to the pathology and treatment of these affections may be expressed in a very few words. First, then, as to diarrhœa, which is the frequent passing of stools of a more or less watery consistence, and which may, and generally does, occur without fever. This affection may be considered to arise under three different circumstances; but, in point of fact, every form of the disease may be referred to a single cause, as there is no essential difference in the actual nature of the circumstances by which they are produced. A patient, for instance, takes a quantity of indigestible food, this produces irritation in

the gastro-intestinal mucous surface, and diarrhœa is the consequence. Another is exposed to cold, or gets wet feet, the mucous membrane of the bowels becomes more or less inflamed, and this terminates in diarrhœa. Again, a patient, labouring under hectic, has profuse perspirations, these go off and are replaced by frequent fluid discharges from the bowels—here, also, the result is called diarrhœa. All these forms are, however, referable to the same cause—irritation of the mucous lining of the digestive tube.

A man commits an excess at table, eats something that he cannot digest, and gets diarrhœa. If you happen to be called to such a case at an early period, your course is very plain and easy; there is every chance that the affected organ has received (as yet) no material injury, and is attempting to relieve itself by increased secretion. The indication here is to get rid of the source of irritation as soon as possible, and this is best done by prescribing a laxative, to remove the offending matter, and then following it up with an opiate. The simple rule is to relieve the intestine, and prevent the liability to inflammation. A mild laxative, followed by opiates and demulcents, keeping the patient on a low regimen for a few days, and in a warm temperature; this is sufficient for the management of the first form of diarrhœa. In point of fact, the principal thing which the practitioner has to do, is to watch his patient, and take care not to permit the inflammatory action to become developed. It is in such cases as these that the expectant medicine is of value. What you are to direct your attention to, is the state of the intestinal surface. If a patient gets an attack of pain, if his belly becomes tender on pressure, if he is more or less feverish, you may be sure there has been some mischief done. If, on the contrary, the diarrhœa yields to the exhibition of a mild laxative and light diet; if the pulse be soft, and the belly not tender, you have no reason to fear. But if the purging becomes more distressing, if the pain is severe, the abdominal tenderness evident, the thirst and restlessness continue unabated, it is a sign that the irritation has produced something more than mere increased secretion, and that actual disease of the mucous tissue is setting in. We have now a true inflammatory diarrhœa, which may be looked upon altogether as an enteritis of that kind in which there is a copious secretion from the surface of the intestine. You observe this leads us at once to the principles of treatment. Here we have fever, pain, frequent morbid stools, thirst, and abdominal tenderness. Well, then, what are you to do? In a case where these symptoms are so severe as to excite alarm, at once begin with applying leeches. Where there is merely evidence of intestinal irritation caused by indigestible food, give a laxative, and follow it up with an opiate; where, in addition to the ordinary symptoms, you have fever, pain, and tenderness, never omit the application of leeches. Many a time have I seen cases of this kind, in which chalk mixture and astringents not only failed but even caused additional suffering, speedily and completely relieved by the application of a few leeches. In using leeches, too, we are not like the practitioners who trust to astringents, playing at the game of double or quits; nor do we stop the purging by exchanging it for something else equally bad, or even worse,—for a peritonitis or a bronchitis, for instance; *by removing its cause we not only check the diarrhœa, but we obviate any tendency to a metastasis of inflammation to other tissues, and our mode of cure has at once the merit of being successful and safe.*

A patient who has had an attack of diarrhœa should have his belly swathed with flannel: this should never be neglected. He will also experience a great deal of benefit from the use of the hip-bath and occasional opiates. Give, also, a combination of rhubarb and Dover's powder, and you will find that it will do him a great deal of good. This is the remedy which Rœderer and Wagler found to be of extraordinary advantage in the mucous fever, with diarrhœa, which ravaged parts of Germany in the last century. Give two or three grains of each every second or third hour, and increase or diminish each of the ingredients according to circumstances, increasing with Dover's powder where the indication is to remove pain and irritation, and increasing the rhubarb where you wish to produce a laxative effect. This combination forms a remedy of decided value in enteric inflammations; it has been much used in such cases by Dr. Cheyne, and I have repeatedly employed it in the Meath Hospital with marked advantage. You are also to bear in mind, that though the principle of treatment in this disease is to remove its cause and put a stop to the purging, still you are in no case authorised to give it a sudden check, by astringents, in the early period. I gave the reasons for this at my last lecture, and showed that it was based upon a general law of the economy. If an organ in a state of inflammation pours out an increased quantity of secretion, *it is the mode in which nature attempts to give relief; and if you suddenly arrest this secretion, the probability is, that you will excite more inflammation in that organ or cause a metastasis to other parts.* This is particularly the case if inflammatory fever exists. You must also attend to your patient's diet. Your object here is to support him on such a diet as will require but little digestive power, and will not produce large collections of fecal matter in the bowels. Jellies, arrow-root, chicken-broth, and mild farinaceous food, are the only things than can be used with safety, until the intestinal irritation has subsided. By pursuing this plan of treatment with steadiness and decision, you generally succeed in cutting short the disease.

Chronic Diarrhœa. — In some cases, the diarrhœa will run on to the chronic state, just like the gleet which follows gonorrhœa; and this is to be looked upon as the apyrexial period, in which antiphlogistic remedies are no longer admissible, and where you may employ stimulants and astringents with effect. The best way to manage this form of the disease, is to make your patient use warm clothing, an even temperature, and mild nutritious diet; to prescribe the vegetable and astringent tonics, the hip-bath, and the occasional use of mild laxatives, followed by an opiate. In this way, after some time, the disease generally goes off, and the patient recovers his strength. But it may happen that this gleety discharge will continue unabated; it is running the patient down, and he wants some decided remedy to check it. Now, the remedies which appear to have the greatest power in stopping this discharge, are the metallic astringents, and the turpentines and balsams, combined with some of the preparations of opium. It is a curious and interesting matter to consider how these remedies act. They are a class of medicines which exercise an extraordinary influence over discharges from mucous surfaces, in a way we do not understand, but the effect is to arrest these discharges. In a case of ophthalmia, accompanied by copious secretion from the conjunctiva, or in a case of chronic gonorrhœa, we know there is nothing more beneficial than metallic astringents and balsams; and we are also aware of the great

value which turpentine and balsam copaiva possess in checking the increased expectoration of a chronic bronchitis. In diarrhœa, also, they have the same power; they check inordinate secretions, and remove the morbid condition of the mucous membrane on which it depends, by some effect produced on the surface of that membrane; but in what manner this is accomplished we know not. In severe cases of this gleety discharge, one of the most certain remedies we can employ is acetate of lead. You will seldom have occasion to use this or any of the other remedies alluded to, in the case of a healthy person, because the disease will seldom pass into this second or gleety stage; but if it should, and that it is running down the patient, it behooves you to check it as soon as possible, consistent with safety. Give, then, the acetate of lead in free and repeated doses; and it is singular to remark what quantities of it patients under such circumstances will bear without any bad consequence ensuing. Hitherto many persons have been afraid to employ it in large quantities, from fear of producing painters' colic; but at present it is known that this disease is to be attributed to the absorption of the carbonate of lead in almost every instance, and that the acetate is comparatively harmless. On this point I can mention one interesting fact, namely, that I have been in the habit of using it constantly, and in considerable doses, for the last six years, and I cannot bring to my recollection one single instance of colic produced by it. One patient, in particular, who was under my care, took it in very considerable doses for six weeks, without any apparent injury. The only cases in which I have seen the acetate of lead act as a poison, were those in *which it had been used as an external application*. Whether it be that this remedy is more pernicious when employed after the endermic mode, or whether, when applied to the skin, it attracts carbonic acid from the air, and is converted into a carbonate, I do not know; but of this I am certain, that where bad effects have followed the employment of the acetate of lead, they have been brought on by its external use. I generally use this remedy in the form of pill, prescribing two grains of the acetate of lead and a quarter of a grain of opium, three times a-day. With the same intention you may employ the turpentines and balsams, which have a powerful effect in checking mucous discharges. Dr. Pemberton, in his work on Abdominal Diseases, speaks very highly of the efficacy of balsam copaiva;* and I have seen many cases where turpentine has had a great efficacy in arresting chronic diarrhœa. You will see, in the works of materia medica, some other remedies which you can employ with benefit in such cases, but I may mention one which is not generally known — the alkali of the nux vomica. Strychnine was first used in checking mucous discharges by a German physician, and afterwards by Dr. Graves in this city. The cases in which it proves most successful, are those in which there is a mere gleety discharge, a copious secretion from the mucous surface, without any inflammatory action whatever, or if there be, where it is so low as not to produce the least feverish excitement or pain. Cases of this kind, in which strychnine has been eminently successful, have been published by Dr. Graves. Among others, is that of a gentleman, who had sudden calls, so that he often had not time to reach the close-stool. He passed a quantity of thin,

* [Dr. La Roche, of Philadelphia, has recorded his successful experience of the efficacy of the balsam in this disease. See *Eclectic Journal of Medicine*, vol. ii., pp. 409–19.—B.]

jelly-like substance, and then experienced a transient relief until another attack came on. This case was cured by the use of strychnine, one-twelfth of a grain, three times a-day, made into pills with crumb of bread or aromatic confection.

I may mention here, that in treating gleety diarrhœa in this way, one thing should be always borne in mind — it is always dangerous to check any copious secretion suddenly, and the danger consists in the liability to metastasis or new inflammation. Never forget this. What generally happens is, that the patient's belly begins to swell, and you have ascites rapidly formed. Now, I have never seen a case do well in which this kind of ascites came on after the sudden checking of a diarrhœa; the patients all died. Another consequence is the rapid supervention of pulmonic inflammation, and here the disease is almost as bad as in the bowels. You will ask how this unfavourable termination may be avoided. The best mode is, while you are arresting the discharge from the bowels, to promote a determination to the surface. While you are using opiates, and stimulants, and astringents, employ general warm bathing, or the hip-bath, dress the patient in flannel, and use mild diaphoretics every night. You will also do right in blistering the belly occasionally. In this way you will succeed in curing the worst cases of this chronic flux, without exposing your patient to the risk of new inflammation, or translation of disease to other organs.*

Colliquative Diarrhœa.— One of the most common forms of diarrhœa is the purging which occurs in cases of phthisis; a physician will be called to treat this as often as any other, and it is of importance that you should have correct ideas with respect to its pathology and treatment. The ordinary opinion is, that this kind of diarrhœa is one of the results of hectic fever, and many practitioners, in treating the purging of consumptive patients, overlook the actual condition of the intestine, and only take into consideration the state of the whole constitution, of the hectic state of which the diarrhœa is looked upon as one of the symptoms. The consequence of this is, that they do not proceed on the same principles in the treatment of this as of other similar affections of the intestinal canal. Now, I would impress upon you, that you should always consider the diarrhœa of phthisis, as depending, in almost every instance, on enteric inflammation. There is no fact in medicine better established than this. Persons think it is the hectic which produces the purgation, but I believe the converse of this proposition is often much nearer the truth, and that the constant diarrhœa often produces and keeps up the hectic. If you examine the digestive tube of a patient who has died with symptoms of phthisical diarrhœa, you will commonly find extensive ulcerations in the colon, cæcum, and ileum. In some cases of consumption, where the purging has been very severe, the amount of disease will often be found to be quite extraordinary; I have often seen the whole of the lower part of the tube one sheet of extensive ulceration. I find I have not brought up any

* [In such a state of things as that recorded in the text, I have repeatedly and with the best effect prescribed the blue pill, alone if there be heat and dry tongue, and with opium if the skin be cold and tongue moist. This will be found to be a safer practice than the administration of astringents. If the stomach is not oppressed by the balsam copaiva, it may be given in the morning, and the blue pill at night. — B.]

specimens of the effects of phthisical diarrhœa from the museum, but will exhibit them at our next meeting. The preparations before us are those which are illustrative of dysentery, but they will convey to you a good idea of the state of the great intestine in the diarrhœa of consumption, for the effects are nearly the same. Observe now, the importance of this fact, and recollect that in treating every case of consumption, with diarrhœa, you will have constantly to bear in mind this enteric complication. Recollect, also, that one of the best means of stopping it, when all other remedies have failed, is a blister applied over the abdomen. If the purging depended on hectic, this would not be the case. I could bring forward several cases in which everything had been tried without success, when a blister was applied to the belly, and from the time it rose the patients ceased to be troubled with diarrhœa, and continued so up to the period of death. I do not mean that you should in these cases proceed to attack the enteritis with the same vigour as you would a similar disease in the healthy subject. Generally speaking, I believe this form of enteritis to be incurable ; but it is of importance that you should be aware of this enteric complication in phthisis, and when you are called in to treat such a case, you should carefully avoid prescribing anything calculated to add to the existing irritation."*

Before I quit this subject, I wish to make one remark by the way of caution. It not unfrequently happens that a person, labouring under chronic diarrhœa, comes to consult a medical practitioner, and tells him that he has been suffering from this complaint for months, that he has eight or nine discharges by stool in the day, and that he has been under the care of five or six doctors in succession, without any benefit. Well, you are determined to have your trial too, and you commence operations by putting him on full doses of acetate of lead. After a week or a fortnight, he comes back and tells you he is not a bit the better. You then try turpentine or balsam copaiva—no use. Nitrate of silver—the same result. The man gets tired of you in turn, and perhaps goes to a surgeon to ask his advice. The surgeon examines the rectum carefully, and finds, at a short distance from the anus, an ulcer, which he immediately touches with a strong solution of the nitrate of silver. The ulcer begins to heal, the irritation of the gut ceases, and the diarrhœa goes off. The surgeon is extolled to the skies, and the doctors disgraced forever in the opinion of the patient. Now, this is not an uncommon case. I have seen several

* [I have found, very generally, this form of diarrhœa to be more controlled by changes of regimen than by active medicinal means. The discharges, from having been copious and frequent, and irritating and exhausting, will be reduced to two or three in the twenty-four hours, by the substitution of bland farinaceous food for that of a more stimulating character, — such as meats, animal broths, &c. The patient himself, however craving his appetite may be for strong food, soon sees his advantage in at least temporary abstinence, and that his strength is rather improved than otherwise, under the use of what he contemptuously calls slops — rice or barley-water, and rice or arrow-root boiled into a jelly, and flavoured with a little spice and sugar. Of the medicines which I have employed in these cases I prefer the simplest, — small doses of carbonate of magnesia, with a fourth or half a grain of ipecacuanha, and for drink mucilage of gum arabic. — B.]

instances of it, and I must tell you I was once mistaken in this way myself. These ulcers are situated close to the verge of the anus: they occur chiefly in persons of broken-down constitution, and those who have taken a great deal of mercury. They produce irritation in the colon, tenesmus, griping, frequent discharges by stool, and, most commonly during the straining, a little blood is passed. During the course of last summer I treated a soldier for this affection, who had been discharged from the East India Company's service (as was stated in his discharge) for incurable dysentery. I examined the rectum, and finding some ulcers close to the anus, had them touched with the nitrate of silver. Under this treatment a rapid amendment took place, and in the space of three weeks the man was discharged, quite cured. Now, are you to make this examination in every case? I believe you will act rightly in doing so in every case of chronic diarrhœa in the male, but the examination is absolutely necessary in all cases under the following circumstances: first, when the diarrhœa has been of long standing; secondly, when it has resisted a great variety of treatment; thirdly, when it has been combined with tenesmus and a desire of sitting on the night-chair after a stool has been passed, showing irritability of the lower part of the great intestine; and lastly, when the patient's health does not appear to be so much affected as it naturally should be, where there was long-continued disease of a large portion of the great intestine. A patient will come to consult you, who will inform you that he has had eight or ten alvine evacuations every day for the last six months, and yet he eats heartily and looks quite well. Under these circumstances, the cause of the diarrhœa will generally be found to be ulceration of limited extent low down the tube, and capable of being quickly and effectually removed by a strong solution of the nitrate of silver. I shall recapitulate all the circumstances under which an examination is indispensable; where the symptoms have been persistent, have resisted a variety of treatment, are accompanied by tenesmus, and where the injury done to the general health is not in proportion to the duration of the disease. I may mention here, that a medical friend of mine has communicated to me the particulars of another case of this form of diarrhœa in a soldier who was invalided on this account, and who experienced sudden and permanent relief from the application of nitrate of silver to some ulcerated spots which were discovered near the termination of the rectum.

Dysentery.—We come now to the subject of *dysentery*. I shall draw your attention briefly to the general principles of the pathology and treatment of this affection; but I do not intend to enter upon the consideration of its general history, which you will find sufficiently detailed in books. The first principle I have to enforce on this subject—and you may take it as an observation based on the soundest pathology—is this, that dysentery is inflammation of the large intestine. In some cases it is complicated with fever, and in others with disease in the upper portion of the digestive tube; and I believe that those cases which are termed *epidemic dysentery*, are those in which this disease is combined with typhous fever, or with an extensive affection of the small intestines—where there is ileitis as well as colitis. I shall not take up your time with discussions respecting epidemic dysenteries, or those of warm climates; it will be sufficient, for the present, to allude to that form of disease which is observed in this country.

I have told you that dysentery is an inflammatory affection of the great intestine, and all the symptoms during life, as well as the phenomena revealed by dissection, tend to confirm this view of the subject. We often have fever, because the constitution sympathises with the inflammation of an important organ: we have excessive pain and irritation of the intestine, in consequence of its muscular fibres being involved in the inflammation; and we have discharges of morbid, purulent, and bloody secretion. You will now please to inspect this preparation, and hand it round. See the effects of dysentery—the extensive inflammation, ulceration, and sloughing of the mucous membrane. Here is another preparation; you perceive the whole surface of the colon is covered with coagulable lymph, which, in some cases, forms a chief part of the dejections. Here is a preparation which exhibits extensive sloughing of the mucous membrane; its tissue, you see, is quite abraded and destroyed. Here is a preparation of chronic dysentery, which presents a very curious appearance; the mucous membrane is finely mammillated, as it were, and it is stated on the label that the process of cicatrization was going on. If you compare it with the others, you will find a remarkable difference. Here is another specimen of dysenteric destruction.

Here, then, is a disease in which we have violent inflammation of the mucous membrane and sub-mucous cellular tissue, and in severe cases I believe, of all the coats of the great intestine, except the serous. Let us rehearse its symptoms briefly. Fever of an inflammatory or typhoid character, great pain and excessive irritability of the great intestine, morbid discharges of purulent, bloody, and lymphy matter, twisting pains called *tormina*, and frequently the absence of fecal matter in the dejections.

At my next lecture I hope I shall be able to finish this subject, and I shall then bring before you some remarks on constipation and collections of air in the great intestine; two points upon which much light has been lately thrown.

LECTURE XXII.

DR. STOKES.

Sporadic Dysentery — Nature of this disease — Treatment; mercurial, stimulating, antiphlogistic — Recommendation of Dr. Elliottson — Success of Dr. O'Beirne in the use of tobacco injections. — Tympanites, or Meteorism. — Windy Colic, remedies for the cure of.

I drew your attention briefly, in my last lecture, to the subject of dysentery; I stated that its anatomical character is now known to be inflammation of the great intestine, and gave it as my opinion, that in many cases of the epidemic, disease of the large intestine occurs under one of two conditions, either as secondary to typhous fever, or with an extension of the inflammatory process into the small intestine. These circumstances should, I think, be always taken into consideration in cases of epidemic dysentery; but the ordinary sporadic dysentery of this country, which we have now to consider, is, generally speaking, an inflammation of the large intestine. The old doctrine on this subject was, that dysentery

was the result of an irritation caused by the presence of scybala in the colon; and the indication was to attempt their removal by purgatives. You will find this opinion put forward in many of the older authors, and that the plan of treatment which they recommend is in perfect accordance with their notions of the disease. It is a very curious fact, however, that in this country these hard fecal masses, or scybala, are very seldom met with in cases of dysentery. During the epidemic dysentery, which occurred in Ireland in 1818, a series of clinical investigations was made on an extensive scale by Dr. Cheyne, who at that period had charge of the Hardwicke Hospital; and he states, that on a strict examination of the discharges in a vast number of cases, no scybala could be discovered; and in the sporadic cases, which we receive from time to time into the Meath Hospital, I have never found that the patients passed them. It is a great error to think that dysentery depends on the presence of scybala; the notion is now shown to be founded on a false pathology, and the treatment which it inculcates decidedly bad. You will be convinced of the latter when you recollect that the disease is inflammation of the great intestine, that its effect is to throw the muscular fibres of the gut into violent and painful contractions, and that the existing mischief must be therefore greatly increased by the exhibition of strong purgatives. For a knowledge of the true and scientific treatment of this disease, we are indebted to the light which modern pathology has shed upon practical medicine. We now employ purgatives with extreme caution, we use general or local bleeding, according to the urgency of the case; and we treat the disease as an inflammatory affection of the lower intestine demanding active depletion. All writers are unanimous in recommending the employment of the lancet, in cases of acute inflammation; and acute dysentery is one of those cases in which general bleeding seems to have the best effect. Dr. Cheyne states, that in this disease the most decided relief results from the use of the lancet. He says, that in several cases in which there were excessive pain and tormina, and in which nothing was passed for several days but mucus and blood, as soon as venesection had been performed the patients became comparatively easy, *and passed large quantities of feculent matter.* He also found that the blood drawn was buffed and cupped; and states that his experience led him to conclude that this disease was best treated by the lancet. Dr. Mackintosh, who has had great experience in dysentery, says, that laxatives will act with the best effects when bloodletting has been premised. In fact, the utility of general bleeding in dysentery is established beyond any possibility of doubt; and those who object to the use of the lancet, object to it on theoretical and not on practical grounds. As a proof of this, you will see a great many cases in which decided relief is obtained by a natural hemorrhage from the bowels; and this I think ought to be sufficient to overcome the doubts of those who are skeptical as to the value of general bleeding in acute dysentery.

Next to bleeding, the best thing you can have recourse to is the free application of leeches, a practice not sufficiently appreciated or followed in this country. I would advise you to apply leeches freely along the course of the colon; and if the tenesmus be constant and distressing, round the anus also. The case in which the application of leeches round the anus is attended with the greatest relief, is that in which the tormina and tenesmus are excessive, and in which a quantity of blood is found blended with each discharge. After you have applied the leeches, I

would strongly recommend you to direct your patient to sit in a hip-bath for some time, and you will find that he will experience great relief, because the bath will act as a fomentation, and promote the flow of blood from the leech-bites. I have often seen the application of a dozen leeches round the anus, followed by the hip-bath, attended with the most rapid and signal advantage in dysentery.

Many persons are in the habit of giving small doses of some mild saline laxative in this affection; of this practice I cannot speak much from experience, and I think more benefit will be derived from the free use of demulcents, gum-water, whey, barley-water, and linseed tea.* But the internal remedies on which we chiefly rely in the treatment of dysentery, are mercury and opium. Blue pill and Dover's powder are an excellent combination, so are calomel and opium, and you may give either of these remedies alternately with a mild laxative, whenever you are led to suspect an accumulation of fecal matter in the bowels. In very bad cases it will be necessary to continue the mercury until the mouth is affected; but in the sporadic dysentery of this country you will very seldom be under the necessity of bringing on actual salivation.

Permit me here, gentlemen, to make a few observations on mercurial action. In treating a case of dysentery, it does not, in the first place, follow as a matter of course that you will cure your patient by subjecting him to the full influence of mercury. You are not to expect that salivation will be always attended with success. There is another point which should never be forgotten, although it is one which I believe has not been sufficiently considered. It is a common idea with respect to the administration of mercury in cases of local inflammation, that if you produce salivation you do a great deal towards accomplishing a cure, and this is true in most cases. Many persons are of opinion that it is the ptyalism which carries off the disease, and hence it is that we so often see the principal share of a practitioner's attention directed to produce salivation *at all hazards*. This is the history of the medical treatment ordinarily pursued in warm climates, where such vast quantities of calomel are given. Here the idea seems to be, that the disease is to be subdued by salivation alone, and accordingly the practitioner "throws in" mercury, an expression evidently arising from the enormous quantities given. There are many cases on record in which eight hundred and even one thousand grains have been given for the cure of a single local inflammation. But it is remarkable, that in several cases in which vast doses have been given, no ptyalism has been produced, and thus it frequently happens, that the practitioner goes on increasing the quantity, lest he should have failed in consequence of not having given enough. All this practice is wrong and founded on false notions: and I think that when you come to practice yourselves, you will be inclined to adopt the opinion, that, in cases in which mercury has been employed in the treatment of local inflammation, salivation is to be looked upon more as the result of the relief of the inflammation to a certain degree than as its primary cause. For instance, suppose you are called to treat a case of acute enteritis or hepatitis; you give ten grains

* [Saline purgatives, so far from giving relief in some cases, are decidedly irritating; they cause serous discharges, but not proper defecation. Alone I have found them of no benefit; following calomel, they answer a better purpose.—B.]

of calomel two or three times a-day, and find that day after day passes without any appearance of salivation. Another practitioner is called in, who bleeds the patient, and this is almost immediately followed by the appearance of salivation and relief. My friend, Staff-Surgeon Marshall, who is intimately conversant with the diseases of India, has informed me that *he has never known a case in which abscess actually formed in the substance of the liver*, in which salivation could be produced; and that when the patient became salivated, he believed it to be a proof that there was no inflammation of an intense character, or that no abscess had formed. The greater the intensity of the disease, the less was the chance of salivation occurring, so that the salivation in certain cases appears to be the result of the same influence which produces a relief of inflammation, and not the cause of that relief. When, therefore, you have given mercury in free and repeated doses for twenty-four or forty-eight hours, and find no sign of salivation appearing, you should be cautious how you proceed, because in such cases the inflammation may be of that intense character which will not permit the mouth to be affected. Under such circumstances, the use of mercury, if rashly persevered in, will only aggravate the disease. In many cases of intense pneumonia, you will find that the patient will not be salivated until an advanced period, when, in consequence of the subsidence of intense irritation, the mercury is, as it were, allowed to produce its effect on the salivary glands. You may also frequently observe instances of intervals between the salivation, in which, during the course of an inflammation, the patient's mouth becomes affected by mercury; but if he gets fresh symptoms of the original affection the salivation disappears, and returns only when the new attack has been overcome by appropriate treatment. I think that, under these circumstances, we are authorised in considering salivation as the effect of a certain degree of reduction of inflammation, and not as its cause. You will see the importance of these observations when you reflect in how many cases of local inflammation practitioners are in the habit of trusting to calomel alone; not being aware of the fact, that inflammation of an intense character has a powerful tendency to prevent it from acting on the salivary glands. Be assured of this, that if, in any acute visceral inflammation, after you have performed the usual depletions, you find an unusual resistance to the action of mercury, you may, on that account, form a more unfavourable prognosis.*

There is one point in the treatment of dysentery which it is necessary you should be acquainted with. Sometimes the symptoms steal on gradually, and the patient appears to be in a condition not at all dangerous, when, all at once, the disease explodes with violence, and exhibits an extraordinary intensity; the fever is ardent, the tormina excruciating, the tenesmus constant and harassing, the dejections frequent and blended with lymph and blood. Such an array of threatening symptoms must be met with a corresponding activity. In such a case as this I would bleed, leech, use the hip-bath, and give free doses of calomel and opium; and if you were to ask me to which of the internal remedies used I should attribute the most decided alleviating influence, I should say to the opium. Dr. Cheyne says, "after the lancet, the best remedy I know of is opium." He says further: if another epidemic, similar to that which he witnessed,

* [See additional remarks on this subject in a subsequent lecture by Dr. Bell.—B.]

occurred, he would have no hesitation in giving opium, in four-grain doses, in such cases.

There was a very curious circumstance connected with the history of the epidemic dysentery of 1818–19. At one time the deaths happened to be extremely numerous, and everything which the experience or ingenuity of Dr. Cheyne could suggest failed in arresting the disease, in many cases. An English physician, who happened to be in Dublin at that period, and was in the habit of visiting the hospital, proposed the administration of large doses of cream of tartar, stating that he had tried it on several occasions under similar circumstances, and was convinced of its value. As the cases were not succeeding which had been treated after any of the ordinary modes, Dr. Cheyne consented to the exhibition of the cream of tartar, and allowed the physician to prescribe and administer it himself. Accordingly, he proceeded to give it in doses of half an ounce every fourth hour. Its first effect, generally, was to produce violent distress, and to aggravate all the symptoms, but, after three or four doses, bilious and feculent stools came away, and the patient experienced the most extraordinary relief. Many cases which had been considered desperate improved and recovered, and Dr. Cheyne expresses his conviction that many persons were saved by this practice, who would have been lost under the ordinary modes of treatment. One of the old German authors has also alluded to this singular efficacy of cream of tartar in the treatment of dysentery; and from the result of Dr. Cheyne's experiments, there can be no doubt that it is entitled to a high rank among the remedies usually employed. In case you should prescribe castor oil as a laxative, it will be necessary to combine it with mucilage of gum arabic and a few drops of laudanum; given alone it will be likely to prove too irritating, particularly during the acute stage. In the advanced stage much benefit will be derived from a combination of castor oil with tincture of opium and a small quantity of oil of turpentine. This is not at variance with the pathology of the disease, for there is a period in this as well as in every other form of inflammation, when stimulants may be used with benefit.

Such is the treatment of the ordinary forms of acute dysentery, but it may happen that you will be called to a case in which you cannot employ these decided measures; and here I shall mention, that in all local inflammations it is of the utmost importance that you should act with judgment and decision in the commencement. Every hour is precious; a single day is worth much; and if two or three days are allowed to pass, and the treatment is inactive or indecisive, the patient too often sinks into the chronic stage, or dies. When you happen to be called to treat a case of acute local inflammation, attempt to cut it short as soon as possible; it is much easier to cure an inflammatory attack in its commencement than to save the patient from the effects of it in the advanced stage. Now, if you should be called to a case of dysentery of some standing, and on your arrival find the patient lying on his back, his skin of a pale dirty hue, his eyes sunk and without lustre, his extremities cool, and bedewed with a clammy sweat, his pulse small, rapid, and feeble; his thirst ardent; his pains and tormina incessant; and constantly passing from his bowels a quantity of fluid matter, blended with depraved mucus, lymph, and blood, with great irritation about the anus; and if these symptoms have lasted for some days, you may be sure there is extensive ulceration of the lining

membrane of the large intestine. How are you to act under such circumstances? The patient will not bear bleeding, nor perhaps the application of a small number of leeches. Here your sole object must be to support your patient's strength; you must give wine (if the skin be cool), strong chicken-broth, beef tea, jellies, &c.; you must wrap your patient in flannel, and have recourse immediately to anodyne and astringent injections, and you should blister the abdomen, taking care to remove the blister at a proper time, and not leave it on so long as may add to the existing irritation. You may also prescribe the acetate of lead, or the sulphate of zinc with tincture of opium. I have seen several cases of this kind in the Meath Hospital, in which the administration of the sulphate of zinc was attended with good effects. The best mode of using it is to dissolve ten or twelve grains of the sulphate of zinc in six or eight ounces of cinnamon water, with a proportion of laudanum, and direct this quantity to be taken during the twenty-four hours. Dr. Elliottson recommends the sulphate of copper, and you can employ it in combination with opium. In this way, by supporting your patient's strength, keeping him warm, paying attention to the state of his bowels, using counter-irritation, and prescribing astringents combined with opiates (taking care not to check the discharge too suddenly), you will often succeed, even in very bad cases. Before I quit this subject I may observe, that Dr. O'Beirne has succeeded in some cases, and in others has given great relief by the use of tobacco injections. You can understand this when you reflect that tobacco acts powerfully on the general system, and produces effects somewhat analogous to bleeding. Like general bleeding it brings on faintness, vomiting, cold skin, perspirations, and feeble pulse. It is also a powerful anti-spasmodic, and Dr. O'Beirne states, that its employment has been attended with the best effects in several very bad cases. I have not tried this remedy myself, but I think it well worthy of a trial in the acute stage of dysentery, when there is room for an antiphlogistic treatment. In the advanced stages, of course, it is inadmissible.

Tympanites.—We come now to consider the affection of the digestive tube, which merits a separate consideration, and this is *Tympanites*, or, as it is sometimes termed, meteorism. I shall not enter upon the general pathology of aëriform effusions into the abdomen; we are not acquainted with that peculiar condition of parts which produces them, but it is now established that we may have effusions of air, not only into the digestive tube, but also into every part of the body. The term tympanites is limited to effusion of air into the digestive tube, in all parts of which we may find it. We detect it in the stomach under two circumstances: first, as a recent and transient affection, as when it comes on after swallowing indigestible matter; secondly, in a more permanent form, as when it depends upon hysteria, hypochondriasis, or chronic gastritis. It may be also frequently seen in very young children, when there is feverishness with irritation of the digestive system. I recollect a very remarkable case of this kind, in which the distension was so great, and the pressure on the diaphragm so considerable, as to cause displacement of the heart upwards: — this, I believe, has not been mentioned among the causes of displacement of the heart. The symptoms of this affection are sufficiently obvious: — a sense of uneasiness and distension at the region of the stomach; when the effusion is in excess, a distinct tumour can be felt; and the sound on percussion, over the stomach, is like that of a drum. It

often happens, also, that when the patient is shaken, a distinct sound of fluctuation is heard, a circumstance which more than once has led to a suspicion of the existence of pneumothorax, or empyema. There are also cases on record, in which the distension was so great as to cause rupture of the stomach, and effusion of its contents into the cavity of the peritoneum, causing intense inflammation and rapid death.

The effusion of air into the intestinal tube is extremely common in cases of acute enteric inflammation and gastro-enteritis, after the disease has lasted for a few days: and, as this is a matter of considerable interest, I wish to make a few remarks upon it. It is of importance that you should bear in mind that this is one of the results of enteric inflammation, because many persons are in the habit of looking upon it, not as a mere symptom of another affection, but as a peculiar form of disease, forgetting that it may occur with, as well as without, inflammation. In consequence of this limited and imperfect view of the subject, they are in the habit of prescribing turpentine as a specific remedy for tympanites. Now, I can say that I have seen the most dreadful effects from the administration of turpentine in the tympanites of acute enteric inflammation. The immediate effect is to produce a rapid diminution of the tympanitic swelling; but this is purchased at too dear a rate; for you will find next day that there will be a violent exacerbation of the existing symptoms, and the tympanites becomes worse than before. You should never, therefore, interfere in this way with the tympanites of acute enteric inflammation, nor should you alter your practice on this account in the slightest degree, except where the tympanites is so great as to interfere with the due performance of the function of respiration; but in the advanced stage, after the twelfth or sixteenth day, when the fever has abated, and the tongue is moist, I have frequently seen great advantage result from the use of turpentine. *But as long as the condition of your patient admits of antiphlogistic treatment, be assured that the administration of turpentine is hazardous.* When the patient is in a low state, when you can no longer have recourse to bleeding or leeching, when the tympanites is connected with an asthenic condition of the intestinal mucous membrane, then, and not till then, should you venture on the employment of turpentine. I shall return to this subject when we come to speak of hysteria.

Windy Colic.—I may mention here, that the occurrence of flatus in the intestines sometimes gives rise to dreadful sufferings in that affection, which has been termed *Windy Colic.* A person in the enjoyment of good health happens to take at his dinner or supper a quantity of indigestible food, he goes to bed without feeling any particular inconvenience, but about the middle of the night he awakes with an attack of pain and tormina, which extend from the hypochondria to the umbilicus. This subsides for a short time, and then returns with violence, and the patient often finds that it is relieved by pressure. In a short time the pains get worse, and the abdomen begins to swell, sometimes at one point, sometimes at another, as if the air was confined and pent up in particular situations. The patient begins to suffer indescribable anguish, he has great anxiety, extreme prostration of strength, his face is pale, his extremities cold, a cold sweat breaks out all over the body, and he sits bent forwards, with his hands pressed on his stomach to relieve the paroxysms of pain which come on with increasing rapidity. In some cases there is distressing hiccup, in some a large quantity of aqueous urine is passed,

in some there are loud borborygmi, and the intestines may become so enormously distended as to fall rapidly into a state of gangrene. Hippocrates has given a description of one of the forms of this disease, which terminates by the passage of air upwards and downwards, by which the patient obtains relief; this he calls dry cholera. This windy colic is an exceedingly violent disease: one of the first cases of which I witnessed, presented such an array of alarming symptoms, that I thought every moment the patient would expire. It is, however, a disease which is generally easily managed if taken in time. One of the first things to be done is to apply heat to the abdomen by anodyne stupes, or warm flannel. Flannels wrung out of a decoction of poppyheads, as hot as can be borne, will do a great deal of service, and in some cases will give complete relief, when assisted by the use of carminative draughts. But of all the remedies which I have seen, the most efficacious is an injection with tincture of assafœtida, turpentine, and opium. This is generally followed by speedy relief, the pulse becomes more natural, the belly soft, and the excruciating agony is relieved. This is the mode of treatment in which I have the greatest confidence. After the acute symptoms are removed, it will be proper to exhibit a laxative, for the purpose of removing the exciting cause of the disease—indigestible matter; unless you get rid of this, your patient is liable to a return of the attack, and even to an inflammation of the tube itself. Be not, therefore, satisfied with merely relieving your patient; watch him carefully, and, by a proper treatment, obviate a recurrence of the symptoms, and prevent any tendency to inflammation.

LECTURE XXIII.

DR. BELL.

DYSENTERY.—The anatomical lesions in dysentery,—same in all parts of the world—Dr. Cheyne's experience in Dublin; Mr. Twining's in Calcutta; Dr. Cornuel's in the West Indies.—Stomach, small intestines, and liver, sometimes inflamed concurrently with the colon.—*Causes* of dysentery—crude ingesta—atmospherical vicissitudes—damp and impure air—particular seasons and climates—Malaria not a cause—The disease not contagious—Duration—Terminations—*Prognosis*—*Treatment*—venesection—leeching—mercurials.—Autumnal dysentery—modified treatment of—sulphate of quinia—blue mass—demulcents—tannin—gastric complication—emetics in—acetate of lead—prussian blue—diaphoretics—change of air—ipecacuanha—opium—Rectal inflammation—its treatment.—HEPATIC FLUX—its symptoms and treatment.

BEFORE dismissing the subject of dysentery, it may not be thought amiss for me to fill up, to a certain extent, the outlines of the disease so ably sketched by Dr. Stokes in the preceding lecture.

The *anatomical character* of dysentery, consisting of lesions of the great intestine, is placed beyond doubt by dissections made in different and remote quarters of the earth, and on people of different races. Hence we may properly designate the disease by the title of *colitis;* and from its being often associated with inflammation of the small intestine, by that of *entero-colitis*. The testimony furnished by Dr. Cheyne in Dublin, M. Thomas of Tours (France), and by Dr. Twining in Bengal, taken in conjunction with our own observations here in the United States, and Dr. Cornuel's in the

West Indies, would alone suffice for producing entire conviction on this point. Dr. Cheyne has given us an ample account of dysentery as it appeared, in the latter end of 1818, in Dublin and some other parts of Ireland; his own personal experience being the result of observations made at the Whitmore Hospital, in the Irish capital. The anatomical lesions in this dysentery have been divided by Dr. Cheyne into two classes: in one the coats of the intestine were not thickened; in the other they were. In the former, the mucous membrane of the colon was increased in vascularity, without abrasion or ulceration; or it was covered with coagulable lymph, or simply abraded, and its epidermoid coat removed. Sometimes the mucous membrane was ulcerated; the portions of membrane intervening being of a natural appearance. Lastly, the mucous membrane was partly ulcerated, and partly covered with coagulable lymph. In the second class, or that in which the mucous membrane was thickened, there was found, in one case, simple abrasion, in another ulcerations; the portions between the ulcers being of a natural appearance; sometimes the mucous membrane was rugous and ulcerated; sometimes ulcerated and filamentous, hanging in shreds as if sphacelated; or at another time partly ulcerated, partly removed, exposing the muscular coat. In many of the preparations, the mucous membrane, when not eroded or ulcerated, was covered with an exudation of coagulable lymph.

Numerous large holes in the rectum and lower part of the colon, regularly round and vascular, with elevated edges, at first supposed to be ulcers, were found, on more careful inspection, to be the ducts of mucous glands enlarged, and in the advanced stages, either ulcerated or connected with a cyst formed of the lining membrane of the duct, which secreted a gelatinous matter, whereof these cavities were often full.

The stomach, small intestines, and liver, were implicated to a considerable degree in some of the fatal cases recorded by Dr. Cheyne. The continued inflammation, of increasing intensity, in the order of descent, from the small to the large intestines, is thus described: "The mucous membrane of the stomach and small intestines sometimes presented an inflamed appearance, which in general became more remarkable as we approached to the great intestines; then ulceration began to show itself; at first superficial, afterwards laying bare the muscular fibres of the intestines; the ulcerations became larger, more numerous, and deep as the rectum was approached; but it was remarked that the last three or four inches of the rectum were sometimes pretty sound. The peritoneum was found less diseased than might have been expected." In a majority of dissections the liver was apparently sound, but in a good many instances remarkably otherwise; in two cases there were abscesses formed in its substance, and in a considerable number of bodies it was in a state of great sanguineous congestion.

The peculiarly advantageous position of Dr. Cheyne, by which he was enabled to note with all minuteness every symptom and every morbid appearance, entitles his observations to more than common respect; and I dwell the more, on this account, on the anatomical details respecting dysentery with which he has favoured the profession. (*Dublin Hospital Reports*, vol. iii.) Dr. Stokes was well aware of the value of his countryman's merits on this point, and has quoted him accordingly.

Of a similar purport with the results of the *post-mortem* examinations made in the fatal cases of dysentery in Dublin, are those recorded by Mr.

Twining in Calcutta. (*Clinical Illustrations of the More Important Diseases of Bengal*, &c.)

On dissection of those dead of dysentery we find, says Mr. Twining, the following appearances:—

1. Inflammation, ulceration, and, at times, sloughing or mortification of the inner coats of the intestines; principally affecting the cæcum, colon, and rectum.

2. Morbid vascularity of the mesocolon, mesentery, and omentum; adhesions of the omentum to the parts adjacent, and of contiguous portions of intestine to each other.

3. Glands of the mesentery and mesocolon often enlarged, sometimes inflamed, and more rarely suppurating,—the corresponding portion of intestine usually contains a deep and large ulcer.

4. The omentum is occasionally adhering to these diseased glands, forming a band that may strangulate a portion of intestine and cause death.

5. The ulcerations within the great intestine are generally most numerous and most extensive at the cæcum and first portion of the colon: the valvula ileo-colica has in some cases been found quite destroyed by ulceration, and the lower end of the ileum has formed an intussusception into the cæcum: and, becoming there strangulated, has caused death.

6. The right portion of the omentum is frequently found adhering to the cæcum, and this morbid attachment gives rise to symptoms that are liable to be mistaken for hepatic abscesses. When these adhesions exist, we find that irritation or distension of cæcum, or pressure over that part, produces pain at the transverse portion of the colon, which is drawn downwards by this attachment to the part most diseased,—the patient cannot stand erect, nor extend the body as he lies down, without feeling pain, which is referred to the region of the liver; the same pain is excited by raising the right arm above the head; there is occasionally cough, and sometimes a pain in the right shoulder, rendering the diagnosis very difficult.

7. In a few instances, the size of the intestine is increased by thickening of its coats, so that when a transverse section is made, the canal of the colon stands up like a thick leathern tube; the interior of the intestine being covered to a great extent, with numerous large, ragged ulcers, in the intervals of which the mucous membrane is partly destroyed and partly hanging in shreds.

In several of these cases, there is a thick layer of coagulable lymph deposited under the peritoneal coat of the intestine, and beneath the gut, extending a considerable distance along the iliacus muscle; in some instances an unusual quantity of fat has been found at this part.

In other cases, the whole of the great intestines are contracted in diameter, resembling a cord; and numerous small superficial ulcers are observed in their interior. The patients have been much emaciated: they have a flat, retracted belly, and dry skin; the tongue is of a slate colour, glossy, and morbidly clear, as if skinned; the stools resemble an opaque, dirty brown water.

8. Sometimes we find, in the whole course of the colon, not above eight or ten large, deep ulcerations, with sloughing, thick, abrupt, raised edges, surrounded by a thickened base, into which sinuses and undermining cavities are seen to penetrate.

Patients have been seen to die with not more than six or eight of these

spots of disease in the colon. These persons have flushed face, restlessness, and continued symptoms of fever, which were not easily subdued by remedies.

The patients with this sort of disease were generally recent arrivals from Europe, of light complexion, and not in affluent circumstances.

9. In those who die of dysentery, the last three or four inches of ileum, adjoining the cæcum, are generally affected with superficial ulcerations and roughness. With this exception, we rarely meet any disease of the small intestines in the *post-mortem* examination of dysenteric cases; unless we look to the dysenteric termination of protracted fevers, in which ulceration of the small intestines frequently exists; and it may be deemed one cause of the tardy and imperfect convalescence after fever.

In the West Indies, the colon exhibits the same peculiarities as in the East Indies and in Europe. Dr. Cornuel tells us, in reference to this point, in the former region, that from the ileo-cœcal valve to the rectum, the whole mucous membrane of the colon often presented "one vast ulcer, of a cherry-red, or reddish-black, which looks like the advanced stage of osteo-sarcoma." He also adds, that the intestine is contracted and greatly thickened, being in some parts almost an inch in thickness, and sometimes cartilaginous, and that the inflammation, although extensive and grave towards the ileo-cœcal valve, is nevertheless of greatest intensity towards the sigmoid flexure. As far as the observations of MM. Rilliet and Barthez extend, in cases of dysentery in children, they have noted intense inflammation of the intestines, and especially of the large ones.

M. Catteloup, attached to one of the French hospitals in Algeria, relates two cases of acute dysentery, in which there was detachment of the mucous membrane of the large intestine.

The mucous follicles are commonly diseased, being either enlarged and transparent, or else enlarged, hard, and opaque. Sometimes they have been observed, both in the dysentery of Dublin and of Jamaica, to assume the appearance of hard pustules or tubercles. The mucous membrane of the colon would seem, therefore, to be liable to two kinds of inflammation; the first, the spreading or continuous, which is always acute at the beginning, but may become chronic, causing either thickening, roughening, or ulceration. The second, though affecting the colic mucous membrane generally, is, however, principally seated in the muciparous follicles, which are raised and altered in the manner already described, and is for the most part chronic. (*Craigie's Practice of Physic.*) I would refer, also, to Dr. Gedding's paper on *Follicular Gastro-Enteritis*, in the *Baltimore Med. and Surg. Journal*, vol. i.

If the fecal discharges be examined under the microscope, we meet with long strings of coagulated fibrin intermingled with blood-corpuscles. Granular cells resembling pus-corpuscles are mixed with numerous flattened, spherical, and cylindrical epithelial cells, and the whole are imbedded in the structureless stroma of the mucus. Vibriones are scarcely ever present, but confervæ and sometimes fermentative fungi occur in great excess, and apparently in a direct ratio with the degree of acidity presented by the evacuation. — (*Remak.*)

M. Thomas, already quoted, believes, with Cœlius Aurelianus, that ulcerations of the mucous membrane of the colon constitute the essential anatomical characteristic of dysentery. They begin to show themselves on the eighth day of the disease.

Dr. McGregor, while he admits the existence, generally, of local inflammation of the bowels, is, nevertheless, inclined to dwell on the belief of great engorgement of the biliary organs, and of distension of the gall-bladder with thick and viscid bile, in the early stage of this disease. He supposes a similar pathological condition to prevail in cholera and fever, but that there is more internal sanguineous congestion in these diseases than in dysentery.

Complications. — Both Cheyne and Twining's observations point to the occurrence of inflammation of the small intestines, and particularly in the lower portion of these, or towards the ileo-cœcal valve — a morbid condition which is so common in typhoid fever. In the dysentery of Ireland, Dr. O'Brien found the liver diseased in one-half of the dissections, the spleen in one-fourth, the small intestines in two-thirds, and the colon and rectum in all. May we not believe these anatomical lesions, when they occur in dysentery, to be modifying causes of the phenomena of this disease, as when we find low fever associated with dysentery, and sometimes preceding its appearance? Congestion of the liver and hepatic abscess are frequently associated with dysentery in India.

Causes. — Complications are more apt to occur in endemic dysentery under the operation of local causes — as of cold and moisture after high heat, and the impure air of camps, prisons, or hospitals. Of a like operation are scanty or damaged food and the depressing passions. In epidemic dysentery we must look more to atmospherical vicissitudes and extremes than to errors of regimen for the cause, — although, even here, the latter are not without their effect.

In illustration of the influence of ingesta, either improper in themselves or by excess causing dysentery, I may adduce the instance of the Prussian army which invaded France, in 1792, and had advanced into Champaigne, having been decimated by a dysentery caused by eating unripe grapes; and that of the French troops who traversed Provence, on their way to Algiers, suffering in like manner from excessive use of oranges and other fruits of that region. Dysentery prevailed for a period of thirty years in Cork, at particular seasons, and most especially in years of scarcity, and when the common articles of food had proved of bad quality. The effect of weather is shown in the fact, of the disease having prevailed with most severity in the autumnal season and during the continuance of wet weather. A diet of salted meat has been productive of dysentery at many posts in different parts of the world, among the English troops, and likewise in the navy. (*Elements of Medicine*, by Dr. Robert Williams, vol. ii.)

A change, from old barracks, in low, damp situations, to new ones well-aired and ventilated, and on a drier position, has been attended with almost a complete cessation of the disease. Even under the adverse circumstance of unhealthy situation, the substitution of good spring water for that of the impure water of the river Lee, which passes through Cork, has sufficed to exempt the soldiers in barracks from dysentery, to which previously they had been very subject. Dr. Perston, in describing the disease among the troops at Limerick, mentions, as among the most probable causes, the intense prevailing heat of the days and the cold and profuse dews of the nights, at the time it first showed itself; but he makes the qualifying addition, "together with some unknown peculiarity of the atmosphere." Noxious exhalations from accumulated filth in the narrow streets,

and the effluvia from the banks of the Shannon, may also, he thinks, have contributed to produce the disease. As regards personal habits, he attributes much to the liberal use of pernicious spirituous liquors; for those addicted to irregularities were observed to be the principal sufferers, though in several instances this could not be imputed. The advocates of total abstinence might here very pertinently ask, whether spirituous liquors, when used habitually for drink, are not always *pernicious?* Dr. Cornuel says that, in the foremost place of individual causes, we must place drunkenness and an intemperate indulgence in spirits. Indeed, at Basse Terre (Gaudaloupe) there is no constitution so strong that it can escape dysentery without the practice of temperance. Every regiment arriving at Basse Terre loses, in the first year, three-fourths of those addicted to drinking, and the remaining fourth die at no distant period afterwards. (*Mémoire sur la Dysenterie, &c.*)

Mere morbid impression on the skin, by which its functions are impeded, will bring on the disease; as, in the instance of the French soldiers, who, at the battle of Dettingen, were exposed during a whole night to heavy rains, and were, in consequence, seized with dysentery. Another body of troops, encamped at a little distance, who were not thus exposed, escaped the disease. Sir John Pringle relates, that the English troops suffered at the same time from the like cause.

Although dysentery has prevailed in every season, yet it has been met with much more frequently in the summer than in the winter half of the year. Dr. Ozanam has collected the history of fifty epidemic dysenteries which occurred in Europe, from which we learn that, of this number, thirty-six occurred in summer, twelve in autumn, one in winter, and one in spring. Mr. Annesley relates, that there were 13,900 persons attacked with dysentery in Bengal from 1820 to 1825; and that of this number two thousand four hundred were attacked in the cold season, four thousand five hundred in the hot and dry season, and seven thousand in the hot and moist season. In the United States army it has been observed, that the ratio of the disease in the third quarter of the year is more than three-fold that in the first, and more than twice as high as that in the fourth quarter. (Dr. Forry — *The Climate of the United States*, p. 298.)

Dysentery is sometimes epidemic, as was the case in France, from 1840 to 1842.

The attempt to trace a community of malarious origin of dysentery with intermittent and remittent fevers, has not been successful:—they are rife often at different seasons, and under different circumstances of locality. In our own country, both sporadic and epidemic dysentery are most frequent during the intense heats of summer and in situations in which intermittent fever is either not seen, or is comparatively rare. That there is sometimes alternation of the two diseases in the same person, is no more than is noted in the case of remittent fever and dysentery, and of typhous fever and this disease. In early autumn, says Dr. Cheyne, several cases of cholera [morbus] degenerated into dysentery, and in the spring following symptoms of dysentery accompanied the measles. Very often, he tells us, dysentery arose during convalescence from fever, in which case he several times ascertained that the preceding fever was not attended with any unusual gastric or enteric irritation. In other cases he suggests, that, when the symptoms of bilious or gastric fever were exchanged for those of dysentery, probably an extension took place of the

irritation from the mucous membrane of the stomach and small intestines to that of the large intestines; a supposition rendered probable by some of the dissections made both by Dr. Cheyne himself and by Mr. Twining, in which the stomach, and still more the small intestines, were found to be inflamed.

A contagious origin has been attributed to dysentery by writers and practitioners of great repute; but, as it seems to me, without adequate foundation. The same mistake pervades the reasoning in this as in so many other diseases, viz., in confounding community of cause, by which a number of persons are affected in a certain order of succession, modified by constitution and degree of exposure, with transmission of a morbid poison from one of these persons to another. By the same logic, intermittent fever, and even catarrh, might be shown to be contagious; as it could be proved that one member of a family was seized with the disease while nursing another suffering under the same malady. The most plausible argument in favour of the contagiousness of dysentery is made when this disease is associated with fevers of a typhoid character, and sometimes with typhus itself; but in such cases, dysentery, like bronchitis, is a superadded disease, a complication of the original malady, and, in this view, it does not come within the scope of investigation into the etiology of either real sporadic or epidemic dysentery.

Doctor Cheyne, who expresses his belief in the contagion of dysentery under particular circumstances, or, at least, that the contagion of fever may at one time produce fever, at another dysentery, relates an experiment which was meant to prove the adverse side of the question. It was a dirty and not a conclusive one. "In the years 1797, 1798, and 1799, the dysentery prevailed in the Caithness legion of fencibles to some extent. The surgeon, anxious to determine the question as to its infectious [contagious?] nature, caused the same glyster-pipe to be used, without cleansing, for those labouring under dysentery, and those who were free from that disease; the latter, notwithstanding, were not infected, from which he concluded that the dysentery of Cork is not infectious."

Duration, Termination, and Prognosis.—It is difficult to assign the duration to dysentery. It may disappear in twenty-four hours, or it may last fifteen to twenty days. Commonly the period is from four to eight days. If the disease does not end in health, it will in some other disease, or in death. Dysentery is productive of several forms of dropsy,—ascites and anasarca in particular; and it is worthy of remark, that a swelling occurred in several of the patients, both male and female, resembling the *phlegmasia dolens* in all respects but in its connexion with parturition. (Cheyne, *op. cit.*) Sometimes there was a translation of disease to the lungs, with great dyspnœa, which was in one or two instances removed by venesection and a blister to the sternum. The continued irritation and straining at stool may lead to very unpleasant consequences—frequently to dysuria and *procidentia ani*. The deaths, says Dr. Cheyne, which took place in the first stage of dysentery, were owing to fever, or to some other fatal disease which concurred. When owing to fever, a peculiar state of the mucous membrane of the stomach and intestines was noted. It was found of a deep red or purple colour, rather thickened, soft, and pulpy; and it exhibited uneven, rough, and granulated spots, surcharged with blood; and others of a deep red colour, depending on bloodvessels ramifying in an aborescent form. The stomach contained a

viscid mucus, firmly adhering to its coats, and mixed with an opaque, yellow, or whitish matter; the contents of the large intestine were fluid, and of a yellow-green colour. Dysentery frequently and in warm climates, is attended by disease (congestion) of the liver and spleen. One of the most fatal complications with dysentery in the East Indies, is, according to Mr. Twining, disease of the spleen. Sir James Macgrigor examined twenty bodies that had died of dysentery in the East Indies, and found the liver diseased in sixteen of them.

Death sometimes occurred unexpectedly, from the escape of the contents of the intestines into the cavity of the peritoneum, in consequence of a portion of that coat being destroyed by ulceration.

When the disease continued without relief for twelve or fourteen days, a degree of emaciation usually became observable; much more rapid in some than in others, and which was always an alarming symptom. If, added to emaciation, a patient in the second or third week of dysentery acquired a haggard look, had a quick pulse, and an abdomen intolerant of pressure, we had, says Dr. Cheyne, little hope of his recovery. At one period, continues this author, when the disorder was fatal, our expectations of recovery were confined to those cases which had not existed long, and in which the patient was not emaciated at the time referred to. A majority of the patients died who had been ill more than six or seven days, and of those who were emaciated scarcely one recovered.

The *prognosis* must vary with the intensity of the disease and the concurrent circumstances under which we meet with it. Sporadic is less alarming than epidemic dysentery, and in this latter, our augury will be unfavourable according to the persistence and violence of the fever, as when this is of a typhoid or remittent character, and occurs in low and damp situations, and in badly ventilated lodgings, and among men crowded together, as in ships, camps, prisons, and hospitals. Chronic dysentery may last for weeks, months, and even years. If a person has acute dysentery in the latter part of the summer, the disease is sometimes greatly mitigated, but not entirely cured, by appropriate treatment; and it assumes the chronic form, which often persists during the whole winter, and is only removed on the approach of warm weather in spring or early summer.

It would be a point of no little interest, to be able to determine when ulceration in the colon begins, as not only influencing us in our prognosis, but, also, to a considerable degree, in the entire treatment. That this lesion is curable we are well assured, from the fact having been repeatedly noticed, that, in persons who had been examined after death from another disease, long subsequent to the attack of dysentery, smooth spots, cicatrices, were met with, taking the place of the ulcers which had healed. The second stage of dysentery is said to commence when pus appears in the stools, but there are cases in which the disease pursues a chronic course, and terminates fatally without any such appearance. Discharge of pus does not necessarily imply ulceration; for, as we learn from Dr. Cornuel, he has examined cases in which no ulceration has been found, and yet pus in large quantities was occasionally contained in the colon. In some mild cases the pus passed is small in quantity; but more commonly it amounts to several ounces in the twenty-four hours, and may be voided with or without blood, or with shreds of lymph, lumps of a sebaceous substance, and fecal matter. Portions of mucous membrane, varying

from a few inches to a few lines, are often passed in the dysentery of the West Indies, according to Dr. Cornuel, and in a gangrenous state, during the second stage of the disease.

Extreme emaciation is noticed by this last mentioned writer as occurring in the last stage of dysentery, and as a sign of bad augury. So also is a burning sensation or constriction of the throat, which hinders the patient from speaking; the buccal membrane also inflames, the mouth becomes aphthous, and sometimes even the cheek is ulcerated.

The *prognosis* depends much on the country in which the dysentery occurs. In general, the result is unfavourable in the acute stage in hot climates, in the proportion of one to twenty or twenty-five, at least when the patient (a soldier) can command the comforts of a hospital. On actual service, however, the chances of recovery are often much diminished; while the chronic form shares the probabilities of one death in every four or five cases, in whatever country the patient may be seized. In the dysentery which reigned in Edinburgh in 1828, Dr. Christison considers the mortality in eighty cases to have been one in four. In the military hospitals at Namur in 1831, out of one hundred and seven cases treated, twenty-six died, or nearly one in four. In the Peninsular war, the change in the same person from intermittent fever to dysentery was sometimes common. If both diseases attacked the same patient at the same time, the dysenteric symptoms were aggravated. When dysentery was combined with typhus, the patient seldom survived. (Williams, *op. cit.*, vol. ii., p. 562.)

Treatment.—In the first stage of the milder cases of dysentery, the simpler means pointed out by Dr. Stokes, as applicable to diarrhœa, will suffice. Symptoms of inflammation of the intestine will indicate recourse to venesection and leeches. In the sporadic dysentery, as I have met with it in Philadelphia, and, in earlier life, quite frequently in the lower part of the valley of the Shenandoah in Virginia, the lancet cannot, with safety, in many cases, and with advantage at any time, on the score of speedy abatement of fever and pain, be dispensed with. But in epidemic and camp dysentery (I use this term to indicate locality rather than any specific or well-marked difference of disease), we do not, by any means, speak with the same confidence of this remedy. At the most, its cautious use, only at the outset of the disease, is allowed by Cullen, Annesley, Ballingall, Macgrigor, Cornuel, Latham, McCarthy, &c. But yet we must not forget the practice of free bleeding by Pringle, Munro, and other army surgeons, Twining, McGregor, &c. When associated with ileitis, as in typhoid fever, or with regular typhus, we cannot, after the very outset of dysentery, promise ourselves much benefit from the use of the lancet. But even in cases of this kind of complication, and where he had reason to believe that ulceration existed in the intestine, Dr. Cheyne repeated venesection, and with great temporary relief; and when followed by blisters, mild aperients and anodynes, the relief was permanent.

In all cases, even in the advanced stage, in which there is much tenderness or pain confined to one region, we may promise ourselves excellent effects from the application of leeches; and, if need be, afterwards of a blister; the vesicated surface to be frequently dressed by cataplasms of flaxseed or bread and milk, so as to keep up, not only counter-irritation but a kind of revulsive secretion.

As regards the use of mercury in dysentery, I shall repeat the opinion

which I expressed on a former occasion. It is mere empiricism to look to salivation, either as a necessary proof that enough of mercury has been administered, or as an indispensable means of curing the disease. Salivation is an occasional result to be deprecated and avoided rather than sought for. After venesection and leeching, or where the inflammation is less intense, after leeching alone, I give calomel, in a dose of from ten to twenty grains, at once, or in a dose of five grains, repeated two or three times at an interval of three hours, until the lower bowels are relieved by a discharge of retained scybala and of fecal matter mixed with bile and mucus. If the medicine fails to operate freely in this way in from twelve to sixteen hours, we should administer some of the milder purgatives, such as rhubarb and magnesia, salts and magnesia, compound powder of jalap, or castor oil. If there be much nausea and distress of stomach, we may be content to aid the operation of the calomel by enemata. Again and again I have seen the most complete relief from all the troublesome symptoms of dysentery—tenesmus, mucous and bloody discharges from the rectum, fever, and the indescribable painful sensations which follow irritation of the large intestine—after one or two copious evacuations, procured by calomel. Sometimes this relief is but temporary; and the pain, and straining at stool, fever, and foul, and even dried tongue, harsh and hot skin of the abdomen, and coldness of the extremities, show that the disease persists in its course. Leeches over the region of the colon, and, notably, corresponding with its arch, or to the anus, will again be advisable here; and calomel in smaller doses, say one to two grains every three hours mixed with a little gum arabic, will be useful, by acting on the mucous surface and muciparous glands of the intestines, restoring their healthy secretion, and that also of bile, which is suspended or is retained in the small intestines and does not enter the colon. If calomel fail to answer our expectations in this way, we ought not blindly to persevere in its use, with a view of inducing salivation. On the contrary, we ought to desist from its administration, and abstain from active medication for a while; content to direct demulcent drinks and mucilaginous enemata, warm pediluvia, perhaps a few leeches, and if fever persist, minute doses of tartar emetic combined with opium. I prefer giving calomel alone, in the earlier stage of dysentery, to its combination with ipecacuanha, or with ipecacuanha and opium, from a belief that the former of these two medicines rather interferes with than aids the salutary action of the calomel. Ipecacuanha is directed under the influence, very much, of the old pathology of dysentery, in which the disease was regarded as one of weakness, caused and marked by excessive morbid discharge from the bowels, which this medicine had the power of checking. I do not think that we are prepared to speak in positive terms of the real effects, either direct or remote, of the combination of opium and ipecacuanha with calomel in the early or inflammatory stage of dysentery; and, until we have definite notions of the operation of a compound, we had better content ourselves with the articles singly of which it consists, when they have, each of them, admitted power. In succession or alternation, we can generally procure all the salutary results derived from the administration of several medicines at once. Thus, after calomel has exerted its effects in the manner already mentioned, if there is still diarrhœa with little or no tenesmus or tormina, ipecacuanha with chalk or carbonate of magnesia will advantageously come into play. At this time,

also, as the skin is commonly found to be dry, and there is restlessness and general irritation preventing sleep, opium will answer a good end. Taking it as a basis, we can add ipecacuanha, as in Dover's powder; or substitute for the neutral salt in this latter, chalk or carbonated magnesia. We may at the outset, or at least so soon as we think it advisable to give calomel in dysentery, combine a little opium with it, with a view of making it rest more tranquilly on the stomach, and of diminishing its sickening effects in its passage through the small intestines; but to the frequent routine use of calomel and opium, from the beginning, in dysentery, I am opposed, for the reason, in addition to that already given, that opium is generally prejudicial in the beginning of the disease, and interferes with in place of aiding the operation of the calomel. The best preparation for the latter is venesection and leeches: the best adjuvants, diluent and demulcent drinks, simple enemata, and fomentations. Camphor water, mint water, or mint or peppermint teas, may, on occasions, be used at the same time, with the effect of temporarily allaying and soothing pain, until more complete and permanent relief is obtained by the calomel; but the appropriate drinks for common and continued use through the course of the disease, are rice, barley or gum water, and occasionally a little thin, well-boiled gruel.

You will see that, whilst I deprecate the empirical practice of giving mercury in dysentery, with a view to its sialagogue operation, I am not backward in using it with other views and to produce other effects. These are, first, in conjunction with laxatives, to unload the bowels of scybala when they are present, or of mucus and remains of ingesta, which are so many causes of irritation; and, secondly, to produce a soothing effect on the mucous follicles and membrane generally, and through the duodenum on the liver and its secretory apparatus. Need I adduce the names of practical men, who have recorded their experience against the curative value of mercurial ptyalism in dysentery? "I have met," says Mr. Twining, "with a vast number of cases in which it had been used so as to produce salivation, without curing the dysentery" So, likewise, Dr. Cheyne tells us expressly, "that mercury, when it produced salivation, even in the earlier stages of the disease, was in many instances unequal to the cure, was established beyond a doubt. In the ulcerative stage, and in cases in which emaciation had taken place, and in cases in which the tongue was florid and glazed, the mercurial treatment was injurious." Mr. Annesley (*Diseases of India*), while he agrees with Dr. Johnson in recommending calomel in scruple doses, in the acute stage, differs from him pointedly in opinion as to its value as a sialagogue, and warns us against carrying the remedy so far as to affect the mouth, "for, in that case, it generally depresses the powers of life too rapidly;" and he adds, "after the acute symptoms are removed, the calomel, in the manner now recommended, should be either altogether discontinued, or given only occasionally, when its operation may be assisted by mild oleaginous aperients."

Believing it myself to be an agent which lowers the powers of life, and that its constitutional operation is that of a sedative, I use mercury, and particularly blue mass, in the remains of irritation of the intestinal mucous membrane, in sub-acute and chronic dysentery, on the same principle as that by which I am led to its employment in larger doses in the first or acute stage. In this latter, its sedative action is often not equal, without the aid of venesection or topical bloodletting and laxatives, to relieve the

intestinal inflammation and to reduce the general febrile excitement. Dr. Ballingall, although opposed to mercury in the acute stage of dysentery, is a warm eulogist of this medicine in the chronic form of the disease, in which, he alleges, we may place implicit confidence in it. This is an extravagant opinion, as all extreme opinions in the practice of medicine are, and is in contradiction to that of some of the best East India practitioners: but it must not drive us to an opposite extreme, and induce us to withhold, in suitably prepared cases, in any stage of the disease, mercurials, either alone, in alternation with other remedies, or combined with them, in the manner already indicated.

The fact is, that colitis is often so associated with other lesions, as of the small intestines, or of the liver or the spleen; or, using nosological language, dysentery is so often complicated with intermittent, or remittent or typhous fever, that neither one remedy nor one plan of treatment is adequate to the cure of the disease, as it presents itself in different climates and seasons, or in different localities and even persons.

Although the anatomical lesion characteristic of dysentery, that on which the chief symptoms and progress of the disease depend, is inflammation and ulceration of the mucous follicles and intermediate membrane of the colon and rectum, and occasionally of the lower part of the ileum, there have been fatal cases in which no organic change of this nature was obvious. At times, and not unfrequently, especially at the commencement of dysentery, the gastric symptoms prodominate; a modification set forth in a strong light, with his accustomed ability, by Dr. Chapman. Under such circumstances, our attention should be at first mainly directed to the stomach, and suitable means had recourse to for allaying its irritation. With this view, leeches over the epigastrium, laxative enemata, cooling and demulcent drinks, will be a proper prelude to ulterior treatment, which in this case will be singularly simplified and easier.

Frequent nausea and retching, or a bitter taste in the mouth, and the known presence of indigestible matters in the stomach and upper bowels, would seem to indicate the propriety of administering an emetic; and, accordingly, vomiting has been often had recourse to as a remedy in dysentery. That it is sometimes useful in the beginning of the disease I know well from repeated experience; but the same cannot be said of it in a more advanced stage, when the tongue is dry and furred and the abdomen hot and tender, and other symptoms point out phlogosis of the intestine. The emetic to which preference is commonly given is ipecacuanha, but, as I cannot help thinking, on speculative grounds. Thus, it is supposed to have the double action of an emetic and an astringent, and as such it is thought to be peculiarly adapted to dysentery. But, admitting this double property, which, by the way, is not proved, it does not by any means follow that the first stage of sporadic dysentery is the time for its salutary manifestation. Whether we have regard to the inflammatory state of the large intestine, or to the febrile disturbances in consequence, preference ought to be given to a remedy which has a direct and well-marked effect in reducing if not removing these phenomena; and this remedy is tartar emetic. There is every indication for this latter, and none for the astringency of the ipecacuanha. Some persons would cut short all reasoning as to its *modus operandi*, and claim now for ipecacuanha the same credit which it enjoyed when introduced into general practice by the first Helvetius, viz., the power of exerting a direct and specific action on

the diseased organs. Without formally announcing a proposition of this nature, the late Mr. Twining of Calcutta seems to have acted on the idea involved in it, by recommending large doses of ipecacuanha in dysentery, without its exciting vomiting. Having cleansed out the bowels by a dose of castor oil, he gave six grains of ipecacuanha, with four grains of extract of gentian and five grains of blue mass, in three pills, which were repeated every night at bed-time, and at daylight in the morning a small dose of compound powder of jalap. A cessation of all the distressing symptoms ensued; and it was sufficient to continue six grains of ipecacuanha, with four grains of gentian every night, and to give a very small dose of compound powder of jalap, or a moderate dose of oil every morning for four or five days more. Mr. Twining says, that ipecacuanha thus combined seldom produces vomiting, and that he has often given twelve grains of this article with eight grains of extract of gentian in four pills without any effect of this kind; and half this quantity to a young person, thirteen years of age, without causing nausea. The power of the gentian to control the emetic effects of the ipecacuanha seems to be evident from the fact, that three grains of the latter of the same parcel and bottle, given alone, repeatedly vomited. According to Mr. T., the first effect of ipecacuanha, in ordinary cases of acute dysentery, is for the most part a slightly increased intestinal secretion, the evacuations becoming more copious and feculent — pain and tenesmus are abated, while the quantity of blood and slime immediately decrease and soon disappear altogether. It will be seen, at once, that this practice is not by any means conclusive of the operation and effects of ipecacuanha, so much as of the prescriptions of Mr. Twining, into the composition of which it is true this latter medicine enters in large proportion.

We can repose the more confidence in the accuracy of Mr. Twining's description of the results of what some would term the ipecacuanha practice, from the fact that he was not by any means exclusive in his views, nor wedded to one particular remedy. Thus, he most strenuously urges the necessity of a free use of the lancet and repeated bleeding by leeches, in all recent cases of dysentery, where there is either pyrexia, morbid sensibility of the belly on pressure, evacuation of blood with the stools, or tenesmus. But when repeated bleedings have accomplished all that can be wished from them, ipecacuanha, with the medicines above stated, will be found of infinite service in soothing irritability and restoring a healthy state of the bowels. "I need not say," continues Mr. T., "that tepid baths, fomentations, and poultices over leech-bites, while they are still bleeding, are useful. Where the free use of calomel has been chiefly relied on and employed to salivate, in some instances a purging and tenesmus have still continued, and in these the combination of ipecacuanha and gentian has then been employed with the most happy results. Opiates have generally appeared injurious in dysentery, except when given with calomel, so as to cause that medicine to be retained in the first portion of the intestines, while it may act on the secretions of the duodenum and liver."

In connexion with these views, as far as respects the ipecacuanha practice, Mr. Martin's experience (*Official Report of the Climate and Topography of Calcutta*) will find appropriately a place here. In the dysentery of Bengal, bloodletting, general and local, as first practically urged by Dr. James Johnson, takes the lead, and has done so for many years. "But," observes Mr. Martin, "as in most cases of this formidable disease,

as it appears within the tropics, the diseased state of the large intestines is essentially mixed up with general abdominal complications, other and important means follow the bloodletting; and of the first are those which act powerfully on all the secreting organs, internal and external—such as calomel in full doses with antimony or with ipecacuanha, followed by laxatives, warm baths, enemas, and other adjuvantia. I believe this to be the general course here, and I have seldom seen calomel carried the length of the salivation; neither do I consider this degree of effect necessary to the cure."

Mr. Martin and Dr. Whitelaw Ainslie, after many years' experience in Indian dysentery, both among the natives and Europeans, place the greatest confidence in the remedial powers of ipecacuanha, in the simple uncomplicated forms of the disease, as an *exclusive* remedy, that is, after bleeding and moderate purging. But both they and Dr. McNab, an East India physician of much experience, have been quite disappointed in their trials of the ipecacuanha with gentian and blue pill practice, so highly extolled by Mr. Twining.

I draw the more freely on the descriptions of writers on tropical diseases, for the benefit of the practitioners of the southern portions of the United States, who may be expected to regard them as authority of more weight than writers at home, residents in the northern states.

A partiality for large doses of ipecacuanha in dysentery was manifested long before Mr. Twining's time. Reference to a communication by Mr. Balmain, in the fourth volume of the Memoirs of the Medical Society of London, will show us that this gentleman gave repeatedly two drachms at a dose, with the addition, however, of sixty drops of laudanum. In many cases, he tells us, that a dose or two was sufficient to remove every dangerous symptom. The ipecacuanha answered the purpose best when given in the form of pills; and, adds the narrator, "if the patient kept still and lay on his back, with the head and chest tolerably elevated, nausea seldom or never followed it; and oftentimes it happened that he had not a stool the succeeding day, although previously the gripings were violent and the discharges of blood frequent and in large quantities." The emetic practice in dysentery has a strong advocate in Moseley (*On Tropical Diseases*), whose prescription of sulphate of zinc and alum is not, however, the best adapted to meet the exigency. Dr. McGregor, in harmony with his pathology of dysentery, is strenuous in his recommendation of an emetic. Contributing to the same end are five drops of croton oil with five grains of extract of henbane, towards restoring the discharge of bile from the gall-bladder.

I ought not to omit in these remarks on the treatment of dysentery, specific allusion to the use of opium in large doses, from an early day. Broussais, Cheyne, Christison, and other names of high authority, are adduced in its favour. Dr. Cheyne's opinion has been given already by Dr. Stokes. Dr. Christison, in the treatment of the cases of epidemic dysentery which came under his charge in the year 1828, in the Edinburgh Infirmary, found opium to give the greatest relief, after the stage in which feculent matter was discharged and had ceased, and the evacuations had become muco-sanguinolent, or sero-sanguinolent. At this time he commonly directed the application of leeches to be immediately followed by doses of pure opium, of such magnitude and frequency as were found necessary to check the unremitting diarrhœa and tormina; and sometimes the desired

effect was not procured until the patient was pretty strongly affected by the narcotic action of the drug. In urgent cases, twenty or twenty-four grains in the twenty-four hours were sometimes necessary from the very beginning; in the slighter cases, four or six grains were sufficient. "When an impression was once made on the discharges, it was maintained by doses of two or three grains repeated according to circumstances, and frequently the exhibition of opium by the mouth was conjoined with its employment in the form of suppository." But it would appear, from the sequence of Dr. Christison's narrative, that the opium was more palliative than decidedly curative in its operation, for he speaks of the blood re-appearing abundantly in the stools, "if the opium was intermitted on account of its causing too complete constipation." And again: "After the hemorrhage was permanently checked, the frequent, thin, feculent stools continued many days, sometimes many weeks, indicating, it is to be presumed, the existence of ulceration, which consequently must have taken place at a very early period of the disease." It is worthy of remark, that the medicine which Dr. Christison found to be most useful in allaying irritable stomach, and in correcting and checking the thin discharges mixed with some blood in the sub-acute form of dysentery, was the acetate of lead.

In autumnal dysentery, in that alternating with rheumatism, or in which the symptoms indicate a predominance of neuralgia over phlogosis, in cases of cold skin and feeble action, and in the beginning of more acute cases before reaction, and when the skin and extremities are still cold, opium in a full dose of two or three grains, with warm drinks, may be given with advantage. But if the inflammatory action has been fully developed in the mucous follicles and membrane, this medicine will poorly meet our wishes, by merely deadening sensibility, and simply suspending for a while the morbid processes, which, if not more completely checked, will end in ulceration and gangrene. Dr. Miner, of Connecticut, who is an advocate for the opium practice, lays great stress on the benefits of its union with capsicum. His prescription is, a pill consisting of one grain of capsicum and opium each, every two hours — but for how long a period he does not state. Of the utility, and exceeding comfort, by the removal of tormina and tenesmus, from the use of opium by enema, there can be no doubt; but even this mode of administration is not adapted to every stage of dysentery. It is applicable chiefly to the second, in which there is an abatement of fever and inflammation, and in which it becomes necessary to procure, if possible, tranquillity and sleep for the patient during even a few hours. The chances of retention of the enema will be, of course, in proportion to the smallness of the quantity and the mildness of the vehicle — warm mucilage or even simple water.

Dr. Harlan, in his *Medical and Physical Researches*, p. 567, adduces his favourable experience with sugar of lead in dysentery, as it prevailed in Philadelphia in 1820. In an acute and very severe case, with great tormina and tenesmus, and a discharge of a considerable quantity of blood, Dr. H. prescribed, within the first twenty-four hours, the following:—

R. Sacchar. Saturn., gr. xviii.
Pulv. Opii, gr. vi.
M. ft. pulv. vi. One to be taken three times daily.

By the use of this medicine alone, the patient was perfectly cured in three

days. The tenesmus, tormina, and bloody discharges were promptly relieved, and the cure was permanent. In some instances, the sugar of lead was given alone, or combined only with small doses of opium; to which latter, without this observation, might otherwise be attributed the cure of the disease.

Dr. Zollickoffer has succeeded in giving entire relief, in many cases of dysentery, after venesection and laxatives, by Prussian blue (ferrocyanuret of iron), in doses of four grains mixed with a little sugar and water every four hours. From seven to eight doses have sufficed for a cure.

A cold and dry skin, diarrhœa in place of tenesmus and tormina, or the occasional recurrence only of these; pulse frequent, but without force; a tongue which has lost its redness and is less loaded, will indicate the propriety of the administration of Dover's powder, with warm herb teas, the warm bath or warm pediluvia and stimulating liniments to the abdomen. As regards the use of turpentine, I refer you to Dr. Stokes's lecture. A combination of opium or laudanum in camphor mixture, with mucilage of gum arabic, and the addition of a few drops of nitrous or nitric acid, known for some time as Hope's Mixture, is a favourite prescription with some practitioners. I have often employed it, but without anything like the uniformity of pleasant results which its more sanguine friends claim for it.

Autumnal and Chronic Dysentery.— In the *autumnal* dysentery, and that which prevails in low lands at the same time with intermittent fever, there is not the same urgency for the use of the lancet, as in the varieties already described. Leeches to the abdomen, or even a few cups where the former are not readily obtained, will take the place of the lancet. Recourse also will be had more freely to sulphate of quinia, and greater stress laid on counter-irritation by blisters and tartar-emetic ointment; not so much with a view of acting on the colon as for the relief of the liver and spleen, engorgements and chronic inflammation of which are not unfrequent accompaniments of the disease. The use of calomel will be of shorter duration and followed by the earlier administration of ipecacuanha and opium than in the more acute and inflammatory dysentery of summer. The variety under consideration most commonly ends in chronic diarrhœa, which taxes the ingenuity of the practitioner in the selection of various astringent medicines. Without denying the utility of these, I can speak with more confidence of the advantages to be obtained from the use of the blue mass in doses of two or three grains night and morning, and mucilaginous drinks — the food to consist of rice well boiled, arrow-root, &c., with the addition, if they do not prove too oppressive to the stomach, of milk and cream. I learned, now many years ago, when in China, the practice of using the blue pill in this stage of dysentery from Mr. Pearson, the estimable surgeon of the English Factory at Canton, and have had continued reason to be pleased with the remedy ever since. In simple profluvia, after the subsidence of inflammatory irritation, as well as in hemorrhage from the bowels, and menorrhagia of a chronic kind, I have employed tannin, in doses of three to five grains twice or thrice a-day, according to the exigency of the case. Extract of Krameria, sugar of lead with opium, and alum, have been used in this stage of disease with good effect.

Chloride of lime has been found highly serviceable in dysentery by Dr. Read of Dublin, who employed the medicine also with excellent effects in the epidemic fever of Ireland, with which dysentery was often associated. His prescription was—

℞. Chlorid. Calcis, gr. x.
Tinct. Colomb., ℥ij.
Aquæ Puræ, ℥iv. M.
Half an ounce to be taken every hour.

Dr. Read also administered the chloride as an enema, ten grains being added to the common enema. Simaruba bark has been highly spoken of, especially in conjunction with opium, by Dr. O'Brien, in epidemic dysentery.

M. Trousseau has employed at the Necker Hospital nitrate of silver, in enema, both in the acute and chronic stage of the disease; and with great success. He premises an emetic of ipecacuanha, and then gives an enema composed of five grains of the nitrate in twenty ounces of water. A single enema often sufficed, but, in general, the treatment was continued for four or five days. Where the disease was supposed to extend to or be connected with lesions of the ileum, M. Trousseau directed the medicine to be used by the mouth, instead of *per anum*, in the dose of half a grain. To a child, age not stated, with chronic diarrhœa, one-fifth of a grain was given by the mouth, or a grain in enema.

The troublesome tenesmus, with pain in the rectum, and at the verge of the anus, is often combated, with entire success, by enemata of nitrate of silver, and the use of the same medicine by the mouth, in the pill form, combined with opium and ipecacuanha, as follows:—℞. Pulv. Opii, gr. xii.; Nit. Argent., gr. ij.; Pulv. Ipecac., gr. vi.; Ol. Caryophylli, gtt. vi. M. ft. pil. vi. One of these is to be given every second hour, watching carefully the action of the nitrate of silver on the stomach. —I give here the formula recommended by Dr. McGregor. Some may be inclined to refer much of the good effects from the pills to the opium. The proportion of this latter will vary according to the judgment of the prescriber.

Ergot of rye has been given, with, it is alleged, the best effects; but as its use was combined with that of the tincture of the sesquichloride of iron, the inference is not so clearly in its favour. After the administration of sugar of lead, calomel, and opium, and vegetable astringents in vain, recourse was had to the following prescription: Battley's solution of secale cornutum; tincture of the sesquichloride of iron; of each, one drachm. Water, six ounces. Mix, and give a quarter part every four hours. Visible improvement followed the use of the first mixture; and after three of the same quantity had been taken, the bloody discharge and other symptoms had entirely ceased.

In chronic and even in the more acute form of adynamic dysentery, alum combined with catechu, and camphor are appropriate remedies, with small and frequently repeated doses between each dose of the astringents. Injections of alum are also of use in very enfeebled conditions of the intestine, and in cases of East India dysentery, in which it is so disorganised as to tear, after death, like wet paper.

Great relief is procured, at times, by the use of balsam of copaiba in an emulsion, with the addition of a few drops of laudanum, two or three times a-day; and, also, of cubebs, combined with a little carbonate of magnesia.

In epidemic dysentery, of a severe form, in which the deaths were one in four cases, all methods of treatment were represented to be unavailing, until it occurred to Dr. Wilmot to exhibit creosote enemata, in the strength of ℥i. to ℥xii. of starch. Under this plan a rapid amelioration took place.

Change of air and the exercise taken to procure it have been decidedly curative in dysentery, after the first or acute stage has subsided, but the patient still suffering from and greatly exhausted by the chronic disease. More particularly is this change required in cases of dysentery in tropical climates. Desgenettes, physician-in-chief to the French army in Egypt, relates, that four hundred soldiers who had been reduced to a state of extreme emaciation by chronic dysentery, were embarked from Alexandria for France; and that with the exception of nineteen who sank under the disease within a few days after their leaving port, they were all entirely convalescent on their arrival at Malta. Desgenettes attributes these good effects to the movements of the vessel, by which nausea and vomiting were produced, and the peristaltic action of the intestinal canal inverted; in connexion with the change of air and approach to a cooler climate.

In admitting unripe fruit to be a cause of dysentery, we cannot at the same time deny the fact that the ripe kind, and especially grapes, have often displayed marked curative effects in this disease, particularly when it is associated with fever. Dr. Ferguson, in his "Notes and Recollections," regards the free use of ripe fruit, of grapes, for example, as a preservative against the disease.

There are cases in which dysentery is confined almost entirely to the rectum, which is inflamed and discharges blood and some mucus, and is thrown into a spasm at each effort of defecation. Here, although there is often much sympathetic distress—headache, fever, full pulse, with thirst and restlessness—the remedies required are merely topical, viz., leeches to the anus, emollient and narcotic enemata, and afterwards a weak solution of the acetate of lead, and, still later, of sulphate of zinc. After the subsidence of the rectal inflammation, the bowels may be acted on by a dose of calomel, followed by castor oil mixture, which will discharge scybala and bile, and give the patient entire ease.

Hepatic Flux.—The disease which has obtained this name is a chronic variety of tropical dysentery to which Europeans who have resided some time in India are liable. I shall take the summary description of it by Dr. Craigie (*Practice of Physic*). Like the common dysentery it commences with an ordinary attack of diarrhœa, and is afterwards characterized by frequent and severe fits of griping, like colic pains, near the navel, each of which is succeeded by a call to stool. The discharges are, from the first, always unnatural in colour, varying from the darkest inky hue to the different and alternating shades of green and yellow. The stools, which exhibit a frothy appearance, are voided with copious discharges of wind, and with a sense of scalding about the anus. Each evacuation is followed by relief,—but the gripings, with the sense of air moving in the bowels, are soon succeeded by a call to stool with the same powerful sensations.

The tongue is covered with a yellow mucous coat, and often furred; appetite lost; thirst great. The pulse is quickened, and the skin parched and hot. When these symptoms have existed for some days, the stools become of a whitish colour, are mixed with portions of half-digested aliment, and are passed with painful straining. In this state the disease is termed, by the soldiers, the *White Flux*. The griping pains continue, sometimes with permanent oppression at the epigastric region, or even hysteric strangulation. Squeamishness and loathing of food, with hiccup and bilious vomiting, are very distressing; thirst is extremely urgent;

weakness and lassitude increase as the flesh is lost; the pulse continues quick; and the skin often communicates a greasy sensation to the touch.

Under these symptoms, modified by peculiarity of constitution, season, and local situation, the patient may labour for weeks or months, while the flux injures the constitution irreparably, and wastes the strength by its long duration. Yet it generally does not, of itself, prove fatal, but may either terminate in recovery, by gradually and spontaneously exhausting itself, or by an abscess of the liver or ulceration and mortification of the colon, either of which may be fatal.

The *treatment* of hepatic flux is comparatively simple: it consists of mercurials, mild purgatives, and diaphoretics. The blue mass is to be given in a pill of from three to five grains, three times a-day, followed by and alternating with castor oil and infusion of senna; or aloes and calomel combined may be given to operate on the bowels. The addition of hyosciamus or of taraxacum to the calomel or the blue mass will be an improvement. When the skin is hot and dry, the warm bath, with Dover's powder, in a dose of five to ten grains, morning and night, or of tartar emetic and opium, will be very serviceable.

LECTURE XXIV.

DR. BELL.

ENTERORRHŒA—Includes both *diarrhœa mucosa* and *d. serosa*.—Gastrorrhœa.—Pathology of enterorrhœa—Two varieties of the disease.—Acute and chronic stages—Connexion between dentition and development of the intestinal mucous follicles—Treatment of enterorrhœa based upon subduing intestinal irritation—diet, and sudorifics and opiates, sometimes astringents—In lymphatic subjects and in epidemic visitations, emetics and purgatives proper.—Importance of diet for the cure of diarrhœa in all its forms—Kind of diet most beneficial.—ENTERORRHŒA WITH MEMBRANOUS FORMATIONS—Pellicular exudation on intestines of very young children—Associated sometimes with stomatitis—Later in life with dysentery—Probably the result of morbid follicular secretion, with or without inflammation—May appear and recur frequently,—sometimes without much general disorder—in duodenal dyspepsia—Causes and seat not known—Treatment.

ENTERORRHŒA (from ἔντερον, *intestine*, and ῥέω, *I flow*), on which I now propose to make some observations, will include *diarrhœa mucosa* and *diarrhœa serosa* of systematic writers. The former term is much more distinctive than this latter; the prefix of διά through conveys no definite meaning, and is just as applicable to excessive discharges from the stomach, bladder, vagina, and uterus, and even from the skin, as it is to those from the intestines. A wrong direction is also given by the word diarrhœa to our pathological investigation, which it makes to turn upon the mere amount and quality of the *flow*, or matters discharged, rather than on the condition of the organ or organic system on which the discharge mainly depends. Enterorrhœa consists of a morbid change of secretory function of the intestinal mucous membrane, by which there is an excess of mucus, or of muco-serous fluid, discharged from the bowels. I did not designate by its appropriate title of *gastrorrhœa* an analogous morbid state of the gastric mucous membrane, but contented myself in a former Lecture (XVI.), with directing your attention to this derangement under the head of *Dys-*

pepsia with Gastric Morbid Secretions (pp. 149–50). We may readily suppose, that, in some cases, this morbid condition of the mucous membrane prevails, both in the stomach and intestines, constituting a true *gastro-enterorrhœa;* but as I am not in possession of any diagnostic characters of this form of the disease, I shall pass on to the more immediate subject of this lecture, or to enterorrhœa proper.

As regards the pathology of this disease—its causes, symptoms, and the structural alterations—we find that it originates from exposures similar to those which often bring on dyspepsia and dysentery. It resembles in some particulars the chronic state of this latter disease; but differs from it in the organic lesion not being inflammation of the mucous membrane, but irritation of this tissue and irritability of its follicles. In low situations, and those exposed to a damp and cold atmosphere, and in seasons and climates in which this kind of constitution of the air prevails, we often find mucous fluxes, sometimes endemic, and at others even epidemic. Indigestible food, or bulky aliment in which mucilage is too abundant, are also causes particularly active in persons of a lymphatic temperament, and of a scrofulous diathesis. So also are bad water, intoxicating drinks, and particularly fresh or sour beer. Strong mental emotions of a depressing or anxious kind will sometimes bring on this flux.

There are two varieties of enterorrhœa; the first not distinguished by the passage of much fluid—the second characterized by copious discharges. In the first variety, the abdomen is full and tumid; there is rumbling of the bowels, increased by pressure on the abdominal parietes, under which pain is also created. The stools are few and irregular; and there is sometimes alternation of diarrhœa and constipation. The tongue is not abnormal, and the general symptoms are not very clear. The second variety has, for its distinguishing symptom, a copious discharge, consisting of serum (albumen dissolved in water), or of mucus in excess, and sometimes of both; or they may be mixed with a notable quantity of bile. On occasions, as where gastro-enterorrhœa has been epidemic, and complicated with or given rise to fever, death has resulted, and an opportunity has been afforded for examining the mucous membrane. Rœderer and Wagler, who were among the first to direct attention to the morbid state of the muciparous glands of the gastro-intestinal cavity in fevers, tell us (*Traité de la Maladie Muqueuse*, &c., French translation, p. 61), that not only were the stomach and intestines, but particularly the small intestines, coated with a thick, viscous and tenacious mucus, which was detached with difficulty; but beneath this were seen numerous follicles, filled with mucus and jutting out from the membranes. Often, on examination, the intestinal mucous membrane is not altered either in colour or consistence; and instead of being red, it is, on the contrary, pale, as if the secretion resulted from an anemia of the membrane.

Enterorrhœa is most frequently met with in children; in whom, also, it displays itself under two forms, the acute and the chronic. When chiefly serous, it has been called *watery gripes*, the *diarrhœa serosa* of Sauvages and Good. By Cullen it is properly included under the other variety, or *diarrhœa mucosa*. *Acute* enterorrhœa may come on suddenly without appreciable cause; it may follow a sudden check to perspiration, as when the body, after having been bathed in sweat, is exposed to a cold and damp air. One of the consequences of such exposure is, we know, disease of some portion of the serous system, causing pleurisy or perito-

nitis. Another effect may be the disease now under consideration, and a flux of the mucous membrane of the digestive passage. In admitting this cause and order of sequence, it does not follow that the morbid secretion should be the result of inflammation. The mucous membrane may, as M. Andral supposes, perspire profusely as the skin does. Sometimes, the disappearance of effusion in a serous cavity is followed by a serous flux from the intestine of a fluid closely resembling that effused. Moral causes have been mentioned before as adequate to bring on the flux. The only precursor, at times, of copious evacuations in enterorrhœa is a rumbling noise in the bowels. In the adult, the pulse is remarkably small: in young children, the flux is apt to bring on, or be speedily followed by, coma or convulsions.

Let me, in connexion with the pathology of enterorrhœa in infantile subjects, point out the interesting fact of the greater growth and development of the mucous follicles of the digestive canal at the period of dentition. (Billard, *op. cit.*) Now, although we cannot call this state a pathological one, yet neither can we deny, on the other hand, that the rapid evolution and augmented size of the glands will greatly predispose them to the common causes of disease, and especially improper ingesta or suppressed perspiration. But, while we refuse to admit inflammation as a cause of increased follicular secretion, we must not, mistaking effect for cause, predicate of the exhaustion to which the flux gives rise that it is a disease of debility, and as such to be treated by stimulants and more exciting food. Enterorrhœa is the more serious in proportion as it is complicated with encephalitis, or aphthous or follicular stomatitis, a combination often observed during the period of dentition. Before dismissing the pathology of this disease, I must caution you against the sweeping inference from what has been said, that the intestinal follicles do not take on inflammation in children similar to that which is met with in adults. On the contrary, these glands undergo two kinds of change, the result of phlogosis, in their being either simply red and tumefied, or disorganised, and forming ulcers. But I shall not enlarge on this point now, as it will more properly come under notice when I speak of *cholera infantum*. The duration of enterorrhœa varies; it commonly lasts but a few days.

A neglect of enterorrhœa in its acute stage will be followed by its passing into the chronic: the secreted mucus becomes an irritant of itself, and forces the bowels to increased peristaltic action, and diarrhœa, with more or less interruption, is the consequence.

Treatment.—The indications of cure are, to allay the irritation of the mucous membrane, and then to remove the debility which sometimes remains after such irritation. With this view, supposing that all the proper feces have been removed, either by the natural efforts, or by purgatives administered for the purpose, we direct a plain and simple diet; avoiding, on the one hand, food of too exciting a quality, and on the other that which would fatigue by its bulk, without containing adequately nutrimental matter. At first, restriction to barley or rice water, and arrow-root, for food, and even these in small quantities, will suffice of themselves, if the skin be kept warm, to end the attack in a day or two. In every variety of enterorrhœa, and the principle may be extended to all diseases of the gastro-intestinal canal, our success in curing will be very much proportioned to the control which we have acquired over the skin, by restoring and maintaining the activity of its functions. This remark has peculiar

fitness, if the disease, now under consideration, have proceeded from obstructed perspiration, or cold and moisture retarding and reducing the cutaneous capillary circulation. In addition to confinement to bed in a warm room, we should give mild saline diaphoretics and opiates, or small doses, three or four grains, at intervals, of Dover's powder. More violent cases, manifested by much soreness of the abdomen on pressure, and very frequent discharges, will require fomentations to this region, of flannel bags wrung out of hot water and vinegar, and of warm water injections, mucilaginous drinks, and *aquæ ammoniæ acetatis*, with a few drops of laudanum, and rigid adherence to the simplest diet. The disease persisting, with much coldness of the skin, and tormina, and perhaps tenesmus, it will be proper to direct starch mucilage, two ounces, and ten or twenty drops of laudanum, as an enema, for an adult, and Dover's powder mixed with chalk, at intervals. Although, in a great majority of cases, the detraction of blood is not admissible, yet, sometimes, symptoms may manifest a combination of enteritis with enterorrhœa, or at least such a state of some portion of the mucous membrane as to require the application of a few leeches and an entire restriction to mucilaginous and diluent drinks, and the administration of an opiate clyster. More benefit will be procured by applying the leeches, in number about fifteen or twenty, to the anus, than to any portion of the abdominal surface; or if to the latter, let us select one or other iliac region.

If we are adequately impressed with the true pathology of serous and mucous diarrhœa, or of enterorrhœa, and fix our attention on the mucous membrane as the seat of the disease, and its sympathies with other organs, and particularly the skin, we shall rely more on rest, external warmth, and simple regimen, or rather restriction to demulcent drinks in small quantity, than on any decided mode of medication, either by purgatives, or by opiates or astringents. If we must prescribe in the simpler cases, we should give chalk mixture, or ipecacuanha, in small doses, with a few grains of magnesia, repeated at intervals. But, after the disease has lasted some days, and the skin is cold, pulse small, and exhaustion considerable, we then reach the second part of the indication of cure, and prescribe astringents, of which kino with chalk, or alum with some aromatic powder, will be entitled first to a preference. If a child be the patient, we watch carefully whether the cerebral symptoms are aggravated or abated by this treatment,—whether we have arrested a derivation from the brain, or checked a discharge that caused exhaustion, which itself gave rise to the comatose symptoms. It is in subjects of this nature that a blister, to produce rubefaction, or a sinapism might be applied to the abdomen, or on the inside of the thighs.

Dr. Graves (*Clinical Lectures, with additions by Dr. Gerhard*) recommends strongly in chronic diarrhœa, especially as it occurs in delicate and nervous females, the persesquinitrate of iron. It is the form used with such advantage by Dr. Christison. Dr. Graves succeeded with this medicine in curing two cases which had resisted all the efforts of medical skill, the one for seven months, the other for two years. The disease to which this medicine is applicable is not inflammatory, but rather a congestion of the digestive mucous membrane, of a passive nature, resembling the scrofulous. The persesquinitrate if kept longer than a week is apt to spoil, and hence the prescription should be renewed every day or two.

In the variety of sero-mucous enterorrhœa which is met with in lymphatic

habits, or sometimes in certain epidemic forms of the disease, the mucus secreted becomes itself a source of irritation, and measures must be taken for its expulsion, and for giving better tone to the mucous membrane. Both an emetic of ipecacuanha and a purge of calomel and rhubarb are indicated here; or after a few grains of calomel alone, a small dose of castor oil with half a drachm to a drachm of oil of turpentine. In cases of this nature balsam copaiba often exerts a very happy effect, relieving and curing the intestinal, as it does pulmonary and vesical catarrh. I have given it even to children thus affected with evident advantage. In this variety of enterorrhœa the treatment recommended by Dr. Stokes for gleety diarrhœa, is applicable. The warm bath, aided, or if it cannot be continued, replaced by assiduous friction of the skin, especially along the spine and over the abdomen, will come in aid of completion of the cure. But, of these means, the bath will have rather an injurious effect than otherwise, unless the skin be carefully and continually covered with flannel, either of wool or cotton, and the feet protected by similar clothing and thick-soled boots or shoes. The approach of summer, or removal to a warmer climate, exerts a salutary effect in simple sero-mucous intestinal flux, by calling the skin into greater and more sustained functional activity; on the same principle that a change to a colder climate will sometimes cure hepatic flux by relieving the liver of the continued transmitted excitement from the skin kept up by tropical heat.

If I have been at all successful in giving a proper direction to your inquiries into gastro-intestinal diseases, and especially if you have studied in a proper sense the lectures of Dr. Stokes relating to them, you must be aware by this time, that in all the profluvia of the digestive canal, whether they be morbid secretions from the stomach, and occasional eructation and vomiting of these, or from the intestines, with purging and other morbid phenomena, your task will consist in ascertaining the precise extent and degree of irritation and other organic change of the mucous membrane, much more than in a measure of the nature and quantity of the fecal and other matters discharged. Symptoms you are bound to study, but these should be of organic change, not those depending on or made by accidental products. The cause is generally intrinsic in the membrane, not extrinsic, or in the matters in apposition with it or contained in its cavity. That these may and do prove sources of irritation and disease I do not deny, nor that there are indications for emptying the stomach of irritating ingesta by emetics, and the bowels of similar ingesta and of irritating bile and mucus; but it is not the less clear that, for the most part, the contained matters in the digestive canal become irritant according to the irritability or phlogosis of the mucous membrane itself; and consequently, that the chief indication, after all, is that for allaying organic irritation, rather than for evacuating irritating matters.

Among the various remedies and modes of treatment for diarrhœa, both acute and chronic, *diet* must ever rank, as it generally has hitherto ranked, among the chief curative means; itself preceding and giving effect to all others, and often proving an all-sufficient substitute for them. Alone it frequently cures completely; if it be rejected as an auxiliary, we have no certainty and but a remote probability of other and more strictly medicinal agents being either immediately or permanently beneficial. It is true, one who insists on a strict diet soon gets the reputation of being a *starving doctor*, but this is a small inconvenience compared with the great and

permanent service rendered to one's patient. A little firmness in carrying out a dietetical system has often been the means, in my hands, of not only saving life, but of recovering health and strength, and a freshness of feeling and hope, those things, in fact, which make life desirable, in cases of persons worn down by indigestion and diarrhœa, who had gone the round of medicine and of many doctors, but who had not been impressed with the importance of diet for the cure of their disease. There is no unusual skill required by the physician on such occasions as these. Possessed of the correct pathology of the disease, all that he need do is to be honestly firm in carrying out his convictions; neither diverted therefrom by the ill-nature of patients, nor the ridicule nor impertinent interference of their so-called friends — that is, of the gossips and busy-bodies who infest the house of a sick person, and who derive, or think they derive, a little factitious importance from placing their own ignorant impulses in opposition to the carefully elaborated results of long study, diversified observation, matured reflection, and possession of the recorded experience of the great masters of the art for the last twenty centuries.

That I may not seem to be either extravagant or exclusive in the kind of diet which I habitually direct, and would therefore recommend for your approval, in diarrhœa, I cheerfully adopt the very language of two able writers on the subject — Mr. Crampton and Dr. Forbes (Art. Diarrhœa, in *Cyclopædia of Pract. Med.*), in prescribing the kind which in their opinion is best adapted to the various disorders coming under this head:—

"The following may be stated as the order in which the articles of diet will be found more proper in such cases; barley-water, arrow-root made with water, sago, tapioca, rice gruel, oatmeal gruel carefully strained, light broths with some of the preceding ingredients. In some cases, more especially of the chronic kind, a drier diet is found more suitable — the liquid food appearing to keep up the diarrhœa; but in all cases the ingesta must be of the mildest quality. Rice is one of the most valuable articles of diet in such cases. It should be well boiled, and merely moistened with a little broth. While it is extremely mild and unirritating, rice scarcely leaves any remains to be transmitted along the intestines; and this is the reason why it is generally regarded as astringent. As soon as it can be borne, a *small proportion* of the lightest animal food may be taken with the rice. Tender chicken [eaten without the skin] is the best to begin with; then white game boiled; then sweet mutton. The meat of young animals, as lamb and veal, should be avoided. Beef is too stimulant, and fish is bad on account of the large quantity of excrementitious matter it leaves in the bowels. Animal jellies are generally allowable in the cases where meat is found to agree; but they often are more irritating to the bowels than the muscular flesh of animals." I would modify this opinion, respecting animal jellies, by saying, that they are oppressive rather than stimulating to the stomach, which digests them slowly and imperfectly when it is in a state of atony, or weakened by long disease. A somewhat more compound animal food is required, such as the addition of osmazome to jelly, as it is found in chicken. Beef, especially when imperfectly masticated, — as it is by half the people who eat it, is a bad article of diet, both for the dyspeptic as well as the invalid with weak bowels: but I find that, when boiled with rice into a thick broth, from which the fat is carefully skimmed, it gives nutriment palatable and conge-

nial with the digestive canal throughout. Even to children in the advanced stage of diarrhœa, when animal food is required, it is particularly serviceable.

Enterorrhœa with Membranous Formations.—I prefer using this title for the disease of which I am about to speak, to adopting that of *Pseudo-Membranous Enteritis*, as given by M. Roche, or of *Fibrinous Diarrhœa*, by Dr. Symonds. Dr. Good calls it *Diarrhœa Tubercularis*. My designation does not imply a positive cause, such as inflammation, which, in fact, is not a necessary or precursor of the morbid formations in question: it expresses, however, their origin, viz., from the intestine, and the most usual, if not universal preceding and accompanying phenomenon, viz., enterorrhœa.

In saying that membranous formations on the mucous surface of the intestinal canal are not necessarily, nor in a majority of cases, preceded by inflammation, I had better, at the same time, direct your attention to the observations made by M. Billard (*op. cit.*, p. 273) on the appearance presented by the intestinal canal of a child shortly after birth. "When all the liquid parts of the intestinal tube are removed, there remains," says M. B., "a layer of thick mucus, adhering to the intestinal surface of the canal, forming on it a kind of plastering. This layer may be raised with the nail, under the form of a pellicle, resembling, to a superficial observer, portions of the mucous membrane itself." This secretion, whatever may be its use, remains but for a short time, "and detaches itself, without the assistance of any purgative, by a kind of natural exfoliation," in very thin lamellæ, which, being rolled together, form the small, white flocculi so frequently met with in the stools of young children.

Somewhat later in infantile life, and when a child is attacked with stomatitis, with morbid secretion and pseudo-membranous formation, the mucous deposit and membranous exudation sometimes extend into the stomach, and on occasions into the small intestines. In the large intestine, both in the child and adult, membranous formation on the mucous or villous coat is common enough, particularly in dysentery. In whatever part of the digestive canal, from the mouth to the rectum, this morbid formation occurs, it is most probably in the same way, viz., secreted matter from the mucous follicles, which spreads over the surface and becomes concreted into membrane. Sometimes this is the result of simple follicular irritation, sometimes of inflammation of the glands and intervening mucous membrane. Dr. O'Brien describes this false membrane as occurring, in dysentery, both in the large and small intestines, but as being most frequent, and remarkable in the colon and rectum. In some cases he found it exhibited in patches, but in others the mucous membrane was covered by a uniform layer of white lymph. Similar observations have been made by other writers on dysentery. M. Roche (*Diction. de Med. et de Chir. Prat.*, Art. *Colite*) tells us, that he has seen patients, and, what is somewhat remarkable, they were always females, affected with obstinate diarrhœa for months and years, pass daily, during the disease, a large quantity of these false membranes. He adds, that the cases of colitis (chronic) in which these discharges occur are not, in consequence, more alarming than others. Elsewhere (Art. *Enterite*) M. Roche remarks, that pseudo-membranous enteritis is much more common in a chronic than in its acute form; and that a number of persons discharge these formations in different degrees of size, resistance, and figure. Some

are but slightly incommoded in consequence; only they are troubled, from time to time, with colic, and then they pass more than common of these false membranes. They eat with appetite, and digest well so long as they adhere to their customary diet; but on the slightest deviation their colic returns, and the *glairy* discharges are increased. Some, on the other hand, evince symptoms of chronic enteritis; they suffer habitually from dull colicky pains, a feeling of heat and often of *burning* in a circumscribed point of the abdomen. They go to stool frequently in the course of the day, and pass each time amorphous pieces of false membrane. The expulsion of these pseudo-membranes is often accompanied with a sensation of burning at the rectum, so pungent that the patient dreads the time for evacuating the bowels. These persons have but little appetite, digest badly; their tongue is almost always loaded with a whitish or yellowish coat, but without any redness at its side or point; the skin preserves almost always its natural heat; the pulse is rarely accelerated, and there is little or no thirst. Occasionally, in wet seasons, or owing to errors in regimen, and more commonly perhaps to moral causes, the skin is hotter, the pulse more frequent than natural, at the same time that the local irritation is increased. After two or three days the disorder returns in its customary degree; although, sometimes, these exacerbations are prolonged beyond this period.

Mention has been made before of the separation of the mucous membrane itself in acute dysentery.

In a former Lecture (XVIII.), when describing, after Dr. Todd, the symptoms of *follicular duodenal dyspepsia* (pp. 171–2), I mentioned the quantities of mucus discharged in various morbid states and forms—something like "shreds, apparently part of a membrane, and even perfect tubes of considerable extent are passed." These discharges of mucus appear to take place periodically, and as it were critically, being in general preceded by considerable aggravation of the symptoms; and the recovery is attended with evacuations of quantities of mucous or glutinous substances. The course and termination of these forms of the disease, which I call enterorrhœa with membranous formations, do not justify the prognosis given by Andral, in speaking of chronic enteritis, who says, that the presence of pus and of false membranes mixed with the alvine discharges indicates great danger. Not only do they take place in the chronic forms of enteritis described by Drs. Todd and Roche, but they are also quite common in dysentery; and in all these circumstances, the augury from their appearance, though it may be sometimes, it is not necessarily or commonly sinister. The frequent occurrence of the disorder in females would remind us, even if anatomical inspection did not suggest the fact, of the resemblance of these pseudo-membranes to the decidua, or to the membrane discharged in dysmenorrhœa. I have seen it alternate with this last mentioned disorder. Its analogy to the lymphatic exudation in croup is mentioned by more than one writer.

Neither the precise causes nor the special seat of membranous exudation with enterorrhœa is known to us. Its duration for years forbids our referring to any particular cause; and as to its seat, we can only say that it is sometimes in the small, and perhaps oftener in the large intestines.

In the *treatment* of this disease we must be guided by the constitution of the individual who is its subject, and the nature and extent of the general sympathies. At first, recourse may be had advantageously to

local depletion by leeches to the tender part of the abdomen, if there be such, or to the neighbourhood of the anus, followed by fomentations, the warm bath, and laxative enemata. Having thus removed any enteritic complication, and placed the intestinal mucous surface in the best state to be acted on by alteratives of a penetrating and active kind, we endeavour by these means to modify the secreting function of the muciparous glands. This indication will be met by the administration of calomel, where the membranous shreds are still being passed, followed by castor oil and oil of turpentine; or where febrile irritation is present, the blue mass with ipecacuanha, or *hydrarg. c. cretâ*, alternating with balsam of copaiba. The iodide of potassium with syrup and decoction of sarsaparilla, furnishes us with a safe and efficacious means of correcting the morbid secretions in this as it does in so many other forms of disease. In a lymphatic temperament and weakened state of the digestive organs, mild mercurials should soon be followed by preparations of iron and pure vegetable bitters.

LECTURE XXV.

DR. BELL.

Colonic Dyspepsia.—The colon—its extent, situation, and functions.—*Atonic colonic dyspepsia*—*Constipation*—its general character, symptoms, causes, and various terminations—Spinal irritation connected with dyspepsia—Treatment of the colonic disease—Importance of a suitable diet.

Following, properly enough, an account of acute and chronic inflammation of the large intestine accompanied with discharges of varying character and quantity, will be a notice of that functional derangement which is entitled to the epithet of *colonic dyspepsia*. Often secondary and a consequence of disorder of the small intestine and of the liver, colonic derangement is not seldom so far primary as to precede in its manifestations functional disturbances of other parts of the alimentary canal, and singularly to aggravate and complicate these latter. Small progress shall we make in our diagnosis of the diseases of the abdominal viscera without an accurate knowledge not only of the structure, but of the situation and extent of each viscus and tissue. Neglect of attention to the anatomical relations and the locality of organs, has often made physicians confound disease of the colon with that of the stomach, as well as of the liver, and at times, also, of the kidneys. The course and distribution of the colon, contiguous at its transverse portion to the stomach, and running in part under the liver and, behind, on the kidneys, will show the cause of these mistakes. So, on the other hand, its disorder, as in colic, is often the direct effect of phlogosis or irritation of one of these organs; and hence, in addition to the variety of gastric origin, we have hepatic or cystic, and nephritic colic. The colon, with its immense mucous surface, its extended muscular coat, its double supply of nerves, spinal and organic, and a circulation modified by the vital activity of the parts just mentioned, may naturally be expected to undergo vicissitudes of functions from causes affecting the system at large, such as plethora, excess or defect

of innervation, and suspended perspiration, as well as from those acting more particularly on itself, viz., local plethora or congestion, irritation of the spinal nerves distributed to it, and above all, the varying quantity and quality of its contents, or the fecal matter, the residue of digestion, which it is destined for a while to retain and discharge. Although this office appears to be ignoble, it is not by any means unimportant; nor analogous to that of a mere recipient of substances sent into it from the intestines above. It has its secretory and absorbent functions, by both of which the residue of digestion is subjected to important changes, very different from those merely physical or chemical,—changes necessary for conversion of this residue into matter properly fecal or excrementitial. Regarded in connexion with the part performed by the cæcum, we cannot be ignorant of the fact, that the functional phenomena of the large intestine are too diversified, and their morbid sympathies too impressive, to allow of our passing them by in the cursory, not to say slighting manner, which is commonly practised. Of late times, acute disease of the colon, *colitis*, and its sequelæ, enterorrhœa or diarrhœa, have been properly elucidated by the aid of morbid anatomy, and their treatment placed in consequence upon a better basis: but we are still wanting in that precision of detail respecting the more chronic and less violent deviations from health of this intestine, which bear the same relation to *colitis* that gastric and gastro-duodenal dyspepsia do to *gastritis* and *gastro-enteritis*. I will not promise you to supply the omission, but will at least put you in the track of rational inquiry, and furnish you with some aids to farther investigations.

Colonic Dyspepsia.—I begin with a notice of certain morbid phenomena which require, I think, that we should class them under this head. If a better title for them shall occur to any of you hereafter than that which I use after Dr. Todd, I am not at all tenacious on this subject, and shall very readily adopt it. There are three portions of the colon in which its disorders are more apt to occur, or at any rate to be manifested by pain and other symptoms, viz., — 1, at its beginning, or cæcal portion in the right iliac region; 2, its transverse arch, contiguous to the stomach and liver, in the epigastric region; and 3, its sigmoid flexure in the left iliac region. In all derangements of function of the colon, and in its acute diseases or phlegmasiæ, these regions should be carefully examined by touch and palpation; the posture of the patient, the while, being changed from a recumbent to a stooping, and afterwards, if his strength allows, to an erect posture.

Constipation. — Colonic dyspepsia is divided by Dr. Todd (*Cyclop. Pract. Med.*) into the *atonic*, the *inflammatory*, the *irritable*, and the *follicular*. A few observations on each of these kinds, deduced mainly from the source just indicated, will place the subject sufficiently before you, to prevent false diagnosis, and to guide to the most judicious treatment. I may state, by the way, that Dr. Todd himself professes to have drawn a considerable part of his description from the accurate portrait of Dr. M. Hall. Much of the subsequent details are descriptive of effects commonly attributed to constipation, and the treatment is that required for the latter; and hence I shall be saved the necessity of repetition, or of recurring to the subject of constipation as a separate disease, requiring separate and special notice.

The general character of *atonic colonic dyspepsia* is habitual constipation of the bowels, but with no great alteration of the alvine evacuations, pain

or uneasiness in some part of the colon, variable in degree, situation, and constancy; often stridulous noise in the abdomen. A not unusual mistake, in forming an opinion of this disease, is to suppose that it consists in costiveness, which is, in fact, but one of its symptoms, and indeed a troublesome effect of colonic weakness. This form is not confined exclusively to one sex; it is most common in young females, and in delicate boys or young men. Months, even years, may elapse after the first coming on of costiveness, or scanty, even though daily, evacuations before this and concomitant ailments, such as impaired appetite, lassitude, aching of the whole body, or distressing pain in the loins and lower extremities, attract serious notice. "There is frequent headache, great nervousness or susceptibility of impression, a tendency to perspiration on the least surprise or exertion, fluttering, faintishness, timidity, discomposure by the least hurry or agitation; sometimes tremor, and vertigo." Among the most marked changes in the physiognomy of the patient, and these do not occur at first, are a dark or sallow discoloration, going on to a greenish-black, of the lower eyelid; a pale, sometimes chlorotic, complexion; and a sensibly greater paleness of the upper lip than any other part of the face.

The pain of the colon, for a while shifting from one side and from one part to another, becomes by degrees more fixed in one of the iliac regions, frequently in the right, in the course of the ascending colon, accompanied by spasms returning in paroxysms, and not rarely by vomiting and great irritability of the stomach (the *colica stercorea* of some authors). This is every now and then the precursor of stercoraceous and phlegmonous tumours, of which I shall speak under the head of *Cæcitis* and *Peri-cæcal tumours*. A common situation of the pain is in the left side just under the false ribs, and very often in the left iliac region in the course of the sigmoid flexure of the colon; in which case there is a frequent desire to go to stool, accompanied with distressing tenesmus. "Frequent though ineffectual efforts are made to obtain a stool for several days, and at length a number of small, hardened, and slimy lumps, or scybala, either separately or connected together, similar to sheep's dung, more rarely of a flattened or tape-like form, will be voided, sometimes preceded and sometimes succeeded by liquid and sanious stools of various colours, of a frothy consistence, and always extremely offensive. This is the *tenesmus a scybalis* of some authors, and the dysentery of others, of which inflammation and ulceration of the mucous membrane, and occasionally stricture of the lower part of the colon, are the remote consequences." Sometimes there is pain and soreness at the hypogastric region and a slight pain on urinating. There may be felt a distinct hardness in some part of the colon, particularly on the left side, depending on accumulated and indurated feces. I have had occasion to watch this disease for many years, and have found that the pain was at first, for a year or more, in the sigmoid flexure of the colon and afterwards in the transverse portion. In the latter there is more of an uneasy sensation than of positive pain, which is only experienced when pressure is made on the part.

One of the most annoying and common attendants on this disorder is a disagreeable noise, which has been compared to the croaking of a frog, heard in the bowels, and proceeding more especially from the left side. "This noise is very much under the influence of respiration, and also any state of excitement. For the most part, especially on inspiration, it is similar to the croaking of a frog; but on expiration it is somewhat less

so, conveying the idea of the sound issuing, as it were, from water: often before it ceases it is like the plaintive sound of a dying animal." A curious sensation is conveyed to the hand applied on the left umbilical region, between the navel and the spine of the ilium, during inspiration, as if some liquid was forcibly dashed or squirted against the peritoneum. On expiration this is less perceptible. Sometimes this verberation will be felt between the navel and spleen. There is no limited duration of this noise, which, however, seldom lasts more than twenty minutes, and returns at irregular intervals. It is most marked in an erect posture, and will disappear so soon as the recumbent posture is taken. Induced by the first few mouthfuls eaten, it soon abates as the meal advances, and after some intermissions entirely ceases. It has seemed to me to be most frequent and troublesome in the case of female patients when they were tightly laced; and I have procured from them an admission of this fact, in their own cases. The artificial pressure of corsets was not so great as to diminish much the diameter of the colon, while yet it destroyed the tone of the abdominal muscles, and prevented the elastic compression on the intestine which they habitually exert.

The assimilating functions manifest disorder by an impaired appetite, but frequently without any symptoms of gastric or duodenal dyspepsia: sometimes, however, there is irritable stomach and ejection of food soon after taking it, accompanied with pain or uneasiness and tightness across the stomach. Sometimes there is faintness with a sense of craving for food. The tongue is loaded or furred, and of a white or yellow colour; frequently loaded, swollen and œdematous, and marked by pressure against the contiguous teeth; and at times so large in proportion to the mouth, that from compression it is found more or less divided with sulci or folded into plaits. Foulness of the teeth and mouth, a vitiated taste and viscid saliva, are often accompanied with a tainted and fetid and almost stercoraceous breath; but this last is by no means a uniform symptom. I have seen long and tedious cases of the disease, in which the breath was almost uniformly fresh and pure, unless on occasion of gastric disorder or common indigestion,—although the tongue and mouth, especially in the morning, were as just represented. The bowels are, at first, always constipated, afterwards constipation and diarrhœa occasionally alternate; but in the advanced stage the latter becomes permanent. The appearance of the feces is various,—being at first indurated and scanty, afterwards fluid, dark-coloured, scanty and fetid, often accompanied with mucus and even blood; sometimes, as already remarked, their discharge is attended with tenesmus, bloody stools, and pain in the right iliac region; an occurrence very common in young females. In the beginning of the disorder the urine is high-coloured and apt to be loaded, depositing a whitish sediment, and presenting a supernatant iridescent pellicle; afterwards it lets fall a mucous deposit, sometimes of a lateritious tinge. I have seen this followed by large deposition of uric acid, which in some cases, in which there is a complication of irritable and atonic colonic dyspepsia, attends every exacerbation. The urine will frequently become limpid, but a slight exasperation of the malady soon restores the deposit. The pulse is often nearly natural; sometimes it is quick, or easily accelerated; but usually soft and weak, and becoming somewhat more frequent with the progress of the complaint. The skin is in general cool, rather moist and clammy, particularly the hands and feet, which are apt to be

obstinately cold; the fingers are rather livid, and the nails assume a lilac hue.

Allusion has been made to the patient's complaining of headache, nervousness, and vertigo, and of a sensation of weakness and aching after slight exertion. "The headache, which is severe on rising from bed in the morning, insomuch as sometimes to excite vomiting, will continue unabated for an hour or two, and is often proportionate to the degree and length of time which the patient has slept." Nervous tremor supervenes on the least excitement or surprise, and is manifested in a quivering of the lip or dimpling of the chin in speaking, or under the least agitation by tremor on holding out the hand or carrying a cup of tea to the mouth. Sometimes there is oppression, heavy sleep, or considerable stupor or obtuseness of intellect during the day, and during the night great wakefulness, restlessness, disturbed sleep, dreams, and incubus.

The following description of an attack of the disease will be acknowledged to be faithful, both by the patient who has experienced it, and, what is more to our present purpose, by the physician who has ever been called on to advise for such a case. I transcribe it the more cheerfully, because, although the attacks are common enough, their real nature and cause are often overlooked; and at one time bloodletting, at another opium, or again some anti-spasmodic is had recourse to, when the real means of relief would consist in relieving an over-loaded colon and preventing a recurrence of its torpor.

"The patient is liable to violent and sudden attacks, generally induced by some improper article of diet or a more than usually loaded state of the large intestines, such as sickness, vertigo, faintishness with cold perspirations, paleness of the countenance, and coldness of the extremities. These attacks are sometimes accompanied with spasmodic or convulsive paroxysms, frequently assuming the form of hysteria, more rarely of epilepsy, and occasionally temporary delirium, loss of memory, or absence of mind. Sometimes the attacks consist of spasmodic or anomalous pains about the heart or side, or in various parts of the abdomen; in fluttering, irregular action, violent palpitation of the heart with syncope; in local pains more or less severe, occasionally so severe as to resemble *tic douloureux* of longer or shorter duration, and in various forms and situations; in some instances resembling the passage of gall-stones, in others inflammation of the pleura, of the liver, spleen, kidneys, and intestines or peritoneum, and affections of the bladder. Sometimes there is an extraordinary loss of muscular power, especially of the lower extremities, which are so enfeebled as to appear affected with paralysis."

In scrofulous constitutions, curvature of the spine has been noticed to be not a rare complication and consequence of atonic colonic dyspepsia. It is gradual in its approach; but after a longer or a shorter time, the spine gives way at the third or fourth lumbar vertebra, either by projecting anteriorly or to the left side. "In consequence of the curvature of the spine on the left side, the right hip has the appearance of being enlarged, by reason of the hollowness between the ilium and the vertebral column being increased, whilst the left hypogastric region is more swollen than the right."

Dr. Todd controverts the opinion of Dr. Bradley, who supposes that the disease of the spine is the primary affection, of which the stridulous sound

and other derangements are only the consequences. I would add that, in general, organic spinal disease, and that which is still less understood, spinal irritation, are more commonly, by far, part of a series of reflex actions, the first of which was in a disease of some viscus, the second its transmission to the spine or spinal marrow, and a third the reflexion of this last on the affected viscus and adjoining organs.

The *predisposing causes* of atonic colonic dyspepsia are a certain period of life, between ten and thirty years of age; perhaps also a natural conformation of body, and still more a change of habits from childhood to adolescence in the offspring of the rich and the luxurious, by which, from wrong notions of what is due to graceful carriage and to the requirements of education, they are deprived of suitable exercise. With the children of the poor, from different motives, similar restrictions are imposed, as in the factories and workshops; in which, in addition to constrained posture, a close and impure air exerts a constant and deleterious operation. Another, and a quite common and influential cause, is false modesty or shame, by which young persons are prevented from obeying the calls of nature for exoneration of the bowels, when absent from home, or travelling, or in any way exposed to more than customary observation. Serious diseases of the bladder are not unfrequently brought on in this way.

The immediate cause, or that which, erroneously enough, in the fashion of the writings of the present day, is called the pathology of the disease, is an atonic state of the colon, and, as a consequence, although we have reason to believe sometimes a cause, also, excessive accumulation of feces in its cavity. This condition of parts is capable of affecting the upper portion of the digestive tube, both by continuity and sympathy, and by pressure on the abdominal aorta and some of its important branches interfering with secretion, and deranging in both ways the nervous system.

The colon may suffer by mere sluggishness, owing to a want of proper stimulus in the matters passed down to it from the upper bowels—a want chiefly depending on deficient or depraved secretion of bile. Its contents are by this means, however, accumulated, become hardened, and irritate the surface of the intestine, causing tenderness on pressure, a feeling of hardness in the part, and all the symptoms of colonic disorder already described. Persons thus circumstanced, if they are exposed to high heat alternating with cold and moisture, or are under strong and contending emotions, and commit some error in regimen, are liable to a variety of dysentery, in which rectal heat, irritation, and straining, are among the most troublesome symptoms. Possessed of a knowledge of the antecedent state and habits of the patient, we prescribe with confidence, in this kind of dysentery, a mercurial purge, aided by oil and enemata, with the effect of causing a free evacuation of the large intestines and almost entire removal of the disease. It is generally in such cases that scybala are seen, and that their discharge gives manifest relief.

But this is in anticipation of the *treatment* of atonic colonic dyspepsia, the indications for which, as laid down by Dr. Todd, are, 1, to remove any accumulation of feces by having the bowels fully and satisfactorily evacuated; 2, to facilitate and promote the regular performance of the function of the colon; and 3, to correct the morbid condition of this intestine.

For fulfilling the first indication we cannot, at times, well dispense with

purgatives, unless the patient shall manifest determination and perseverance in the use of particular ingesta, and of other hygienic means calculated to prevent and obviate constipation. Rhubarb with sulphate of potassa; sulphur with cream of tartar; solutions of sulphate of magnesia and potassa with sulphuret of potassa; pills of rhubarb, aloes, and blue mass, alternating with the infusion of senna, ought to be preferred to other purgatives. In pursuance of the second indication, we must insist on the superior power of a due regulation of the ingesta, more than on any kind of medication; or if an exception be made, it will be in favour of enemata of tepid or warm water, in which, if the constipation be obstinate and of long duration, a small quantity of soap may be occasionally mixed, or of common salt dissolved. When, of necessity, recourse must be had to aperients, these should be of the milder class, just indicated, and so combined with articles from other classes, that their operation will be adequate, without causing irritation and consequent probability of inertia of the colon in consequence of previous undue excitement. If there be febrile symptoms present, or heat and tenderness in any part of the abdomen, or the temperament of the patient be sanguineo-bilious, we may give with advantage tartar emetic in combination with purgatives; as, for example, a teaspoonful of Epsom salts, dissolved in half a pint of water, and thirty drops of antimonial wine, at bed-time, or the following prescription:—

℞. Extract. Colocynth. compos.,
Extract. Hyosciam. ää. ℥ss.
Antimon. Potassio-Tartrat gr. i.
Syrup. q s. M.
Ut. ft. mass. in pil. xvi. dividend. Sum. æger ii. vel iii. pro dosi.

The extract of hyosciamus is a useful adjuvant, and in this case corrigent, also, of purgative medicines. With aloes, or gamboge and blue mass, it makes a convenient combination in the present case. In prescribing this latter or any other preparation of mercury for occasional and repeated use, care must be taken to ascertain the susceptibilities of the patient to this medicine, both as regards its direct action on the bowels, and its remote, but more serious one, by bringing on salivation. Whether we direct enemata or aperients for opening the bowels, we must be aware, and press the fact on the minds of our patients, that these are means of temporary benefit only, and can never be continued long, certainly habitually, without injury, and finally aggravation of the disease.

The better and more constant means of cure will consist very much in suitable diet, which implies that it should be mild and nutritious, taken in moderate quantities, and not at long intervals, or not less than three meals in the course of the day. It should consist of mild animal food, boiled, roasted, or stewed, such as mutton, chicken, game, and the tender loin of beef. The last mentioned meat is not as digestible as mutton. Sometimes a moderate quantity of salt meat, as of bacon, with an abundance of vegetable food, agrees very well with the patient: at other times it invariably produces disorder of digestion, and more especially in the large intestine. Next in importance, if not itself of paramount consideration, is slow and adequate mastication. Few articles of food are easily digested if this rule be neglected; few will prove very troublesome if it be carefully attended to, so that the alimentary substance shall be reduced to the greatest degree of comminution and well mixed with saliva, in order to form a soft, homogeneous mass. In the selection of vegetables,

the experience, and sometimes the idiosyncrasy, of the patient, must regulate our advice. Mealy potatoes mashed answer well for some; to others they are irritating in any shape, and more, it has seemed to me, certainly in my own personal experience, to the colon than to the stomach and duodenum. The bread should be always stale, or at least of the baking of the day before that on which it is eaten. The pan-loaf, as it is commonly called, into the composition of which a small portion of corn-meal enters, is palatable, and preserves the requisite softness longer than the loaf of wheat alone. Of the various vegetables for table use, I know of no one at all comparable to spinach, in its laxative property, without causing acidity or flatulence. Milk, without large dilution, or unless in the state of butter-milk or whey, seldom agrees in colonic dyspepsia, while cream, in this as in some varieties of gastric dyspepsia, answers a good purpose. When the stomach is not disordered by their use, stewed fruit, such as prunes and apples, or those with a predominance of sugar, such as figs, and rye mush and the like, will be found to contribute to preserve a soluble state of the bowels. The same modified advice will apply to the use of molasses, or drink of molasses and water, and cream of tartar whey.

For the removal of the atonic state of the colon and constipation from this cause, in obedience to the third indication, the union of a bitter, as the extract of gentian or of quassia, with a purgative, should be directed. The same good effects may be expected to follow a combination of a mineral tonic with a purgative, to which a warm gum, as myrrh, or an anti-spasmodic like assafœtida, can be added, as in the following:—

℞. Pulv. Aloes,
G. Myrrhæ, āā. ℥ss.
Ferri Sulphat. ℈i. M.

Syrup. q. s.; ut. ft. mass. in pil. xx. dividend. Take two or three before breakfast.

℞. Extract. Gentianæ.
Pulv. Assafœtida, āā. ℥i.
—— Aloes. ℥ss. M.

Adde syrup. q. s.; ut. ft. mass. in pil. xl. dividend. Take two or three twice daily.

Or the compound aloes pill, made of aloes, extract of gentian, with a little oil of caraway, in doses of from five to ten grains, answers very well to open the bowels. Two five-grain pills, taken two hours before dinner, or about noon, will evacuate the bowels sometimes in the evening, sometimes on the following morning. Sulphate of quinia with aloes in pill, or with the pills of aloes and myrrh, exerts frequently the best effects in constipation, or in a torpid state of the colon and of the system generally. Solution of iodide of potassium and compound syrup of sarsaparilla are excellent alteratives in the disease now before us, both by their action on the mucous secretions and on the liver. I have obtained very satisfactory results from their use. The combination of salines and chalybeates, or of sulphur and salines, as at certain mineral springs, if continued for some months, has procured entire exemption from the disease during a considerable period.

Among the hygienic means of giving tone to the colon are moderate exercise, in which alternate flexion and extension, a gentle commotion, as in some agreeable sport, or riding on horseback, are imparted to the body. To the same purport are travelling and change of air and scene, assiduous

friction with kneading of the abdomen, and sponging this region and the spine with cool or tepid salt water. A hot, and, at times, a cold douche on the abdomen, are found to be quite successful in Italy and some other parts of the continent. Violent and prolonged exercise is injurious.

LECTURE XXVI.

DR. BELL.

INFLAMMATORY COLONIC DYSPEPSIA—Connexion with chronic colitis—Causes and treatment.—*Irritable colonic dyspepsia*—*Enteralgia*—Peculiar temperament of persons suffering from this disease—Treatment; to be simple and mild.—*Follicular colonic dyspepsia*—its analogy to follicular duodenal dyspepsia—*Treatment.*

INFLAMMATORY COLONIC DYSPEPSIA.—The general character of this variety of disorder of the colon is pain in some part of the intestine, prevailing in one particular point, felt always, more before an evacuation of the bowels, seldom increased on pressure; stools generally liquid, rarely formed, not always more frequent than natural. "The patient," continues Dr. Todd, "is always remarkably lowered, irritated or made otherwise uncomfortable by the action of purgative medicine, and even by the spontaneous action of the bowels, which is always followed by more or less feeling of exhaustion; he feels always most strong and most comfortable when his bowels are confined." The pains are accompanied with a somewhat tense and accelerated pulse; there is some degree of thirst, but little heat of surface. The evacuations vary in consistence and colour; more commonly they are liquid or pultaceous; sometimes almost white, or yellow and frothy, less frequently green or black; sometimes a tenacious puriform matter streaked with blood. Generally more frequent than natural; they are often not so, an evacuation occurring but once in a day, or in two days. "The stools are frequently discharged with considerable force; but occasionally there is tenesmus without any excrementitious discharge. The appetite is seldom much impaired. The complexion is pale or whitish, sometimes of a remarkably greenish paleness, and the body emits more or less of a cadaverous smell.

"The unfavourable progress of the disease is to hectic fever, accompanied with œdema of the lower limbs and face, dejected features, and gradual exhaustion."

Very analogous to the disease just described is that which M. Roche designates as a variety of chronic colitis. It is not accompanied with diarrhœa if the patient's diet be simple; but looseness follows the use of stimulating meats and wine. The patient feels in some part of the large intestine, commonly in the cæcum, a dull, sometimes a sharp pain, intermittent or irregular, and which often comes on suddenly, and disappears, after a variable duration, in like manner. So long as it lasts the patient is sad and gloomy, feels a weariness in his limbs, all of which will disappear with the cessation of the pain. Rarely is this last felt in the horizontal posture, except on pressure and in thin persons only, for in those of a full habit the strongest pressure will not give rise to it. It is often calmed by taking food, and by demulcent and narcotic enemata. It is more

especially manifested four or five hours after a meal, and also after a long fatiguing walk, or by jolting on horseback or in a carriage; sometimes it is induced by sudden flexion of the body, or throwing it backwards. Grief, crosses, and anger, will bring it on. It may last a long time without materially interfering with nutrition, provided the patient lead a regular life; but, at last, sooner or later, if it be not attended to, emaciation will show itself, and sometimes a tumour becomes visible in the painful region. Stricture of the intestines, cancerous conversion, and finally ascites, are often the consequences of this phlegmasia when it is neglected. When it has its seat in the cæcum, it often happens, that the inflammation is extended to the surrounding cellular tissue, and gives rise to those abscesses, of which I shall soon speak, in connexion with accumulations in the cæcum, and inflammation of this intestine.

The *causes* of this variety of colonic dyspepsia are, all those which can excite chronic colitis, and more particularly continuance of the atonic variety, and the use of drastic purgatives, often resorted to for its cure; also, the irritation of worms, and that of the violent remedies sometimes empirically used for their expulsion. Atmospheric changes, by interfering with the regular functions of the skin, seem, also, to be determining causes. The morbid condition of the colon is analogous to that in colitis; sometimes the inflammation is limited in extent, frequently terminates in ulceration, occasionally in thickening or induration.

The *treatment* is tolerably well pointed out by the symptoms and recognised state of the colonic mucous membrane. It will consist in leeches or cups to the affected part, followed by fomentations, flannel rollers round the trunk, and covering of course the abdomen; frictions; counter-irritation by croton oil or tartar emetic. These last I have found to be of considerable benefit when the pain was fixed in one part, as in the right iliac region. The food should be plain, light, and easy of digestion; neither troubling by acescency nor by stimulation. Farinaceous articles with a small quantity of milk, if it agrees with the patient, and after a while light animal broth, made quite thick by the quantity of rice boiled with it, should be used. Tea, when it does not annoy by causing flatulency, is to be preferred to coffee, which is so apt to excite the alimentary canal, and particularly the large intestine. Rest of body, and sometimes a recumbent posture, for a length of time, are requisite means of relief. Exasperated as the complaint is by purging, we must abstain from all medicines which produce this effect, and confine ourselves to the direction of enemata of warm water to relieve the bowels of their contents in case of constipation. The warm bath, and some of the narcotic extracts, either by the mouth or as an enema, will prove to be soothing and useful remedies. Opium, from its inducing a constipated habit of bowels, will of course be withheld, except in cases of extreme and continued pain, when we shall use it as we would do in the like exigency in other diseases, in which it is not abated or removed by bloodletting.

Irritable Colonic Dyspepsia.—Enteralgia.—The general character of this variety, we still follow Dr. Todd in his description, is intestinal digestion accompanied with pain, uneasiness in some part of the abdomen, seldom fixed to one spot, but changing its situation and intermitting. This disease is most frequently met with in persons of a nervous and irritable temperament, whose morbid irritability would seem to be frequently concentrated in the intestines, and to give rise to hypochondriasis,

with its minute attention to one's own feelings and extravagant opinions of their importance and meaning. There is a complaint of pain or twisting at the umbilicus, or in the course of the colon, seldom augmented, generally relieved by pressure; frequently a sensation of sinking or dragging of the bowels, giving the notion of the intestines falling out; "some patients experience this uneasy feeling to such a degree that they are obliged to confine themselves to the recumbent posture. Sometimes, instead of pain, the patient feels in the intestines an indescribable uneasiness or peculiar sensation similar to those which are perceived in the stomach in irritable gastric dyspepsia; occasionally the pain and preternatural sensation exist together, frequently they alternate with each other."

Flatulence, with borborygmi, colic, and other spasms, harass the patient, in conjunction with, at times, ptyalism and copious discharges of limpid urine. In some subjects there is such an aggravation of the symptoms as to make the disorder in men resemble hysteria: and I have seen all the characteristic symptoms of this last disease, including the *globus hystericus*, in men, during a paroxysm of this *flatulentia convulsiva*. It has been arrested, as we learn from Dr. Todd, by the application of cold to the testicles. Would not the same good effects be still more certainly procured and with less risk of subsequent disorder, by cold applied to the nucha, between the mastoid processes, and over the occipital region? The uneasy feelings are exasperated during intestinal digestion, which is ordinarily difficult and laborious. I have watched the phenomena of this disease, and have noted that it is not uncommon for a person thus afflicted to eat his meal with relish, experience no inconvenience during the period of gastric and duodenal digestion, feel pretty comfortable during the afternoon and evening, and only be apprised in the course of the night, or early in the morning, that he has indigestion. This will be manifested by some pain in the lower bowels, sometimes a looseness if he has eaten any unusual article at the dinner of the preceding day, and, as the morning advances, flatulence, flying pains, and the other symptoms already enumerated. The irritation thus felt on the passage of the chymous residue from the ileum into the cæcum and colon, producing the diarrhœa, with sometimes a deep feeling of sickness and prostration, early in the morning, is continued during the passage of the fecal matters through the great intestine. The change in the state of the tongue, mentioned in a note of mine to Lecture XII., in the morning, may have arisen from the incipient irritation of the colon at this time.

Motion and travel, which often suspend and relieve the intestinal pain and uneasiness, sometimes, on the contrary, aggravate it. Unsettled and stormy weather is often an exciting cause. If, to the enumeration of symptoms, we add the singular fickleness of purpose and conduct of the patient in all that regards his medical treatment—flying from one physician to another, using all remedies in quick succession, without giving any one of them, or indeed any mode of treatment, a fair trial—we shall have a pretty accurate idea of the features of the disease, and be better able to ascertain its nature.

The temperament of the individual suffering under this form of colonic dyspepsia is nervous and excitable, and at once predisposes him to be readily affected by stimulants of any kind. Now, as there is no class in which excesses in quantity and quality, and irregularity of period of application, are so apt to be committed as in the use of ingesta, we are pre-

pared to find a person thus constituted suffer from indigestion. The variety of the disease will be determined very much by his kind of life, his habitual posture, and the particular circumstances which operate on one part of the digestive canal more than another. But we shall fall short, it seems to me, of a knowledge of its correct pathology, if we suppose merely a morbid irritability of the nervous system at large, without taking into account some particular portion—such as of the dorso-lumbar region of the spinal marrow and its nerves — in explanation of the pain and violent spasmodic movements of the intestine. Still more connected with the causation of other phenomena manifesting derangement in the organic functions, and including anomalous feelings and distress not explicable by any language, is perverted function of the organic or ganglionic nerves. An attempt to locate the disease in the muscular coat of the intestine is mistaking an effect for cause,—a symptom for the disease. There is an entire and morbid change in the impressibility and transmitting or motor power of a portion of the cerebro-spinal axis, and also of that of the sympathetic or nerves of organic life, by which the large intestine is supplied. To correct these, constitutes a more important indication for the cure of irritable colonic dyspepsia than the regulation of the quantity of fecal contents in the intestines, and the precise degree of irritability of its muscular coat. One of the means of controlling and modifying the nervous apparatus more particularly disordered, may, it is true, consist in regulating, if possible, the kind and amount of stimulus habitually acting on it; but this is not all.

Treatment.—The remarks which I have just made directly bear on the selection of our curative methods in this disease. This obviously now, it seems to me, is resolved into two heads: first, that which tends to withhold all morbid stimulants, and diminishes the force of hygienic ones; and secondly, that which modifies by diminishing the morbid susceptibility of both the special and general nervous apparatus, by giving them tone to resist being too strongly impressed by common transient exciting agents. We can neither stimulate nor deplete with advantage. Both high living and low diet are equally, though in different ways, injurious. The food should be bland and yet nutritious. In its selection we may perhaps glean useful suggestions, by learning the kind habitually used by the patient in earlier life, and before the habits of luxurious or promiscuous eating were formed, which were contemporaneous with, perhaps partly causative of, his disease. Among the articles which would most readily present themselves to our mind is milk: and if adapted to his powers of digestion, the patient ought to restrict himself mainly to it, in conjunction with light farinaceous food—well raised but not fresh wheat bread, rice and rice flour, fine homony or grits. After a while, or when milk does not agree, a limited portion of animal food, and in its selection the experience of the patient will be the best guide, is to be directed. Fluids ought to be taken in small quantity, and the diet generally must not be bulky, so as to fatigue by distention, nor much mixed, so as to irritate by the evolution of new products in the intestinal canal opposed to its vital and assimilating action.

Content to keep the bowels open by simple enemata or the mildest aperients, we must refrain from giving active and especially drastic purgatives. A beneficial impression will be made on the organic nervous system by narcotics, such as hyosciamus, belladonna, conium, alone, or

combined with preparations of iron and zinc, alternating with, or to be replaced by, narcotics and the pure bitters, as gentian and quassia, and preferably, I think, to them all, sulphate of quinia. Extract of hyosciamus and the last named salt, equal parts of each made into four-grain pills, and taken night and morning, will be found to display often a pleasant controlling influence on the disease, by removing pain and spasm, and abating flatulence, while a regular state of the bowels is preserved at the same time. Nux vomica and its active principle strychnia, may be expected to exert a good influence in this, as in some other morbid conditions, in which pain and enfeebled or irregular muscular action constitute the chief characters.

Among the agencies which act on both the nervous system of animal and on that of organic life, are, exercise on horseback, sailing and even long voyages; and, as much as can be, a succession of pleasing objects in which the patient takes a lively interest. If this kind of change cannot be procured, we must insist on an abandonment of those habits, which are known to be so often a positive cause of this disease, as of so many other diseases of the digestive system,—viz., eating in excess or at unusual hours, alcoholic potations of any kind, the use of tobacco in any form, late hours, constrained and particularly a bent posture, confinement in close and badly ventilated rooms, neglect of the state of the skin, either by withholding warm clothes, or refusing to preserve its farther activity by bathing and frictions.

Follicular Colonic Dyspepsia.—This disease, which occurs in persons of sedentary habits, and especially in young females, who are generally subject to costiveness and accumulation of feces in the large intestines, has a similar origin, in the morbid states of the follicles, to that already explained under the head of *follicular duodenal dyspepsia*. It often supervenes on the atonic variety, and is marked by acute attacks of pain or spasm, frequently amounting to regular paroxysms of colic. Frequently some violent affection of the nervous system is brought on, and children in particular are seized, in consequence, with convulsions, followed by chorea and sometimes paralysis of the bowels. Young women are attacked with hysteric and various disorders of the nervous and muscular systems, including catalepsy itself, and of the heart and circulation generally. Uterine derangements are a common sequence. "Generally the patient becomes pale and delicate-looking, but sometimes preserves a natural appearance or even good looks; the skin is cool, moist, and clammy, particularly the extremities; the lips and gums are pale, and the tongue is invariably large, moist, and covered with a thin, clammy coating; frequently it is swollen and œdematous, divided laterally or transversely by deep cuts or fissures, and retaining the impressions of the teeth." The bowels, when relieved of their constipation, which is often obstinate and for a while intractable to the most active medicines, discharge matters varying in colour, consistence, and smell,—being sometimes of a chalky-white and inodorous, at others fetid and dark, and occasionally mixed with membranous shreds. There is nothing distinctive in the appearance or quantity of the urine. The pulse is almost always weak, small, soft, and generally slow; and there seems to be a defect of capillary circulation.

The *pathology* of this disease need not be detailed here, as it would be little else than a repetition of that of *follicular duodenal dyspepsia*, on which I have already adequately enlarged (Lect. XVIII.), as far at least

as regards the condition of the mucous follicles and their morbid secretion. The most common causes of follicular colonic dyspepsia are the habitual costiveness of sedentary persons, repeated irritation of the alimentary canal by crude and indigestible articles of food, and the ill-judged use of purgative medicines. But as these are causes of other forms of dyspepsia, and may be present without inducing enteric follicular disease at all, we must believe that there is a predisposition of a scrofulous nature in persons thus affected, who are, I may add, generally of a lymphatic temperament.

The *treatment* will consist of the use of means to evacuate the bowels, to alter the morbid state of the follicles, and to give the requisite tone to these organs and the colonic mucous membranes generally. With this view we give castor oil and oil of turpentine, calomel and rhubarb, croton oil, compound powder of scammony, in order to relieve the colon of its accumulated feces. After this, we shall endeavour both to preserve a soluble state of the bowels and modify follicular secretion, by blue mass and rhubarb, *hydrarg. cum cretâ*—rhubarb with ipecacuanha, balsam copaiba, cubebs with bicarbonate of soda, and iodide of potassium in conjunction with some saline and a chalybeate. The tone of the bowels will be maintained by vegetable bitters, with occasionally narcotics and sulphurous and chalybeate waters.

LECTURE XXVII.

DR. BELL.

DISEASES OF THE CÆCUM.—Peculiarities of position, structure, and function of the cæcum—Its liability to be disordered—Symptoms of fecal accumulations in it—*Treatment*—Importance of enemata—Best means of employing them—Suspicion of hernia being present—Liniments and friction—Attention to diet.—CÆCITIS—Its varieties—*Causes—Symptoms—Treatment.*

THE diseases of the cæcum, of which I am now about to speak, are not of common occurrence; and on this account their diagnosis requires to be laid down with some distinctness, in order that they may receive a suitable treatment. They are apt to be mistaken by the inexperienced for other affections; and measures are attempted for their relief which are inadequate or mischievous. We cannot, however, duly appreciate the circumstances of the liability of the cæcum to disease without a knowledge of its anatomical character and its relations as well as functions. An extensive pouch at the termination of the small intestines, it receives the chymous residue from these latter, including, of course, any crude and indigestible substances which had escaped gastro-enteric digestion: itself liberally supplied with large mucous follicles, which secrete an acid, albuminous, and solvent juice, it subjects all these matters to a second digestion, likened by some physiologists to that of the stomach. A more complete remora of its contents is procured by its mode of connexion with the colon, by which these have to ascend against gravity before they find entrance into the latter. In the cæcum, the intestinal contents first acquire their fecal odour, which is attributed to a volatile oily substance secreted

by their follicles; and on this occasion is generated, together with an acid, hydrosulphuretted hydrogen gas. We can now readily understand how, if the upper and chief digestive organs fail to effect complete chymosis, either by their being disordered, or forced to yield a passage to crude and indigestible food, if the secretions of the liver, pancreas, and upper (small) intestines be of a depraved or irritating nature, the cæcum should be heavily tasked by accumulations and remora, disordered in its function, and, finally, taking on inflammation, be disorganised in its structure.

Weakened energies of the digestive system will of course be largely participated in by the cæcum, which manifests its disorder by flatus and colicky pains in the iliac region, sometimes ileus itself, and alternate constipation and diarrhœa. To this state it is brought, in young, irritable or nervous persons, by the use of much acid and unripe fruit, neglect of the bowels, and tight lacing, or belts round the upper part of the abdomen; and, in fine, by several other of the common causes of dysentery: some of the most distressing symptoms of which are occasionally connected with accumulations in the cæcum and inflammation of this part. Several instances are recorded by the older writers, in which the stones of fruit, biliary and intestinal concretions, and hardened fecal matters, lodged in the cæcum, have occasioned severe colic, and even fatal ileus. Most of these are referred to by Dr. Copland, in his *Dictionary of Practical Medicine* (Art. *Cæcum*), who has himself contributed not a little, by his own cases and observations, towards fixing the attention and enlarging the knowledge of his professional brethren on this subject. "When the distention by accumulated matter is great, it may, from rising high in the abdomen and pressing upon the nerves, vessels, and ducts in its vicinity, occasion numbness and œdema in the right lower extremity, retraction of the testicle, and derangement of the urinary secretion; and thus be mistaken for disease of the kidney." Dr. Copland observes, also, that besides various indigestible substances which may be lodged for a length of time in the cæcum, producing more or less disease, "large balls of worms, both lumbrici and ascarides, collect in the viscus, and occasion much local irritation, or even inflammation, of its inner surface, and constitutional disturbance." Substances, taken for medicinal purposes, in repeated doses and during a length of time, such as magnesia and charcoal, have accumulated in the cæcum, and given rise to serious, and sometimes fatal, obstruction of the bowels, by their filling up and becoming impacted in the cæcum.

The symptoms occasioned by fecal accumulations in the cæcum, and by its distention, enlargement, and irritation, are *local*, *symptomatic* and *constitutional*. The local symptoms are, more or less fulness, hardness, or distention, in the right iliac region; sometimes on examination carefully with the point of the fingers, the abdominal muscles being relaxed, a doughy hardness is felt. "When the bowels are constipated, and interruption of the passage of matters through the cæcum occurs, the paroxysms of pain are very acute, and sometimes attended with vomiting and all the symptoms of the most severe colic, and even those of ileus." Some of the symptomatic disorders have been already mentioned, viz., numbness of the right thigh; œdema of the right foot and ankle; sometimes retraction of the testicle, or frequent calls to empty the bladder; to which may be added, hemorrhoids, uneasiness in the right iliac region, often

extending to the right hypochondrium; various dyspeptic symptoms and irregularity of the bowels,—constipation alternating with diarrhœa, and scanty, offensive, and mucous stools, and severe tormina, even to retching, when the mucous surface and follicles of the organs are irritated. Dr. Copland, whose description I still follow, adds, that he has seen several cases of varicose veins of the leg, or indolent ulcers, and a case of disease of the bones of the feet, the occurrence of which was evidently connected with great distentions and accumulations in the cæcum. The constitutional symptoms are very analogous to those of atonic colonic dyspepsia detailed in my last lecture, to which I refer you.

The indications of *treatment* of cæcal accumulations and the accompanying costiveness are the same as those already recommended for torpid colon, under the head of atonic dyspepsia of that intestine. But greater liability to disorder of the stomach and inverted action of this viscus and of the small intestines, in the disease now under notice, requires of us more reserve in the administration of active purgatives, especially those of the resinous or drastic kind. Calomel in a full dose, as from fifteen to twenty grains, will be found to answer better than these: it will, it is true, be very apt to cause some nausea, and even vomiting, when it has reached the ileo-cæcal valve, and has entered the cæcum; but, in return, it will bring away much indurated feces; and often by its action on the liver and mucous follicles of the intestines, stimulate these to a free secretion, which, going down with it, will excite the cæcum and colon to further peristaltic action and discharge of their contents. Pain, flatus, or spasm, being present, will indicate the propriety of adding opium, hyosciamus, or belladonna, to the calomel, or, subsequently, to aloes, in order to insure a complete, yet not painful or irritating evacuation of the bowels.

Enemata.—Difficulties interposed to prevent the administration of medicines by the mouth or to their full operation after their being swallowed, we must have recourse to enemata, among the best of which is castor oil and oil of turpentine,—one to two ounces of the former and half an ounce to an ounce of the latter mixed with a pint of gruel or thin flaxseed mucilage. When worms are suspected to be present in addition to other morbid matters, we may use aloes, and the alkaline solutions, assafœtida, camphor, lime-water, &c., in union with the injections, all of which, to be efficient, should be large, and introduced by a suitable instrument well up in the intestine. The simpler enemata of salt and water, in such quantity as to distend the colon, will often, by repetition alone, suffice to procure free evacuations.

Both cæcal and colonic accumulation, the latter occurring particularly at the sigmoid flexure, and certain cases of colic, as well as the obstruction from hernia, require the persevering use of enemata, in order that the bowels may be relieved of their fecal contents. Not unfrequently, a passage to the injected fluid is refused in consequence of a spasm at the sigmoid flexure of the colon; and by the same cause the feces are prevented from passing downwards. In such cases it will be useful, and indeed necessary, to adapt a flexible tube of sufficient length to the pipe of an injecting syringe, and to carry the former up the rectum and beyond the spasmodically strictured part of the colon, and then to introduce through this tube the contents of the syringe. A speedy discharge, both of flatus and feces, after the withdrawal of the instrument, indicates, and, at times, loudly proclaims, the effect of the remedy and the cure of the

disease, or at least the removal of the obstruction by which it was either caused, or to a great extent kept up. Dr. O'Bierne, who was among the first to adopt this practice, has certainly most contributed, by the cases which his experience furnished him, to show its usefulness. Sometimes a good purpose will be answered by introducing an apparatus in the manner just directed, or even a common syringe with a moderately long nozzle or terminal tube, empty, but with the piston pushed up. After the instrument is properly introduced, let the piston be drawn down: the patient will soon complain of a feeling of dragging and sinking; some air, and even particles of feces, will enter the syringe, and afterwards there will be a copious discharge of scybala and other fecal matter. A still simpler plan is to introduce an elastic tube, alone, well up the intestine, and pass, if possible, the strictured portion. Mr. Maunder relates a case in his own practice (*Lancet*, February 1, 1842), of scrotal hernia, of three days' duration, irreducible by taxis, in which all the alarming and painful symptoms were removed by this means. He introduced the tube of a stomach-pump twenty-six inches up the intestine, "and, after the expiration of about ten minutes, air escaped in small quantities from its mouth; the scrotal tumour gradually diminished, and the poor fellow was soon released from suffering; the sickness ceased, pain was diminished, and the dragging sensation completely relieved." Two drops of croton oil with sugar, divided into three doses, one taken every three hours, and followed up by a little saline mixture, acted powerfully on the bowels, and completed the cure.

Hernia.—I cannot at any time more appropriately than the present, when constipation is the subject of remark, insist on the necessity, in all cases in which stools cannot be procured, and there is at the same time nausea, retching, or vomiting, dragging at the epigastrium, and symptoms of colic, of instituting careful inquiries, and making, yourselves, a minute examination, in order to ascertain whether the disease is not in reality hernia, either at the crural or abdominal ring. In some old persons, and particularly women who have borne many children, and whose abdominal parietes is much relaxed and yielding, it is not easy, at first, to distinguish distention and accumulations in the cæcum, by which it is protruded forwards and downwards, from inguinal hernia.

Among the means resorted to for enabling the cæcum to recover its tone and acquire power for the expulsion of its contents, are liniments assiduously rubbed, with moderate pressure, over the abdomen, and particularly in the region from the umbilicus to the tuberosity of the ilium, and thence downwards to Poupart's ligament.

After we have succeeded in apparently removing whatever obstructions may have existed—the cæcal region being soft and natural, and the motions of the bowels free,—the next object is to prevent the recurrence of the disorder by imparting the requisite strength to the digestive organs, and to the large intestine in particular. As the indication here is identical with that for the treatment of atonic colonic dyspepsia in a similar stage of the disease, I must refer to the directions given on the occasion in my last lecture. The liniments may be continued at this time, or occasionally in their place a warm plaster worn over the region of the abdomen already specified. Attention to the diet and to procuring regular alvine evacuations are of the same importance here as in the derangements of function of the colon before described.

Cæcitis.—Inflammation of the cæcum or *cæcitis* (*typhilitis*) is acute and chronic, and may result from stercoral accumulation, or occur in the same way as phlogosis of the mucous membrane of other parts of the intestinal canal, and particularly the colon.

Analogous to cæcitis in its causes, secondary symptoms and treatment is, inflammation of the sigmoid flexure of the colon; and I shall, accordingly, speak of them in the same connexion. The remarks on one will be applicable, with slight modifications, to the other.

The *causes* of cæcitis, as well as of partial colitis at the sigmoid flexure, are, fecal accumulation, constituting obstinate costiveness, remora of foreign matters, such as those already mentioned, and worms, contusion from a fall or other external violence, long and constrained posture, as of leaning over the edge of a table or the like, and the operation of cold. This inflammation may also occur in the progress of enteritis and dysentery, and become for a while the chief disease. More generally, however, it shows itself in a separate form and, in its origin, unconnected with any other complaint.

The *symptoms* of acute cæcitis are, at first, tenderness on pressure and some colic disorder, but then the peritoneal coat is also affected: there is a burning, pungent pain in the right iliac fossa, aggravated by pressure and by intestinal evacuations, and frequently extending more or less along the line of the transverse colon. A sensation of burning heat at the anus every time that the bowels act is a common attendant symptom.

Usually there is a distressing diarrhœa present, which, in general, diminishes the pain in the iliac fossa. The stools are thin, often loaded with mucus, and not unfrequently bloody. As the disease abates, the mucosities become whiter, and of a thicker consistence, not unlike those which are often expectorated in bronchitis. The mucous secretion has frequently been mistaken for and described as purulent; and hence a common error, that in this affection the stools are often mixed with matter. The extension of inflammation from the mucous to the muscular and peritoneal coats of the great intestines constitutes the phlegmonous dysentery of authors.

The pain which accompanies inflammation of the cæcum is, in general, less severe when the mucous membrane alone is affected. It usually extends down the surface of the right limb, more especially when the patient walks, or turns his body round in bed. Hence it is apt to be considered as of rheumatic origin; and as the muscles covering the inflamed bowel generally sympathise with it, there may be a degree of rheumatic suffering blended with that arising from the enteric disease. In some cases, retraction of the right testicle has been noticed; and in others symptoms of irritated kidney appear.

The *duration* of inflammation of the cæcum has never, to Professor Albers's knowledge, extended longer than seven days. By Dr. Burne we are told that the *termination* of the symptomatic inflammation of the cæcum is usually by resolution; the symptoms yielding at the end of five or six days, and subsiding altogether soon afterwards: except in patients of an inflammatory or gouty diathesis, in whom inflammation once excited will continue in a sub-acute or chronic form, and require several weeks for its removal, notwithstanding the original exciting cause shall have passed away.

The *treatment* of cæcitis may be pretty well inferred from the descrip-

tion of the disease. It will be nearly the same as that of ileitis, and consist of—1, leeches or cups over the iliac fossa and behind, between the ridge of the os innominatum and the lower rib, and anterior to the psoas muscles, followed by fomentation and poultices;—2, a blister, which is to be kept freely discharging, and if the symptoms persist, the surface to be dressed with mercurial ointment;—3, antimonials to act on the blood-vessel system, by reducing action; and afterwards a mild purgative, in order to insure a discharge from the cæcum of any retained fecal or imperfectly digested or other irritating matters. Active purging should not be produced by any medicine given by the mouth; but enemata may be frequently administered, partly with a view of revulsion, and partly of gently soliciting the passage downwards of the matters in the ileum, cæcum, and upper part of the colon, the delay of which would prove irritating. Small doses of calomel at intervals will contribute to this end, and be otherwise useful. Salivation has been followed by a cure. Local as inflammation of the cæcum is, we ought, nevertheless, in cases in which the pain is fixed and violent and extends over the abdomen, in a young and well-constituted subject, not to rely entirely on topical detractions of blood, but must have recourse to venesection, and allow the blood to flow from the arm until approaching syncope. Turpentine embrocations applied over the abdomen, and retained as long as it can be borne by the patient, is a remedy of great power. Leeches to the anus will sometimes be of service, the more so if there have been pre-existing irritation of this part by hemorrhoids.

LECTURE XXVIII.

DR. BELL.

STERCORAL INFLAMMATION OF THE CÆCUM —Symptoms and treatment.—*Chronic inflammation of the cæcum*—its causes, complications, and cure.—COLITIS OF THE SIGMOID FLEXURE OF THE COLON.—*Inflammation of the pericæcal tissue—Perityphilitis.*—Symptoms—Prognosis—Causes—Termination—Statistics—Treatment.—Perforative ulceration of the cæcum and of the appendix vermiformis—Causes—Symptoms—Prognosis—Treatment.

STERCORAL INFLAMMATION OF THE CÆCUM.—We have spoken of impediment of function of this organ as dependent on accumulations of feces or concretions in it; for the relief of which we have recourse to the same measures as for common, yet obstinate, constipation. But a persistence of this disorder without material abatement induces another and more complicated state of things, which gives rise to phlogosis of the gut. *Stercoral inflammation of the cæcum* is the occasional consequence of the protracted detention of the fecal matter in the cells of the cæcum, until a process, at first of irritation, and afterwards of inflammation, is excited, and then all the symptoms of enteritis or of strangulated hernia are evinced. As obstinate constipation is perhaps the only symptom that is present for a great length of time, the physician may have no grounds to suspect any local mischief until swelling or pain is felt in the right groin. At this time, the abdomen, says Professor Albers, is usually tense, hard, and

prominent, especially at the right flank. If we attentively examine this part, we shall generally find that it is the seat of a large swelling, which can be displaced more easily from one side to another than from above downwards. At first, light frictions over this part will probably cause the swelling to disperse; not so, when the malady is farther advanced. Pressure on the part usually causes a certain degree of uneasiness, but rarely any acute pain. In the left iliac region, the descending colon may often be found filled with indurated feces. A sense of pain and numbness is not unfrequently felt along the line of the *iliacus internus* muscle, from the groin downwards along the inner side of the thigh: this feeling usually becomes more and more distressing as the complaint advances. A dull sound is elicited by percussion on the right iliac region.

The various symptoms which attend this disorder may exist for several days before they come to a crisis. Professor Albers has observed in some cases that the most conspicuous symptom for a great length of time is a most troublesome itching of the surface. If a diarrhœa should take place either spontaneously or from the use of purgative medicines, the symptoms are, in common, relieved rapidly and effectually. It is truly astonishing to see what quantities of fecal matter have been discharged before entire relief is obtained.

Our *prognosis* in this complaint is for the most part favourable. There are cases, however, in which the feces are lodged permanently in the cæcum, and consequently upon this state will ensue an inflammatory and perhaps suppurative action in its walls or in the adjacent cellular tissue. But even should the abscess burst outwardly, feculent matter is not always mixed with the purulent discharge, as the gut may never have been perforated, or the aperture may have been so small that it has subsequently closed up. Such cases not unfrequently terminate well; the suppuration gradually diminishing, and the abscess at length healing up. In a few rare instances the inflammation has terminated in gangrene. Finally, though rarely, the life of the patient has been much prolonged by the yielding of the bowel, and the formation of an artificial anus in the right groin.

The period of duration of the stage of stercoral inflammation of the cæcum will modify its *treatment*. When there is simply accumulation and retention of feces, indicated by protracted costiveness and some fulness in the right iliac region, we can have recourse to all those means which are in common use for the relief of constipation. Calomel and jalap in full doses, a calomel pill of ten grains, followed by the compound powder of jalap, the compound extract of colocynth, or an infusion of senna with salts, or castor oil and spirits of turpentine, may, severally, be prescribed with advantage. Tartar emetic, in nauseating or relaxing doses, to be succeeded by active enemata, will sometimes procure free fecal discharges. Croton oil, if the stomach revolt at medicine in bulk, or if the other prescriptions prove unavailing, is a resource in reserve.

But if, to the symptoms of stercoral accumulation, be added diffused tenderness of the abdomen, vomiting, and protrusion of the intestine in the groin, we should have recourse to the same remedies which are directed in strangulated hernia. Of these, venesection or leeching, according to the constitutional vigour or evidences of general febrile excitement, tartar emetic, as a sedative and relaxant, and enemata, will constitute the first part of the treatment. Relief being obtained, we may

then give some tolerably active purgatives; selecting those which are least irritating to the mucous coat. Calomel, therefore, and castor oil, or castor oil and turpentine, will have the preference over the resinous and drastic medicines of this class.

We must not forget the means of at least partial relief afforded by the elastic tube introduced some way up the gut, as already recommended. In all cases in which an enema is to be administered, the pipe projecting from the barrel ought to be longer than it is; or the defect in this particular may be supplied by the affixing to it an elastic tube, which, especially in cases of obstinate constipation and colic, or where stricture of the rectum exists or is suspected, should be carried high up in the intestine; as far, at least, as the sigmoid flexure of the colon. Knowing the immense quantity of accumulated feces which have sometimes been retained in and distended the cæcum and colon, we ought not to desist from a continuation of our measures for their entire evacuation, even after the fecal discharges have been copious.

Where the muscular coat is partially paralysed by inflammation, or the diameter of the intestine diminished by external tumour, or other causes, it will be desirable to produce a relaxation of the whole intestine, and at the same time diminish the inflammation. Hence we have recourse to free leeching in the neighbourhood of the tumefied part, tartar emetic by the mouth and *per anum*, and finally, if need be, to enemata of tobacco, as used for hernia, and as successfully employed by Dr. O'Bierne in dysentery.

In favour of the practice of using tobacco injections for the relief of obstructed bowels, we have the opinion of very judicious practitioners; but on the other hand, the proofs of its alarming and, every now and then, fatal effects, are too clearly on record to allow of our regarding it in the light of other means of treatment—as one to be employed or withheld at pleasure. In all the forms and stages of ileus, which is but a higher grade of colic, Dr. Abercrombie speaks of the tobacco injection as the remedy which, as far as his observation extends, is of most general utility. He adds, immediately after, it should be given, at first, with much caution, —perhaps not more than fifteen grains, infused for ten minutes in six ounces of boiling water; after the interval of an hour, if no effect has been produced, it may be repeated in the quantity of twenty grains, and so on, until such effects are produced, in slight giddiness and muscular relaxation, as show that its peculiar action is taking place upon the system. It may then be repeated at intervals of one or two hours, a great many times, if the case do not speedily yield; and, with the precautions now mentioned, I have never seen any unpleasant effects from a free use of this powerful remedy." Even the cautious and skeptical Heberden speaks without drawback of the curative powers of the injection of tobacco smoke and tobacco infusion in ileus; but, on the other hand, both in surgical and medical practice, we have many cases on record in which speedy death was the result of the administration of this powerful medicine as an enema. I shall recur to this point when the subject of ileus is before us.

We may remit, for a day or two, the administration of purgatives after ease has been procured by large discharges of scybala and feces; and then resume the use of this class of medicines, varying the kind so as at one time to give saline, at another resinous, then again oleaginous. The in-

creased activity and milder operation of certain purgatives are obtained by the addition of a bitter, as sulphate of quinia, gentian, &c.

Frequent and regular friction, and gentle kneading of the abdominal parietes; the tepid bath at first, and afterwards the cool shower bath or douches along the spine, and moderate exercise in the open air, will be among the measures of restoration, in addition to those already recommended, for the convalescent from this disease. I shall take occasion to speak of the treatment of constipation, in a future lecture, on *stercoraceous colic.*

Chronic Inflammation of the Cæcum. — This form of cæcal disease is less commonly an effect of prior acute inflammation than a primary one of slow and insidious approach, and long confined to the mucous surface and follicles of the intestine. It often, as Dr. Copland justly remarks, advances imperceptibly, until serious organic changes have taken place in the coats of the cæcum; the general health, although more or less affected, not being so far injured as to alarm the patient. Occasionally on this state may supervene a sub-acute or an acute attack, which may terminate in peritonitis, or in suppuration, or in gangrene. "Chronic inflammation is the most common organic state of disease by which the cæcum is affected." The *causes* of this form of disease are, some of them, common to both sexes, others peculiar to females, who are the most frequent sufferers from it. Among the first may be enumerated the use of unripe or acerb fruits, sedentary occupation, deficient, or occasionally too violent exercise on foot or horseback; the depressing passions; previous disorder of the digestive organs, particularly costiveness, and habitually or occasionally deferring the earlier intimations to evacuate the bowels; suppression of accustomed discharges, such as hemorrhoids; the pressure of an illy-constructed bandage or truss, or blows on the part. The causes to which females are exposed are contingent on their uterine functions and child-bearing, and their modes of dress. It often occurs among them previously to menstruation, or soon after the climacteric epoch. The symptoms of chronic cæcitis are those common to disordered digestion, such as flatus, occasional colic, irregular alvine discharges, loaded tongue with red borders, muco-purulent discharges; and some more distinctive and peculiar, such as the inclination of the patient to lie on the right side, pain or uneasiness in the right iliac region, or on turning to the left side, which is increased by keeping this position; pain on pressure over the cæcal region, and a deep-seated fulness and hardness here.*

The *treatment* of chronic cæcitis differs but in the degree to which we carry the use of remedies from that of acute inflammation of the cæcum. "When," says Dr. Copland, "the disease has gone on to thickening of the coats of the intestine, as indicated by obscure hardness and tumour, uneasiness, &c., in the iliac region, particularly if it be attended with ulceration, as may be inferred from the presence of small quantities of blood or pus mixed in fluid, or but little consistent, muco-feculent and offensive stools, amendment is procured with great difficulty under the most favourable circumstances; but it should not be despaired of, although it may be long in appearing." The treatment suggested by this author is enemata, laxative electuaries, blue pill, *hydrarg. cum cretâ*, ipecacuanha, hyosciamus, and camphor, liniments, and repeated blistering, and subse-

* In the sixth volume of Dr. Chapman's Medical and Physical Journal, Dr. Beezeley gives an account of a case of *Scirrhous Tumour of the Cæcum.*

quently the deobstruent plaster. In addition to these, I would recommend mercurial alternating with iodine inunction of the right iliac region, the internal use of iodine, and syrup of sarsaparilla.

Colitis of the Sigmoid Flexure.—The same train of symptoms as in cæcitis will, as I have already remarked, be caused by inflammation of the *sigmoid flexure of the colon ;* of this I have had painful experience in my own person and had occasion to notice in patients. Sometimes the inflammatory action begins in one iliac region, and is soon to be transferred with all its intensity to that on the opposite side. In my own case the disease came on suddenly, and was marked by the most atrocious pain in the left iliac region, which was soon relieved by cups applied to the part. In the course of a few hours, however, a similar pain and of equal intensity was felt in the right side corresponding with the cæcum, which in its turn was greatly mitigated by leeching. The force of the disease was spent on this side, and it only gradually subsided with a bilious diarrhœa, which seemed for some days to be equally profuse, whether abstinence or nutritive food were had recourse to. Bloody urine was passed at five different times in two days, and without any notable change in the appearance of the excreted fluid or the urination immediately preceding or immediately following that in which the blood had been discharged. The pain of the testicle was considerable on the side corresponding with that of the iliac region affected, and it extended, also, to the groin and inside of the thigh ; the limb was kept in a state of demiflexion, to avoid the pain which its extension would produce.

I have had quite recently (January, 1847), under treatment the case of a married woman, in which a similar succession of disease has taken place. This person had complained for some time of pain in the left side, of a paroxysmal character, coming on in the afternoon ; and had suffered, also, from constipation, from which she was relieved by appropriate treatment. A month after the death of her infant at breast, she was seized with an acute colitis in the sigmoid flexure, and painful micturition with the discharge of bloody urine.

The disease was of ten days' duration, and was accompanied with high febrile excitement, and a tense and frequent pulse, requiring for its subjugation both venesection and cupping over the affected part. Active purging was illy borne, and opium failed to tranquillise. More benefit was derived from the tincture of hyosciamus, and vinous tincture of colchicum, with carbonate of potassa, in moderate doses. Sinapisms gave some lull to the pain, but better effects were procured after venesection and cupping, from vesication by cantharides.

After an interval of a few days, in which convalescence was begun, and the patient able to go down stairs and attend to her home affairs, she was seized with acute pain in the right iliac region, extending into the groin and inner part of the thigh, and accompanied by occasional vomiting, and frequent and copious diuresis. The vascular excitement was considerable ; tongue white and loaded, and somewhat furred. Venesection was had recourse to, and enemata were frequently administered ; the latter brought away a large quantity of scybala. Pills of compound extract of colocynth and extract of hyosciamus, although, like almost everything else she took in the way of medicine, they were followed by vomiting, were of service by helping more completely to unload the bowels. This person is again convalescent, having no longer pain or fever ; she is able to take with advan-

tage light animal nutriment. The bowels are kept in a soluble state by pills of assafœtida and rhubarb with soap. Duration of this attack fourteen days. She mentions her having suffered from a constipated habit of body ; and, also, that more than two years since she had, after much pain in the left lumbar and iliac regions, an exceedingly copious discharge from the bowels resembling, as she said, matter ; and which left her, for a time, exhausted and faint.

During the whole of the disease flatulence prevails, and discharge of wind, either upwards or downwards, gives present relief. The first feeling of abatement of the fixed pain and distress on the sigmoid flexure is associated with some relaxation of the bowel, so as to allow of the movement of wind in it, which is both felt and heard by the patient. These sensations, as well as those of pain caused by grasping the part between the thumb behind and two fingers in front, and of heat and soreness, or rawness it might be termed, indicate clearly the precise seat of the disease, of which otherwise, owing to the pain extending in the course of the internal iliac muscle, and into the cord and testicle, and great derangement of the urinary functions, the diagnosis would be considered somewhat equivocal. When the cæcum is the seat of disease, the pain extends more from the iliac region towards the umbilicus and pubes.

The nervous system is often greatly deranged, and sleep wanting, or disturbed by painful dreams. Relapse is readily brought on by overexercise or strain, catching cold, and constipation.

The following cases will illustrate some of the foregoing remarks :—

" Case. — A man, seventy-two years of age, died last year (1839) in the Salpetrière at Paris, after protracted suffering from intestinal disturbances. The interior part of the sigmoid flexure was much contracted ; and the consequence of this lesion had been that an immense quantity of feces, in large, hard lumps, was accumulated in the transverse portion of the colon, which might actually be felt through the thin parietes of the abdomen ; the liquid parts seemed to have been, as it were, filtered through them, and hence during life the patient had supposed that he had a diarrhœa. He died suddenly and without experiencing much pain. On dissection, a large ulceration was found in the cæcum, and a cancerous contraction of the sigmoid flexure.

" In another case — which terminated favourably — where the rectum was obstructed by an encephaloid tumour, the feces had accumulated in large hard balls in the sigmoid flexure and descending portion of the colon. The cæcum and rest of the colon were distended with gas. This state had continued for upwards of a twelvemonth, when suddenly the abdominal parietes became the seat of sharp pain, which was most severe in the right groin. By the use of purgative medicines, an immense quantity of the large fecal balls was discharged, and the patient was speedily relieved."

Inflammation of the cellular tissue round the cæcum or peri-cæcal tissue. — Perityphilitis. — I ought to premise that inflammation and abscess of the iliac fossa is not confined to the right or cæcal side, although it occurs in a majority of cases. Thus as we learn from M. Grisolle (*Histoire des Tumeurs Phlegmoneuses des Fosses Iliaques*, — *Archiv. Gen.*, 1839, — also in his *Pathologie Interne*), of eighty-three cases, the disease occurred in the right side in fifty-three, and in the left in but twenty. The cellular inflammation commences suddenly after exposure

to cold, irregularity of diet, or taking a draught of cold liquid when the body is heated and perspiring. The pain which attends it is felt at first sometimes near the umbilicus, and at other times in the iliac region. When it begins round the navel, the patient usually complains of slight cutting pains, which do not differ much from ordinary colic: when in the iliac region it is much more intense. Wherever situated, it gradually diffuses itself, so that the entire surface of the abdomen soon becomes exceedingly tender, as is the case in genuine peritonitis. Sometimes the pain extends round to the loins and back, and then the cases may be mistaken for nephritis or psoitis. But, at length, it is concentrated chiefly in the iliac fossa. When this takes place, the disease is fully developed, and suppuration is probably near at hand. The pain is aggravated by any movement of the body, or by the accumulation of flatulence in the bowels, &c.: the patient generally prefers lying on the back or right side, with the feet drawn up. When the pain has lasted for some time there is always considerable tension, swelling, and hardness in the right iliac region, stretching from thence in all directions, but chiefly downwards in the direction of Poupart's ligament. These phenomena are more circumscribed than in peritoneal inflammation; although it must be admitted that the two cases are not easily distinguishable. The following is an example of the difficulty of diagnosis:—

A child, eight years of age, was suddenly seized, after a chill, with considerable fever attended with severe abdominal pain, which was seated at first in the hypogastrium, and gradually extended itself to the right iliac region, and finally over the whole abdomen. There had been diarrhœa; but this was replaced by constipation and troublesome vomiting. The case was considered as one of genuine peritonitis, and treated with bloodlettings, local and general, fomentations, mercury internally and externally, &c. The patient died on the ninth day after the attack. *Dissection* showed the whole extent of the peritoneum, intestinal as well as abdominal, to be perfectly sound, with the exception of one spot about the size of a dollar over the cæcum, where it was evidently inflamed, and exhibited a few flocculi of coagulable lymph. On examining more minutely the parts at this region, a fluctuation was perceptible; and, on making an incision there, a large cupful of purulent matter flowed out. The cellular tissue surrounding the cæcum behind was found to be greatly destroyed by suppuration, and the pus had made its way between the abdominal muscles forwards to the iliac region. These muscles were quite dissected, as it were, from the subjacent peritoneum; the cæcum also was much softened in texture, so that it was easily torn across; and its mucous surface was of an almost livid colour: no perforation, however, had taken place. All the other abdominal viscera were sound.

It will be observed, that in the case now related, there was at first diarrhœa, which was followed by obstinate constipation. Such is the usual occurrence whenever the cellular substance round the cæcum becomes inflamed. The constipation here is partly owing, we may suppose, to the loss of contractility in the muscular coat of the intestine by inflammation and partly to the mechanical pressure of the swelling on the cæcum, and on the colon also and small bowels. In addition to the symptoms already enumerated, there is usually pain and a sense of numbness down and about the hip-joint. These symptoms may be owing to the *psoas* and *iliacus internus* muscles being peculiarly affected. The excretion of urine is also

in many cases more or less disturbed. It is probable that the right kidney sympathises from the very beginning of the disease, and that the swelling in the latter stage may press upon the ureter.

None of the preceding symptoms are so diagnostic of pericæcal inflammation, as to be absent in cæcitis or in partial colitis, as already described; and hence our prognosis, while guarded, may be upon the whole encouraging.

It may be readily supposed that there is generally more or less feverish irritation present. The progress of the disease is often very obscure and slow; the symptoms being at first inconsiderable, but becoming on a sudden violent and most alarming. The *prognosis* is in general favourable; since, out of sixteen cases collected by M. Meniere, only one proved fatal. But if we extend our view to all cases of phlegmon in the iliac regions, the result is not by any means so favourable. Of 73 cases collected by M. Grisolle, there were 20 deaths. Peritonitis destroys a certain number of cases. The *duration* of the disease may be said to vary from two or three weeks to several months, or even to upwards of a year.—*Termination.* It is, we are told, not rare for the inflammation of the cellular substance round the cæcum to terminate favourably by resolution, but certainly in the majority of cases suppuration is induced. The pus usually finds its way into the cavity of the gut, either directly, or by bursting into the *appendix vermiformis.* If the former, the purulent matter is discharged *per anum*, and the patient may regain his health. In some of the cases published by Dupuytren, the purulent matter had infiltrated itself as high as the kidneys, and so low in the pelvis as to collect between the rectum and bladder. When suppuration takes place there is a sudden change in all the symptoms; the severe pain and the obstinately confined state of the bowels being generally followed by a complete remission of suffering and by a greater or less degree of diarrhœa; so that the patient, and his medical attendant, also, if he be not on his guard, are apt to suppose that a favourable crisis has taken place. Too often, however, this is but a delusive calm; the patient becomes weaker and weaker, the stools are found to be mixed with purulent matter, and the system at length gives way. The history of the following case affords a good illustration of the usual progress of the disease:—

"Case.—A man, twenty-nine years of age, who had been previously in perfect health, was seized, during the summer of 1833, when the influenza was prevailing, with smart abdominal pains, which returned at periodic intervals, but were not attended with fever or any gastric disturbance; diarrhœa, however, was present. By the use of cupping the pains abated, but they became more permanent and more fixed in the right iliac region; and at the same time a constipated state of the bowels ensued. For five days the patient was able to attend to his affairs; and then he was seized with feverish chills followed by flushes of heat. The pain became much more severe, and occasional vomitings supervened; at the same time the groin was somewhat swollen and very tender on pressure, and the urine was thick and very red. Purulent matter was observed to be mixed with the alvine dejections; all the symptoms became suddenly very alarming, the extremities being cold and the pulse scarcely perceptible; and the patient died in a state of coma.

"On dissection, a large collection of pus was found behind the cæcum, stretching up to the right kidney, and down to the pelvis; the *appendix*

vermiformis was hard and thickened. In the cæcum, at about an inch from the appendix, there was a perforation with irregular edges, through which the matter had escaped into its cavity; the right kidney was softened and very red; and the *iliacus internus* muscle was partly destroyed by ulcerative absorption.

"In a few rare cases, the pus makes its way not only into the gut, but also outwardly through the abdominal parietes; thus an anus *contra naturam* is established. Occasionally the outward opening alone takes place. When this is the case, the symptoms are generally very severe for ten or twelve days, and then suddenly they subside, when the abscess bursts. Under all circumstances the disease must always be considered as a very dangerous one; the colliquative exhaustion that is induced by the protracted suppuration proving in most cases fatal.

"With respect to the age, at which *pericæcal* suppurations are most frequent, perhaps it is that of youth." The period of the greatest liability is between 20 and 30 years of age.

M. Meniere (*Archiv. Gén. de Méd.*, t. xvii., p. 213) supposes that adults and the male sex are most liable to this disease. M. Grisolle (*Archiv. Gen.* 1839) confirms this statement, in relating that, out of 56 cases not connected with the puerperal state, 46 were males, and only 10 females. Dupuytren tells us, that disorders of the digestive tube caused by certain trades have a great tendency to produce this diffused inflammation and subsequent abscess. He specifies house-painters, colour-grinders, and copper turners, as more peculiarly liable. M. Grisolle points out the puerperal state as the chief cause in females. Of 27 cases of iliac abscess in women, 19 occurred in the puerperal state.

Dr. Burne remarks: The peculiarity in the organization of the cæcum, which bears upon the present subject, is the absence of a peritoneal tunic at its posterior part, where it is fixed and attached by adipose cellular tissue to the iliac fascia, so that in the event of a perforative ulceration in this direction an abscess would form behind and without the peritoneum upon the iliac fascia, and direct its course to the lumbar region at the outer edge of the *quadratus lumborum* muscle. Dr. Burne, in premising that the cæcum by its conformation is peculiarly exposed to the lodgment of undigested substances, thinks that the greater number of cases of inflammation of this intestine are to be ascribed to the prolonged irritation of bodies so lodged, and that such inflammations are, therefore, properly symptomatic; a conclusion borne out, moreover, by the manner of the attack, which is characterized by a development of the local preceding that of the general symptoms, and by the absence of the chills and rigors which usher in idiopathic inflammation. That the inflammation of the cæcum may be idiopathic, and arise from the ordinary exciting causes, cold and vicissitudes of the weather, there can be no doubt; but these instances are rare, in comparison with those which may be fairly attributed to the irritation of crude substances which have reached the cæcum and lodged in its pouch. To these causes may be added, spirituous liquors, preparations of copper and lead, child-bearing, emetics and purgatives, riding on horseback, and mental perturbations.

The statistical information afforded by the cases collected by Dr. Burne is presented as follows:—*Termination:* 13 recovered; 8 died. *Character:* 19 acute; 2 chronic. *Varieties:* 11 were inflammation of the cæcum—all recovered: 2 were chronic disease of the cæcum—both died:

1 was ulcerative perforation of the cæcum from within, with abscess externally—recovered: 1 was inflammation of the appendix, with circumscribed peritonitis—died: 6 were ulcerative inflammation of the appendix—5 died, 1 recovered. Of the five fatal cases of perforative ulceration of the appendix, one died of diffuse peritonitis in about sixty hours; one of peritonitis and circumscribed abscess in the peritoneum in nine days; one of circumscribed peritonitis and abscess in the peritoneum in twelve days; one of circumscribed abscess in the peritoneum in four weeks; and one of abscess in the peritoneum, pointing in the right ileo-lumbar region, in eleven days. The one which recovered was a circumscribed abscess in the peritoneum bursting into the cæcum.

The *ages* were, two under ten years of age; seven between ten and twenty; three between twenty and thirty; six between thirty and fifty; three between fifty and seventy. *Sex:* sixteen were males; five were females. *Occupation:* six were gentlemen; one was a coachman; one a farmer; five were boys having no particular occupation; three were destitute; five were females having no particular occupation. *Season:* in the autumn and beginning of winter more frequently.

The *treatment* of phlegmon and abscess of the iliac fossa, and of pericæcal inflammation, will be nearly the same as that detailed for cæcitis. Bloodletting to be efficient must, however, be employed early; and even then it will often fail to prevent suppuration, although it will diminish the extent of the abscess, and render the subsequent treatment easier. Leeches ought to be had recourse to in aid of the lancet, followed by fomentations and oleaginous frictions. Laxatives are to be preferred to purgatives, and enemata to either.

"If, notwithstanding these measures, the pericæcal tumour increases and is converted into a vast abscess, M. Donne advises, that no endeavour should be made to draw it to a head and to open it externally; but that the surgeon should wait patiently the discharge of the purulent matter by the intestine. Where this termination does not take place, and where there is a disposition in the abscess to open externally, the matter should be let out by incision, before the skin heals; and by proper dressings, and especially a suitable position, the abscess entirely evacuated and its cavity obliterated. As the most dependent part of the tumour is towards the posterior part of the body, it has been recommended for the patient to be on his face. When the disease becomes complicated with peritonitis, the remedies for this latter affection are to be employed." (*Am. Cyclop.*, &c. *Art.* cited.)

Perforative Ulceration of the Cæcum and of the Appendix Vermiformis.—The termination by perforative ulceration and abscess of the cæcum is rare: but this organic lesion of the appendix is more apt to occur, and is next in frequency to the inflammation of the cæcum.

The varieties of the disease are—1. Inflammation, acute or sub-acute, of the cæcum, terminating quickly or slowly in resolution, or lingering on and leading to permanent organic impairment. 2. Perforative ulceration of the cæcum from within and abscess behind the peritoneum, and pointing externally in the corresponding lumbar or inguinal region, or in both. 3. Inflammation of the appendix spreading over the peritoneum. 4. Perforative ulceration of the appendix, with consequent universal peritonitis ending rapidly in death, or with circumscribed peritonitis and abscess within the peritoneum, sometimes ending in death in the course of ten days;

or, life being preserved, it bursts eventually into the cæcum and discharges itself by the rectum, or directs its course to the surface of the body and points in the right lumbar or inguinal region.

The *perforative ulceration of the appendix* may be suspected by the more or less sudden development of the local signs, which are always severe, by their being fixed in the right iliac fossa, and not preceded by bowel complaints or ill health; by the supervention of vomiting and constipation, the constipation yielding readily to medicine; yet, having yielded, no amendment following; by the great tension of the ileo-inguinal region, there being always a circumscribed peritonitis and abscess within the peritoneum; by the sympathetic tenderness of the whole abdomen; and subsequently, by the occurrence of a diarrhœa, and a discharge of pus by the rectum, followed by subsidence of the tumour and amelioration of all the symptoms, or by the pointing of the abscess in the form of an emphysematous tumour in the lumbar-inguinal or ileo-inguinal regions.

The peritonitis excited at the moment of the perforations of the appendix will not unfrequently spread rapidly and universally over the peritoneum, and destroy life in from twelve to twenty-four hours.

The diagnosis in the two varieties of the disease will be the less doubtful by our remembering that the perforation of the cæcum is generally preceded for weeks or months by bowel complaints, indicating ulceration of the mucous membrane; while the perforation of the appendix is not preceded by such bowel complaints.

LECTURE XXIX.

DR. BELL.

DISEASES OF THE RECTUM.—The structure and sympathies of the rectum.—Chief diseases of the rectum, viz., *hemorrhoids, ulceration, stricture,* and *cancer.*—Danger from neglect of proper knowledge of rectal disease.—HEMORRHOIDS—Definition—Disease, both hemorrhage and tumours—Varieties of hemorrhoids or piles.—*The anatomical characters* of the three principal ones,—varicose, erectile, and cystic or spongy (mariscæ).—*Hemorrhoidal Flux or Discharges*—Their sources—Quantity and colour of blood discharged.—*Mucous* or *Sero-Mucous* hemorrhoidal discharge—*Causes*—Constipation and drastic purgatives overrated as causes of hemorrhoids.—*Consequences and complications of hemorrhoids.*

THE diseases of the rectum merit more consideration than they generally receive; or, I ought rather to say, that the morbid alterations of this part of the intestine are not studied with the care and attention to which their importance entitles them; and it is only after they have made a progress which is at once alarming and dangerous, and places them often beyond the reach of the art, that the physician and surgeon are appealed to for their removal. The rectum is something more than a mere continuation and termination of the colon. Its mucous coat is more vascular, and its muscular coat thicker, and it receives a more abundant mucous supply than this latter. Its sympathies are both organic and animal,—for the reception and transmission of impressions either healthy or morbid. Its susceptibility to irritating purgatives and acrid poisons is manifested in the fact, that, often the effects of these are felt more by the rectum than

by any other part of the digestive canal, after the stomach and perhaps the duodenum; and hence it is, that the chief traces of phlogosis, or analogous structural alterations of mucous tissue caused by the ingestion of poisons, are found in the stomach and rectum. It is a curious fact, says Dr. Christison (*Treatise on Poisons*, p. 318), that the rectum is much inflamed, though the colon, and more particularly the small intestines, are not in cases of poisoning with arsenic. A common appearance, in lingering cases, is excoriation or ulceration of the anus, and, in some, it is said that even gangrene has been produced. Often, under the operation of drastic purgatives, persons complain of heat and burning at the lower part of the gut and anus, which, they are told, proceed from the irritation caused by bile. Sometimes the explanation may be valid; but more generally, these sensations are the effect of the medicines acting on a susceptible portion of the intestinal canal. Whenever sensations in this portion of intestine more than those of mere distention, and especially when heat and some pain, however slight, are felt by a person during fecal exoneration, we must suppose that the digestion is not healthy; and, in fact, it will be found, on inquiry, that the rectum is participating in a morbid state of the stomach. By its contiguity as well as anatomical relations through bloodvessels and nerves, and in degree also muscles, with the genital organs and bladder, it both receives irritation from and transmits it to these parts. Supplied as its lower portion is with spinal nerves, it readily transmits its impressions by one set, and its muscular coat and *levator ani* are stimulated in consequence to contraction by another or motor set. This is part of the series of nervous actions which takes place in health for the evacuation of the rectum and sigmoid portion of the colon. The entire series includes the call upon the abdominal muscles and diaphragm and their contraction to aid in the expulsive movement. When the transmission of impression by the rectum is too quick and too frequent, in a morbidly sensitive state of its mucous surface, there is a corresponding quickness and frequency of motor action, and violent and irregular contraction of its muscular coat and of the *levator ani* muscle, and tenesmus or straining and expulsive efforts with pain are produced. If, on the other hand, the rectal sensibility be less than natural, the circle of sensitive and motor actions is tardily performed, feces accumulate to some extent, and are retained here; or, in common language, the person is said to be costive.

The circulation of blood in the rectum is liable to irregularity, chiefly by retardation. This is owing first to the straight veins, which are also without valves, and to their being subjected to irregular and, in cases of constipation, undue and prolonged pressure by the fecal accumulation distending the rectum. In addition to these local causes, there are the remote ones operating through other parts of the vena porta, remora of the blood in which may be caused by obstruction of the circulation in the upper portion of the intestinal canal, and still more in the liver. Undue fulness and congestion of the vessels of the rectum may also proceed from the double cause of impediment in the capillary tissue of the rectum itself, or in the trunks of the vena porta, of which the upper hemorrhoidal veins are, it will be remembered, branches. Nor is the lower hemorrhoidal plexus which terminates in the hypogastric vein exempt from retardation, in the return of its blood, by the same causes; since the lower hemorrhoidal veins composing it anastomose with the upper ones. Among

the mechanical causes more or less interfering with the regular circulation of the rectum, and especially with the return of blood by the veins, are distention of the bladder and enlargement of a gravid uterus. The very circumstance of lax cellulo-adipose tissue surrounding the rectum, and particularly abundant at its lower part, which prevents the retarded and irregular circulation from being at first painful or leading to rupture, gives facility for distention to a great extent and for establishing congestion and stases of blood, which, if by any cause converted into inflammation, are more troublesome and difficult to cure than phlogosis and its concomitants occurring in other regions in a more frank and violent manner.

The chief diseases of the rectum are, *inflammation*, *hemorrhoids*, *ulceration*, *stricture*, and *cancer*. Complete fistula is, to a certain extent, a rectal disease, as it depends on a solution of continuity in the coats of the intestine; but it is more commonly regarded as an adventitious one, calling for surgical rather than medical aid. It happens, unfortunately enough, with reference to all the diseases of the rectum, that their constitutional origin and connexions are either regarded as of little moment or entirely overlooked; and, if we except partial remedies to soothe present irritation and pain, the patient does not think of asking for regular professional assistance until the distress from morbid growth or obstruction is so great as to leave apparently no option. The surgeon is sent for, and the knife or ligature is put in requisition; the local obstacle is remedied, the parts heal, the patient is rendered comfortable, thinks himself quite well, is prodigal of expressions of gratitude to the operator, who was allowed to have his own way; but he more than hints dissatisfaction at his physician, whose reasoning on the complicated nature of his rectal disease he could not or would not understand, and whose directions for hygienic, still more than medical, treatment he thought were too rigid, and adverse to present sensual enjoyment. But, after a while, uneasy sensations of fulness and oppression are felt in some other organ; sometimes in the liver, at other times in the lungs, or more frequently, and worse than all, in the brain; and unless speedy relief be afforded, disease of an alarming kind, apoplexy or palsy, supervenes, and death will close the new series of disorders which have taken the place of the rectal ones, the removal of which was so gratifying to the patient at the time, and a cause of so much eulogy by him of his surgical attendant. Equally unfortunate effects have followed the use of various empirical remedies for the cure of diseases of the rectum, which were applied in ignorance of their pathology, and with a view to the removal merely of a local disorder.

Inflammation of the rectum (*rectitis*,—if we admit the mongrel product of Latin and Greek in the use of this term) merits a separate notice. It is too generally confounded with either dysentery or hemorrhoids, and it may in fact exist in both of these diseases. Its connexion with the former has been already described.

Rectitis is distinguished, at first, by a sensation of weight and even pain of various degrees of intensity along the sacrum and coccyx, which extend to the bladder, and uterus, if the subject be a female, and to the loins and down to the thighs. Obstinate constipation sometimes accompanies the inception of the disease; and the effort to expel the hardened feces is attended with exasperation of pain and a feeling of laceration. There soon succeeds tenesmus with expulsion of glairy or puriform and often bloody fluid,—symptoms which would seem to indicate dysentery, were it not

for the absence of colitis, tormina, and tenderness of the abdomen on pressure, and of any great weakness or prostration. The tenesmic straining may bring on prolapsus of a portion of the rectum with its concomitant distress. Sometimes, there is dysuria, and in some women uterine hemorrhage.

The local irritation, under these circumstances, gives rise, at times, as one might suppose, to fever with a full, throbbing pulse; but in simple inflammation of the rectum this is generally slight. In certain subjects of a lymphatic temperament, after the subsidence of the acute stage, there is diarrhœa, of a mucous or serous character.

Chronic rectitis is marked by a slight pain in the region of the anus, which is greatly increased by the discharge of the stercoral contents of the rectum, especially when these latter are hard and dry. A mucous, serous, or puriform discharge, in some cases, accompanies the effort of fecal exoneration; in others it is constant. There is alternation of constipation and diarrhœa.

Inflammation of the rectum may be ulcerative or gangrenous, and in either case it is followed by communication between the cavity of the peritoneum and the rectum, and escape of the contents of the latter into the former, followed by peritoneal inflammation and speedy death. Similar communication may take place between the rectum and sub-peritoneal cellular tissue of the bladder or vagina, and give rise to abscess and recto-vesical or recto-vaginal fistula.

The mucous membrane itself undergoes the changes, in different cases, of hypertrophy, softening, induration or ulceration. Sometimes the thickening and induration are so circumscribed, and yet embracing the entire circle of the gut, as to form a stricture.

Causes.—The causes of rectitis are, irritating injections, drastic purgatives, irritating ingesta, and the large use of condiments, retention of fecal matter in the rectum; the presence of ascarides, prolapsus of the rectal mucous membrane, extension of a cutaneous eruption, as of eczema, sympathetic irritation with disease of contiguous organs, as of the uterus, bladder, and prostate gland. Long impaction of the head of the child in the superior strait and the cavity of the pelvis, may be enumerated as an additional cause. It is, also, worthy of remark, that, while rectitis may contribute to the production of hemorrhoids, the latter in turn will greatly predispose to the former.

Treatment.—If there be general vascular excitement, venesection will be employed; or if the disturbance be local, recourse will be had to leeches to the verge of the anus or cups over the sacrum. Enemata of tepid water or of mucilaginous substances, when the rectum is not too irritable to retain them, are soothing. In their stead, warm or tepid bath or fumigations of watery vapour are recommended. Narcotics, either in the form of enemata or suppository or taken into the stomach, will be found necessary when there is much tenesmus and straining. (Requin, *Elemens de Pathologie Médicale*, t. 1re.) When constipation has preceded the attack, and especially when it has been the cause, relief must be obtained by active purging, even though, at the time, this be productive of irritation and pain. In general, calomel followed by an infusion of senna and salts or by castor oil will suffice for the purpose of immediate relief, and future action of the bowels is to be kept up by the compound extract of colocynth and extract of hyosciamus, or by blue mass succeeded by rhubarb and magnesia.

Hemorrhoids, the first disease of which I shall speak, and to which the

preceding remarks are more particularly applicable, is derived from αιμα, blood, and ροος, a flux; the last derived from ρεω, I flow. The derivation is little different, in the radicles not at all, from that of hemorrhage; and, in fact, by some of the ancient and older writers since, the two were used as synonymous: but yet we have the authority of Hippocrates himself in favour of a more restricted designation of the term hemorrhoids, viz., that of dilatation of the veins of the extremity of the rectum, accompanied with a flow of blood; and the vessels of the part have consequently been called the hemorrhoidal vessels. The definition of hemorrhoids, as given by Dr. Copland (*Dict. Pract. Med.*), is, pain, tension, weight, heat, or other uneasy sensation, referred to the rectum and anus, accompanied or followed by tumours in these parts, or by a flow of blood from them when the patient is at stool; recurring after intervals, and sometimes periodically.

By hemorrhoids or piles we now understand, not merely discharge of blood from the rectal vessels, but also, in addition, tumours, either external or internal to the intestine; and even these tumours without discharge of blood at all. When the tumours are accompanied or preceded by sanguineous discharge, the disease is called *bleeding* piles; and when they are not thus accompanied, *blind* piles; so, also, according as they are inside the anus or on its margin, they are called *internal* or *external*. A more definite and technical nomenclature has been attempted by calling the bleeding tumours *hemorrhois*, and the blind *mariscæ*. When blood is discharged without tumours being present, or at least without their being external or readily ascertained, the hemorrhage in this case is not directly distinguishable from entero-hemorrhage higher up the canal. By a careful inspection, however, we shall be able to feel a tumour or tumours inside, an inch or two above the anus, or the dilated vessels and thickening of the mucous coat of the rectum. In hemorrhoidal discharge, the blood generally escapes either mixed with the feces or in jets, squirted out, as it were, just before and, oftener, after the passage of the feces by the action of the *levator ani* and straining of the abdominal muscles and diaphragm. In entero-hemorrhage, even from the colon, the blood is passed *per anum* in a continuous flow, without rectal irritation, and of a dark colour, unmixed often with any fecal matter: it may escape without any effort at defecation. For the most part, intestinal hemorrhage, higher up than the rectum, is the result of metastasis from some other important organ, or it is a symptom of dangerous visceral disease, and frequently appears in the advanced stage of certain low fevers

Anatomical characters.—Common as is the disease before us and well appreciated as are its general phenomena, its anatomical characters have not been ascertained with that entire accuracy which might be expected. Of late years, an approximation has been made, by zealous and painstaking pathologists, towards this desirable end; and I shall, therefore, draw from their labours the materials for the following sketch. The rectum itself is found, on dissection of those who have had for a length of time hemorrhoids, to exhibit enlargement of its veins, and hypertrophy of its sub-mucous tissues. The veins are seen through and directly under the mucous membrane, taking a course parallel to each other for seven or eight inches; their trunks being, as noted by Dr. Colles, as large as crow-quills. Morgagni mentions a case in which they had almost acquired the diameter of a thumb, in the entire length of the rectum and adjoining portion of the colon.

The hemorrhoidal tumours themselves, piles, are organised in different ways, constituting them into so many varieties. The first organic change is simple dilatation of the capillary tissue, and more particularly of the venous part, which may be followed by hemorrhage, or remain for a longer or shorter period without any evacuation of their contained blood. After the paroxysm has passed off, these vessels recover their customary size and tone, and exhibit no traces of vascular engorgement or change. This slighter deviation from health must be of frequent occurrence in most persons, especially when there is derangement of the lower bowels: but the prolonged operation of particular causes and increasing predisposition by age, give the congestion a fixed character; the veins become more and more distended, and, at length, varicose, and form small tumours, in clusters, which are chiefly internal, but project more or less beyond the anus. Inflammation is added to distention, and lymph is deposited in the cellular tissue surrounding the veins. M. Begin (*Dict. de Med. et de Chir. Prat.*) has sometimes seen the lower part of the rectum as if completely interwoven with a venous network, forming a thick vascular ring, gorged with blood; the incision of which would give rise to dangerous hemorrhages. These are the varicose hemorrhoidal tumours: they are internal, and only after straining efforts at stool are they protruded externally. Another and more common variety is the *erectile*, consisting of an areolar structure, soft, spongy, and full of blood, but which is shrunken when there is no excitement or irritating cause producing an afflux to them. Numerous capillaries ramify through these tumours in such a manner, that if, after cutting into them, we were, as Chaussier has pointed out, to throw a coloured fluid into the arterial branch, we should see it issue from all points of their surface by innumerable minute orifices. A somewhat remarkable example of this kind is furnished by Sir James Earle, in the case of a young lady in whom the tumour was about nine inches, and altogether like a piece of sponge, bleeding from every pore. It was, however, of a healthy appearance, soft and compressible. Varicose piles are very prone to hemorrhage. In their colour they vary, says Dr. Gross (*Pathological Anatomy*, p. 625, 2d edit.), from a light red to a deep purple; their volume may equal that of a pea, a filbert, or an almond; and their number seldom exceeds three or four. Sometimes these bodies are supplied by vessels of some size, as in the case mentioned by Dr. Colles, in which, after death resulting from another cause, he had an opportunity of making an examination. On slitting up the rectum, he saw "three bloodvessels, each as large as a crow-quill, running for some way down the intestine, and then dividing into a number of branches; these vessels ramified very profusely, and each seemed, by interweaving of its branches, to form one of these tumours. The trunks and branches were covered only by the lining membrane of the intestine." (*Dublin Hospital Rep.*, vol. v., p. 152, and *Surgical Lectures*, p. 271, Philad. edit.) A third variety of hemorrhoidal tumour is the *encysted* or *spongy*, and technically, *marisca*, appearing in the shape of a fleshy tubercle. It is formed between the mucous and muscular coats, by the interweaving of distended capillaries and cellular tissue, and contains a centre or cyst filled with blood which had escaped from some of the ruptured capillaries. At first, this effusion disappears after the subsidence of the hemorrhoidal paroxysm; but by repeated congestion the sac remains more or less permanently distended, and gives issue to an oozing of blood,

constituting a hemorrhoidal discharge. This kind of tumour projects often far into the rectum, is somewhat solid or spongy, and when divided presents a compact or porous and bloody surface. When the tumour is external it is paler and more elastic, is infiltrated by serum, and is sooner produced and disappears more readily than when it is internal. A modification of *marisca* is formed by a small fold of mucous membrane, which, with its sub-mucous tissue, has been forced through the anus by the effort of defecation or other strain; and, being pinched by the contraction of the sphincter, is prevented from returning within the bowel; or the thin skin connecting the internal mucous and external cutaneous membrane, which is naturally puckered, but by slight causes becomes irritated, has its cellular tissue enlarged, and undergoes other changes similar to those just described. Liable, by friction and accidentally undue pressure, to inflammation, these tumours become thickened and indurated, and the mucous membrane by continual exposure is transformed into skin. By long irritation from friction and want of cleanliness, they often increase to a large size, and assume, from the pressure of the nates, a flattened oblong form, with a thick, rounded, irregular edge. Their opposing surfaces become abraded and ulcerated; and fissures and rhagades are produced, from which a thin purulent discharge takes place. These tumours are often exceedingly painful, but do not bleed. Sometimes, small abscesses form in them, attended with a discharge of purulent matter from the anus, and more pain and irritation of this part than usual.

Symptoms.—These vary with the kind of piles and the stage of the disease. At first, the patient complains of heat and itching about the anus, and a sensation as of some foreign body being lodged in the intestine. To these first symptoms of internal piles are added, after a time, sympathetic irritation of other organs, as of the bladder, producing a frequent desire to make water, and a spasm of the muscles which surround the membranous part of the urethra, causing a complete retention of urine. Heat and pain in the region of the loins and sacrum, and aching of the lower limbs, fulness of the head, and increased throbbing of the carotid and temporal artery, and, occasionally, buzzing in the ear, and acceleration and increased fulness of the pulse, often precede an attack of hemorrhoids and a sanguineous discharge from the hemorrhoidal vessels. When this takes place, the headache and other disagreeable symptoms are removed; and hence a reason for some persons regarding the hemorrhage from this cause as a salutary crisis, relieving them from or preventing the recurrence of more serious diseases, such as gout, and apoplexy. To this circumstance may be traced, also, much of the partiality for applying leeches to the verge of the anus, in certain diseases, evinced by French and other continental practitioners.

The internal piles becoming large, are protruded from the anus and form a tumour, which, although projecting externally, is still covered by the mucous membrane of the intestine. This takes place when the patient goes to stool; although the protruded tumours return after the bowels are relieved of their fecal contents, if not spontaneously, with the aid of moderate pressure by the fingers. "In short, with respect to the protrusion of internal piles, there are all possible varieties of circumstances: they may protrude occasionally, for a short time, or for a long period; they may be constantly protruded; or there may be a large protrusion at one time, and a small, constant protrusion besides. Whenever the pro-

trusion, be it large or small, takes place, there is an abundant secretion of mucus from the rectum; the piles themselves are sore to the touch; the surface is red and vascular; and if you put your hand upon them, you find that you can diminish their size by pressure, but the moment you take off the pressure, they are as large as ever."

Sometimes, suppuration, following inflammation, in internal piles, is announced by a little pus of a yellow colour mixed with the mucus that oozes from the anus. The orifice of the internal pile that has suppurated may be felt by the finger introduced into the rectum.

When the loss of blood from piles has been great, as occasionally happens, the patient is much weakened, and his countenance blanched, and other symptoms of anemia are present.

Hemorrhoidal Flux or Discharges.—Dr. Copland enumerates the various sources of hemorrhoidal discharges (*Dict., ut supra*) to be—1st. From congestion of the vessels of the part, followed by exhalation or exudation from the internal surface of the rectum. 2d. From irritation of this bowel, followed by vascular determination and sanguineous exhalation. 3d. From the surface of the hemorrhoidal tumours, especially those belonging to the second and third varieties: and, 4th. From the rupture of varicose or enlarged vessels. We may well doubt the fact of hemorrhage from the surface of the tumours themselves; they bleed, owing to compression and rupture of some of their own or immediately contiguous vessels. When the discharge is a continuous stream, we may generally suppose it to come from the ruptured varicose hemorrhoidal vein; but for the most part the discharged blood is arterial. I have already adverted to the perpendicular course which the hemorrhoidal veins take from the anus up the rectum, and to their being unprovided, for the most part, with valves; and hence you must be well prepared to understand why blood will escape in a full stream, and sometimes to a great and alarming extent, in hemorrhage, from a rupture of one of these veins when varicose or dilated.

The quantity of blood discharged during a hemorrhoidal paroxysm, at the different times when the patient goes to stool, will vary with the kind of tumour, or according as it comes from the latter or a ruptured vessel. It may not exceed a drachm or two, or it may amount, at one time, to several pounds. It ought to be known, that a person may lose several ounces of pure blood in the act of defecation, without, at times, his being made conscious of the loss by pain or uneasiness, either previous or subsequent to the discharge. Sometimes, in place of feces, blood is passed at intervals of a week, a month, or longer, to the amount of half a pint. In fact, there is often no correspondence between the size and number of the hemorrhoidal tumours, or the irritation to which they give rise, and the quantity of blood discharged. In many cases, the blood flows for a short time only, and is not again seen until the next attack. But, in others, it is observed repeatedly when the bowels are acted upon, or the discharge is renewed when the feces are expelled, for several days.

The colour of the blood is generally red, as coming from the arterial capillaries, and it either covers or follows the fecal evacuation; but when it is consequent upon venous congestion or dilatation, it is of a dark hue, and follows, or is partially mixed with, the feces.

A colourless hemorrhoidal discharge — mucous or serous hemorrhoids of some writers — sometimes takes place after, and as a consequence of, sanguineous discharge, or it may be associated with the hemorrhoidal

tumours of the third variety, or *mariscæ*. The discharge varies much as to quantity and appearance. When watery, serous, or mucous, it usually exudes slightly from the anus; when more albuminous and abundant, it is commonly passed at stool. These varieties of colourless discharge, which may be called anal leucorrhœa or blenorrhagia, are most frequent when there is little or no hemorrhage, and when the disease is associated with *ascarides*, or with pregnancy, and even *leucorrhœa*.

Causes. — Of the predisposing causes, hereditary constitution, age, and excessive alimentation are the chief ones. A predominance of the venous system, as in persons of a bilious and nervoso-sanguine temperament and of a plethoric habit of body, like any other peculiarity of an organic system, is transmissible from parent to child, and by such means the tendency to hemorrhoids is inherited. In this way, alone, can we explain the appearance of the disease in children, and in all the individuals of some families although of different constitutions, and differently exposed to the common exciting causes. Hemorrhoids is most common in mature age, when the abdominal viscera are in a state of the greatest functional activity and of the fullest organic development. More especially is the vascular system full and almost turgid at this time; and hence any undue excitement of one part of it will endanger afflux and congestion, which finds temporary relief in hemorrhage. Excessive alimentation, by which I mean the use of nutritive ingesta beyond the actual wants of the animal economy, is a common predisposing cause of hemorrhoids. When the system cannot relieve itself of the superabundant nutritive materials elaborated into blood, by the common depuratories, as of urine, sweat, and the pulmonary and intestinal secretions and excretions, the bloodvessels become necessarily loaded, and in a more particular manner is the system of the vena portæ slow and sluggish, and its circulation liable at this time to be gorged throughout all its ramifications. Animal food and fermented liquors, and especially malt liquors, contribute more than other substances to produce both the general and abdominal plethora which predisposes to the disease in question. Their bad effects will be not a little increased by indolence, sedentary habits, undue time in bed, and irregular hours in general; all of which may be regarded as additional predisposing causes to this, as they are to another and more fatal hemorrhage, viz., apoplexy.

The influence of *climate* in the production of hemorrhoids is not well ascertained. At first we might suppose that the disease would be more common in hot climates; but the difference in atmospherical heat in the latter is made up by the artificial in-door heat in colder climates, which is often excessive, and also unequal, and hence more apt to induce congestions in the system of the vena portæ. Partial congestion and remora of the hemorrhoidal vessels are also more readily brought on among the inhabitants of cooler climates by their warm clothing, indulging in warmer seats, cushions, &c., and preserving more the erect position, and being less attentive to topical ablutions, than among the people of more genial regions, who spend so much of their time in the open air, are loosely and lightly clad, and for the sake of luxurious enjoyment have frequent recourse to the bath and other fashions of personal ablution. Seasons exert a modifying influence over hemorrhoids: those in which the alternations of temperature are most abrupt and frequent, and the circulation correspondingly affected, such as spring and autumn, would seem to be the most unfavourable in this respect; but I have seen the high heat of summer obviously

induce large hemorrhoidal discharges, when the bowels were constipated, more than a similar condition of the latter would have effected with the body exposed to a different temperature.

Some of the causes already mentioned as predisposing, viz., the sitting posture, and above all, when this is maintained for many hours in succession or habitually on warm and soft cushions, full or rich food, condiments, spices, and highly-seasoned dishes and intoxicating beverages, are, at times, exciting causes. The same remark applies to inordinate excitement of the sexual organs, habitual constipation, straight and tight corsets, and the use of irritating injections.

Hemorrhoids is liable to occur from any cause which prevents the free return of blood by the hemorrhoidal veins, — as constipation, the lodgment of hardened feces in the rectum or lower part of the colon, and repeated efforts at evacuation ; torpor, congestion, or structural alterations of the liver, and obstructed circulation in any part of the portal system, as from a gravid uterus pressing on the mesenteric veins, diseased ovarium, and disease of the prostate, or of the sphincter ani. Among the exciting causes, we rank all agents by which the rectum is irritated, as drastic purgatives, among which aloes is more particularly supposed to offend in this way, worms, articles used as emmenagogues ; also the local influence of cold or of warmth, the first operating by reactive or indirect, the latter by direct excitement, — as sitting on the ground, or on stone seats or damp cushions, and the habit of standing with the back to the fire, or our more American fashion of being seated before it and the feet raised and resting on the mantel-piece. Violent mental emotions, either exciting or depressing, induce hemorrhoids, probably by the pernicious influence which they exert over the liver and portal system generally.

Great stress is always laid, by writers on this subject, on constipation, as the chief cause of hemorrhoids; and there are undoubtedly many cases which seem fully to justify the ascription. But I cannot help thinking that its importance is overrated. Constipation and hemorrhoidal predisposition are concomitants in persons of the same temperament, and in whom similar causes are in operation in the production of both. Hepatic obstructions and retardation of the portal circulation, by interfering with the secretion of bile, and measurably also with intestinal secretions, prevent due stimulation of the intestinal mucous surface, and in this way cause constipation. Similar obstruction and retardation, and deficient intestinal secretions, by giving rise to congestion in the rectal vessels, will cause also hemorrhoids. Constipation may indeed prove to be an occasionally exciting cause; but of itself would have comparatively little effect in inducing hemorrhoids, without the predisposition developed under the circumstances just mentioned. I believe that inquiry into the history of the cases of hemorrhoids will fail to show their occurrence and that of constipation as always coincident, even in the individuals suffering from the disease. In persons of a sluggish or lymphatic temperament, costiveness prevails, but without the accompaniment of hemorrhoids. In those of a sanguineo-nervous temperament, on the other hand, in whom hemorrhoids is quite common, constipation is not of corresponding frequency, nor is the conjunction of the two a matter of general observation. I have frequently seen hemorrhoidal discharges to come on with a loose state of the bowels ; indeed I know that they appear in some cases almost uniformly after looser and more frequent fecal discharges than usual; and in these same cases their appearance is relatively rare during a rather constipated

condition of bowels. The fact would seem to be, that the *molimen hæmorrhoidale*, congestion of the rectal vessels, determined by the general causes already mentioned, requires often slight irritation of the rectal mucous surface to give rise to sanguineous discharge. Constipation bears about the same relation to hemorrhoids, as a cause, that picking or pinching violently the nose does to epistaxis. It is one which ought certainly to be withheld, but it can hardly be regarded of that paramount importance with which most writers seem disposed to invest it, except as a troublesome accompaniment and an effect of imperfect and depraved digestion.

Analogous reasoning may be brought to bear on the question of purgatives inducing a predisposition to hemorrhoids, and proving, also, an exciting cause of the disease. The chronically dyspeptic, the hypochondriac and the melancholic, who suffer from costiveness and slow digestion, are habitually prone to the use of drastic purgatives; and no doubt often aggravate their maladies, and superinduce gastro-intestinal irritation if not inflammation by this practice. But, whilst we admit that hemorrhoids is occasionally one of the bad consequences of this hypercatharsis, we cannot be blind to the fact, that the disease or series of disorders which provoked to the use of purgatives, was precisely that which also predisposed to hemorrhoids. Of the purgatives which are more especially accused of bringing on this disease, aloes stands foremost, but, as I conceive, without adequate proof. It is the favourite medicine, or basis, at least, of purgative preparations most in vogue with the constipated, and hence has a larger share than other medicines of the class in irritating the bowels. It has, indeed, we know, a decided action on the pelvic viscera, and may be supposed to stimulate the hemorrhoidal vessels; but the proofs are not manifest that its use is so much more mischievous than other purgative medicines, even of a milder kind. In persons whose pelvic circulation is congested and the mucous surfaces irritable, any purgative stimulant will suffice to bring on hemorrhoidal discharge. I am prevented, in the case of some of my patients, from prescribing castor oil, on account of their so generally having had an attack of piles when they used it in former times; nor is my experience peculiar in this respect. Epsom and Glauber salts, I know, also, have repeatedly brought on hemorrhoidal discharge, and in some cases for the first time. In persons with irritable intestines, and especially rectum, calcined magnesia has commonly the same effect. The inference from all these facts is, that any stimulus to which the digestive canal is unaccustomed, whether it be crude ingesta, the remains of chyme not fully elaborated, or medicines, is peculiarly liable to irritate the lower bowels, and of these the rectum most. If at this time there be *molimen hæmorrhoidale*, blood will be discharged under the irritation of the agents just mentioned; if there be no disorder in the circulation, the patient will complain of some heat and tormina, and have increased muco-fecal dejections.

The *consequences and complications of hemorrhoids* are both local and constitutional; and merit notice, both as aiding us in our diagnosis and giving us a proper appreciation of the means of cure and of their relative safety. Inflammation is a no uncommon effect of piles; or ought we not to say, that the irritation by which the afflux to the vessels, causing congestion, and to particular spots of the mucous and cellular tissue of the rectum, causing tumour, being continued, ends in inflammation if not prevented by hemorrhagic discharge. Mucous or sero-mucous secretion is not unusual at this time. When the phlogosis is severe it implicates not

merely the mucous membrane and subjacent cellular tissue, but also, in a slighter degree, the prostate gland and neck of the bladder, occasioning much pain in the perineum, sacrum, &c., with dysuria or even strangury. In females, the uterus becomes sympathetically irritated in this way. Constipation is induced or kept up by the tumefaction of the rectum and spasmodic constriction of the sphincter; and straining and tenesmus are the consequence. Not unfrequently the inflamed tumours, protruded by the expulsive action of the intestine, become inflamed and very painful, and are even sometimes strangulated, and slough. The general system sympathises with the local irritation, and a variety of abnormal sensations and even functional disorders, particularly of the digestive system, are the consequence,—constituting, at the same time, so many symptoms of hemorrhoids. Among these heaviness and a feeling of fulness of the head are quite common. "In those who have hemorrhoids from or associated with habitual constipation, there will be weight and heat and a sense of fulness about the rectum very constantly, an obscure tenesmus, frequent micturition from sympathetic irritation of the bladder, and leucorrhœ from a similar irritation of the vagina and uterus; all of which are temporarily alleviated by the discharge of blood, but are never entirely removed, the cause remaining."—Dr. Burne (*Cyclop. Pract. Med.*, Supplement .

In the list of troublesome complications, and in degree consequences of hemorrhoids, or of the irritation of parts to which they give rise, are, *fissures* or *rhagades of the anus*, *ulceration* or *abscess frequently passing into fistula*, *tenesmus*, or *spasmodic contraction of the sphincter*, frequently with *protrusion of the mucous coat of the rectum*. Sometimes the protruded mucous membrane is girt so tightly by the spasmodically contracted sphincter as to threaten strangulation, and give rise to symptoms, such as tumid abdomen, colics, borborygmi, nausea, and even vomiting, nearly similar to those from strangulated hernia. A reverse state may obtain after fissures, so that the rectum becomes tumid and relaxed, allowing of the ready escape of blood without defecation, and also the partial escape of fecal matter, which last is insinuated into the sides of the fissures, or lodged in little sacs that remain after the hemorrhoidal paroxysm, forming stercoral abscess, or even stercoral fistula.

LECTURE XXX.

DR. BELL.

TREATMENT OF HEMORRHOIDS.—Relief afforded by hemorrhagic discharge.—Disadvantage of this natural method.—Measures, medicinal and hygienic, required in a first attack of hemorrhoids.—Treatment of the fixed disease.—Difference between arresting and curing a disease.—Attention to the general system, and to the removal of plethora and visceral disease.—Sometimes active measures—v. s., leeching, calomel, &c., required—To vary the treatment, according to preceding or accompanying disease—Chronic variety—Balsams, turpentine, and cubebs, useful.—Periodical hemorrhoids—treatment of—Precautions to avoid an attack of the disease.—Hemorrhoids with anemia—Extirpation of tumours practised sometimes with advantage—Danger—Constitutional measures more prudent.—Necessity of preparing the system for the operation of removal.—Restricted regimen afterwards.

TREATMENT. — If we bear in mind the pathology of hemorrhoids, and especially of the causes by which the disease is induced, and of the symp-

toms preceding the hemorrhagic discharge, we cannot fail to see in it a mode of relief, both to the general plethora which had existed before a first attack and to the abdominal plethora with which hemorrhoids at all times is associated. The discharge of blood relieves the congestion of the liver, bowels, and indeed sometimes of the whole pelvic viscera, as epistaxis does that of the brain, and hemoptysis that of the lungs. Nature does here that which art, under similar circumstances, accomplishes by venesection, or leeching, or cupping; with the advantage in favour of the former, that the bleeding was of imminent necessity and forced by the state of the bloodvessels of the organ; but with the drawback, also, of a compulsory repetition of the discharge whenever the organ becomes turgid and congested, without reference to the state or wants of the general system. While, therefore, we may hail with satisfaction the appearance of a hemorrhage which, like hemorrhoids, not only relieves the organ more immediately oppressed by congestion, and sometimes inflammation, but also a more vital organ, as the brain, lungs, or liver, it does not follow that we should desire this kind of evacuation to become habitual; sure, as we are, that, like all frequently repeated or periodical sanguineous emissions, it will, if excessive, exhaust and bring on anemia, or, if moderate, keep up the very plethora which it first manifestly relieved. If the hemorrhoidal discharge have occurred for the first time, under the operation of occasional causes, and be followed by removal of local congestion and inflammation, and of the general febrile excitement, the physician has little to counsel on the score of immediate action. His advice will be of a negative kind: viz., to avoid the admitted causes, whether they be of a general or a local nature, and to adopt a rather cooling regimen. But if the rectal irritation be still considerable, and accompanied by a sense of weight, heat, and pain in the sacral and lumbar regions, headache, and a quick and a somewhat resisting pulse, the better plan will be to carry out the treatment as we would for inflammation of any other organ. Not caring to leave to nature farther sanguineous evacuations, we take the treatment in our own hands and draw blood from the arm. By this means we reduce both general and local excitement, and at the same time relieve the rectum by a kind of derivation. Next, we prescribe remedies akin to venesection, such as antimonials, cooling and acid drinks; and, if the symptoms of fulness in the portal system indicate it, we give calomel, not simply as a purge, but as a means of relieving the congestion of the intestinal mucous membrane, and perhaps, also, of the liver, by procuring a free secretion from the muciparous glands, and, by continuous sympathy, of bile also. The compound powder of jalap, castor oil, or rhubarb and magnesia, may severally answer in a mild case to open the bowels, or in a more severe one as a sequence to calomel. Washes of cold water to the anus, sacrum, and perineum, will be found refreshing and useful after purging; and if there be not much obstruction by hemorrhoidal tumours at the anus, or directly within the sphincter, cold water enema may be used with benefit. In some cases, from peculiarity of constitution, cold is illy borne, and tepid water may be substituted for cold, both for enema and ablution. A recumbent or somewhat reclining posture is to be enjoined, on hair sofas or hair mattresses, with just clothing enough to prevent a feeling of chilliness. The diet should be quite simple; chiefly of well-dressed vegetables, ripe or stewed fruit, and all these, as well as the drinks, taken cold or nearly so. By

these means, due attention being paid to preserve a soluble state of the bowels, without, however, much purging, the local congestion and general excitement will be reduced and gradually disappear, and with them the disease. The more permanent state of plethora and other morbid predisposing causes can then be abated, at leisure, by a regulated regimen, the occasional yet cautious use of laxative and cooling medicines, and other remedies to be hereafter mentioned. To many, perhaps to most persons, these directions may seem to be needlessly particular and minute for a disease which few think of any great moment, and fewer still care to be rid of on such conditions. But professional advisers ought to impress on the minds of their patients, the fact, that, although the hemorrhoidal flux is a means of relief of excessive fulness of the general system, at any rate of the portal circulation, and at the moment prevents much more alarming and even fatal disease, yet that it is an evidence of an unhealthy state of the body, and, unless this latter be removed, the flux may itself become a diseased habit, which cannot be cut short without great danger. Make persons, who are attacked for the first time with hemorrhoids, aware of the real nature of the disease, of its causes, its probable complications and effects, and of its augmentation until life becomes intolerable; and then the risk of their being drawn, in despair, to submit to violent and harsh measures for the removal of the local malady, at the cost of suffering in some other more vital organ, perhaps of loss of life itself. By placing the question before them in all its bearings, strengthening, it may be, our advice by reference to the known sufferings of their progenitors, or some other members of their families, we may succeed in inducing them to submit to the requisite remedies and restrictions for the present cure of the disease, before it becomes habitual and in every way more complicated and difficult of management.

Commonly, however, medical opinion and assistance are not invoked for the cure or even relief of hemorrhoids, until, by frequent repetition, the disease has become aggravated by the amount of the discharge, or the size and painful nature of the tumours. The very idea of the hemorrhage being a salutary effort of nature for the removal or abatement of a disease of a more vital or serious kind than this one set up in its place, makes many slow to ask for professional assistance; and they either allow the discharge to take its course, and the tumours, if not too painful, to remain untouched; or they are content to try some nostrum or domestic prescription, or the favourite remedy of a friend, which he knows to be efficacious because he has tried it for the last twenty years. We have, then, we will suppose, an established case of hemorrhoids; one, in fact, of some duration. What course shall we counsel? Much will depend on a correct view of the subject, or the idea we attach to the cure of a disease. Many confound the cure of a disease with arresting the course of some of its leading or pathognomonic symptoms: but the difference is great; in fact it is one of vast importance to the welfare of the patient. Thus, we may break the concatenation of morbid actions which constitutes intermittent fever, by preventing the return of the paroxysm; but if, in so doing, we leave or create gastritis, as may be done by the administration of arsenic, the term cure would be misapplied in such a case. So, also, if we have to do with headache, associated with gastric disorder, although we may possibly, by certain palliatives, relieve or for a time remove the former, yet if the stomach be still disordered or its derangements increased

by our remedies, such as opium and narcotics, it would be mockery to say that we had cured the disease. Now, in the case of hemorrhoids, there is a series of disordered functional actions which have been controlled, and at the same time partially relieved, by a hemorrhage from the vessels of the rectum, of more or less abundance and frequent or regular of recurrence. Sometimes this hemorrhage ends in a mucous secretion; sometimes it is replaced by this latter. There are, also, commonly associated with the hemorrhage and remaining in the intervals between its recurrence, tumours of a varicose or cellulo-vascular texture, which, after a while, acquire something of the structure, as they assume the office, of secreting glands.

If now the question be repeated—What course shall we counsel? The reply is—To cure the disease, but not to stop it; to carry off, at least abate, the general plethora; to diminish and remove the local congestion, and so to alter the habit of the diseased parts, that, divested of the pabulum of blood for distending the rectal vessels and for nourishing the tumours, and no longer by local excitement inviting blood into their tissues, the merely local disease, the hemorrhoids, will cease and gradually disappear with the removal of the causes that gave origin and nutrition to them. The modification of treatment will depend on the other morbid states and tendencies of the patient, such as of gout, rheumatism, apoplexy, plethora or hepatitis, and the degree of inflammation accompanying the hemorrhoids, and, also, on the irritability of the intestinal canal, and particularly of the lower bowels. During the violence of the hemorrhoidal paroxysm, if the tumours be large and painful and the rectal irritation great, with fever accompanying, we shall more promptly and efficaciously relieve by venesection to an adequate extent—twelve to twenty ounces—than by any other means. In a case of the disease, in a female, before parturition, but which a few days after delivery became greatly exasperated, and the tumour of which was very voluminous, producing exquisite pain and great constitutional disturbance, I drew twenty ounces of blood from the arm, directed cooling washes to the tumours, had the bowels opened by calomel, followed by castor oil, and in fine carried out the antiphlogistic practice which I have already indicated as that adapted to a first attack of hemorrhoids. The disease was entirely removed in this case, without any interruption being given to the lochiæ or to the flow of milk, nor was any inconvenience felt by my patient. I attended her in two subsequent labours, but she was not, in either of them, troubled with hemorrhoids. Where the constitution is feeble or contra-indications exist to venesection, leeches are recommended to be applied to the tumours; but when this operation is required, it ought to be practised in the vicinity of the tumours, by which they and the congested mucous membrane will still be adequately relieved, without making them the direct centre of painful afflux, causing serous effusion, and keeping up enlargement for a while as great as that before the application of the leeches. Acupuncturation has been found, upon the whole, to relieve the patient more than the application of leeches. By puncturing the piles in several places, a large quantity of venous blood is let out, with great benefit and comfort to the patient. As a substitute for leeches, or where a great aversion exists on the part of the patient to their being applied, cups to the sacrum and adjoining portions of the pelvic surface will often give early relief. They may advantageously, in all cases in which we

have any doubts about the efficacy of venesection, be substituted for this latter; and in some very severe cases, in young and inflammatory subjects, they may still be required in addition to it. Laxatives, which, given at first, would either have failed to operate, or would have increased the irritation of the rectum, will now, after bloodletting, exert a beneficial effect. Calomel has been already mentioned as useful in rectal hemorrhage; it ought, also, to be the preferred medicine in rectal irritation with painful hemorrhoidal tumours, accompanied by constipation. Combined with rhubarb, or followed by castor oil, rhubarb and magnesia, or infusion of senna with salts, it procures the required evacuations and relieves the congested vessels by increasing the intestinal secretions. A similar action may be kept up in the sub-acute or chronic form of the disease by means of blue mass with hyosciamus, and rhubarb or aloes. After the subsidence of the acute form of the disease, which is characterized either by hemorrhage or by painful tumours, or by both, we shall have recourse to various medicines which are believed to be more especially useful in certain diseases that were replaced or reached a critical termination by hemorrhoids. Thus, in a gouty habit, we direct colchicum and magnesia, or the alkalies with bitters; and in chronic hepatitis, the blue mass with extract of taraxacum, and small doses of salines; in rheumatism, opium with tartar emetic, and iodine with salines; in chronic cutaneous diseases, laxatives, sulphur, sulphurous waters, iodine and sarsaparilla. In all these diseases complicated with hemorrhoids, medicines which act on the kidneys, such as nitrate of potassa, iodide of potassium, colchicum and digitalis, &c., may be expected to manifest excellent effects without irritating the digestive mucous surface as purgatives would do. If the requisite facilities are at hand, the warm bath may be used at the same time with considerable benefit, as one of the means to equalise circulation and excitement, and to relieve the disease by revulsion to the skin. If the hemorrhoidal tumours have appeared in a case in which the constitution has not been injured by former disease, such as gout, rheumatism, hepatic or cutaneous diseases, or incipient phthisis, we may have recourse, *after* the general treatment already recommended in the paroxysm, to cooling washes,—as cold water, solutions of sugar of lead and of sulphate of zinc respectively; also of alum, and the addition to water of the *tinctura ferri chloridi*, or cold lime water alone. In the more doubtful and mixed cases, it will be safer to trust to frequent ablutions of the parts with tepid water.

The treatment of hemorrhoids conducted on these principles will be found properly curative and safe: it is that to which we would have recourse in other cases of hemorrhage with inflammatory action, and is calculated to reduce or remove the visceral disease from which danger might be apprehended by the mere stoppage or suppression of the hemorrhoidal flux and repelling of the tumours.

Guided by the same pathology, we shall know how to direct the treatment in the more mixed and indeed more common forms of hemorrhoidal attacks—occasional discharges of blood with few or no tumours, and these of small size, or tumours commonly indolent but occasionally becoming painful; or, again, mucous or sanguineo-mucous discharges, and irregularity of bowels, constipation being the prevalent but not uniform derangement. Laxatives, with which blue mass may often be combined, will be here more freely administered than during the earlier period and acute form of

the disease. The best aperient, in the opinion of Sir Benjamin Brodie, for this purpose, is the following: One ounce and a half of *confectio sennæ*, half an ounce of *sulphur precipitatum;* and then *mel rosæ*, as much as is necessary to make an electuary: of this the patient will take a teaspoonful or about this quantity, as his own experience shall indicate, every evening.

Conjointly with these means, the hygienic ones for obviating constipation, already mentioned in treating of colonic dyspepsia, should be sedulously used. They are, fortunately, of such a nature,—vegetables and fruit,— as that, while they meet the present indication, they also contribute best to remove the plethora and inflammatory condition which gave predisposition to hemorrhoids. Succeeding and alternating with laxatives, we give terebinthinates and balsams, and particularly the oil of turpentine and the balsam of copaiba, and also cubebs, in doses respectively of from half a drachm to a drachm of each, in an appropriate vehicle, two or three times a-day. With the balsam, fifteen drops of *liquor potassæ* may be rubbed down with two or three drachms of mucilage in cinnamon water.

An empirical composition, known by the name of Ward's paste, has been long used, and celebrated, in this disease. It is similar to the *confectio piperis composita*, which is made of black pepper, fennel seeds, elecampane and honey; dose, the size of a nutmeg three times a-day. To be of service, its use must be persevered in for a length of time. Sir B. Brodie mentions the case of a lady, which was one of the worst he ever saw; the piles were so large, and protruded so constantly, that he thought there was no chance of curing her except by an operation. As, however, she was compelled to pay a visit to the country immediately, he directed her to give the confection a trial. Greatly to his surprise, after the lapse of six or eight weeks, the patient called on him to say that she had taken the medicine regularly, and was now quite well. "It is of no use to take the remedy for a week, a fortnight, or a month; it must be persevered in for two, three, or four months." (*Clinical Lectures on Surgery.*) This judicious writer and practitioner believes, that Ward's paste, the compound confection of pepper, operates by its coming in contact with the piles, having been little changed in its passage through the alimentary canal, and acts upon them as a topical application, "much as *vinum opii* would act upon the vessels of the conjunctiva in chronic ophthalmia." Confirmatory of this view is the circumstance related to him by Sir Everard Home, of a patient labouring under the piles, to whom Ward's paste had been recommended; but who, supposing that the medicine was intended for the rectum, and not the stomach, crammed as much as he could into this intestine. The effect was probably a good deal of pain; but certainly, also, entire relief from the piles. Owing to the risk of the confection accumulating in the colon, and particularly in the sigmoid flexure, after it has been taken for a length of time, it will be necessary to give, at intervals, a gentle aperient, during the period of administration of the confection. For the turpentine a few spoonfuls of common gruel will suffice. These remedies are well adapted to constitutions shattered by other diseases, such as gout or rheumatism, or exhausted by the continuance of the hemorrhoidal flux and the irritation of the hemorrhoidal tumours. They have been found to procure not only present relief, but sometimes exemption for a length of time from the disease: and from their diffused action on the mucous membranes generally, and also on the kidneys through the

circulation, they are salutary derivatives, of whose therapeutical operation in this case we can have little or no apprehension. Their employment constitutes still part of the curative treatment, and harmonises with the views which I advocate in this lecture: — that we must aim at the removal of the morbid condition of the viscus or viscera, and of general or abdominal plethora, of which hemorrhoids is but a part and an effect.

Even after hemorrhoids has been, as it were, established and become a part of the series of functional movements of the system, or returns habitually at stated intervals, and in so doing has replaced violent headache and old cough, a gastro-enteritis or duodenal hepatitis, and might lay claim to be a salutary process, we need not be deterred from its removal if we act on the principles of true pathology, as enforced in preceding remarks. It is safer, assuredly, to place the patient beyond the contingency of fresh metastatic change, by which, from accidental causes, or his own impatience quickening empiricism into action, the hemorrhoids may disappear and the orginal disease be brought on with complications and renewed violence. We do this by the general and constitutional treatment already laid down; and advance, thereby, a step farther than the existing dogma sanctions; so that, instead of a person having the lighter and less dangerous of two diseases, he may procure exemption from both.

In the treatment of *periodical hemorrhoids* we must be governed by the same principles with those that guide us in periodical diseases generally, viz.,—1, to abate the violence of the paroxysm and excessive determination to the suffering viscus; and, 2, so to change the state of the system during the interval as to prevent the recurrence of the paroxysm. We are less called on to practise venesection or analogous depletion in this than in the irregular variety; although in both we shall be greatly influenced in our practice by the habit of the patient, and the more or less exhaustion caused by prior attacks of the disease. One great means of preventing an accumulation of blood in the rectal vessels and the general plethora by which this is supported and foundation laid for a hemorrhage will be, to keep up a regular and frequent secretory action from the whole intestinal canal by laxatives, and a revulsive action to the skin and muscles by the tepid bath, and moderate exercise. The supply of food, even of a bland kind, ought not to exceed the actual wants of the economy. If the nutritive system have suffered, or a morbid irritability have been induced by the length of the disease, or that of which it takes the place, tonics come into requisition; and of these, the sulphate of quinia, as an anti-periodic, is every way entitled, between the paroxysms, to the preference. In addition to the general bath, or, whether it is used or not, ablution, with cool fresh water, of the anus, perineum, and sacrum, every morning after rising, and of sponging the part after a stool in the day, provided the body is not perspiring, will be found one of the most efficacious as it is the simplest and most readily attainable means of prevention. With some few exceptions, the practice ought to be enjoined in all hemorrhoidal subjects. Auxiliary to it is the use of a cold water enema, which, if sufficient to evacuate the bowels, at the same time that it reduces excitement of the rectal mucous membrane and hemorrhoidal vessels, fulfils a desirable twofold indication. I have not recommended this remedy in an acute attack of hemorrhoids; for, although in some cases of excessive hemorrhage it may be necessary, yet in general, the irritation, first by the introduction

of the end of a syringe or clyster-pipe, and secondly, by the distention of the rectum by the fluid introduced, more than counterbalance the good derived from it. Still more forcibly does this difficulty apply when purgative enemata are administered; since, both by their ingredients and their bulk, they must necessarily irritate the rectum not a little. The same objection does not apply to the use of a suppository of opium, hyosciamus, or belladonna, when the pain is great during the efforts at stool.

Continuing the directions for treatment during the interval between the attacks of periodical hemorrhoids, and in the main they are applicable to that which elapses between the common or irregular variety of the disease, we should enjoin on the patient to avoid breathing hot air, living in hot rooms, being seated on soft cushions, sleeping on feather-beds, or wearing clothes which press upon the anal and perineal regions, or ligatures of any kind, which must, more or less, interfere with an equable circulation and distribution of blood. Internal stimulants, such as spices, condiments, and alcoholic drinks, are likewise to be carefully eschewed; and that other more difficultly abstained from, and, if possible, more pernicious excitement than intoxicating drinks, the indulgence in strong emotions and contending passions.

Among the minor but far from unimportant precautions during a hemorrhoidal paroxysm, is for the patient to preserve the recumbent or horizontal posture, and as much as possible during defecation also, in order to diminish the chance of protrusion of the tumours. It will be desirable to resist the second call in the morning to go to stool, as this is often merely owing to the irritation of the congested rectal mucous surface, or from blood in small quantity which had escaped from the hemorrhoidal vessels into the rectum. If this feeling be yielded to, expulsive efforts of some force are made, and not only will the hemorrhoidal tumours, if there be any, be protruded, but there will be discharge of blood and eversion of the lower part of the gut, and often without any or very slight expulsion of feces.

So far I have treated of hemorrhoids as the effect of plethora and morbid excitement, and in their progress associated with these states of the system. But it is not always thus. The sanguineous discharge, though not to any great extent, proves, by frequent repetition, enfeebling and exhausting, and brings on a state of anemia. We are in some cases apprised by these effects on the general health of the loss of blood, for sometimes there is no preceding pain or dulness, or tumour, even to indicate the mischief to the patient himself; or from false modesty, in the case of a female, the physician is not made acquainted with the existence of the disease. Symptoms analogous to those of chlorosis are manifested under these circumstances. "The patient loses flesh, and acquires a remarkable paleness of complexion, which is afterwards exchanged for a peculiar dingy-yellow hue, like that of imperfectly bleached wax. The lips no longer possess their vermilion colour, but resemble those of a dead body; the tongue, too, has a blanched appearance, very characteristic of the state induced by excessive or continued depletion. These symptoms are attended with great listlessness, or want of energy, both of body and mind, disturbed sleep, irritability of temper, quick pulse, and headache, which is generally increased by rising up more than by lying down. Palpitation and pain in the region of the heart, and difficulty of breathing, are also frequently induced by slight exertion or agitation of any kind."

Mr. Syme, from whose work on *Diseases of the Rectum* I have taken this description of the effect of bleeding piles of long standing, then proceeds to show, in opposition to the popular, and still, as I conceive, well-grounded opinion, of the danger of checking an habitual discharge like that of hemorrhoids, that the disease may be stopped in cases with entire safety, "even when of the longest standing and greatest extent." He gives the case of a lady who had suffered for upwards of thirty years from hemorrhoids, which went on increasing, "until at length the bleeding, which for seven or eight years had been very profuse, so affected the general health as to excite the serious alarm of her friends. She exhibited, in an extreme degree, the peculiar aspect and other symptoms of exhaustion caused by a continued drain of blood. But very soon after the removal of the hemorrhoidal tumours, which were large and numerous, so as to encircle the aperture of the gut, she regained her strength, together with a healthy look; and though three years have now elapsed since the operation was performed, she has not suffered any unpleasant symptoms from the sudden suppression of her complaint."

Mr. Syme points out an error in diagnosis which is every now and then committed, — by mistaking the disordered function of an important organ for the cause of hemorrhoids, when in fact it is the effect. He adduces, in illustration of this caution, the case of a person who was supposed to labour under disease of the heart, and whose "waxy look, bloodless lips, and defective energy, together with irregular action of the heart, certainly afforded considerable ground for this opinion; but Dr. Alexander discovered that there was an internal hemorrhoid, which bled profusely every time the patient went to stool, and I removed it," says Mr. Syme, "with the effect of quickly restoring him to health." In cases in which anemia of this decided character is induced by the persistence of hemorrhoids, we may suppose that the sanguineous discharge, like that in other hemorrhages, particularly those called passive, in which the general system is greatly enfeebled, may be properly enough stopped. But when hemorrhoids have followed other diseases, and alternate with and when coming on relieve them, then we have not the same freedom in arresting the rectal disease by local means. It will be safer to institute a general treatment, as we would in other hemorrhages of any great duration: and to give tonics, particularly the chalybeates, at the same time that we guard against sudden plethora, even in this case, and relieve the congested vessels of the rectum by the regular use of laxatives, into the preparation of which blue mass will enter. It is under such circumstances that turpentine and balsam cobaiba have been successful. Counter-irritants to the inside of the legs are also proper. In this way we may succeed in imparting the requisite tone to the system, and at the same time abate or carry off the local congestion, including the hemorrhoidal tumours, without the risk which follows extirpation of these latter, and of thus closing up entirely the sanguineous outlet.

But there is still greater risk in removing by a surgical operation those hemorrhoidal tumours which do not bleed, nor are associated with hemorrhage, but which discharge mucus or sero-mucus, and which, in fact, have taken on regular secreting action, and become, in a great measure, additional and supplementary organs. They resemble old ulcers, or an issue in broken-down constitutions, the drying up of which is perilous to the individual, to whose system they have served so long as a kind of drain.

Their removal by surgical means, without prior preparation of the system, and well-enjoined rules of living, precautions to obviate local plethora or determination by the proper revulsives and particularly laxatives and the warm bath and pediluvia, cannot but be reprobated as empirical and hazardous, tampering with the patient's health and endangering his life. Where alarming consequences, such as apoplectic seizure, asthma, incipient phthisis, convulsions, are threatened after the removal of hemorrhoidal tumours, and the entire drying up of hemorrhoidal flux, attempts have been made, with more or less success, to establish an analogous congestion and discharge, by leeches to the anus, followed by irritating injections of turpentine, or rubbing tartar-emetic ointment on the verge of the anus and the lower margin of the rectum: a blister to the sacrum, to be kept running by some stimulating ointment; the administration of aloes and calomel by the mouth, and the like. The danger after surgical operations for the removal of hemorrhoidal tumours of the kind just mentioned will be greatly abated by careful attention to regimen, and particularly to a diet as little stimulating as possible consistent with the actual wants of nutrition. Mere abstinence from animal food will not always meet the requirements of such a case; it will be necessary to restrict even the quantity of farinaceous food, which, as in the instance of bread in abundance, when taken with milk, will induce in some persons a morbidly full and plethoric habit,—particularly adverse to the object proposed in instituting the regimenal course.

LECTURE XXXI.

DR. BELL.

NATURAL CURE OF HEMORRHOIDS.—EXTERNAL HEMORRHOIDS.—Topical applications—washes, ointments, injections, pads to cause pressure.—Remarkable case by M. Guyot.—Reasons for enlarging on the subject of hemorrhoids.—*Ulceration of the rectum*—Two varieties—treatment of.—*Prolapsus of the rectum*—its peculiarities and treatment.—*Stricture of the rectum*—Mistakes and malpractice respecting this disease—Stricture commonly the result of inflammation.

NATURAL CURE OF HEMORRHOIDS.—Piles are sometimes removed by a natural process, similar to operations employed by surgery. In the case of external piles, an abscess may form in one of them and burst externally, and although it is slow to heal, yet the result, when brought about, is accompanied with an obliteration of the cavity and an entire cure, as far as this particular pile is concerned. A similar process is undergone when an external pile is inflamed and the blood in it becomes coagulated; and it is then slit open with a lancet. There comes out a mass of hard coagulum; the cavity inflames, suppurates and granulates. Sometimes nature takes the place of the surgeon; and the cavity is blocked up by the coagulum, the vein becomes obliterated and after a while the coagulum is gradually absorbed and the pile cured. (Brodie, *ut supra.*)

The natural cure of internal piles may take place by strong contraction of the sphincter ani muscle, which acts like a ligature, on the protruded tumour, by producing mortification and sloughing. Sir B. Brodie refers to the case in point of the celebrated Horne Tooke, as related to him by

Dr. Pearson, physician to the latter, when the piles under which this gentleman had long suffered, mortified; and Dr. Pearson expected every hour to hear of his death. To the surprise of the physician, however, he soon learned that his patient was better, and from that time rapidly recovered; having been completely cured of a disease which had been the torment of his life for many years preceding.

External Hemorrhoids.—I have not pretended to lay down methodically the treatment of external hemorrhoids, and more particularly of tumours; believing that if the means already indicated be adopted this will be of relatively small moment. At the same time I must add, that external applications of an astringent or repelling kind, which, when used alone, are either inefficient or injurious, may prove an auxiliary to the constitutional treatment worth attending to. In the inflammatory stage of hemorrhoids in young subjects of a sanguine temperament, after suitable depletion and the course which I have mentioned, the applications will be of simple cold or tepid water, and solutions of acetate of lead or sulphate of zinc. In the subsequent attacks, it is customary to apply either cooling washes of this nature or astringents, decoctions or ointments, into which galls enter and of which tannin is the active principle. Chromic acid, forming as it does a thick crystalline pulp, is conveniently applied to ulcerated piles, and with great efficacy. It is very important, as I think I have already recommended, that the anus should be washed with cold water after each fecal evacuation; or with yellow soap and water, as recommended by Mr. Mayo, before the piles be returned, if they are internal. A more complete aspersion of the parts would be procured by injecting into the rectum some cold or tepid water, with, on occasions, a few grains of sulphate of zinc dissolved in it, immediately after each defecation. Advantage has occasionally been derived from pressure exerted on external hemorrhoidal tumours, and those which are permanently protruded, by means of a conical pad or piece of ivory, made to slide along a bandage or handkerchief, passed between the nates, and fastened to a cincture or belt worn round the loins, in the form of a T bandage. "The pad may be provided with a concentric wire spring, the more internal coils of which rise in a conical form." Dr. Copland (*op. cit.*), who suggests this practice, describes, also, a means of combining the internal with the external method of imparting pressure, when the tumours are internal and protrude at stool, dragging the mucous coat with them, or when they consist chiefly of varicose veins. The instrument is that introduced by Mr. Mackenzie; being a metallic bougie, of an oval form with a short slender neck, and a conical base to press upon the anus externally: after being carefully introduced into the rectum, it may be attached to the bandage and worn occasionally. It must be obvious, however, that, unless the pressure be equally and uniformly applied, it will heat and irritate the parts, and not only fail to answer the purpose, but may aggravate the disease; and hence the necessity of making a suitable instrument, and neatly and accurately adapting it to the parts. I know not how far back the recommendation of pressure for the piles goes in English surgery; but, although mentioned in the first French Encyclopædia of Diderot and D'Alembert, it seems to have been forgotten by the modern French surgeons, until it was introduced anew by M. Guyot. The case that suggested its use to this gentleman, as he details it in the *Archives Générales*, December, 1836, is of a very interesting nature. The subject of the disease had been plagued,

for twenty-five or thirty years, with internal soft piles, which had grown as large as a turkey-egg. At first they only escaped externally by efforts at defecation; but they finally so dilated the *sphincter ani* that they fell out while the patient was walking and even standing. He was forced, when in this position, to support or to push back the tumours with his hand. Every now and then, after fatigue or a spontaneous fluxionary movement, the tumours, to the number of ten or twelve, formed a lobulated ring, the surface of which became red, inflamed, and exquisitely painful, until relief was afforded by a copious hemorrhage. The patient applied to his friend, the celebrated Delpech of Montpelier, for relief; but the latter dissuaded him from submitting to an operation, either by excision or by ligature, and told him that compression by a suppository, such as the bougie internally, would only irritate the surface of the tumour, and might bring on a cancerous condition of the part. Dupuytren and other celebrated surgeons of Paris gave him the same advice. He had mentioned to his friend, M. Guyot, that in the midst of his greatest sufferings, whenever he could support his anus, either by his hand or on being seated, he felt considerable relief; and, also, that after having passed several days in a carriage on a journey, he could, to his great astonishment, walk more freely than before, and without the tumours coming down for some time. Acting on this information, M. Guyot prepared a T bandage of leather; the posterior band from the back becoming wider as it approached the os coccyx, so as to serve for a support to a cushion of soft leather well padded, which occupied the space between the coccyx, scrotum, and the two tuberosities of the ischium; and at the scrotum divided into two slips, which, coming up by the groins, were attached to the circular bandage round the trunk above the haunches. In the middle of the cushion he sewed a hard ball, of the form of a hen's-egg cut in two, lengthways, and so fixed that the projecting or central part should correspond with the end he applied to the anus. M. Guyot, after having returned the hemorrhoidal tumours, applied this bandage, and had the satisfaction of discovering that his patient found no inconvenience whatever from it, but was able, at once, to walk with perfect ease and comfort, and ever after was exempt from hemorrhoids.

Hemorrhoidal Excrescences.—Under this title Dr. Colles (*Lectures on The Theory and Practice of Surgery*) describes formations in the lower part of the rectum, which Sir B. Brodie designates by the term *excrescences* of the rectum, and which are regarded by him as a sort of polypus. These tumours are often mistaken for piles. Sometimes there is a single one, at other times there are two or three growing from the mucous membrane: their protrusion is, on occasions, without pain, but in other cases they give rise to the greatest suffering. There may be an absence of bleeding, or, on the other hand, very profuse exhausting discharge of blood following their descent. These excrescences can be felt and seen, and they are found to vary in size and to be soft and of a purplish colour, with numerous minute vessels ramifying on their surface. Under the pressure to which they are subjected by the contraction of the sphincter *ani*, they, at times, ulcerate. Excision is recommended by Dr. Colles in preference to a ligature. He seizes one end of the tumour with a polypus forceps, the other being held with a hook by an assistant, and then snips off the former with a strong pair of crooked scissors: Brodie, after bringing down with his fingers the tumour through the anus and then tying a ligature round its neck, snips it off below the ligature.

Dr. Colles believes that these excrescences will get well of themselves, but, as it is always desirable to prevent and remove suffering, the severity of the symptoms may be readily obviated, if the disease be not entirely cured, by causing an enema to be thrown up every night on the patient's going to bed, consisting of eight or ten grains of sulphate of zinc in four or five ounces of water, and causing the patient to retain it all night; and if the parts should protrude, having them smeared with a liniment composed of a drachm of sub-acetate of lead in two ounces of olive oil. Other excrescences similar to those in the nymphæ of women are sometimes left by the imperfect obliteration of external piles.

I have enlarged the more on the subject of hemorrhoids, because, 1, it is a common, and a troublesome, and a nasty disease, and, therefore, a large number of persons are interested in its avoidance and cure; 2, it is associated with many other important diseases; and its cure on this account is not unattended with danger; and, 3, the principles involved in its pathology and treatment are analogous to those which must guide us to correct views of hemorrhage in general, and of diseases maintained or induced by plethora.

Ulceration of the Rectum is chiefly confined to the mucous membrane of the intestine. It is a common sequela of inflammation, as in dysentery, and as such has already been spoken of when this disease was under consideration. In some cases the ulceration is purely local and restricted to the rectum, which is kept in a state of constant irritation, manifested by tenesmus, frequent discharges, purulent or mucous, at other times fecal with mucus and pus, and sometimes a tinge of blood: at first there may be some fever, but afterwards the pulse is not affected, and the skin is colder than natural, thirst not great, and appetite as usual. This is a complaint common enough to young children, in whom it will last for weeks and even months, gradually disappearing, sometimes without any, at least adequate, treatment. On occasions, we find within the rectum, at a short distance above the anus, an ulcer, unconnected with any other disease. The patient complains, says Dr. Colles (*op. cit.*, p. 156), that he observes his linen stained with a purulent discharge, which often flows when he is not at stool; "on examination this will prove different from healthy pus, frequently containing an admixture of thin, bloody fluid; at times the quantity of discharge is much lessened, and then the sufferings of the patient are aggravated; but on the flowing off of a larger quantity he experiences great relief; he suffers sharp pain on going to stool, and this continues for an hour or two. On examination, the finger soon discovers the seat of the disease, which at first feels rather raised and rather rough, but by pressing the finger firmly on this spot the point sinks into a small hollow cup of an ulcer, the edges of which are found in some degree hardened. We may obtain a satisfactory view of the ulcer by passing upon the finger a blunt polished gorget, the cavity of which is to look towards the seat of the disease; then, by everting the anus as much as we can, we shall obtain a full view of the ulcer, by the light reflected from the gorget." A speculum will be found more convenient for procuring the requisite exposure of the ulcer.

The *treatment* of ulceration of the rectum will consist in the administration of mild laxatives and enemata, alternating with the balsams and terebinthinates; the latter of which may be administered occasionally by injection. Topically, in this way, we use solutions of sulphate of zinc or

of copper, and, what is perhaps preferable to either, of nitrate of silver. The single ulcer described by Dr. Colles will be touched, if we can reach it, with nitrate of silver or sulphate of copper, or some stimulating ointment, as of chloride of lime, red precipitate, &c., applied to the part, and retained for a while by a dossil of lint. Spasmodic irritation of the sphincter, which sometimes accompanies the ulceration, will be soothed by belladonna ointment, or lotion of the liquor of the sub-acetate of lead. In more intractable cases the remedy is in the domain of surgery, and is thus described by Dr. Colles:—"To introduce into the rectum a convex-edged scalpel, and make an incision through the entire length of the ulcer, continuing it through the sphincter, and dividing the verge of the anus; as soon as this wound has got into a state of suppuration, we should dress it and the ulcer with some stimulating ointment, introduced on a dossil of lint. The cure goes on without interruption, although it is rather tedious and slow of healing. I need hardly add, that the final cicatrization will be promoted by the occasional application of nitrate of silver."

Ulceration of the rectum sometimes results from the laceration produced by the pressure of hard fecal evacuations. In this case, the mere longitudinal incision of the mucous membrane, so as to include the ulcer, will effect a cure, as shown in many instances by Mr. Copland. But what more immediately concerns us, at this time, taking account of medical treatment only, is the fact, confirmed by Sir B. Brodie, that a cure may be performed without an operation, by the use of the compound confection of pepper (Ward's paste) internally, and occasionally, also, of the lenitive electuary, and sulphur or of some other simple aperient. The paste may be applied locally also. Suppositories of this preparation and soap have alone sufficed for bringing about a cure, — aided by gentle aperients to prevent the remora of feces and hard evacuations.

Prolapsus of the Rectum, or, as it is less accurately called, *prolapsus ani*, is commonly believed to be more within the domain of surgery than of medicine; but its prevention and treatment in most cases depend on measures under the control of the physician, who will generally be able, with suitable care, to prevent the extreme measure of an operation. The disease consists in the descent of the upper portion of the intestine, which becomes invaginated in the lower part and protrudes beyond the anus. "It has been maintained by some, that the lower part of the rectum alone was concerned in the formation of prolapsus, the protrusion of this appapently fixed portion being accounted for by the relaxation of its coats. But this explanation does not agree with the anatomical structure, the phenomena observed during reduction of the protruded bowel within the sphincter, or the appearances which have presented themselves in cases that terminated fatally." (Syme, *op. cit.*) We are cautioned by Sir B. Brodie against confounding prolapsus of the rectum with internal piles protruded. In the latter case, the mucous membrane alone descends, and may be seen below the anus; but there is no displacement of the muscular tunics. Whereas, in the case of true prolapsus, the muscular as well as the mucous coat is protruded. There is sometimes a connexion between the two in this way, viz., the dilatation of the sphincter ani caused by repeated protrusion of piles prevents the proper support of the rectum, and this gut is occasionally, under these circumstances, liable to come down. The disease is chiefly confined to children and old persons. In the former, the expulsive efforts to evacuate the bowels are often violent, owing to the

frequent sources of intestinal irritation, at the same time, that, owing to the lesser curvature of the sacrum and deficient resistance of the os coccygis, and the imperfectly developed prostate gland and vesiculæ seminales, the intestine is less able to resist these inordinate strainings. Fits of crying cause also a violent contraction of the diaphragm and abdominal muscles, and bring on, sometimes, prolapsus. In old persons, with weakness of innervation there is corresponding weakness of the muscular system, and one manifestation of this is deficient energy of the sphincter ani, often connected with similar feebleness of the pelvic viscera and lower extremities. At first, the prolapsed intestine is like a simple soft ring external to the anus, but after frequent expulsions and aggravation of the disease it assumes the appearance of a globular mass, several inches long, of a red colour: by pressure of the sphincter, and impeded circulation in consequence, it becomes of a deeper and almost livid hue. When the patient has been long subject to prolapsus, the lining membrane of the rectum, to the extent of an inch or two, is rendered insensible, changes its appearance from exposure and contact with external substances, and approaches in structure to the common skin.

The *treatment* resolves itself into the means required for replacing the intestine, and those to which we should have recourse for preventing a return of the complaint. For the successful performance of the first, the posture of the patient is an important consideration. He should be laid horizontally on his side or back, with his pelvis raised, and the limbs bent on the pelvis, so as to remove the weight of the abdominal viscera and relax the muscles of the abdomen, which might otherwise oppose the descent of the gut. The physician or surgeon "then grasps the tumour in his hand, having previously lubricated its surface with oil, and gently but steadily compressing its neck, while at the same time he urges in the body of the swelling, gradually pushes the protruded parts within the sphincter." It has seemed to me that more equable pressure is exerted on the prolapsed intestine, by the intervention of a soft and oiled napkin or even rag between the tumour and the fingers which push it gently upwards and a little backwards: or, the two thumbs may be so applied to the end and a little on each side that, by a moderate pressure upwards, and being slightly inclined also to one another, the intestine will glide upwards and come within the sphincter. "There commonly remains, however, some laxity of the integuments about and within the canal; and, in order to insure that the last portions of the mucous membrane are returned within the orifice of the internal sphincter, it is advisable to apply the thumbs or the two indices to the sides of the anus, so as to press the skin inward, and then, by introducing a well-oiled finger within the rectum, we may remove any folds or irregularities that might otherwise keep the cellular tissue on the stretch, or prove a source of irritation to the rectum. When the tumour is very large, it cannot be returned by so simple a proceeding, and it becomes necessary to roll the prolapsed membrane towards the orifice of the intestine in the middle of the tumour by means of the fingers; thus gradually reducing the swelling by returning, first, the portions last discharged. In extreme cases this is often a task of great difficulty; and the inexperienced operator should bear in mind the fact, that the membrane may be returned within itself without entering the canal; or, in other words, that the part of the tube which escapes last may be folded within the portion which should line the lower part of the

rectum without pressing the sphincter; and may thus increase the difficulty of reduction, while the surgeon thinks that he is gaining ground. The efforts at reduction should never be forcible or rough; and while the fingers are employed in involving the tube, it is often proper to keep up a moderate general pressure on the tumour with the palms of the hands." (Dr. Reynell Coates, *Am. Cyclopædia of Med. and Surg.*, Art. Anus.) In quoting from this article I must add, that I know not where else to refer you for so full, able, and practical a description of the diseases of the anus and its vicinity, viz., *neuralgia*, *spasm*, *atony*, *wounds*, *prolapsus*, *inflammation*, *blenorrhagia*, *organic stricture*, *tumours and ulcers*, *fissures*, *preternatural pouches*, *abscesses*, *and fistula*.

Where the intestine has been long protruded and is much swelled, it may be necessary to reduce its volume by leeches applied round the anus and cold applications to the tumour itself; immediately after which attempts at reduction in the manner already indicated should be made. If piles have been the cause, it will be advisable to remove them by an appropriate operation before attempting to return the prolapsed intestine.

The prevention of prolapsus will consist in an avoidance of the exciting cause, and chiefly, in children, of intestinal irritation, including that from ascarides: the bowels should be kept in a regular state, exempt alike from constipation and purging. Astringent washes and injections, in cases of great relaxation of the parts unaccompanied by inflammation or fever, are sometimes serviceable; but their use demands judgment. Mechanical supports, of the same nature with those already recommended for hemorrhoidal tumours, may be had recourse to, particularly when adults and old persons are the sufferers. It is in this class of subjects with prolapsus of the rectum, accompanied by relaxation of the sphincter and skin round the anus, that the operations recommended and practised by Dupuytren and Hey are found useful. By the removal of a few folds of pendulous skin at the margin of the anus, the sphincter is enabled to contract more completely, and a greater consolidation of the tissues is procured, so that adequate resistance will be offered to the descent of the rectum, or the escape of fragments of feces or portions of mucus through the anus, and one great source of irritation is thereby removed. "The scissors, curved to one side, prove," says Dr. Syme, "most convenient for effecting this excision, and should be directed from the circumference towards the centre of the aperture. The folds of skin should be held tense by a hook or forceps, and be removed from the distance of about an inch and a half quite up to the mucous membrane, a small part of which should be included in the incision."

Alteration, by injection and thickening, of the mucous membrane of the rectum, and its descent and protrusion in adults, constitute properly a variety of hemorrhoids, rather than a case of prolapsus; and demand a different mode of treatment from this latter. Hence, instead of astringents or any mechanical means of support, we should endeavour to amend the morbid state of the mucous membrane of the rectum by local depletion, mild laxatives, enemata of tepid water, and occasionally mercurial alteratives with hyosciamus. If condylomata, or hard, white piles, prove a cause of irritation and straining, they should be removed.

Means should be taken, among the preventive measures against rectal prolapsus, for the patient to avoid straining at stool; and with this view, besides repeated injunctions to this effect, it will be proper to require

him to sit upon a chair so high as to prevent his feet from reaching the ground, which will keep the trunk erect and moderate the efforts at expulsion. Care should be taken, also, to prevent him from being too long or too frequently at stool.

Polypus of the Rectum is a disease of more frequent occurrence, especially in children, than one might be led to suppose from the comparatively scant notices of the subject in systematic works. It is liable to be mistaken for internal hemorrhoids and for prolapsus; nor are the symptoms sufficiently diagnostic of the tumour itself, unless it can be felt, with its pedicle, by the finger, or it is protruded beyond the sphincter ani and thus becomes visible. Polypus tumours of the rectum are liable to be chafed, excoriated, and ulcerated by the continual presence and passage of feces.

The first symptoms of this disease in children are sanguineous discharges *per anum* with tenesmus. M. Guersant notices an appearance to which he attaches some value, viz., a groove or furrow on the surface of the feces made by the polypus; but the same effect may be produced by a hemorrhoidal tumour.

Sometimes the polypus is separated spontaneously; but in general we cannot trust to a process so uncertain and often painful. The simplest and safest means for the purpose is the use of a ligature, which will be followed by a detachment of the tumour. (*Summary of Transactions of the College of Physicians of Philadelphia: Dr. Condie's Report on Diseases of Children.*)

Stricture of the Rectum is, happily, not so common a disease as bougie doctors and shallow surgeons persuade themselves, or try to persuade their patients, is the case. There are two causes of obstruction, besides real stricture, to introducing the finger or a bougie up the rectum, which might impose on those who are ignorant of the anatomy of the intestine, but which, in fact, belong to its healthy structure. The first of these is the lacunæ, and folds or valves, so well pointed out by Mr. Houston (*Dublin Hosp. Rep.*, vol. v.), and the second, the angle made by the rectum within about the distance varying from two to four inches of the anus, and where, from following the curvature of the sacrum, it makes a sudden turn outward to its termination.

As some inveterate bougie introducers, doubtless in ignorance, adduce these natural obstructions to the passage of the finger or bougie as really strictures, I will just repeat as much of Mr. Houston's description of the healthy folds of the rectum as will be necessary to guard you against error yourselves or imposition on the part of others. "The valves exist equally in the young and in the aged, in the male and in the female; but in different individuals there will be found some varieties as to their number and position. Three is the average number, though sometimes four, and sometimes two are present in a marked degree. The position of the largest and most regular valve is about three inches from the anus, opposite to the base of the bladder. The fold of next most frequent existence is placed at the upper end of the rectum. The third in order occupies a position about midway between these; and the fourth, or that more rarely present, is attached to the side of the gut, about one inch above the anus." The form of the valves is semi-lunar; in breadth, they are from half to three-quarters of an inch, extending from one-third to one-half the circumference of the gut; their structure is a duplicature of

the mucous membrane with some intermediate cellular tissue and a few muscular fibres. The relative position of the valves is such, that the one situated opposite to the base of the bladder most commonly projects from the anterior wall of the gut; the valve next above from the left; and the uppermost from the right wall. Confirmatory of this description, Dr. Colles (*op. cit.*, pp. 141–2) points out the fact, that in some patients who are free from all symptoms of morbid condition of the rectum, the finger *in ano* cannot discover any canal in the gut, the entire of its calibre above the sphincter being filled up with soft folds of the lining membrane. As respects the angle and consequent obstruction, in some cases greater than in others, at the junction of the colon and rectum, Dr. Colles does not think that the term stricture is ever applicable to it.

If to these natural or anatomical obstacles to the ready introduction of the finger into the rectum be added the spasmodic constriction of the gut in irritable states of the intestine, when attempts at exploration are made, you will be the less surprised, though not the less pained, at the narratives of so much needless suffering inflicted on patients labouring under constipation or hemorrhoids and sometimes irritation of the neck of the bladder, by their being subjected to the bougie practice. Dr. Colles, in the work already mentioned, p. 147—Mr. Syme (*op. cit. Am. Edit.*, p. 35)—Dr. Burne (*On Habitual Constipation*, Am. Edit., p. 103), give other examples of this pernicious meddling, which is severely commented on by all intelligent surgeons.

Stricture is commonly the consequence of inflammation, but it is sometimes spasmodic or functional, and felt only when the patient is in a particular posture or straining. Dr. Bushe (*A Treatise on Malformation, Injuries and Diseases of the Rectum*) tells us that he has examined four cases of stricture of the rectum after death which had not caused any disease in the surrounding parts. "In one, the lesion seemed to be confined to the muscular tunic and cellular tissue; in another, to the cellular tissue alone; and in two, to the mucous coat and cellular tissue. The alteration of structure seemed to depend upon the deposition of lymph, which gave to the parts more or less hardness. The extent of the stricture varied from one-quarter to one inch, occupying the entire circumference of the gut but in two cases, while in one it scarcely passed half around it." Any long-continued irritation at the extremity of the intestine, with straining to evacuate its contents, injury by the passage or lodgment of indurated feces or foreign bodies, as fruit-stones, seeds, bones, &c.; injury during parturition, as well as by common inflammation in any way produced, will be occasional causes of strictured rectum.

The stricture is commonly situated at the lower part of the rectum, within reach of the finger, or two or three inches above the anus. In some rare cases, it is six inches; and even as high up as the sigmoid flexure of the colon, manifestly, in one instance referred to by Brodie, the consequence of a contracted cicatrix of an ulcer which had formerly existed at this part. Sometimes the stricture occupies the whole length of the rectum, for some way up above the anus, perhaps three or four inches. The mucous membrane is diseased beyond the precise limits of the stricture itself.

The only kind of stricture of which Dr. Colles speaks in his "Lectures on The Theory and Practice of Surgery," is *schirro-contracted* rectum, often erroneously called *schirrhous* rectum.

Symptoms.—Stricture of the rectum makes its approach slowly and insidiously; difficulty in discharging the bowels being a common, though not a fixed symptom, until the disease is established. In its advanced stage, a diagnostic symptom is the frequent squirting out of thin feculent matters, containing no solid matters, or only very small ones, and mixed with blood or mucus, accompanied by a sensation of cutting or burning in the rectum. "In addition to this," continues Mr. Syme, "the abdomen is distended, partly by retention of its feculent contents, partly by tympanitic swelling caused by derangement of the bowels. Pain also is felt in the sacrum, extending down the limbs; and abscesses frequently form in the vicinity, so as to lay the foundation for *fistula in ano*." There is, also, a discharge of mucus constantly dribbling from the anus, and staining the patient's linen of a brown colour. "Schirrus of the neck of the uterus and vagina, and diseases of the prostate gland, might, either of them, be confounded with this contracted rectum, but manual examination will detect the true nature of the malady." Ulceration of the rectum might be confounded with schirro-contracted rectum, but besides that ulceration, when low down, may be seen, by the aid of a speculum, and that it gives severe pain in evacuating the bowels, there is, in contraction of the rectum, difficulty rather than pain at this time. The disease is more frequent in females than in males, and in adults than in children. Extreme emaciation and hectic irritation are induced by the prolonged continuance of the disease, which, after attaining a certain height, seems to remain stationary.

LECTURE XXXII.

DR. BELL.

TREATMENT OF STRICTURE OF THE RECTUM.—*Spasmodic stricture—Fissures—Carcinoma* of the rectum—Treatment, palliative.—*Neuralgia—Preternatural pouches or sacs.—Blenorrhagia—Pruritus Ani.*

THE *treatment* of stricture of the rectum is divided into two parts,—the general and topical: the first, by medicines; the second, by surgical means, and of these the chief is a bougie; sometimes, though rarely, the knife or bistoury to cut the stricture. These two parts ought to be carried on simultaneously, but with a leaning in favour of constitutional treatment, by which the bowels are to be kept regular, and impactions of feces in the colon prevented; the digestive function in general improved; and absorption made active by a regulated and somewhat reduced regimen and appropriate alteratives. Of these latter we direct blue mass with hyosciamus; cicuta; salines to procure semi-liquid discharges; iodine with sarsaparilla; arsenical solution, but with great reserve, and watching its effects on the stomach. Brodie recommends a draught composed of half a drachm of balsam of capaiba, fifteen minims of *liq. potassæ*, three drachms of mucilage of gum arabic, and about nine drachms of carraway water, three times a-day. If not positively contra-indicated by the feebleness of the patient, evacuation and derivation may be usefully practised by the application of a few leeches, from time to time, to the anus; or

cups to the lower part of the sacrum, and afterwards permanent counter-irritation kept up by a small blister, tartar-emetic ointment, or croton oil.

Dr. Colles, after adverting to the belief of the disease often proceeding from a venereal affection, and adding that he had tried mercury with a very free hand, but never knew it to do the least service, says: "I may say the same of cicuta; purgatives have been recommended. You certainly must occasionally give an opening medicine in this disease; but avoid violent ones, which would, beyond a doubt, aggravate it; the very best thing I have found to give relief, and sometimes to cure the disease, is blue pill and Dover's powder, but the mercury must not be pushed to salivation." Arsenic and other remedies, said to be of service in cancer, were found by this gentleman to be all alike useless in the disease now under notice.

The bougie, by effecting pressure, excites the absorbents to a removal of the effusion and morbid deposit in the cellular tissue: but if it is retained too long, or too often repeated, or of too great diameter, there will be danger of passing the point of absorbent excitement, and of irritating the parts so as to produce fresh deposit. Experience now happily proves that, instead of the bougie being required to be introduced daily and to remain in for hours, sufficient excitement is caused by the instrument being used every third or fourth day, and withdrawn in a few minutes after being passed through the stricture. Mr. Liston (*Practical Surgery*, p. 437, Am. Edit.) thinks, that the bougie is more conveniently retained, when it is of such a form and length as to be received entirely within the sphincter. Stricture often takes place at the upper margin of the internal sphincter, and its treatment is identical with that higher up the rectum. Rectum bougies are constructed of various materials; the best is gum-elastic. The physician or surgeon, having satisfied himself by the introduction of his finger into the rectum of the seat of the stricture, passes a bougie, lubricated with oil or lard, up to the obstruction, and endeavours, but without violence, to carry it past this. Failing to do so, he tries a smaller bougie, until he gets one to pass through the contracted part, and almost immediately after withdraws it. The patient is to be on his side lying in bed; the bladder should be emptied and the rectum cleaned out previously.

Dr. Colles does not believe that a perfect cure of organic stricture of the rectum has been effected by any plan of treatment hitherto employed. The remarks of this experienced teacher and practitioner on this point are so pertinent, that I cannot refrain from repeating them to you at this time. He had just been speaking of the want of success attending a division of the callous ring by a bistoury, and he next proceeds to speak of bougies in the following terms: "Bougies have been advised with great confidence by authors for the cure of this disease, and I'll tell you what I know of the matter—I have had under my care some of the patients of those very authors who advise the bougie, and I found they had entirely mistaken the disease of their patients. The truth is this,—any irritation of the bowels will cause the ordinary symptoms of scirrho-contracted rectum, such as mucous stools, sometimes with pus or even blood, and when the surgeon introduces his finger, and feels no disease, he feels higher and higher, and still feeling nothing, he introduces his bougie—and up this goes very easily until it hitches against the promontory of the sacrum, and then he thinks he has got to a contracted portion of the rectum. Then as to the appearance assumed by hardened feces, called

figured stools, if nothing solid comes from the bowels of larger size than a slug or an earth-worm, or altered in its cylindrical figure, he thinks there must surely be stricture of the rectum, although any irritation of the bowels will cause these figured stools. I have tried soft bougies of wax, and hard ones of wood; I have used various ointments that have been from time to time advised—I have gotten bougies turned, with a spiral groove in them to hold the ointment, for without some such contrivance it would have been wiped clean off by the sphincter as it entered—I have used bougies, positively the size of this bottle [about one and three-quarters of an inch in diameter], and have never cured a scirrho-contracted rectum, except some very insignificant cases. We are still in want of a cure for the disease."

Sir B. Brodie lays down a good practical rule for the use of the bougie; viz., to have recourse to it only in those cases in which the stricture is within reach of the finger.

Spasmodic Stricture of the Rectum, or, more appropriately, we ought to call it, spasmodic stricture of the *anus*, or preternatural contraction of the sphincter *ani*, is usually accompanied with much pain, and fissures and ulcerations between the folds of the anus. Dr. Colles says, that, with not inconsiderable opportunities, he has never seen a case resembling the spasmodic stricture of the rectum of authors. The bowels are evacuated with difficulty and pain; which latter does not come on until after a stool, and is very severe for an hour or two; sitting is uncomfortable, unless the body rests on one hip, so as to protect the anus from pressure; there is an unpleasant sensation of fulness in the perineum, with heat in the urethra, frequent desire to make water, or other symptoms of irritable bladder. The anus, continues Mr. Syme, instead of presenting its ordinary conical appearance, looks flat when examined, and hardly presents any trace of the orifice, owing to the inordinate contraction of the external sphincter muscle. "If the finger be introduced, which is not accomplished without great pain and difficulty, every attempt to examine the gut causing excessive distress, not only at the time, but for hours afterwards, it feels much more strongly compressed than usual. And when the nates are held aside, so as to bring the lining membrane of the anus into view, one or more ulcerated fissures are occasionally observed between its folds." Sometimes there is a small ulcer of the rectum opposite to the point of the os coccygis. This morbid state is often associated with hemorrhoids, and not unfrequently results from constipation. The sphincter, by repeated contraction, becomes larger than it was in its normal state. The pains, as Copland very truly tells us, sometimes extend down to the feet and ankles, and even occasionally assume a neuralgic character in these or other parts of the lower extremities; or give rise to spasm in various parts, especially in nervous and hysterical females. Whatever tends to irritate the rectum, increases the patient's sufferings. Thus, introducing the finger, or foreign bodies of any kind, within the anus; forcibly expelling indurated matters from the bowels; using stimulating articles of food or drink, and remaining long in a sitting posture, are observed to be hurtful. The disease is chiefly met with in females, and especially in hysterical females.

The *treatment* is here both medical and surgical. If the first be patiently and perseveringly carried out, the latter may often be dispensed with. With this view the bowels should be kept open by laxatives and

emollient enemata. Montegre advises the ascending douche or the application in a stream, with some force, of cold water against the anus, and cold water injections. (*Des Hémorroides ou Traité Analytique, &c.*) In order to render the evacuations more easy, the injection should be thrown up when the patient feels an inclination to go to stool. Careful ablution of the affected parts is to be practised; and washes of the *liquor plumbi diacetatis* (Goulard's extract), alternating with ointment of the extract of hyosciamus, or of belladonna or stramonium, directed to be applied to the anus; or a suppository of one of these narcotic preparations, or of opium, may be occasionally introduced into the rectum, with the effect generally of giving relief. Dr. Copland, when advising these remedies, properly enjoins caution in the administration of narcotic injections, which are often rapidly absorbed from the colon and rectum; he has known half a grain of belladonna in one case and thirty drops of laudanum in another to produce the most serious effects. The same objections do not apply to their use in ointment, pomade, or suppository. In addition to these means we have recourse to that rational alterative treatment recommended in case of organic stricture of the rectum, and which, if continued for a suitable period in the present disease, will carry it off, as it would ulceration with chaps and neuralgic pains in other parts of the body.

In bad cases of stricture of the anus, recourse is had to division of the sphincter muscle, laterally,—a simple and a safe operation.

Fissures of the anus are not always associated with spasmodic stricture, nor stricture of any kind, although they are frequent accompaniments of it. By Boyer they were regarded as an effect and complication of anal stricture. Of late years, a very important addition to our list in the treatment of this disease, has been made by the introduction of rhatany (Krameria). Its use was suggested to M. Bretonneau on apparently sound physiological principles. Constipation he regarded as the chief cause of the fissures, and of course as the great obstacle to their cure. Now, constipation is often productive of a dilatation of the rectum above the sphincter, in which the feces accumulate, and the more so the weaker and less resisting the rectal coats; so that, when, at last, the patient goes to stool, and tries to relieve himself of the enormous accumulation, he suffers pains little short of those of childbearing,—in fact, more than some women experience in this act. It occurred, therefore, to M. Bretonneau, that in order to overcome obstinate constipation, whether it is accompanied by fissures or not, it is necessary to restore tone to the dilated and weakened intestine. Practising on this view, he directed, in a case of constipation, with fissure, an enema made of the extract of rhatany root with water, and the addition of a little alcoholic tincture of the same medicine. Success crowned his expectations; and the like results followed this treatment in other cases. Even in cases of fissure in which constipation was not present, the use of the rhatany was successful. The facts in the latter category are as clearly established as the others; but they do not rest on the same physiological basis: nor can we suppose that the hypothesis which pointed originally to the practice is tenable. Since then, several French surgeons and physicians have been equally successful in the use of rhatany for the cure of fissures; and I feel myself justified in recommending this medicine strongly to your attention in this troublesome and hitherto often unmanageable malady. The mode of employing it is thus described by MM. Trousseau and Pidoux (*Traité de Therap. et de Mat. Med.*, t. i., p. 119).

The patient is to take every morning a mild mucilaginous or oleaginous enema, so as to empty the lower intestine; half an hour after this has been returned, the following enema is given: water, five or six ounces; extract of rhatany, a drachm and a quarter to three drachms; alcohol, half a fluid drachm. The patient will try to retain this injection, and then take another of the same kind in the evening. When the pains have entirely ceased, he need take only one injection daily; and when there is reason to believe that the cure is complete, one every other day for a fortnight. Equal success in the hands of Drs. Johnson and Biddle (*Med. Exam.*, 1841), has attended the use of the rhatany in this country. Another remedy of an analogous nature, and of recent introduction into practice, the *Monesia*, has likewise been found to be an excellent curative agent for fissures, when employed in the form of enema, or of pomade to the fissures themselves.

With all these resources of a medical nature, which I have stated to you, at our command, there will be less necessity for having recourse to the use of the knife, as recommended by Boyer and other surgeons, in order to cut through the sphincter, or even a part, together with the lining membrane of the anus and subjacent cellular tissue, as directed by Mr. Syme. There is, however, a variety of contraction of the anus, with fissure, depending on the slow inflammation and condensation of the cellular tissue round the orifice, which may be the consequence sometimes of the excision of hemorrhoidal tumours; and which requires the use of the bougie and occasionally the cutting through the indurated ring. Caustic applied to the fissure is recommended here, as it has been in the other variety, or the spasmodic stricture, already spoken of.

This disease, though more common in mature and advanced life, is met with even in children at the breast.

Fistula in Ano is apt to follow stricture of the rectum, by abscess forming at the side of the contraction, opening into the bowel above, and occasionally it makes its way to the external surface also. I refer to fistula just now, in order to enjoin caution in attempting its radical cure in cases of incipient phthisis and recent insanity, or where its appearance has evidently alleviated any serious visceral disease.

Carcinoma of the Rectum, like all carcinomatous affections, is an harassing, painful, and seldom curable disease. It may consist either of the scirrhous tissue or encephaloid matter. Its chief seat is the sub-cellular tissue of the bowel, which, being converted into tumours of various size, project either externally into the muscular tissue, or internally into the canal; and in the latter case, are opposed to the progress of the matters in the intestine. The muscular coat is seldom implicated, except by distention and separation of its fibres; sometimes into so many lobuli, as it were, by the morbid cellular ramifications. It may, however, be atrophied by the increased thickness and pressure of the cellular tissue, and even disappear by absorption. The mucous membrane is sometimes intact in the midst of the cancerous tumour; sometimes it exhibits the characters of a chronic inflammation, and after a while, by being ulcerated, allows the cancerous structure to be seen through it: at other times, the cancer begins with the mucous membrane, which, in consequence, becomes covered with vegetations. Whatever may be the seat of carcinoma, its termination is always in ulceration; and by gradual extension inwardly it may, when higher up in the intestinal canal, perforate the peri-

toneum, or outwardly, and cause a fistulous opening into the intestine. Occasionally the arteries are destroyed, and hemorrhage follows, the nerves remaining entire in the midst of the morbid alteration of other parts. (Andral — *Cours de Pathologie Interne.*)

The *causes* of this disease are predisposing and exciting, or occasional. The first is the most powerful, and depends on a particular modification of the tissues, which we can neither explain, nor, when present, appreciate. Of the latter kind of causes, it is usual to cite neglected or ill-treated hemorrhoids, any strong irritation, in fact, of the intestine, *prolapsus recti*, &c.

The *symptoms* of carcinoma of the rectum are, pain in different regions, morbid secretions, and sometimes hemorrhage. The seat and degree of pain vary greatly: there is often only an itching or peculiar sensation like that produced by worms, but after a time this is converted into a true pain, which in some persons is only felt when they are erect or long seated. It may be more or less diffused; and it is common to find patients cease to complain of pains in the rectum, and refer them to the hips, sacrum, and thighs. The pain is aggravated by walking, standing, and defecation, and especially after constipation. The secretion from the rectum is sometimes white, sometimes reddish, and in some cases there is real hemorrhage. As the disease advances, the fecal evacuations become less and less frequent. Occasionally they resemble fragments of vermicelli, and seem to have been spun out; in other cases they are flat and ribbon-like, and have mixed with them glairy, sanious, purulent, and sanguinolent matters. Sometimes the feces find exit through fistulous orifices made by the cancerous ulceration, and they have been known to come from the vagina and adjoining parts. A gradual and alarming wasting of flesh and strength, and loss of all functional energy, now take place; and this result is accelerated if some important organ, such as the bladder, or the uterus, becomes implicated in the disease.

If the cancer is very low in the rectum, it may be seen externally; and if higher up in the intestine, it may be felt by the finger, by which we discover, at one time, a circular ring surrounding the rectum, at another, abridged mucous membrane and agglomerated projections.

The *treatment* of this horrible disease is merely palliative, unless the cancer be near the termination of the rectum so as to allow of its excision; but even after the operation there will be great danger of a return of the disease. The pain will be soothed by simple enemata of tepid water, so as to keep the feces soft, and at the same time to allay rectal irritation. This will be still better accomplished by suppositories or enemata of opium, and if there be stricture, by the introduction of the extracts of belladonna or of stramonium, in a fluid form, through a canula, or a projecting terminal tube of a syringe carried past the obstruction. Bougies have been used, but with very equivocal benefit. By the mouth, narcotics may be administered conjoined with minute doses of corrosive sublimate or arsenical solution. Washes of chloride of lime or of soda will temporarily abate the cancerous ulceration and remove offensive odours. Iodine, topically applied and administered internally, merits a trial. The hip-bath is a soothing remedy. Recumbent posture and a light yet nourishing diet are to be enjoined.

Sometimes bad ulcers and vegetations at the margin of the anus have been confounded with cancer. Their cure may be brought about by mer-

curials internally, and suitably stimulant applications, among the best of which are nitrate of silver and sulphate of copper externally.

Neuralgia of the rectum will occur as part of a similar disease affecting other regions, — either remote, as the face, or contiguous organs, as the neck of the bladder and the uterus. Of its association with spasmodic stricture of the rectum and anus, and fissures, I have already spoken. Where it is unattended by any organic change, we must be content to treat it as we would neuralgia in other parts; and to find, also, our success to be, as in the latter case, very unequal. Sulphate of quinia, iron, opium, arsenic by the mouth, and belladonna topically applied, have all been used, and all have at times failed to relieve the sufferings of the patient. Some have been benefited by dilatation of the anus by bougies; others have derived no benefit from the remedy. There are certain general rules, however, for our guidance in all cases of neuralgia, which are, of course, applicable to the present variety; viz., to restore the digestive organs to a healthy state; to make a mild and abiding impression on the system by vegetable and mineral tonics — sulphate of quinia representing the first, and some preparation of iron the second — associated with opium or sulphate of morphia; a few leeches to the affected part, and vesication and counter-irritation in its vicinity or of some one of the vertebræ; in this case it might be at the junction of the last lumbar one with the sacrum. Endermic medication, by the application of morphia and belladonna to a denuded skin, might also be practised with advantage; and likewise douches of warm or hot water from some height along the whole course of the spine. Incision, carried through the sphincter, was found, by Dr. Bushe, to give, in one case, entire relief from pain and all the other troublesome symptoms. If we have reason to believe that the neuralgia of the intestine is secondary to that of the bladder or uterus, or is dependent on the disease of either of these organs, we shall of course address our remedies to them primarily.

Preternatural Pouches or Cavities of the Anus deserve to be noticed in this place, in connexion particularly with *neuralgia* of the same part The morbid condition of tissues constituting this disease, was first clearly pointed out by Dr. Physick. The symptoms are thus described by Dr. Reynell Coates, in the article to which I have before referred. "The patient makes little or perhaps no complaint in the interval between the stools, but more frequently he suffers a continued uneasiness about the anus, which varies in character in different individuals. Some state that the sensation is indescribable, but very uncomfortable; others compare it to the crawling of an insect within the canal; whilst others suffer an intolerable itching, sometimes sufficiently severe to produce insomnolence and extreme distress. It is apt to be most severe at night. One patient described the uneasiness to feel like the pressure of a ton weight upon the anus.

Pain is rarely felt except after a stool, *nor is then present at every evacuation;* several days may pass over and several discharges may take place without material exacerbation of the symptoms; yet at the next stool the pain may be excruciating. The exacerbation does not precede the evacuation, as it generally does in inflammatory affections of the anus; but commonly follows after an interval of a few minutes; it is most severe at its first attack, and gradually subsides and disappears in a few hours. Dr. Physick has never observed it to be complicated with spasm of the

sphincter, as is the fissure of the anus. (See § 11.) When the finger is introduced into the anus, it perceives no well-defined tumour, and seldom any other marks of disease." p. 124, *op. cit.* Dr. Physick used to explore the lower part of the canal by means of a probe, with about half an inch of its extremity doubled back upon itself so as to form a kind of hook. "If the uneasiness and other symptoms are really occasioned by the presence of these cavities, a little patience and perseverance in causing the probe to advance and retreat along the canal, so as to bring the point to bear successively on various parts of its circumference, will render their existence and character sufficiently obvious. The reverted point passes through a small orifice and enters a cavity or hollow space, of greater or less dimensions, situated immediately within or beneath the integument; and it is sometimes so low as to become prominent under the external skin around the margin of the anus. The pouch is so exquisitely sensitive, that the presence of the instrument gives acute suffering; and so much of its parietes as is formed by the lining membrane of the canal is diaphanous, permitting the silver to shine distinctly through."

"The *mode of operating*, devised by Dr. Physick, for the relief of the complaint (one which has proved successful in every instance), consists in drawing down the membranous covering of the cavity by means of a bent probe, and then removing the whole of this portion, or as much of it as possible, by the scissors, taking care to include the orifice by which the probe enters in the part excised. The opposite surface is thus laid completely open to the anal canal." Attention to the state of the bowels is requisite, as in other cases of rectal irritation.

I have the more willingly introduced a description of this disease and the minor surgery by which it is cured, from my knowledge of the real sufferings of the patients who are afflicted with it, and of the shade which for a while rests on the tact and diagnostic skill of the medical attendant who does not appreciate the real cause of the distress. With a very little attention to the case, and the commonest dexterity in the use of an instrument, a practitioner in any section of the country is competent to the treatment of the *preternatural pouches* or *cavities of the anus;* and hence, he need not send his patient to be placed under the care of city surgeons or other professional celebrities.

Blenorrhagia, or *mucous and muco-purulent discharges from the anus*, sometimes are met with as resulting from the application of gonorrhœal matter to the anus, and on occasions without any specific cause. In the former case the inflammation runs high, and demands recourse to vigorous antiphlogistic measures, and cooling washes to the part. After this, the balsams, or the *confectio piperis nigri* (Ward's paste), will be prescribed with salutary effect,—followed by or alternating with injections of acetate of lead, sulphate of zinc or nitrate of silver in solution. Common mucous discharge, although a frequent attendant on piles, is not necessarily so, as it may be occasioned by ascarides or other irritating cause. The expulsion of these worms, when they are present, will be the first step; and should the discharge continue or arise from common irritation of the mucous glands, the balsams and local applications, as just advised in the other variety of the disease, will then come advantageously into use. If, again, this discharge be the direct sequence of inflammation of the anus, appropriate measures must be taken for the removal of this morbid state before we attempt to employ any remedy simply for the blenorrhagia.

Pruritus Ani.—Itching of the anus proceeds from various causes: in children and young persons, it is induced by ascarides; in older subjects, by erythematic and pruriginous eruption, secretions from the glands of the anus, and a deranged state of the intestines. According to our knowledge of the cause will be the remedies which we prescribe. Ascarides will be removed by aloetic and turpentine enemata, and by calomel followed by castor oil and tupentine. If costiveness and a depraved state of the bowels prevail, these are to be corrected by appropriate treatment. The most troublesome variety of *pruritus ani* is that dependent on cutaneous eruption, either centred here, or alternating with a similar disease on other parts of the skin. The treatment ought to be rational in all cases—due attention being paid to placing the digestive functions in order, regulating the diet of the patient by substituting one of vegetable and milk for animal food; or, if this latter is still allowable, to discard spices and condiments, and all made dishes and stimulating drinks, among which, in the present case, we must include coffee. The local remedies will be tepid ablution and emollient fomentations. After these measures, which will often of themselves suffice for a removal of the disease, we may, if it still persist, have recourse to the various alteratives, mercurial, antimonial, saline, sulphurous, or iodinic,—in alteration or combination; and also occasionally drinks of vegetable decoctions, which experience has ascertained to be serviceable in the eruption affecting other parts of the cutaneous surface. At this period of the treatment some astringent and stimulating applications may be of service; such as an infusion of oak-bark or of nut-galls, creosote, and an ointment or a solution of nitrate of silver: a good purpose will be answered by running a pencil of nitrate of silver lightly over the affected skin.

LECTURE XXXIII.

DR. BELL.

Colic—Its chief divisions—Community of causes, and of many symptoms and other pathological features of these varieties—Inference to guide us in the treatment.—Simple Colic—Its seat and diagnostic symptoms—Varieties of simple colic—Treatment—Preliminary inquiries to be made—Remedies according to the cause of colic—from cold, indigestible matters, or stercoraceous accumulations—Carminatives—Enemata—Purgatives—Venesection—Cupping—Liniments of narcotic substances—Oil of turpentine—Croton oil.—*Infantile colic*—Two varieties of—the stercoraceous and that from indigestible matters—Modifications of treatment in consequence—Importance of attention to the diet and health of the mother—Danger from habit of giving opium to children.—Periodical infantile colic.

In making colic the subject of the present lecture, I wish, in advance, to apprise you, that under this head I place simple or common colic, including the nervous, flatulent, and stercoraceous; bilious colic; colic of Madrid, or dry bellyache; ileus, and painters' colic, or *colica pictonum*. As Dr. Stokes has treated of the last, it remains for me to say something of the other kinds of colic. They all have this much in common,—that there is great exaltation of intestinal sensibility, with violent and unequal contraction and dilatation of portions of the intestinal canal,—pent-up

flatus, and its occasional explosive discharge; constipation, and the occasional occurrence of inflammation. Indigestible matters, or other irritants to the digestive canal, combined with sudden chill and suppression of perspiration, will suffice to bring on cases of all the kinds of colic, even a return of the *colica pictonum*, or lead colic, although this last must be traced to the deleterious operation of lead in the first instance. By habituating yourselves to this general picture and community of symptoms and causes, you will the more readily appreciate the propriety of a general sameness of treatment, without, however, determinately avoiding some specialties called for by certain peculiarities of the case,—as in lead colic. That which we ought to guard against is, making some of the traits of the disease pass for the entire picture, and some of the remedies frequently employed constitute the whole of the curative treatment. Thus, in common flatulent colic, we give often and with advantage, carminatives, and fear little from inflammation; but there are cases in which the phlogosis is going on insidiously without any other premonition than this flatulence: and of course carminatives being exciters are injurious. In bilious colic, the discharge of bile and emptying the intestines will often suffice for the relief of the patient; but perilous will be our mistake, if we always rely on vomiting or purging, or even make them the chief end of our therapeutical measures. In lead colic itself, in which the nervous system is poisoned, we must not rely on antidotes or means purely directed to neutralise the poison, to the exclusion of remedies adapted to common inflammation. Spasm, or unequal and violent contraction and dilatation of the muscular coat of the intestines, in which, in most of the kinds of colic, the voluntary muscles also participate, generally requires at once opium in full doses to allay the morbid excitement of the nerves on which the irregular muscular action depends. But this will only be a step towards a cure, if crude matters remain in the stomach or compacted feces in the great intestine, or morbid secretions and chymous residue choke up the duodenum, or inflammation has seized on some portion of the intestinal canal.

Simple Colic.—The origin of the word colic, from κωλον, implies the belief entertained by the ancient writers of the seat of the disease. At the present time, we give a much more extended or rather diversified location to colic; but I should still be inclined so far to respect the opinion of antiquity, as to believe that colic of all kinds is, at one stage or another of its duration, marked by the evolution and irregular escape of flatus, and that this chiefly comes from the colon. I know that air is extricated in the process of digestion in all parts of the alimentary canal, and that every now and then such evolution taking place in the stomach is a source of much disturbance and pain before it is expelled. But, extrication of gas, the product of secretion, I regard as one of the diagnostic symptoms of colic, most evident in the simple kind, but met with, more or less, in all; nor can I believe it to be merely the air commonly present in the gastro-intestinal cavity, and retained by more or less weakness and distention of the muscular coat in parts of the cavity. With some writers pain and a morbid state of the nerves supplying the intestines on which it depends, are regarded as the chief characteristics of colic, and hence they designate it as an enteralgia. But this, it seems to me, is quite too restricted a view, as is that other which would make it consist in a lesion of contractility. To a certain extent both these errors are committed by

M. Andral in his Internal Pathology (*op. cit.*), where, under the head of Order I, *Neuroses of the Digestive Tube characterized by a Lesion of Contractility*, he introduces the second species, or that in the intestines, and its genera as equivalent to so many colics, including, in the fourth genus, *ileus* itself: and under Order II, or *Neuroses marked by a Lesion of Sensibility*, he places, after gastralgia and various enteralgias, the saturnine colic, or colica pictonum, colic from copper, the colic of Madrid, vegetable colic, and nervous colic.

Were I to define colic, I should say, that it is a disease of some portion of the gastro-intestinal canal, in which there is morbid sensibility and contractility with morbid secretion, commonly that of air; and manifested by acute pain, rolling and twisting, alternating with flatulent distention and spasmodic contractions of the bowels, and often of the abdominal muscles; with sometimes vomiting, and almost always constipation. The locomotive muscles are sometimes contracted painfully and irregularly at the same time. In simple colic, the chief but not the sole derangement is nervous, the result of morbid excitement of some part of this system by any gross irritant, viz., food in the stomach, and sometimes in the small intestine; in which last the hepatic and pancreatic secretions are now and then additional irritants; and feces and remains of ingesta unchanged in the colon. An unaccustomed stimulus will sometimes, alone, bring on colic in a healthy person, as when the disease follows the taking of unripe fruit, crude vegetables, and certain meats; but when it recurs frequently and after slight exciting causes, we must suppose that a predisposition is induced, as by cold and wet feet, or obstructed perspiration, deteriorated state of the digestive organs by the use of ardent spirits, wines or mixed acescent liquors; in females, by the process of menstruation, &c.

I have said that the chief but not the sole derangement in simple colic is that of some part of the nervous system; but, as already intimated, I consider the disease to be something more than mere enteralgia. You will see a patient with the latter disease suffering often acutely, but without spasm and the extrication or escape of flatus, which occur in colic. Not only then is there a lesion in the nerves of sensation and motion, but likewise of secretion, in this latter disease. Still, the predominance of the nervous element and the absence generally of inflammation in colic, are evinced in the circumstance of pressure being not only tolerated but almost instinctively sought for by the patient; and this is a peculiarity which distinguishes this disease, as indeed it also does enteralgia, from gastro-enteritis and enteritis. Another diagnostic sign is the little change in the pulse, as regards frequency; whereas in enteritis it is greatly accelerated.

The varieties of common colic laid down by some writers,—viz., the *nervous*, the *flatulent*, and the *spasmodic*, are neither useful nor instructive; for every colic is nervous, and flatulent, and spasmodic, if these terms are intended to apply to the systems — the intestinal, nervous, and muscular — which are affected, or to the symptoms. But if by nervous we mean to designate the temperament, as well as some of the exciting causes, and the symptoms in remote organs manifesting disorder of innervation, less objection can be found to the use of the word. In females, and in persons leading a studious or sedentary life and whose temperament is nervous or irritable, and habit of bowels costive, a slight error in regimen, exposure to cold, and often very strong mental emotion, will bring on an attack of

colic; in which, besides pain, spasm, borborygmi, and escape of flatus upwards or downwards, and sometimes both ways, there is a pale and anxious expression of the face, cold sweat, and a sinking and loss of strength almost to fainting.

Colic has been subdivided into numerous varieties, according to its presumed obvious and material exciting cause; and in this way we read of the *colica cibaria*, *c. constipata*, *c. constrictiva*, of Good, and *colique vegetale* of Chomel and other French writers. A knowledge of the immediate cause will be useful to us in treating the disease, but will hardly justify our swelling the nosological catalogue, in consequence, by new names. Of the propriety of the term bilious colic I shall soon take occasion to speak.

Treatment. — When called to a case of colic our diagnosis should be as complete as possible. First, we are to ascertain whether it is merely symptomatic of disease of some other organ than the gastro-intestinal canal; sometimes inflamed kidney, distended bladder, irritated or impregnated uterus, or congested liver, will give rise to colic. Second, we are to inquire, particularly, if there is vomiting and intense and continued pain, and the constipation has been of long duration, into the previous history of the patient, or whether he has had hernia; and failing to be satisfied on this head, we should make the requisite examination at the abdominal ring, and in the inguinal and umbilical regions. Thirdly, we are to learn whether any offending substance of an alimentary or other nature has been swallowed for some hours preceding the attack. Fourthly, what cause, either in exposure to cold and moisture, use of alcoholic and acid drinks, menstrual period, or depressing passions, may have predisposed to an attack of the disease. Finally, we ought, by careful observation of all the symptoms and by palpation of the abdomen, to try and determine the particular part of the intestinal canal which suffers most, and in which there may be an obstruction by feces or other matter impacted in the intestine.

In slighter cases of colic, some aromatic water, as of mint, peppermint, ginger, cinnamon, dill, &c., a few drops of essential oil of these and kindred plants on sugar, forming an æleo-saccharum, or an essence made by solution of the oils in alcohol, will often suffice to give relief, by discharging flatus and equalising the action of the muscular coat of the intestine. Persistent pain and spasm with a cold skin will require from twenty to thirty and even sixty drops of laudanum, with a little sugar and water, or combined with some aromatic. In nervous and hysterical subjects, infusion of valerian, mixture or tincture of assafœtida, oil of turpentine, and some of the balsams, are indicated. Enemata of a similar nature are sometimes called for, where the distress, from flatus in the lower bowels, is considerable, especially if constipation have preceded the attack. The effect of all these substances will be increased by warm bodies, as of hot bricks, bottles filled with hot water, &c., applied to the feet and legs, warm flannel to the abdomen, or preferably to all of these, immersion in a warm bath to the very limit of a hot one, or at 98° Fahrenheit, for half an hour.

Colic from indigestible or indigested food, accompanied with pain at the stomach and nausea or slight inclination to vomit, will be benefited by evacuating this viscus of its contents. The patient should be encouraged to drink freely of tepid water, or salt and water; or ten to fifteen grains of ipecacuanha may be administered in a little water. I very early

in my medical novitiate learned a lesson touching the value of an emetic in *colica cibaria*, as Dr. Good would call it. The case was of a stout butcher, to whom, in the absence of my preceptor, I was required to administer relief. I gave him essence of peppermint, and mint tea, and hartshorn and laudanum, in succession, but without any notable mitigation of his disease, until, happily, owing either to the irritation from the admixture of my medicines, or to that from the offending food which he had eaten a few hours before dinner, he vomited up the latter. The consequence of this evacuation was immediate and entire relief. In colic from excessive repletion, or from substances not readily changed in the stomach, but which irritate the nerves of the mucous coat of the whole digestive canal in their passage downwards, after pain in the upper bowels and efforts to vomit there succeed colic in the large intestine and purging, by which the offending cause is more or less completely carried away and the disease removed. It will generally be prudent, however, after an attack of this nature, to administer a laxative, such as castor oil with some carminative, or rhubarb and magnesia with a few grains of ginger; its operation to be aided by diluents—barley or rice water, or gruel and the like. When the stomach is irritable or the taste very fastidious, a calomel pill of five or ten grains, followed by magnesia or a Seidlitz powder, or cold infusion of senna, will be preferred to the castor oil or rhubarb.

Stercoraceous Colic.—In other cases, the sustaining if not actually exciting cause of colic is in the colon, and consists of hardened feces, or sometimes of intestinal concretions. We have then a collection of symptoms, some of which are indicative of a paroxysm of atonic colonic dyspepsia; others manifest a state of things very analogous to stercoral inflammation of the cæcum,—described in former lectures. In some tolerably thin subjects we can assure ourselves of the direct cause of this malady by feeling the indurated matter in the colon, particularly at its arch and in each iliac region, through the abdominal integuments. In this variety of colic there is less distention of the bowels and irregular puffiness in any part of the abdomen; and the pain, which is referable to the colon and between the iliac region and the umbilicus, is more fixed than in the flatulent colic. More complaint is made of pain in one of the kidneys and of the scanty discharge of urine, which is high-coloured and sometimes quite offensive. The stomach is irritable at intervals, and occasionally vomiting of green matter is met with; the pulse is not increased in frequency, sometimes it is slower than natural, but at the same time rather full, and often quite hard and resisting; the tongue is white and moist.

The indications of cure in this variety of colic are—1, to procure the evacuation of the impacted feces; and, 2, to prevent their undue accumulation. But the means are not so simple nor so easy of operation as this announcement might seem to imply. Often we have to combat more than mere atony or enfeebled contractility of the intestinal muscles, one evidence of which, Dr. Abercrombie thinks, is an undue dilatation of some part or parts of the canal. Were this all, we need only to give purgatives, with a view to stimulate the bowels to increased contraction in order to enable them to expel their contents; but, there is not unfrequently associated with the constipation and distention from flatus, a spasmodic contraction of parts of the canal which requires other remedies. Of these the chief ones are bloodletting, more generally from the arm, sometimes by cups or leeches to the iliac or other region of the abdomen, and opium.

If the stomach tolerates the medicine, we may properly begin the treatment of stercoraceous colic with the administration of castor oil, given with some aromatic water; its operation to be quickened and aided by common purgative enemata, such as infusion of salts and senna, or castor oil mixed with gruel and molasses. Melted lard, in the quantity of half a pint, administered by the mouth, and repeated after an interval of four or five hours, has been found to succeed after the failure of even tobacco injections. Much flatus and distention being present, assafœtida mixture, or, in less quantity, the tincture, will be added advantageously to the purgative enema. An active combination for this purpose is, castor oil, ℥ij.; oil of turpentine, ℥ss.; gruel or flaxseed mucilage, one pint; tincture of assafœtida, two drachms, or mixture of this medicine, ℥i. Sometimes, after the rectum is evacuated, we are unsuccessful in procuring the farther discharge of feces, owing to a spasmodic stricture at the lower part of the colon, or at its sigmoid flexure, by which the passage downwards of wind and feces, and upwards from the rectum of enemata, are alike prevented. In such a case, it will be necessary to have recourse to the expedients already mentioned, when I spoke of enemata in cæcal accumulations (Lect. XXVII.), and of the treatment of cæcitis (Lect. XXVIII.), particularly in reference to the introduction of an elastic tube beyond the constricted part of the colon, in order to allow of the escape of pent-up gas as well as of the introduction of enemata from a syringe attached to the tube. A measure of this kind is still more called for if the obstruction and colic be caused by strangulated intestine, as in hernia. In extreme cases, recourse will be had to tobacco enemata.

I must now direct your attention to a state of things of very probable, I may say common, occurrence, not adequately dwelt on by writers and practitioners. It is the gradual coming on of the constipation and morbid state of the intestinal canal, of which this is often a symptom merely, or one of the effects; and the strong probability of inflammation, not very acute, indeed, but still quite decided, having been established before the patient was laid up in bed and had sent for the doctor. The more immediate and pressing uneasiness with the sick man himself is costiveness, with its concomitants, heat and fulness of the part, and some flatulence; and to its removal he directs himself with domestic prescriptions. These being found ineffectual, the physician is sent for, who, not seldom, too readily adopts the erroneous pathology, and with it the purgative practice of his patient; and persists in administering purges, one after another, or in combination, and enemata of the same nature. Mere spasmodic colic with fecal accumulations will every now and then be removed by these means; but if, as I have just intimated, there be inflammation, we ought to lose no time, after the initial and probationary steps of giving some purgative medicine by the mouth and *per anum* have been tried without effect, to draw blood from the arm, even though the pulse be not frequent and the pain of the abdomen be inconsiderable. After venesection, calomel, in a dose of ten grains with one grain of opium or four or five of hyosciamus extract, may be given, and the patient made to take a tablespoonful, every half-hour, of a solution of one ounce of sulphate of magnesia in four ounces of water. The passage of flatus downwards and *per anum* indicate that the bowels are about to yield and to discharge the matters accumulated in them, and at the same time the propriety of giving an enema, either simple or purgative. But if, in twelve hours after vene-

section, the bowels are not moved; if the pain and restlessness return, or the stomach is nauseated, or bilious and other matters are ejected from it; and, also, if the pulse is hard, even though of its common frequency, and there is thirst, we must not hesitate to draw blood again from the arm; or, at any rate, to apply cups to the lumbar region of each side, or leeches over the abdomen—around the umbilicus, and in the course of the great arch of the colon and the iliac regions. Making now the discharge of feces an affair of secondary moment, we continue to keep up the relaxation which was begun by the bleeding, and which alone will sometimes be followed by a stool. For this purpose we direct tartar emetic with opium in small and frequently repeated doses, or hydrocyanic acid; calomel with hyosciamus every hour; fomentations to the abdomen and warm water enema;—in fine, all the measures which have been already pointed out for the cure of cæcitis, including even liniments of belladonna rubbed on the abdomen, and a suppository of this medicine. Relaxation of the bowels induced in this way will be evidenced by easy fecal evacuations, and may be received at the same time as evidence of the abatement, perhaps removal, of the disease, and not, as before, of one of its symptoms. If purgatives are still required, we can, with safety, have recourse to castor oil and oil of turpentine, in the proportion of an ounce of the first and half an ounce of the second, mixed with gruel or with some mucilage, and flavoured with oil of cinnamon or peppermint. Occasionally one drop to two drops of croton oil, mixed with crumb of bread in the form of pills, or with syrup of gum arabic, will answer, in cases of very sluggish bowels in lymphatic temperaments, or where we have no apprehensions about inflammation. If the state of the stomach prohibits the administration by the mouth of purgatives, they may be introduced into the rectum, as heretofore advised. It should be borne in mind, that, after the colon has been once unloaded of its accumulated contents, subsequent motions of the bowels are best procured by mild or laxative medicines and compounds, in which sulphur merits a leading place.

Infantile colic is sometimes of the stercoraceous variety; but more frequently it depends on morbid secretions from the liver and bowels, and on imperfect change which the food undergoes from its want of adaptation to the digestive sensibility. Of the first kind is the colic of new-born infants, or when the viscid meconium adheres to the colon, and is not evacuated. Castor oil warmed, and in doses of half a drachm to a drachm, and in more obstinate cases of retention with the addition of five drops of oil of turpentine, will generally suffice to give relief in a case of this nature. Doctor Dewees (*On the Physical and Medical Treatment of Children*) details a case of disease, which, by the way, was not colic, caused by retention of the meconium, and in which the common laxatives, castor oil and magnesia, failed to operate. He succeeded at last by the administration of a grain of the carbonate of soda, dissolved in a teaspoonful of lukewarm water, every fifteen minutes, until ten grains were taken. Another modification of stercoraceous colic is met with in infants who are habitually constipated, and whose appetite and growth are both vigorous. Purgatives, as is soon discovered, are not the remedy in this case. We must be content to palliate until, with time and some natural change in the functions, the bad habit is changed. Laxative enemata of the simple kind, or occasionally a little castor oil, or spiced syrup of rhubarb, or manna dissolved in its food, as sweetening, if the child uses

spoon-victuals, will generally suffice. A suppository of soap is occasionally useful. I have sometimes given from a quarter to half a grain or a grain of calomel with a little magnesia; but of course not frequently, still less habitually, in every case. This prescription is called for when colic proceeds from deficient secretion of bile, as in jaundice. In this disease, as it attacks new-born infants, I have had occasion to be much pleased with the oil of turpentine, in doses of from ten to twenty drops, with a teaspoonful of castor or sweet oil, repeated at an interval of twenty-four or forty-eight hours. It is, also, one of the best medicines for infantile colic with constipation. Simple syrup, with a little of some essential oil, answers well at times, as follows:—Simple syrup, one pint; oil of rue, 8 to 10 drops. Mix. Dose, one to two teaspoonfuls.

In the other, and still more common, colic of children, depending on indigestion, our attention must be first directed to the health of the mother. In her bad digestion or other derangement of health, kept up, sometimes by gross and improper food, drinking tea and coffee to excess, and malt liquors; sometimes by want of air and exercise, and late hours; and again, by indulgence in strong emotions, or by any cause which irritates the nervous system, must we seek an explanation of the depraved nature of her milk, and, consequently, of colic and other forms of indigestion of the infant. Dr. Dewees (*op. cit.*) relates a case of serious and alarming disease of a child, beginning with colic and going on to vomiting and diarrhœa with great emaciation, which was produced by the altered quality of its mother's milk, owing to severe and protracted toothache. To the child itself suffering from colic, a few grains of carbonate of magnesia, with some simple carminative,—mint, or peppermint water, or camphor mixture, or a grain of subcarbonate of potassa, or two or three drops of liquor potassæ in a similar fluid, with sugar,—will often give relief, without interfering with the peristaltic actions of the bowels, or impairing the digestive energy, as all cordials and mixtures into which opium enters are so apt to do. *Calamus aromaticus*, in powder, with chalk or magnesia, answers a similar intention. In some extreme cases of suffering, a drop or two of laudanum will give the desired relief; but never ought the physician to prescribe it regularly, nor to allow of its regular use in the nursery. He can hardly be too emphatic in his cautions against the dangers of the practice of habitual laudanum or opium-taking in child or adult.

In some cases, infantile colic recurs so regularly at particular times in twenty-four hours as to force attention to periodicity, and to suggest its being treated accordingly. I have, in cases of this nature, given the sulphate of quinia in a dose of a twelfth to an eighth of a grain in solution, with the effect of greatly mitigating the violence of the attack, and sometimes of warding it off entirely. One may, however, reasonably suspect, that this periodical colic is sometimes owing to the recurrence of some known exciting cause, as in the quality of the mother's milk at a particular time in the twenty-four hours, rather than to an organic condition of the nervous system which generally gives rise to periodicity. In confirmation of this, I may state one of my boarding-school reminiscences. A boy, whose digestive organs were never very strong, used to have, regularly every Monday afternoon, an attack of colic; not very severe, it is true, but quite troublesome and well-marked in all its symptoms. The cause of this weekly return of disease was almost forced on his attention, after a while, by its uniformly following a dinner on cold beef, which was

the regular dish of meat for Monday. Many a dyspeptic, who thinks that his sufferings are entailed on him, of necessity, for life, would discover, by a little retrospection of his diet during the preceding twenty-four hours, that these are avoidable; and that if he were to omit some article of the *cold-beef* class, he would escape his special ailment.

Before dismissing the treatment of infantile colic, let me enjoin attention to carefully covering the feet of the child with warm socks and shoes, which ought occasionally in the day to be taken off, and the feet well rubbed by the warm hands of its mother or nurse before the fire, or over a flue of hot air. The early use of a tepid salt water bath, to be followed by careful friction over the abdomen and the lower limbs, will prove to be a useful preventive of colic, as well as corroborant of the system generally.

LECTURE XXXIV.

DR. BELL.

BILIOUS COLIC—Time of its attacks—Causes and Symptoms—Anatomical lesions—Treatment—Venesection—Opiates—The warm bath or fomentations—Purgatives—Enemata—Means of acting on the bowels—Calomel—Caution against too early excitement of any kind—Recourse at times again to bloodletting—Dover's powder—Blisters—Practice by others—Sydenham's directions—Emetics sometimes used.—DRY BELLYACHE—Analogous to bilious colic—Does not arise from lead—Common formerly in the West Indies and in America—Description by Hillary—Paralysis of limbs—Metastasis.—COLIC OF MADRID—Closely resembles the preceding—Causes of—Symptoms—Anatomical lesions.—*Devonshire Colic*—Causes.—*Vegetable Colic*, similar to the preceding—Treatment of this kind of colic, including the preceding varieties.

BILIOUS COLIC.—The extension which I have given to my remarks on the subject of common colic and its varieties, by enabling me to notice some of the chief points of the pathology and of the therapeutical treatment of colic in general, will free me from the necessity of an elaborate account of *bilious colic*, the dangerous character of which entitles it, however, to a careful study. First, as respects the name: although, certainly, it is not a proper pathological one, we can hardly see any harm now in retaining it, provided we no longer believe that the disease proceeds either from a deficiency or redundancy of bile. Our scruples on this point will be abated, if not overcome. by knowing that the title of bilious colic has the sanction of Sydenham, whose outlines of its treatment are those which, in the main, have proved to be the most accurately drawn.

Bilious colic, as far as my own observations extend, is a disease much more frequently met with in the country than in cities: at least I saw more cases of it when a student in Virginia than I have since met with either in private or public (Dispensary) practice in Philadelphia. Bilious colic makes its attacks in the great heats of summer, and is a precursor, on the score of time, as it is sometimes more immediately in the same person, of bilious fever. Some are more predisposed to the disease, so as to be much more readily affected than others by its occasional or exciting causes:—These are, excess in the quantity, and error in the quality of the food; free potations of spirituous or acescent liquors; cold drinks, as of

ice water or milk, especially if the stomach has been weakened by indulgence in the use of strong liquors; hard labour, or excessive exercise of any kind in a hot sun, and subsequent exposure to the cool damp air of night, by sleeping either in the open air or under open windows, in-doors. A little difference, hardly appreciable, in the constitution of two individuals, and perhaps in the quality of the articles eaten at supper, will cause in the one bilious colic, in the other *cholera morbus*.

Symptoms. — Bilious colic is sometimes preceded by indigestion and slight febrile action: but, often, it comes on suddenly in the night or at an early hour in the morning without other premonition than a slight chill. The symptoms are — irritability of the stomach, and occasionally vomiting of, first, the contents of the stomach, and, subsequently, bilious matter; pain in different parts of the intestinal canal and distention by flatus; cramp of the abdominal muscles, which is soon participated in by the muscles of the limbs, especially the lower ones; coldness of the surface, particularly of the hands and feet. After a short time, the skin of the abdomen is hot, the face is flushed, and there is some throbbing of the temporal arteries; the pulse, at first small or not materially changed, is now frequent, hard, and voluminous; the tongue is loaded and of a yellowish colour. To these succeeds an expression of anxiety and suffering; the complexion is altered from its natural colour to a dingy-yellow hue,— partially relieved, in the stage of febrile reaction, by a blush on the cheeks. The bowels are almost universally in a constipated state, — a symptom this, diagnostic of the disease from *cholera morbus*. Sometimes the vomiting is carried so far as to constitute the iliac passion. Numbness and tremors of the upper extremities are occasional symptoms.

The *anatomical lesions* manifested in the bodies of those who have sunk under bilious colic are, chiefly, inflammation and inflammatory congestion of various parts of the small intestine, particularly of the duodenum and the ileum, and similar though less marked alterations in the stomach, and morbid accumulation of blood in the liver. If we connect these appearances with the symptoms sketched above, we can have no hesitation in regarding bilious colic as a true gastro-enteritis, with the occasional complication of hepatic disorder.

Treatment. — The treatment of bilious colic with which I became early familiar, is the best adapted, if we except the too free use of purgatives, to the chief exigencies of most cases of the disease. It consists in venesection, from sixteen to twenty-four ounces, the administration of sixty to a hundred drops of laudanum, or three or four grains of opium, if the stomach is irritable, immersion in the warm bath, or, in its stead, fomentations over the abdomen of cloths squeezed out of hot vinegar and water, and sinapisms to the legs and arms. Relief commonly procured by these means is rendered more abiding by large purgative enemata, as of an infusion of senna with salts, castor oil with turpentine and assafœtida, repeated until the bowels are freely evacuated. The recurrence of pain will be met by simple enemata of warm water, or by those of fluid in small bulk with which thirty to forty drops of laudanum have been mixed.

Having by this active treatment procured a respite from suffering, and a remission, in part, of the disease, the next point to be determined is how far and by what means the bowels should be acted on with a view to their complete evacuation. In the same school in which I was initiated into the early treatment of bilious colic I was taught the advantages of a

full dose, say twelve to fifteen grains, of calomel at this time,—either alone, or if the stomach was still irritable, combined with two or three grains of opium. More commonly, this prescription was made with a view to its administration preceding nearly all other remedies by the mouth. But in place of the laudanum or opium, in this fashion, I now prefer the simple course, — viz., to obtain a cessation of all the symptoms by the treatment which I have laid down, and then to give a calomel pill in the dose just indicated. In prescribing this medicine at this time and in this dose, I bear in mind, and indeed participate in, the strong dislike which the Broussais school entertain to drastic or irritating purges in gastro-enteritis. But I do not think that in my practice I am inconsistent with my theory. I believe calomel to be, when judiciously timed in its administration, one of the best remedies we have in phlegmasia of the digestive canal: at the same time, it must be acknowledged, that I am more persuaded of the fact than ready with an adequate explanation. The calomel now given, in its passage downwards, exerts a kindly operation on the duodenum and the ileum, and by its impression on the former being transmitted to the liver it acts on this latter organ, which is, in consequence, relieved from its temporary congestion, and secretes bile. The large intestine, obedient to the double stimulation of the bile brought to it from above and of the calomel, now discharges freely its contents, together with those which have been passed down from the small intestines; and entire relief, manifested often in a tranquil sleep, is soon after enjoyed by the patient. It may be, that the calomel is slow in its operation, or that, although it is the first and often the best medicine to tranquillise an irritable stomach, it now, just at the time of its passage through the ileo-cæcal valve, causes sympathetic nausea and sickness. In either case, we give moderately stimulating enemata — often tepid water with some common salt dissolved in it will answer — and repeated until there be free evacuations. In desiring free evacuations in colic in all its varieties, I am not influenced merely by the consideration of removing irritating matter from the bowels, and diminishing excitement by the discharges from the mucous surface, but also by that of being assured that the regular peristaltic action is re-established in the entire course of the digestive canal.

At this juncture, when the violence of the attack has subsided, the practitioner must be on the alert, in order to ascertain, very positively, whether the disease is removed, and only rest and simple farinaceous diet are required for restoration, or whether it is merely in a state of remission. If the latter, he will expect to find the pulse somewhat hard, or slightly corded and frequent, and the abdomen still tender; not that diffused tenderness which any muscular part will evince after violent exertion, either normal or spasmodic, but circumscribed in some portion, as the iliac region, or round the umbilicus. The tongue at the same time is dry and furred, and the thirst considerable. This is a critical period of the disease. If recourse be had now to drastic purgatives, or, from mistaken notions about debility, to tonics, the inflammation of the intestine will be aggravated, the distress of the stomach increased, and the disease terminate rapidly and fatally. Equally to be dreaded is the ingestion of animal broths or stimulating drinks, sometimes allowed under the idea that the first remission is the actual beginning of convalescence. I have seen the disease terminate fatally after an imprudence of this nature. Should there be doubt about the real state of the digestive canal, the safer plan will be

to abstain for a day or two from active medication, and certainly from animal food or diffusible stimuli, under which head I include vinous and distilled liquors, until the characteristic symptoms, one way or another, are more fully developed. But if the symptoms indicated at the beginning of these remarks be present, we should have recourse to the use of leeches, or, if there be not too great tenderness of abdomen, to cups applied on the iliac and lumbar regions. Circumstances preventing recourse to either of these means of local abstraction of blood, we ought to endeavour to attain our end by venesection in small quantities, viz., six ounces at a time; watching the effect, and repeating in twelve hours the operation, if the pain and tenderness of a portion of the abdomen corresponding with the intestines beneath seem to call for the measure. During this time we should abstain from irritating the bowels, either by active purging or by strong enemata. Tepid water thrown up the rectum will answer every purpose in procuring regular evacuations. Antimonials with opium, or Dover's powder, given at intervals of two or three hours throughout the twenty-four, contribute to remove the inflammation and to abate febrile action. Revulsion, by blisters over the abdomen or to the lower limbs, and warm pediluvia, may next be used with advantage.

Having sketched the course of treatment in bilious colic which my own experience induces me to believe correct, I will add some particulars of the practice of others in the disease. If I refer first to that of Sydenham, it is that I may express the obligation which we all owe to that great man's precepts on this head. He began with freely bleeding from the arm, and in three or four hours administered an opiate. The next day he directed some lenient purgative, and ordered it to be repeated a second time, at a day's interval, and sometimes a third time, "according as the remains of the humour seemed to be more or less in quantity." This phraseology, of the humour, at the present time, seems to us to be misplaced. Is that of 'depraved secretions' very different, or more philosophical? In case the stomach were oppressed "with a surfeit of fruit, or with any other kind of aliment of difficult digestion," his first prescription was free dilution, followed by vomiting, after which he gave an opiate, and on the following day opened a vein and purged, as just described. Some exceptions will be taken to his advice, in a more violent form of the disease, viz.: to give strong purgatives when the milder do not operate. This error is, however, redeemed by his subsequent remark; that where, either from the weakness of the stomach or from the vomiting, purgative pills cannot be retained, he prescribes an opiate and in a few hours after a purgative. But, because a purge always increases the pain in this and most other diseases where opiates are indicated, at least when the operation is over, the patient sometimes finding relief whilst it works, Sydenham generally gave an opiate immediately after the operation of the purgative, and ordered it to be repeated daily, morning and evening, on the intermediate days between those in which purgatives were administered. When the affair of purging is over, he endeavoured "to check the violent motion of the humours, which is all that now remains to be done," by exhibiting an opiate every morning and evening. Sometimes, when the case demanded it, omitting both bleeding and purging, he recommended the cure to be begun with opiates; as where the patient had been subjected, by reason of some preceding illness, to large evacuations, or was in a state of indirect debility from the excessive use of wine or any spirituous liquor.

A tendency to recurrence of bilious colic, which, by the way, is quite common, is, according to Sydenham, destroyed by the patient's using much exercise on horseback—a remedy which he extols as very successful in most chronic diseases.

Emetics, in bilious colic, have been freely employed by different practitioners since Sydenham's time, and, as may be inferred from the accounts on the subject, with benefit. The stomach is evacuated, by this means, of irritating ingesta, which, despite the retching and vomiting that are often part of the disease, would otherwise remain for some time the source of continued distress; the liver is made to discharge more freely its bile, which finds its exit not only upwards by the stomach, but passes downwards, and may be supposed to contribute to a relief of the lower bowels, by either purging itself off, or rendering the enemata easier in their operation. But, in addition to these commonly cited advantages alleged to follow the administration of an emetic, there is another and more important one yet which would incline me to this remedy: it is the general relaxation of the capillary system and diminution of vascular excitement. In order to procure this result, a selection should be made of that article the action of which is not limited to the stomach, but which is diffused through both the bloodvessel and nervous systems. I refer, of course, to tartar emetic. Administered in solution in moderate doses, at short intervals, at the outset of the disease, and preceding all other remedies, where the phlogosis and excitement are not thought to be sufficiently great to require the lancet, this medicine not only procures the desired evacuations, and acts as a revulsive by this means, but also, if its use be continued in small doses at longer intervals, it displays its customary counter-stimulant or sedative power. In *colica pictonum*, which bears so close a resemblance to the disease in question, I have given the tartar emetic in this way with unequivocally good effect. If the spasm of the abdominal muscles and limbs should continue after the vomiting induced by the emetic, although in general we shall find it abated by this remedy, we may then add to the antimonial preparation small doses of opium, and continue the combination until the spasm is removed, and the skin becomes soft and moist and the pulse has lost its hardness and frequency. The bowels during this time should be acted on by enemata, the operation of which will be easier after the relaxation caused by the antimony. But if free fecal evacuations cannot be procured in this way, and if after the operation of the emetic the stomach is still irritable, we then direct calomel in pill, or mixed with a little gum arabic in powder, and either wait or quicken its action, in the manner already described, by laxatives and enemata.

I have said nothing respecting the effervescing draughts and the prescriptions in common use for sick stomach, because they are for the most part either inefficient or injurious. This organ is best tranquillised by rest from all kinds of stimuli—and by the use of the simpler bland or demulcent drinks in very small quantities at a time; by revulsion, by means of leeches to the epigastrium; afterwards by stimulating liniments or sinapisms to the same part and also to the extremities, and enemata to evacuate the large intestines; and by opium, administered sometimes by the mouth, sometimes by the rectum.

Costiveness, on occasions, continues in bilious colic in despite of the means hitherto recommended for its removal. Much can, I know, be done to prevent this morbid state by the judicious selection and persistent use

of enemata, one of the chief conditions for their efficacious operation being the large quantity of the fluid and the frequency of repetition. By some, tartar emetic in solution has been recommended: others lay stress on the relief procured by the administration of calomel in doses of one or two grains, repeated every two hours, and after the lapse of a day, sometimes two days, to follow up this course with the use of laxatives, if the stomach will allow of their ingestion. I have seen this last treatment successful, although, at the cost, sometimes, of salivation.

Relapses will readily occur unless proper care be exercised by the convalescent to protect his skin, and above all his feet, against dampness and cold; to avoid indigestible or *doubtful* food, particularly of an evening; and to keep his bowels regular. If the disease should have made its attack in the latter part of the summer, or the individual is exposed, subsequently, in his vocation to a damp atmosphere or raw weather, he will find his advantage in the use of sulphate of quinia combined with aloes, in pills, in such a manner that three to five grains of the former and three of the latter may be taken every morning before breakfast.

Dry Bellyache.—The disease designated variously as *dry bellyache*, *Madrid colic*, *the colic of Poitou*, *Devonshire colic*, and *vegetable colic*, is analogous to our bilious colic. For a long time attributed to the action of lead, to the acid wines, or cider, or the spirits drank by the inhabitants, or to milk used in too great abundance, and other errors of regimen, it is now admitted generally to be induced by great atmospherical vicissitudes, the operation of which is favoured by improper food, and probably some causes of an endemical nature which cannot be well appreciated. Hillary (*Observations on the Changes of Air and the concomitant Epidemical Diseases in the Island of Barbadoes*, &c. *With Notes, by Benjamin Rush, M.D.*) speaks of the class of persons most subject to dry bellyache, and especially those who live in America and the West Indies, in which countries it seems to be endemical. At times it assumed an obviously inflammatory type (p. 34), being, as Dr. Rush tells us in a note, complicated with bilious colic. It was, as we learn from the last mentioned distinguished writer, in another note (p. 134), "a common disease in Philadelphia between the years 1760 and 1770. Its rare occurrence [now] has been ascribed to the disuse of punch, and of late and heavy suppers; to the general use of flannel next the skin, and to the abolition of porches, which afforded a temptation to our citizens to expose themselves for several hours, in a state of inactivity, to the damp evening air." The causes of dry bellyache implied in this sentence, are precisely those which I have described as giving rise to bilious colic. But in the absence generally of inflammation and fever, in the frequently protracted duration of the former disease, and the liability, when it does not end fatally, to cause paralysis of the limbs, we find differences between it and bilious colic. "This state of costiveness, pain, and misery," says Hillary, "has continued for twenty or thirty days, and sometimes longer; for I remember a case which, being thus treated in a wrong manner, the patient continued, with some small intervals of being something easier, in this painful condition for six months, or more, and then recovered by a different method of treatment in one week's time." The following is a well-drawn picture of the progress of the disease, and especially that part which portrays the transmission of irritation from the viscera to the spinal marrow, and its subsequent irradiation to the limbs, followed by deficient innerva-

tion and palsy. The passage would be particularly pleasing to Dr. Marshall Hall, as illustrative of his doctrine of reflex-function of a portion of the nervous system. "When the sick fall into the hands of those who treat them in this wrong manner, the pain continues to be very violent, and at times almost intolerable, and that for a long time; and then the patient's breath commonly acquires a strong, fetid, stercoraceous smell like excrement, from a long retention of feces, and an absorption of the putrid effluvia from them into the lacteals, by the strong convulsive contractions of the guts; and when the pain in the bowels has continued long, and at last begins to abate, a pain in the shoulder-joints and adjoining muscles comes on, with an unusual sensation and tingling along the spinal marrow; which soon afterwards extends itself from thence to the nerves of the arms and legs, and they become weak, and their weakness increases till those extreme parts become paralytic, with a total loss of motion, though a benumbed sensation often remains." The author next adverts to the occasional metastasis from the bowels to the brain, producing stupor and delirium, which were succeeded by strong convulsions terminating often in death; also, to the sudden transfer from the limbs, which were paralytic, to the bowels or head.

The *colic of Madrid* (*entripado*, *constipado*) closely resembles, in all essential particulars, if it is not entirely identical with, the colic, or dry bellyache of the West Indies. Our knowledge of it has been rendered much more precise, of late times, by the writings of several French medical men, whose residence in Spain with the armies gave them ample opportunities of observation. That the disease does not depend on causes purely local, nor on acid wines, nor on water running through leaden pipes in Madrid, is proved by the fact of its being common in other parts of Spain, as in Galicia in the north, and Valencia in the south-east. The cause most operative is said to be the sudden mutations of temperature, which are more frequently met with in the table-land of the Castilles than elsewhere. To great heat by day succeeds coldness of the night; and even a transition from the sun to the shade procures often a feeling of excessive coldness. The scanty clothing of the labouring classes and the poor, and their often imperfect protection from the night air during sleep, give greater effect to these atmospherical 'enormities.' Baron Larrey supposes the Madrid colic to proceed from this cause and acid drinks, and designates it by the title of rheumatic bilious colic.

M. Marquand, during eight months' tour of duty at the hospital of St. James of Compostella, in which there were never less, at one time, than forty or fifty men attacked with this disease, had ample opportunities to study it. He was, moreover, himself a sufferer from an attack; and hence was well qualified to describe its symptoms and course. At first there were dull but transient pains throughout the whole course of the colon, but more particularly at its transverse portion. In other respects the functions were very little affected: but after a time there followed uneasiness; want of appetite; difficult defecation, but not constipation; frequent passages in the day, but in small quantity, and accompanied with a discharge of flatus. The patient suffers less in bed than when up. At the expiration of two or three days more, there is no longer any desire to evacuate the bowels, nor any flatulence; but the gastric symptoms which, hitherto, had not been manifested, now appeared in full force. We next notice pain in the epigastric region; the face pale, and with a sad expression;

pulse small, slow, and contracted, but yet regular; urine in small quantity, though natural; skin dry, yet not hot. The patient is often seated, leaning forward, with his arms clasped on his abdomen, which he compresses; if he is in bed, his lower extremities are flexed on his trunk. Hiccup and vomiting now supervene; and afterwards there is rejection of the fluid drank, mixed with glairy and yellow bilious matters in small quantity. No sleep, no rest, no suitable posture is allowed to the unhappy patient. If these symptoms continue, the abdomen more frequently becomes flat; pain is begun to be felt commonly in the right hypochondrium, sometimes in the umbilicus, but without any diminution of the epigastric distress. The sclerotica becomes yellow, and after a while the whole body. The disease is aggravated; and death sometimes terminates the series of sufferings above described. It is sometimes preceded by marasmus, sometimes by partial palsy. This disease often has sudden remissions, promising complete convalescence. In addition to these symptoms, Dr. Pascal notes ischuria or dysuria, and paralysis of both the upper and lower limbs. This writer (*Recherch. Anat. Pathol. sur la Colique dite de Madrid*) gives, as the result of six autopsic examinations of persons dead of the colic, his opinion, that the disease has its seat in the ganglionic nervous system, which is in a state of either acute or chronic inflammation. In five of the subjects examined he found the thoracic and abdominal ganglia more or less enlarged in size, and of a red colour, studded in the middle with yellowish spots, and some of the ganglia were even of a cartilaginous hardness. M. U. Coste (*Mem. sur la Colique de Madrid*) is opposed to this opinion; and believes that the disease is caused by an inflammatory irritation of the muscular coat of the intestines, particularly of the colon. In this sketch of the Madrid colic, I have followed MM. Chomel and Blache in the *Dict. de Médecine*, &c., 2^{me} edition.

The Devonshire colic and that of Poitou need not be described, exhibiting as they do phenomena identical with those just detailed. In connexion with the etiology of this disease, the remarks of Dr. Chisholm are worthy of notice (*A Manual of the Climate and Diseases of the Tropical Countries, &c.*) The colica pictonum, or dry bellyache, constitutes, he tells us, one of the most remarkable proofs of intemperance being a principal cause of disease within the tropics. He refers to a work by Dr. Philip Fermin (*Traité des Maladies à Surinam*), who says, that neither tongue nor pen can describe the horrors of this disease, called by the natives *Beillac*, or the work of the devil. The common causes, according to Dr. Fermin, are, excessive debauch, the immoderate use of strong drinks, and passing the night abroad in a climate like that of Surinam, in which the nocturnal coolness produces a strong impression because following a day of excessive heat. Dr. Chisholm relates, that five-and-thirty years before the time of his writing (in 1822), when he first settled in the West Indies, colica pictonum was very common, and often most afflictive and fatal. "At that time excessive abuse of wine, spirits, and malt liquors, was generally practised by all ranks of society; but, more especially among the lower whites, spirits were the principal drink, because easily procured—either raw or slightly diluted." Since then a reform in the mode of living has been followed by a diminution in the frequency of appearance of dry bellyache, until at the present time it is quite a rare disease. "Alternation of heat and cold, doubtless, may have contributed; but that the poison of lead had any share in its production, within the

tropics at least, there is no just ground for believing." In Devonshire, continues Dr. Chisholm, where the disease may be said to be endemic, no lead is employed in the cider-presses or cisterns; and yet there is every reason to be assured that it is the excessive abuse of this liquor, and the peculiar harshness and acidity of it, which may be considered as the principal cause of its prevalence in that country. The operation of this cause was thus explained to him on the spot. "In the summer and autumn, when the husbandmen are laboriously employed in the hay and corn-harvest, the common practice of these men is to drink cider to the extent of their ability to buy, or rather, as it is allowed without limitation in hay-harvest, to the extent of the capacity of their stomachs to contain it. The labour at this season produces an intolerable heat in their persons. Now, the great cold of the cider, together with its harshness and acidity, acting against the heat produced by labour, give rise to a spasmodic state of the bowels, which, acquiring its *acmé* in twenty-four hours, or even less time, in very many instances terminated in death. These labourers are so very inconsiderate, that to allay the excessive heat and thirst occasioned by their work and the great heat of the season, they often drink to the extent of six or eight quarts of cider in the day; and, not unfrequently, such is their avidity and the uncomfortable state of their feelings, fill their stomach at one draught. In neither Devonshire nor Gloucestershire is lead used in lining the cistern which receives the liquor from the press." Huxham had long ago attributed the Devonshire colic to the abuse of cider and apples, as Cotys did the colic of Poitou to white wine.

Vegetable colic is one of the titles which, I stated to you, has been bestowed on the disease of which I am now treating. It is a comprehensive one: and, although probably not significative of the cause, it is less misleading than some others which would imply a saturnine origin. It is essentially the colic of Madrid, that of Poitou, and of Devonshire, and of the West Indies. At French Guiana this disease prevails; but it cannot be attributed, in the opinion of M. Ségoud, who spent some time at Cayenne, to acerb fruit, nor to the quality of the wines which are drunk, for the former are rare and little eaten, and of the latter, Bordeaux is the only kind used. It is then to atmospherical vicissitudes that we must refer the cause of this colic. Thierry and Lepecq de la Cloture held similar opinions.

Treatment of Dry Bellyache, Colic of Madrid, or Vegetable Colic. — There is a tolerable unanimity of opinion respecting the suitable practice in this disease, whether it appears in the West Indies, and is designated by the name of dry bellyache; in Spain, by that of the colic of Madrid; in England, as Devonshire colic; in France, as that of Poitou or vegetable colic. The indications are, to calm irritation and spasm by opiates, and to remove feculent obstructions, and restore the secretions by purgatives. With the first view, opium is administered, in doses of a grain every three or four hours, until relief is obtained; or an equivalent quantity of laudanum with a little mucilage is thrown into the rectum, and repeated, until the same effect is procured. In full plethoric habits, in those of a sanguine temperament, or when the diseases of the season wear an inflammatory type, venesection, or scarifying cups over the loins and on each side of the spine, will aid, not a little, in the solution of the spasm, and increase the susceptibility to the impression of the medicines to be afterwards given, — whether these be opiates or purgatives. Sometimes the relief is so considerable after bloodletting that opium may be dispensed

with, and we proceed at once to purge as we would do in case we had given opium first. Here, as in bilious colic, a full dose of calomel will operate more kindly on the bowels, and allay the irritability of the stomach better than any other class of purgatives, — certainly better than any of the drastic variety. It will either follow opium or be combined with it. Dr. Musgrave, a writer of authority on the West India colic, or dry belly-ache, recommends, after the first and larger dose of calomel of fifteen grains, smaller ones of five grains combined with a common cathartic. His intention is to evacuate the bowels and to affect the system with mercury. The Spanish physicians are partial to castor oil in the Madrid colic; and it may generally be had recourse to at the very outset, combined with laudanum and some aromatic water and sugar; or after calomel, and in a very torpid state of the alimentary canal: when these fail to operate, we should give it with oil of turpentine, as so pointedly recommended by me in other varieties of colic both by the mouth and *per anum*. Of the purgative clysters, one of the simplest, common salt, an ounce, in a pint of water, is also one of the best. Calomel and rhubarb was the favourite purge of Dr. John Hunter (*Observations on the Diseases of the Army in Jamaica*, &c.). He remarks, sensibly enough, on the subject of perseverance in the use of purgatives, "that whatever purgative was employed, regard was not had to the common dose, which would not have been strong enough; but it was repeated from time to time either till it disagreed with the stomach, or till it operated." For the removal of pain, which is abated by the warm bath and fomentations, Dr. Hunter, in common with many other practitioners, recommends a large blister applied to that part of the abdomen where the pain is greatest; "it was further of great use in promoting the operation of the purgative; for, in general, it was observed, that soon after the pain became easier free evacuations followed."

It was long ago a practice among the French physicians to give an antimonial emetic in the dry bellyache, as it still is in the Madrid or vegetable colic at the present time. An emetic, as I remarked, when speaking of its use in bilious colic, is at times an efficient remedy: it evacuates the stomach of irritating matters, which were not sufficiently ejected by previous efforts to vomit; it allays internal spasm, and by urging the bile into the intestine from the *ductus choledochus*, it favours the evacuation of the bowels; at any rate predisposes them to be more readily acted on by purgatives.

A soluble state of the bowels and freedom from spasm will be maintained by mild laxatives conjoined with the simple bitters, extract of gentian and the like, or sulphate of quinia. A preventive measure of paramount consideration is to wear flannel next to the skin, and to secure as much as possible an equable temperature for this organ. This advice is applicable to all the varieties of colic.

Paralysis is the most troublesome, and, at the same time, quite a common sequence of the disease now under consideration. Acting on the hint furnished by Hillary, in his description of the order in which parts are affected before the limbs are seized with paralysis, and enlightened by a better physiology than heretofore, we should use, after suitable purging, irritants to the spine and its vicinity, such as croton oil, tartar-emetic ointment, or the excitement of the warm douche or spout-bath — preferably to applying these means to the limbs themselves. This last practice has been followed by a metastasis to the bowels and renewal of all the urgent

symptoms. At times, if the habit be full or decided symptoms of irritation be manifested at particular spots between the vertebræ, a few leeches, or cups to draw blood from these parts, will suitably precede the employment of the other local means. As an agent of power over the muscular system, strychnia might be used with benefit in this stage of vegetable or West India colic, as it is in the similar one of painters' colic.

LECTURE XXXV.

DR. BELL.

ILEUS—Affinity between ileus and colic—Symptoms of ileus—Causes—Anatomical characters.—*Volvulus, or intus-susception*—*Invagination of intestine*—How formed; its varieties and termination—Diagnosis of intus-susception—Treatment—Preliminary inquiry into the existence of hernia—Localization of intus-susception—For this last, bloodletting, opium and tartar emetic, and enemata—Venesection generally called for in ileus—Blisters—Turpentine epithem—Dry cupping—Purgatives—Stimulants in last stage—Other remedies—cold—tobacco injection—Other narcotics externally and internally—Injections of linseed oil—Crude mercury in quantity—Operation of gastrotomy—its doubtful propriety and dangerous consequences.

To a certain extent embarrassed by the nosological divisions of colic, and the ideas still entertained by some of there being several kinds of the disease, I have not been as free as I could wish to present the whole subject in a condensed shape. Early, however, in my penultimate lecture, I warned you not to look for any broad line of distinction between these alleged different kinds, but really only varieties, of one disease; differing not so much in the organ or organs implicated, as in the extent of the affection. I told you, that colic, beginning as nervous or flatulent, might soon become inflammatory; and you have seen that, between stercoraceous colic and bilious colic the traits are hardly differential, any more than between bilious colic and vegetable colic. There is a general community of causes of them all. In all, the stomach is irritable; often ejects yellow or bilious matter: there is pain, spasm, flatus, and constipation. Fever and inflammation, more manifest in bilious colic, are not always wanting in stercoraceous and vegetable colic, or dry bellyache; and venesection, so commonly necessary in the former, cannot always be dispensed with in the latter. Opium and purgatives are the chief remedies in vegetable colic; they will often suffice for the cure of stercoraceous colic, and may be mainly relied on in some cases of bilious colic. I shall now advance a step farther, and give you a description of the most aggravated form of colic disease, the highest grade of the series of morbid phenomena the beginning of which was manifested in nervous or flatulent colic. This close affinity of which I am now speaking is distinctly affirmed by Dr. Abercrombie; and I cannot better introduce the present subject to you, than by using the words of this eminent physician and pathologist in his account of ileus.

Symptoms.—"Colic and ileus are different degrees of the same affection, and the name, therefore, may apply to both. The symptoms, in the early stages, are, pain of the bowels, chiefly twisting, with great severity round the umbilicus, obstinate costiveness, and generally vomiting, but

without fever, and commonly at first without tenderness; the pain, on the contrary, being rather relieved by pressure. As the disease advances, and if no relief be obtained, the abdomen becomes tense, tender, and tympanitic; the vomiting very often becomes stercoraceous, with severe tormina, intense suffering, and rapid failure of strength. In this manner, the disease may be fatal without inflammation, or, at an advanced period, it may pass into inflammation, and be fatal by extensive gangrene." (*Pathological and Practical Researches on Diseases of the Stomach and Intestinal Canal and Liver.*) In many instances ileus supervenes on some one of the varieties of colic already described; and hence, in addition to other considerations, the propriety of a general and enlarged view of the entire pathology of colic, and consequent vigilance in observing a transition from the slight to the more serious and severe. But, seldom it is true, ileus is suddenly ushered in with the most violent pains in the abdomen, and vomiting; the patient tossing about in the utmost agony, and the other symptoms supervening, the disease terminates fatally. Sydenham's notice of ileus, or the *iliac passion*, as it has been often termed, is very short. "In this disorder the peristaltic motion of the bowels is inverted; cathartics and glysters soon become emetic, and the excrements are vomited up." His description of bilious colic is, however, applicable, in its chief features, to ileus; and Pringle complains of his having transferred that of the latter to the former. The true iliac passion, in which there is a total inversion of the peristaltic motion, is a rare disease: the author just mentioned never saw but one case, and that terminated fatally.

The appearance of the tongue varies in different cases and stages of the complaint: often it deviates little from the healthy state. Pain or local disease is not referable, at the beginning, to any particular region of the abdomen; sometimes it is felt in the ileo-cæcal region; sometimes in the sigmoid flexure, or in the transverse colon; in others, again, about the umbilicus, or low in the pubic region.

I shall not repeat the enumeration of the organic changes in the intestine observed in fatal cases, which Dr. Copland has given in his Dictionary; to which I refer you for these and many other particulars of the disease. Dr. Abercrombie has recorded cases of fatal ileus, in which the intestines were found distended without inflammation; others, in which there was gangrene without exudation and also with exudation. He next adduces cases in which there had been "previous disease, of such a nature that it seemed to act by deranging the muscular power without mechanical obstruction;" and afterwards ileus, with mechanical obstruction or other organic changes in the structure of the parts; one example of which was presented in a remarkable stricture of the arch of the colon. Tympanites is sometimes associated with ileus, and is always of bad augury.

The *causes* of ileus are very various; generally they are the same as those of colic and enteritis, with the addition of others depending on mechanical obstruction. Pringle thinks that children and those who are delicate, are, perhaps, more liable to it than men in the vigour of life. It is, I believe, more frequently met with in *cholera infantum* than in any other one disease induced by causes not acting primarily in obstructing the bowels. Pringle mentions two cases in which it preceded a fit of the gout.

Anatomical Characters.—The observations of Dr. Abercrombie and

others leave no doubt that there is a remarkable variety in the morbid appearances in those cases which are usually included under the term ileus; sometimes it is simple distention without any change of structure, and at other times extensive inflammation and gangrene. Obstruction, which is not an unfrequent cause, is, in other cases, not to be found. "It would, therefore, appear probable," says Dr. Abercrombie, "that in the cases which assume the characters of ileus, there is great diversity in the primary state of the affected parts; that, in some, it consists of simple loss of muscular power, though it may pass into inflammation at an advanced period; while, in others, it is at an early period connected with inflammation as a part of the primary disease." When, in ileus, we find gangrene uncombined with any other morbid appearance, we are, perhaps, Dr. A. thinks, warranted to conjecture that the muscular coat has been the principal seat of the inflammation.

As respects the precise part of the intestine diseased in ileus,—the morbidly distended, or the contracted,—Dr. Abercrombie thinks it most probable that "the distended part is the real seat of the disease, and that the contracted part is not contracted by spasm, but is merely collapsed, because it is empty,—its muscular action being unimpaired." Still, repeating the language of Dr. Copland on this head,—spasmodic constriction evidently exists; for, independently of the occasional detection after death of a more contracted state of a part of the bowel than can be considered natural, we cannot explain various phenomena connected with colic and volvulus without its aid. Besides, continues Dr. C., its existence is supported by analogical evidence; for it is a principle in the human economy, that all membranes, and, *à fortiori*, all muscular canals, contract spasmodically or inordinately upon irritation of their internal surfaces.

Volvulus or ileus from intus-susception, *invagination of the intestine*, is not unfrequently met with in *post-mortem* examinations. At one time, great and undue importance was attached to this change, which was supposed to explain and be a cause of the fatal termination of the disease. More careful observation, however, shows, not only that intestinal invagination is often unconnected with inflammation, but that it is an accidental and not necessarily fatal consequence of pre-existing disease; and even if it takes place some time before death, it does not present that obstruction to the passage downwards of the contents of the bowels and of medicines which was thought formerly to be one of its inevitable effects. The readiness with which invaginations are removed by the restoration of the intestine to its normal situation, in the dead body, and the frequency with which they are seen after deaths from acute gastro-enteritis, render it probable that these displacements have occurred and been removed by a natural retraction of the intestine, in those who have recovered from ileus and other diseases, in which strong intestinal commotion has been experienced. The ileum and jejunum are the portions of intestine most frequently implicated by invagination, which may take place from above downwards, or in a contrary direction; that is to say, sometimes it is the upper portion of the intestine which descends or falls into the lower and dilated portion; and at other times, the upper is the recipient or hood, as it were, of the lower portion. The first variety, however, is the most common; but it is not unusual to meet with both it and the second in the same subject; and even, sometimes, to see a particular part of the intestine, more dilated than the rest, receive a portion from above and another

from below, so that the two varieties of invagination, in different directions, meet at the same point. In the extent of intus-susception there is great latitude; in some cases it is only a few lines, in others as many inches. The whole ileum, and even a part of the jejunum, has been found contained in the cæcum and ascending colon; and we are told of a case in which the cæcum and the first part of the colon, filled by the small intestine, themselves occupied the lower part of the colon and rectum.

In regular invaginations, the mucous membrane of the dilated or containing portion is in contact with similar membrane of the narrower or contained portion above; so, likewise, between the two portions on the other, or peritoneal side, the serous surface is also in contact with its like. The invagination exhibits, therefore, three thicknesses of the intestinal parietes, viz., the central or entering portion, the external or containing and the intermediate one, continuous from the first to the second. If we open with a bistoury the external portion, we see in its cavity a sort of cone or nipple, of more or less length, free in all directions, and exhibiting on its surface *valvulæ conniventes*, while at its summit or projecting termination there is an opening which gives passage to intestinal matters: the disposition of parts is, in fine, precisely like that which is seen in prolapsus of the intestine through the opening in artificial anus. I have thought that this description of invaginated intestine, the accuracy of which is easily tested by observation on the body, after a case of death from ileus, and for which I am indebted to M. Begin (*Dict. de Med. et de Chir. Prat.*), would not be without interest and instruction, by serving to correct common misconceptions as to the real nature and effects of this displacement.

The occasional causes of intus-susception are, worms, inflammatory action of some one of the intestinal surfaces, and as a consequence of dysentery and chronic diarrhœa, particularly the dysentery of warm climates, in the subjects dead from which latter Mr. Annesley has frequently found it. Dr. Copland has met with it "not unfrequently" in fatal cases of the brain or its membranes in children. One of the most common causes of invagination of the intestine is, as the same author justly remarks, the inappropriate use of drastic purgatives. In all the cases of invagination observed after death from dysentery that Dr. Copland has perused, purgatives have been unsparingly and unnecessarily exhibited. He cites a case which occurred to M. J. Cloquet, wherein a female died of enteritis occasioned by a polypous excrescence arising from the mucous surface, and which having been pushed onwards by the peristaltic action of the intestine, dragged the part to which it was attached along with it. Among the occasional causes may be likewise mentioned costiveness, which acts by producing local irritation followed by dilatation.

The *termination* of volvulus or invagination is, by a restoration of the displaced intestine to its normal state, and removal of the disease; in death without inflammation; or, finally, in death with, and we may believe on account of, inflammation, and that commonly of the peritoneal coat. It is of this last mode of termination that I shall speak. I mentioned, when describing the changes in the relation of the portions of the intestine which constitute invagination, that two parts of the surface of the serous membrane are in apposition on one side, as two parts of mucous surface are in similar contiguity on the other side. Now, as long as there is no change on these surfaces by inflammation, they are capable of gliding readily on each other; and the subsidence of morbid dilatation

in the containing part of the intestine, and equalised muscular power in its coats, will enable the displaced part to resume its natural position. But if the serous membrane is the seat of inflammation and throws out coagulable lymph, this will, after a while, become a bond of union between the two surfaces, and they will adhere permanently, or at least so long that the function of the intestine is perverted, and peritonitis destroys the patient. The readiness with which a morbid change of this nature is brought about, is much greater when the intestine is invaginated by the protruded or containing portion coming from below. The contents of the intestinal canal, on ariving at the invaginated portion, are suddenly arrested in their passage downwards by the base of the projecting cone of invaginated intestine, accumulate at the angle made by the turn of the mucous membrane upwards, and, by compressing the base and sides of the cone, contribute not a little almost to obliterate the opening at its summit, which was at the best small, and which was the only passage for the transmission of the matters from the upper portion of the intestine. Thus there is established an obstruction equivalent almost to strangulation of the intestine, and the life of the patient is in imminent danger. Should the invagination be slight, the pressure of the contents of the intestine from above against the base of the invaginated cone may help to remove it, and things then take their natural course.

If, on the other hand, the invaginated portion be from above and project downwards into the cavity of the intestine, the danger is much less. The descending contents, it is true, on reaching the invaginated portion, come to a narrower canal than natural, and are somewhat retarded in their course; but they pass through an opening which corresponds with the base of the cone, and escape from its projecting, though narrow mouth, with much more facility than they could have found entrance into it, if it had projected upwards or had been the end of an invagination from below upwards. Even if the parts become adherent, the duplicated or rather triplicate walls of the canal at the invaginated section, become merged into one, which gradually dilates more and more and offers slight resistance to the passage of the intestinal contents.

Even in the worst or upward form of invagination, already described, unexpected relief by a natural process has been procured. The internal part of the invagination, or the protruded section of the intestine on which the contents of the upper portion of the digestive tube are continually pressing, becomes gangrened and separates, but not until adhesions are ready to be formed at the outer base of the invaginated fold, which preserve the continuity of the entire tube. The internal or protruded portion, being now detached in all its circumference, is carried downwards to the rectum, and expelled with fecal matters at stool. Occurrences of this nature, extraordinary as they may at first seem, have been proved to take place, by the fact of a portion of intestine, some lines in length, and whose structure was accurately ascertained by dissection, having been found, after its expulsion *per anum*. (Begin, *op. cit.*)

In framing the *diagnosis* of intus-susception, it has been asked: whether it is possible to distinguish ileus owing to or connected with this state from colic or ileus arising from other pathological states? Dr. Copland thinks, that in some instances symptoms may present themselves, which will enable the observing practitioner to infer the existence of invagination. These are,—sudden invasion of the symptoms of severe colic or

ileus after a violent straining at stool; and, subsequently, the constant desire to go to stool, attempts at evacuation being accompanied with violent tormina and tenesmus, and either unattended by evacuation or followed by the discharge of a little bloody mucus, and these by symptoms of enteritis. "In some instances, also, the sudden occurrence of an elongated tumour, in addition to these symptoms and before abdominal distention comes on, will further guide the opinion; particularly if the invagination be extensive, and seated in the cæcum or course of the colon. Much, however, will depend on the precision and tact with which an examination of the abdomen is made. In all such cases, the rectum should be examined by the finger; and the extent to which enemata may be thrown up observed as an additional means of information: for, whenever the intus-susception is in the colon, as much fluid cannot be thrown up as in health. Hiccup, and a small, irregular pulse, characterize the advanced disease, and indicate the existence of inflammatory action in the invaginated bowels."

Treatment.—Our curative measures are the same in ileus as in the other kinds of colic, viz., bloodletting, purgatives, enemata, opium, the warm bath, fomentations, blisters and other external irritants. Let me premise, however, to any specification of the relative value and order of administering these remedies, a caution already given when treating of common colic, viz., to examine carefully and minutely the various regions of the abdomen, particularly the two iliac and inguinal and the umbilical, in order to ascertain whether or not the patient is suffering from hernia. Nor must we be satisfied with one examination, nor have our suspicions allayed by not finding a tumour prominent externally, or felt with the fingers pressing on the part, for sometimes a very minute portion only of the intestine is strangulated, and yet ileus may exist and death ensue. On this occasion, we must be guided to a certain extent, in our diagnosis, by the symptoms already laid down as indicative of the locality of the invaginated intestine. Thus, if the patient suffers from violent attacks of tormina, occurring in paroxysms, like the strong impulse downwards from the action of a drastic purgative,—the action proceeding to a certain point,—then stopping and becoming inverted, followed by vomiting; and this point referred to is in either of the inguinal regions or at the umbilicus, we may suspect that the intestine is protruded, out of place, and strangulated. A correct diagnosis will not a little influence us in the kind of treatment we are to pursue. If there be invagination or hernia, we shall, of course, refrain from active, certainly drastic purgatives, and begin with venesection—followed by opium and tartar emetic; and having emptied the lower bowels by a common purgative enema, administer laudanum *per anum*. Belladonna ointment or tincture rubbed over the region where the invagination or strangulation is believed to exist, has been productive of good effects. The warm bath is a useful auxiliary to these means; but to be serviceable, it ought to be used for an hour or more at a time.

In common, knowing the tendency of ileus to end in inflammation, we ought not to be backward in having early recourse to the lancet. There is reason, also, to believe, as Dr. Abercrombie has pointed out, "that there is a modification of the disease depending on inflammation of the muscular coat, and therefore not exhibiting the characteristics of enteritis, but simply of ileus, though in a very violent and rapidly fatal form." On this

ground we ought to bleed; and it must have been noticed by every practitioner, as quite recently I have had occasion to observe in a case under my care, that the relief is often immediate, a call to stool being made almost as soon as the arm is tied up. Pringle (*op. cit.*) recommends bleeding largely and often as long as the violence of the symptoms remained, or whilst the strength permitted. "If after the first bleeding the patient was not sensibly better, in a few hours the vein was opened a second time, and immediately after a blister (as large as the palm of the hand with the fingers) was applied over that part of the belly which was most affected." More than once the author tells us, that he has known the patient to be relieved in his bowels as he felt the burning of his skin, and at the same time have stools by a purge or clyster which had been given before without effect; and hence he concludes, that the blister acts more as an anti-spasmodic than an evacuant. To the same practice is Dr. Abercrombie led; and indeed it is that which most observing practitioners must have found efficacious under similar circumstances with those now described. If time and opportunity favour, I premise a *pack* of leeches over the affected spot, and after the blood from them has ceased to run, apply, the symptoms still seeming to require it, a blister. A better application even than the blister, especially after leeching, is a hot spirit of turpentine fomentation placed over the whole abdomen, as strongly recommended by Dr. Copland. Dry cupping on both the loins and abdomen has the authority of Celsus, and, still more, subsequent experience in its favour. Quarin states, that in an extreme case, all other means having failed, he had recourse to dry cupping with porcelain bowls. Relief soon followed, and the bowels were copiously evacuated; their action having been assisted by enemata of infusion of chamomile flowers, and the potassio-tartrate of soda.

In general, active purging is not required in ileus; and it may, especially in cases of obstruction from displaced intestine, be positively mischievous. But where the stomach is irritable, and the patient vomits from time to time, calomel, from ten to twenty grains, in the form of a pill, with, if the pain be violent, a grain of opium, or ten grains of camphor, will serve both to allay the sickness of the stomach, abate the morbid muscular action of the intestine, and bring on evacuations *per anum*. Hyosciamus or belladonna may be advantageously united to calomel, if it is thought advisable to repeat its use, at intervals, in smaller doses. When the patient feels that the medicine has traversed his bowels, and there is a passage of wind downwards, and a desire to go to stool, free evacuations may be procured by administering, at this juncture, turpentine enemata with castor oil, as already recommended for constipation in cæcal accumulation and in stercoraceous colic. Even taken by the mouth, the oil of turpentine is, I think, a good succedaneum to the calomel, and in its direct effect on the bowels contributes to equalise the action of the muscular coat, and thus to remove some of the most pressing morbid symptoms. This remedy is still more highly prized in the advanced or sinking stage of the disease, in which there is constant and feculent vomiting. I have observed that, in some cases, after the most active and approved purgatives, — calomel and aloes, or calomel and rhubarb, compound powder of jalap, &c.,—have failed to operate, the infusion of senna and salts has had this effect very entirely. Even Epsom salts alone, taken in small and oft-repeated doses in a considerable quantity of fluid, answers the purpose when many other articles of more power disappoint us. Croton oil in a

full dose has procured a passage, and given a salutary turn to the disease in some cases apparently desperate. In the advanced stage, stimulants with purgatives, as tincture of wine or aloes, compound tincture of senna, and the like, alternating with ammonia and essence of peppermint or aniseed, and the stimulating embrocation before mentioned, serve wonderfully to revive the strength and sinking powers of life, and to give a salutary turn to the disease.

Among the remedies of undoubted power in ileus, but which are attended with more risk than the ones already mentioned, I may mention cold and the tobacco injection. Physicians in Germany, France, and Great Britain, have attested to the decidedly remedial effects of cold, particularly when applied to the abdomen, in the early stage of the disease. Some have had cold water dashed over the lower extremities and abdomen of the patient while he was kept in a standing posture ; but the preferable method is to apply it to the abdomen itself. Dr. Brandes, of Copenhagen, states, that he has employed iced drinks, and cloths wetted with iced water, to the abdomen in ten cases with success ; but that, in some instances, the practice requires to be persevered in for a length of time, and to be assisted by anti-spasmodic and laxative enemata, and by opiates, with stimulants and tonics taken internally. (Copland, *op. cit.*) If the conviction of the physician is decidedly strong in favour of the use of cold in ileus, he ought to have recourse to it early, or at least after trial has been made of bloodletting and opium, and before the tone and power of reaction in the system have undergone any notable abatement.

The remark just made respecting cold will apply to the use of tobacco. If a purgative will not pass, and purgative enemata are ineffectual, and bloodletting and opium have been employed without success, it will then become a question for the physician to decide, whether he proposes to use tobacco in the case. If he has confidence in its powers, and believes that it can be administered in such a dose as not to be deleterious, he will resort to its use at once, before the powers of life are prostrated by the disease. He will not be unmindful, on this occasion, of the cases of death from tobacco enemata witnessed by Desault, Ansiaux, Ugard, Sir Astley Cooper, Sir Charles Bell, and Dr. Copland. In the case recorded by this last-named writer, an injection, made by infusing half a drachm of tobacco in a pint of water for fifteen minutes, was followed by death in three minutes after its administration. In most of the fatal cases, however, a large quantity of tobacco, or an ounce to an ounce and a half, was used to prepare the infusion. On the other hand, he will derive encouragement from the authority and practice of Sydenham, Heberden, Abercrombie, and others; the two first of whom recommend the smoke of tobacco, which is milder in its operation, and if we could, by an appropriate apparatus, secure its ready and complete administration, would be generally, if not always, entitled to a preference. Heberden, indeed, tells us :—" Where the proper instrument for giving the smoke cannot be had, then an infusion of tobacco may be used, made of twelve ounces of boiling water, poured upon half a quarter of an ounce (one drachm). This infusion has been borne without occasioning vomiting or sickness, but has seemed to affect the head more than the smoke." Dr. Abercrombie's high opinion of tobacco injection, and his cautious mode of administering this medicine, have been placed before you in a preceding lecture, and I need not repeat them in this place.

Respecting the use of the cataplasms of tobacco leaves on the abdomen,

recommended by some writers in ileus and other diseases, I have nothing to say in commendation. There is much uncertainty in the operation of tobacco applied in this way: sometimes it has no effect, at other times all the depressing and alarming effects of the drug ensue. Other medicines of the class *Solanaceæ* might be employed with a view to produce similar results to those of tobacco, and with less danger. Within these few years past we have seen, in the Medical Journals, accounts of cases of incarcerated hernia, and all the symptoms of strangulation, as also retention of urine and spasmodic contraction of the uterus, relieved by the use of belladonna. It was applied in the form of ointment rubbed on the hernial tumour. I have already suggested its use in this way in severe colic; and take this opportunity of recommending it in the disease before us, and especially in case of volvulus, rubbed on the skin of the abdomen corresponding with the invaginated intestine beneath. The belladonna might also be used as a suppository. In the stramonium, which is so readily procured, we have an analogous remedy of the same class, and which may be used both in the form of ointment to the affected region, and, internally, in that of pill by the mouth, and suppository *per anum*.

Among the simple remedies to which recourse has been had, and occasionally with success, may be noticed, injections of warm water in a full and continued stream, carried up into the colon; inflation of the intestines by air; large injections of linseed oil—from two to four pints. Dr. Musgrave, who speaks well of the use of this last, directs that it be steadily and slowly thrown up, regurgitation being prevented by pressing the guard of the pipe against the anus. He found it to be remarkably successful, even after feculent vomiting had come on, and the usual means had failed. He recommends, in such cases, the patient to be placed on the right side, with the pelvis elevated above the rest of the body; the premature return of the injection being prevented by firmly pressing a ball of linen against the anus. This clyster is to be repeated every three or four hours until relief is obtained; and, when much exhaustion is present, with the addition of laudanum.

The ingestion of crude mercury to the extent of one or two pounds, particularly where invagination is suspected, has been long an occasional remedy in ileus; and there are not wanting cases of success attending its use. Dr. Copland has seen a female, aged between thirty and forty, relieved from this state of disease by the ingestion of two pounds of common shot. This writer very properly recommends that bloodletting, the warm bath, and enemata, should generally precede the administration of lead or quicksilver.

The last resource, but one of more than doubtful propriety, consists in exposing the invaginated portion of bowel, by making an incision through the parietes of the abdomen, and then freeing it, or allowing it to free itself, of the displacement. Dangerous as this operation must necessarily be, it has, however, been performed, and not always unsuccessfully nor with fatal results. Nuck is referred to by Dr. Copland as recorder of a case in which it was successful. Dr. Fuschius, also (*Hufeland's Journal*, for February, 1826), gives a case in which, after an exhibition of the diagnostic symptoms already recorded, he performed an operation over the place to which the patient referred the sensation of obstruction, and where an obscure oblong tumour, in the situation of the ascending colon, was detected. An invagination of the colon was removed, and the patient perfectly recovered. (Copland, *op. cit.*)

On the other hand, we must be aware that a tumour, well defined and obviously the seat of pain and distress, may be of chronic growth, and embrace the teguments adjoining the intestine, as at the cæcum; and, of course, that it cannot be benefited by an operation. In a case of this nature, marked by constipation, fecal vomiting, hiccup, &c., gastrotomy was performed by M. Monod, one of the surgeons of the Hospital Cochin, at Paris. After exposing a portion of intestine, which proved to be the colon, the surgeon replaced it, and, inserting his finger into the wound, drew down gently a loop of the small intestine, which was red and tumefied, and into which he took a fancy, for reasons not explained, to make an opening with scissors to the extent of about an inch and a half. A quantity of fecal matter flowed out, and the patient acknowledged that she experienced great relief—But on such terms! A ligature was applied through the mesentery of the divided intestine, and retained at the edge of the wound by means of strips of adhesive plasters, light dressings were applied, and the patient put to bed. On the following day, the loop of intestine was found to have retracted inwards; but it was easily found, and was then fixed more securely than before, by means of two sutures. The patient became rapidly worse, and died on the following day.

Examination of the body showed that, while the surgeon had inflicted an injury on the small intestine, which was of itself sufficient cause of death, he had not reached the real seat of obstruction, nor, if he had reached it, could he have removed it. On opening the abdominal cavity, some sero-purulent fluid flowed out; the convolutions of the intestines in the pelvis were coated with semi-concrete pus, and were redder than the other portions of the canal. The intestine which had been opened in the operation proved to be the ileum, eight or more inches above the *caput coli;* a very trifling adhesion had taken place at the seat of the artificial anus. On examining the intestinal canal, for the purpose of discovering where the obstruction had been seated, it was found to be at the point of junction of the cæcum with the ascending colon; the contraction of the tube was so considerable, that the point of the little finger could scarcely be passed through it. The cæcum rested posteriorly on an indurated mass of scirrhous-like formation; but the mucous coat of the gut was not injured. The other portion of the intestinal canal exhibited no morbid appearances, with the exception of patches, here and there, of redness. (*Archiv. Gén.*, 1838.) The duration of the disease, which was manifested by swelling in the ileo-cæcal region, constipation succeeding diarrhœa, and vomiting, at first bilious, and afterwards stercoraceous, ought to have deterred the surgeon from operating. Three months nearly had elapsed from the time of the first symptoms appearing to that of the operation.

LECTURE XXXVI.

DR. STOKES.

PAINTERS' COLIC—Effect of metallic poisons on the nervous system—Symptoms of painters' colic—Pathology of neuroses—Action of lead on the system—Abdominal and cerebral symptoms—Species of painters' colic—Dr. Thomson's researches on lead—Effects of, in animals—Effects of, on the generative system.

A GREAT deal of our time has been already occupied with the diseases of the digestive system—in fact, much more than I originally intended; the

only apology I have to make for this, is the deep and paramount importance of the subject.

The disease next to be considered is called painters' colic, from the circumstance of house-painters being extremely liable to it from coming into frequent contact with the poison of lead. Its synonyms are numerous, dry colic, saturnine colic, rachialgia metallica, Devonshire colic, &c., &c.

Painters' colic is an example of the effects of a metallic poison on the nervous system. There are certain metals which produce a powerful effect on the system, not by means of their corrosive properties, or by any direct action on the surface to which they are applied, but by a peculiar impression made upon the nervous system. Thus we find that mercury, under certain circumstances, will give rise to a very singular nervous disease; arsenic may be introduced into the system in such a way as to produce symptoms of nervous lesion; copper exercises a similar morbid influence, and the effects of lead are universally known. I do not mean to say that all these metals produce similar effects on the economy, for this is not the case; but there is one point of agreement between them, that all may produce symptoms which are called nervous or neurotic, and the diseases thus produced are classed among the neuroses. What is the meaning of this term neurosis? *A lesion of nervous function, more or less complete, occurring independently of any demonstrable organic change.* A neurosis, then, is an alteration in the functions of the nerves of organic and animal life, the nature of which alteration we cannot understand, neither can it be demonstrated by the knife, nor by any examination of the state of the nervous tissue. In other words, a person will die with the symptoms of a neurosis; and when you come to examine the body, you will be unable to detect, in the minute ramifications of the nerves, the trunks, or the nervous centres, any appreciable lesion.

Diseases of this description have been divided into two classes—active and passive neuroses. Active neuroses signify an increase or exaltation in the nervous function; passive neuroses are those in which there is a diminution of nervous energy: in both, there is an absence of perceptible organic change. Take, for instance, an example from the nerves of animal life: a case of convulsions, independent of organic disease, is an example of the active neurosis; a case of paralysis, under similar circumstances, is an example of the passive. In the former, there is an exaltation of the nervous function, which is reflected upon the muscular system; in the latter, there is a diminution, producing a partial or total loss of the power of motion. It has been asserted, by eminent physiologists, that passive neurosis can only exist in the organs of the life of relation, because the functions of the ganglionic system, which presides over organic life, cease only at the death of the individual. But there may be such a thing as semi-paralysis of the organs to which the ganglionic nerves are distributed; and hence we may have passive neuroses of the system of organic as well as of animal life. We get a good idea of these neurotic affections, by taking some of the most remarkable instances of this kind. Hydrophobia is a remarkable instance of excessive lesion of the nervous function, without any known organic change; so is tetanus, and so are some forms of apoplexy, convulsions, and mania. Here we have violent irritations of the nervous system, in which there is no perceptible organic change; and where the only information we derive from pathological anatomy is of a negative character, telling us what these diseases are not, and leaving

us, as to their actual nature, as much in the dark as ever. We find by dissection, that hydrophobia, and tetanus, and hysteria, and convulsions, and apoplexy, are not caused by inflammation of the brain or spinal marrow, and that is all. Hydrophobia, tetanus, convulsions, and hysteria, are instances of active neurosis; paralysis and apoplexy, without any known cerebral disease, are looked upon as examples of the passive kind, because they present either a diminution or abolition of the nervous function.

In the present state of medical science, we must admit this division of the affections of the nervous system into diseases with and without perceptible organic lesion. I grant that it is very difficult, when we come to consider alterations in the functions of parts, to conceive how such changes could be effected without molecular alterations, or that the brain could be deranged in its functions, without some change of this kind. We are, however, compelled to consider such functional alterations of the nerves as changes with which we are unable to connect any process of hardening, or softening, or anemia, or congestion, or, in fact, any *known* pathological condition. Rostan is of opinion that all diseases are organic; that is to say, that they are produced by some molecular change, and this, he says, should be the basis of medicine. Unfortunately for medicine, it has been given so many bases, that it sometimes knows not what leg to stand on.

But to return to our subject. Painters' colic is an example of a neurosis, that is to say, it is a lesion of the nervous function, unconnected with any known pathological alteration. It presents, commonly, two periods—the first exhibiting the phenomena of active, the second of passive, neurosis; or, in other words, the signs of exaltation of the nervous function precede those of depression. In the majority of cases, we find the first stage of this affection characterized by violent spasm, pain, and convulsions, symptoms indicative of active nervous lesion; whereas, in the second stage, we have paralysis, the diagnostic mark of the passive kind. This is the order in which the phenomena of painters' colic are generally met with, but in some cases the first stage is either very imperfectly shadowed out, or even entirely wanting; the paralysis comes on in an insidious manner, and without being ushered in by any symptoms of exaltation of the nervous function.

In this country, the most common victims to this disease are painters, who are much in the habit of working in white lead, and when you are connected with the management of any public medical institution (as I hope you will all be), you will often have to treat cases of this description. In Dublin, and all large cities, it is an exceedingly common affection, and the patients are, for the most part, house-painters. Next to these, the persons who are most subject to it are plumbers, and those who are employed in the melting of lead.

When the poisonous particles of lead enter the system in a highly volatised state, its morbid effects are more certain and extensive. Every house-painter will tell you that the kind of work which is most likely to produce a deleterious effect, is painting "the *dead white*," or, as it has been termed, *statuary white*. In doing this, they use white lead combined with a large proportion of the oil of turpentine, and, in order to produce the intended effect, they are in the habit of excluding the air as much as possible. By means of the turpentine and the warm temperature of a close

room, the lead is volatilised, and, in this state, appears to have an extraordinary power of impregnating the system. Some of the very worst cases of painters' colic are produced in this way. Painting in the open air, even where the same preparation is employed, is comparatively harmless. A poor fellow, who was for a considerable time under my care, assured me that he had escaped for twenty years, and was convinced that he would have enjoyed a much longer immunity, had he not been put to work at the statuary while in a close room.

With respect to plumbers, it is now ascertained that this disease is of comparatively rare occurrence among them; and the reason of this is, that they generally work in the open air, or in well-ventilated apartments, and have now but little to do with the actual manufacture of lead. The kind of lead which they generally use, sheet and pipe lead, is furnished from the manufactories, and their occupation principally consists in the moulding and soldering of it. We very seldom now see a plumber labouring under colic.

Painters' colic may be observed under a great variety of forms; but, for the convenience of studying the disease, we may divide these varieties into four classes. In the first, we have the phenomena of simple colic, without any obvious or marked symptoms of bilious, gastric, or cerebral derangement. In the second variety, the disease assumes a more decided character; the colic is complicated with symptoms of fever of a gastric character, the pain in the belly is more acute, the constipation more obstinate; there is pain and difficulty in going to stool, nausea and vomiting, with occasional headache, dyspnœa, and sense of constriction about the præcordia; the belly is hard and retracted, and there is often pain in passing urine. In the third variety, we have a more formidable array of symptoms. The functions of the brain and spinal marrow are deranged; there are wandering pains in the extremities; and the patient has frequent attacks of violent convulsions, resembling those of epilepsy. He also labours under the abdominal symptoms, but in this stage they are not so well marked, or so distinct, as in the former; the lesions of the functions of the cerebro-spinal system begin now to exhibit a greater degree of preponderance, and claim the principal share of the attention of a symptomatologist. In the fourth variety, there is paralysis, without being preceded by the ordinary symptoms of abdominal or cerebral derangement. A medical friend of mine met with a case of this kind not long since. He was called to visit a child who had lost the use of his limbs. He went, and found the child lying in bed perfectly quiet and easy, his intellect sound, and his spirits good, but labouring under complete paralysis of all his limbs. He inquired minutely into the history of the case, and made a most scrutinising examination, but from all he could see or learn, there was not the slightest ground to suspect disease of the brain or spinal cord. There had never been any symptoms of colic. He was puzzled with the case, and tried one thing after another without benefit. At length he found out that the child's father was a painter by trade, and this led him to suspect that the symptoms might have some connexion with the poison of lead. He inquired; and was told by the mother that a quantity of white lead had latterly been kept in the room, and that it was impossible to keep the child from it. He instantly had the paint removed, a free current of air admitted into the room, and by the use of purgatives, assisted by stimulating frictions, the child recovered.

Symptoms.—The following is the order of symptoms generally observed in this disease.* First, we have the precursory, denoted by pain and sensation of weight about the epigastrium; a weak, small pulse; general languor and weakness of the muscular system; want of appetite; cold, clammy skin; a tremulous and coated tongue. At this period there is sometimes diarrhœa. Then comes some exciting cause, exposure to cold or wet, excess in eating or drinking, and the disease sets in with more or less intensity. The patient is attacked with dreadful pain in the belly, which differs from the pain of inflammation in this, that so far from being increased by pressure, it is in most cases relieved. In fact, so decided is the relief produced in this way, that there is a case on record in which the patient used to get the greatest ease by making one of his fellow-workmen to stand upon his belly. This relief from pressure is very generally observed in colicky affections. Indeed, so general is it, that you will hear it frequently stated, that all cases of colic are relieved by pressure. This, however, is not invariably true; for I have seen cases where the patients could not bear pressure, and where it required a careful examination to distinguish the symptoms from those of inflammation. The pain is of a twisting kind, and felt about the umbilicus; and, in connexion with this, there is scanty urine, with more or less pain in passing it, obstinate constipation, and a tense, hard, retracted state of the belly, from the violent contraction of its muscles. The upper portion of the belly is sometimes more retracted than the lower, and the pulsations

---

* [Prior to the development of the more decided forms of disease, there are effects produced on the system by lead, constituting what may be called "a saturnine diathesis." The principal marks by which this state may be recognised are, according to M. Tanquerel, who, in his *Traité des Maladies de Plomb ou Saturnines*, has entered largely into the subject, are, a peculiar bluish or bluish-gray tinge of the gums, which sometimes extends over the mucous membrane of the mouth generally, the teeth at the same time becoming discoloured and affected with caries; a sweetish, styptic, astringent taste in the mouth, with a peculiar fetor of the breath, sallowness of the skin, and a dull yellow tinge of the conjunctiva; general emaciation, and a small, soft, compressible pulse, and, in some rare cases, a considerable reduction in the number of its beats: of these symptoms, the discoloration of the gums and teeth is the most frequent and the most characteristic. It appears to be owing to the deposition of a very minute film of sulphuret of lead on the mucous surface and on the enamel of the teeth, the former becoming of a bluish slate-gray colour, as before mentioned; the latter of a brown colour, which is deepest at the neck of the tooth, or the part in immediate contact with the gum. The importance of a knowledge of and attention to these premonitory symptoms is shown by a statement of M. Tanquerel, from which it appears that, of 1217 cases of this affection coming under notice, 1195 had been previously affected with one or more of the symptoms specified, a timely attention to which, on the part of the person himself, with temporary cessation from work, has in many instances been successful in averting the threatened attack.—(*British and Foreign Medical Review*, Oct. 1840.) Dr. Burton lays stress on a blue line along the edge of the gums, bordering the teeth, as a diagnostic sign of lead poisoning.—B.]

of the abdominal aorta are unusually distinct. The pain remits, and then becomes exacerbated, and the patient's countenance is expressive of acute suffering. In that form of the disease, where there is a complication of gastric or bilious symptoms, the patient has a semi-jaundiced look, a hot, moist skin, quick pulse, foul tongue, vomiting, hiccup, thirst, and epigastric tenderness.*

In the third form, the chief force of the poison seems to be directed against the brain and spinal cord. There is vertigo, headache, stupor, and sometimes delirium; the patient has fits resembling those of epilepsy, but of longer duration, and violent convulsions, which sometimes continue with unabated intensity for twelve, or even twenty-four hours. You will see those unfortunate creatures rolling and twisting in every form, sometimes doubled forwards, sometimes in a state of perfect opisthotonos, sometimes moving their limbs with the convulsive action of an epileptic, and foaming at the mouth. In addition to this, it is stated, in the descriptions of this disease, that the patient loses his sight, and becomes amaurotic; this I can confirm, for I have seen it more than once. It is a curious fact, too, that this blindness may come on before the other cerebral symptoms are developed. I recollect a case in which one of the first symptoms was blindness. The patient happened one evening to be indulging himself in whiskey-punch, and was in a fair way of getting comfortably drunk, when, unfortunately, he found that all of a sudden he could neither see single nor double. He groped about in a very disconsolate state for his glass, but not finding it, and finding, at the same time, that he had lost his sight, he came to the hospital the next morning, and, shortly after his admission, had a violent attack of convulsion. In cases of this kind, I have generally found the pupils contracted. The patients toss about in bed, and are frequently found lying with their heads turned towards the foot of the bed. In some cases, the breathing has been ster-

---

* [*Lead rheumatism or lead neuralgia* is a common effect of the poison. It may generally be regarded as spasms or cramp-pains of the lead colic affecting the muscles of the limbs instead of those of the abdomen, and is most commonly a mere extension of that disease, although occasionally observed separately. According to M. Tanquerel, this, which he calls arthralgia, is, with the exception of colic, the most frequent result of lead poisoning. The pain, which is the chief symptom, occupies most commonly the lower extremities, then the upper extremities, the loins, the parietes of the chest, the back, and the head.

The liability of workers in lead to contract arthralgia is, as a general observation, in direct proportion to their liability to suffer from colic, with, however, one remarkable exception, viz., in the case of the manufacturers of red lead, the flexor muscles are more frequently the seat of pain than the extensors; the affected muscles being, in either case, strongly and spasmodically contracted, and their powers of motion greatly impeded: an exacerbation of pain often occurs during the night; but there is neither preternatural redness, heat, nor swelling of the parts, and the circulation is stated to be, for the most part, undisturbed. Yet we are also told, that in forty-five of the cases of simple arthralgia, that is, upwards of one-fourth of the number of cases of this description, the pulse was found to be hard, slow, vibrating, and, in seventeen of them, irregular. — B.]

torous for a length of time, and the head fixed, but the fingers and hands were flexible. I have seen cases in which the coma disappeared, and was followed by perfect blindness, lasting for two or three days, and then yielding to treatment.

These symptoms, striking and extraordinary as they are, do not seem to depend on the same state of the brain as cases of other diseases which are accompanied by sanguineous determination to that organ. The reason I make this assertion is, that many of the most violent nervous symptoms, including profound coma, subside under the use of a stimulant treatment. I think we may look upon these symptoms as similar to what are termed the symptoms of the *nervous apoplexy* of the ancients. A case of this kind, which occurred in the Meath Hospital, is deserving of notice, from the singular effect produced by treatment. The patient was in a state of profound coma, but the head was cool, and the arteries had no inordinate pulsation. If this was the case which presented the other symptoms of apoplexy, I would have prescribed bleeding, leeches, and cold applications. But I reasoned thus:—Here is a case in which there is no evidence of the existence of inflammatory action. Opium has been found to relieve the abdominal symptoms of the disease — may it not also relieve the cerebral? I ordered the patient to have a free dose of laudanum in camphor mixture. In a few hours he awoke, sat up in his bed, and next morning we found the symptoms of coma had completely disappeared. In two other cases of a similar kind, I have given opium and carbonate of ammonia with the most favourable result.

Dr. Clutterbuck mentions a peculiar symptom of this disease — a kind of gouty inflammation attacking the great toe, and followed by relief. I have not seen this. He states that the first joint of the great toe becomes red, hot, painful, and swollen, and that this remits by day and returns again at night. I have never seen this, nor have I ever seen those hard tubercles on the tendons in various parts of the body, which some authors have described.

After these symptoms, we come to a new class, namely, the passive, characterized by paralysis of the muscles of animal life.* It is remarkable

---

* [*Anæsthesia from Lead.* — Twenty-three cases of anæsthesia were noticed by M. Tanquerel; in four of which the disease was deep-seated, in seven the loss of sensation was confined to the skin, and in twelve the eye was affected. In the eleven cases of deep-seated and superficial anæsthesia, three times there was paralysis of the corresponding muscles, four times the paralysis of motion and of sensation occupied different parts, and four times the loss of sensation was unaccompanied by loss of motion; in one case only did amaurosis and anæsthesia of the skin exist together. The lesion of sensation is always partial or of limited extent, sometimes confined to certain parts of the abdomen, of the chest or neck, sometimes occupying the limbs; it may be complete or varying in degree, frequently shifting its place, or differing in extent; when deep-seated, it is less mobile than when confined to the skin. Usually it makes its attacks suddenly, and rapidly attains its fullest extent, though occasionally it is preceded by a slight numbness.

It might have been stated, in connexion with paralysis from lead, that it is altogether a different affection from what is termed mercurial paralysis. M. Tanquerel remarks, that in upwards of fifty cases of mercurial

that this paralysis seems to be principally a paralysis of motion, and that the power of sensation is seldom or never impaired. Generally speaking, the upper are more subject to paralysis than the lower extremities, and the right than the left arm. The latter circumstance is explained by assuming that the direct influence of the poison is more applied to the right arm. The paralysis of the arm is also frequently partial; the extensors lose their power, but the flexors do not in so great a degree. You will see a patient with his arm hanging by his side as if it were dead, but if you give him anything to hold, he can grasp it firmly. I have known painters continuing to work with a semi-paralysed arm. There is also an atrophied condition of the affected part; and this sometimes comes on with such rapidity, that, in the space of a week or ten days, the affected limb will be scarcely half as bulky as the corresponding one. We cannot account for this remarkable emaciation on the principle of loss of motion alone, for the short space of time in which it occurs, in many instances, is opposed to our entertaining such an opinion, and we must look for some other explanation. On this point, science affords us no satisfactory information.

This disease, notwithstanding all its terrible array of symptoms, is very seldom fatal. Hence the uncertainty which long prevailed as to its pathological nature. In the great majority of cases, where a dissection was made, the patients died of some other disease, which either occurred during its course, or had preceded it. All that appears to be established at present is, that there is no known organic change of the nervous system connected with this disease; that it occurs in all its forms without the coexistence of organic lesion, and that its exciting cause is the poison of lead.

It was formerly supposed that all the preparations of lead, whether applied externally or used internally, were capable of producing colic; but this doctrine is at present considered very questionable. It was thought that metallic lead, and all its salts, were capable of causing the disease; but the morbid influence of this metal is now restricted by the best chemists and pathologists chiefly to its carbonate. This opinion, I believe, was first put forward by Dr. A. T. Thomson, the author of the London Dispensatory, in an interesting paper published by him in the tenth volume of the Medico-Chirurgical Transactions. The object of this paper is to prove that, of all the preparations of lead employed in pharmaceutical and other purposes, the carbonate is that which is chiefly poisonous, and that the acetate and sub-acetate are comparatively harmless.

You have all, I am convinced, heard of cases of colic produced by the external use of the acetate of lead, and you will see some cases in proof of this opinion in Darwin's Zoonomia, and other writings. There is a case on record of a woman, who, having poulticed her ankle with this preparation, for the cure of a sprain, got colic and fell into a state of marasmus. I knew of a deplorable case of burn affecting the abdominal integuments, which was treated with a solution of the acetate of lead. After using it for a fortnight or more, symptoms of colic came on, which, not being recognised, the lead wash was continued, and the woman died

---

tremors observed in the hospital *La Charité*, in no one instance was paralysis seen to supervene; and his researches among the workmen generally employed in the manipulation of this metal and other metallic substances, lead to the conclusion that lead is the only mineral capable of producing paralysis properly so called.—B.]

in great agony. Dr. Thomson explains all this in a very satisfactory way. He shows that the solution of the acetate of lead, when exposed to the air, attracts a quantity of carbonic acid, and is thus converted into a carbonate; of this I have very little doubt, for you will find that, by exposing a solution of the acetate of lead to the full influence of the air, the carbonate will gradually be deposited in the shape of a white powder. In the same way, we can understand why it is that a solution of the acetate of lead, added to fermenting poultices, may be converted into a carbonate by the carbonic acid which is evolved. It is also a fact, that the acetate can be used internally for a long time without producing anything like deleterious effects. I have given it for weeks together in full doses, without its having been ever followed by colic, or any symptoms characteristic of the absorption of a poisonous matter. There are cases on record where as much as six drachms of this salt have been taken internally without producing any sensible morbid effect. As far as my experience goes, all those cases, in which the medical use of the acetate of lead has been attended with disagreeable symptoms, were cases in which it had been used as an external application. There were two cases in the Meath Hospital in which this medicine was used externally, in which colic, and other indications of poisonous absorption, took place, but not a single one in which its internal employment had been injurious. An excellent practical rule is laid down by Dr. Thomson, that, where you wish to employ the acetate of lead internally, you should take care to combine it with diluted acetic acid. Of the two combinations of lead with acetic acid, the sub-acetate is most liable to be decomposed and converted into a carbonate, so that, if you prevent this by mixing with the sub-acetate, or acetate, a certain quantity of distilled vinegar, there will be little or no chance of unpleasant symptoms being produced, even where the medicine is given in very considerable doses. We are, therefore, I think, justified in concluding that it is the carbonate of lead which is productive of poisonous effects; and that where bad symptoms have resulted from the use of the acetate, it was in consequence of its being converted into a carbonate. I must, however, remark, that it has not been sufficiently proved, as yet, that the use of the acetate is *perfectly safe.**

It is an interesting fact, that many of the lower classes of animals are subject to this disease. Burserius was one of the first authors who directed the attention of medical men to this singular occurrence. I have got from my father an abstract of some observations made by him on this subject, during a visit to the lead hills in Scotland. He found that, in the pastures among these hills, and in their immediate vicinity, cows, horses, sheep, dogs, and even poultry, were subject to colic from lead. The symptoms, also, in these animals, were observed by him to bear a very close analogy to those of the human subject. Thus, for instance, in cows there was obstinate constipation with suppression of urine; the poor animals seemed to suffer from violent twisting pain in the belly, and sometimes were thrown into a state of furious excitement, running wildly

* [Cases of undoubted authenticity have been recorded in the English Medical Journals, in which the administration of the acetate of lead in doses, in one instance, of three grains every three hours in the twenty-four, for hemoptysis, was followed by lead colic.—B.]

across the country. He learned, also, that during that period it was calculated that at least one-tenth of the cows in this nation had died of the effects of the poisonous absorption of lead. One of the most ordinary precursory symptoms, was the animal becoming what is called hide-bound; this was followed by obstinate costiveness, and there was much apparent suffering, with panting, starting, and slavering from the mouth. Where the cerebral symptoms were most prominent, the signs of abdominal irritation were by no means distinct; and this, as I have remarked, is the case in the human subject. In some, who had the head affected, and ran wildly through the country, the secretion of milk was stopped; and this accords, too, with the effect of lead on the human female. Another remarkable circumstance is, that animals living in the vicinity of these lead hills have exceedingly difficult labours. Sheep are subject to epileptic convulsions and paralysis; dogs have the head principally affected, they run across the country slavering at the mouth, as if in a state of hydrophobia, but they do not bite, and are in all respects perfectly harmless. In barn-door fowl, the generative function was injured, and the hens reared or brought there ceased to lay eggs.

There is one fact, mentioned in these observations, which tends to confirm the opinion of Dr. A. T. Thomson, that the poisonous effects of lead are produced chiefly by the carbonate. A distance of a very few miles from the valley renders animals quite free from any liability to the disease; but if they should happen to stray into the immediate neighbourhood, and particularly into a portion of low ground, flooded during the winter months by a river which runs along the valley from the mines, and which, in all probability, leaves behind an efflorescence of the carbonate of lead, they are very liable to be affected with colic. It is said, also, that the poison is introduced by the volatilization of lead in the smelting houses, the vapours of which are carried down the valley and through the neighbouring parts. Be this as it may, the Gaelic name of the valley signifies the *poisonous vale;* and as it is very probable that this name had been given in consequence of the deleterious qualities of the place long before the establishment of lead works, it tends strongly to favour the opinion that it is the water which contains the poison.

The mode of cure employed by the shepherds in this place, is, to give strong purgative injections, and to remove the cattle from the influence of the poison, by sending them to new and healthy pastures. In this way they frequently recover; and if we look to the cause of the disease, its symptoms, or mode of cure, we shall observe a striking analogy between it and the colic from lead in the human subject. I shall conclude this subject at my next lecture.

LECTURE XXXVII.

DR. STOKES.

PATHOLOGY OF PAINTERS' COLIC.—Researches on the state of the nervous and digestive systems—Treatment—Use of narcotics, purgatives, tobacco, &c., &c.—Treatment of paralysis from lead—Efficacy of strychnia and brucia—Colic from copper—Poisonous effects of mercury—Remarkable case—Affection of the respiratory muscles.

WE were occupied at our last lecture in considering the symptoms of painters' colic. I mentioned that it occurs under a variety of forms; that

the symptoms are to be attributed to a lesion of nervous function independent of any known organic change; and that the same disease may be seen in animals which have been exposed to the poison of lead. There are some other facts connected with this disease which should not be passed over, and which I am anxious to lay before you previously to entering upon the treatment.

You will recollect that I introduced the subject by stating that painters' colic belonged to the class *neuroses*, and that I endeavoured to show that this implied a lesion of function of any part of viscus of the body, frequently characterized by the most decided departure from the natural condition, and yet unaccompanied by perceptible organic change. I said, also, that it was hard to suppose the existence of great functional alteration, *without any molecular change;* but that, in the present state of science, we are compelled, for the want of a better term, to call these affections *neurosis*, in contradistinction to diseases in which there is organic lesion visible. To illustrate this point, take an example from two different cases. In one case of what is called *dyspepsia*, we have inflammatory, or, at least, sub-inflammatory derangement of the stomach: here the disease is traceable to organic change; in another we have symptoms of nearly the same character, and yet there is no organic lesion. Painters' colic comes under the latter head; we observe symptoms of excessive functional lesion, but dissection does not exhibit any organic change. Pathological anatomy tells us what it is not, and we arrive merely at a negative knowledge of its nature. We have decided proofs of extraordinary lesions of the nervous system, and yet, when we come to the *post-mortem* examination, we cannot find any visible change to account for these striking phenomena.

The old pathologists maintained that spasm of the intestines was the principal cause of the disease, and attributed the symptoms to their contraction. This opinion appears to have some foundation, when we consider the violent symptoms of colic which accompany this affection. Dubois de Rochfort has mentioned, that in such cases he has found intussusception of the intestine. De Haen says that contractions of the colon are very common; and several authors make the same assertion. The results of more modern observation, however, are against these opinions. I have told you already, that in consequence of this disease seldom or never proving fatal, there is a degree of doubt attached to its pathology; but it is an interesting fact, that where death from other causes has occurred during the existence of painters' colic, the digestive tube has been found either in its healthy state, or with a few detached spots of vascularity, without any decided inflammatory character, and totally insufficient to account for the symptoms. This, which is all that pathological anatomy reveals, may be considered as purely accidental, and only of occasional occurrence, so that we are compelled to look upon the disease as one in which there is great lesion of function without any organic alteration.

In the hospital of *La Charité*, at Paris, a vast number of cases of painters' colic have been treated. In the space of eight years five hundred cases of this description have been admitted; out of these, five died while labouring under the disease; and the following is an abstract of the appearances observed in dissection. In the first case, there was rupture of an aneurism of the abdominal aorta, and the patient sank from loss of

blood. On examination, the digestive tube was found in the natural and healthy condition—there was neither *vascularity nor contraction*. The subject of the second case died of apoplexy. The whole intestinal canal was found healthy, and, contrary to the doctrines of the school of Broussais, there was neither congestion nor vascularity. In the third case, the patient had fits of an epileptic character, in one of which he expired. The colon exhibited a slight degree of redness, but quite insufficient to explain the symptoms during life. In the fourth, the cause of death was the same, and, on dissection, the tube was found healthy. Another patient, after recovering from the symptoms of painters' colic, got a sudden attack of asphyxia, and died. His body was examined, but there was no trace of disease in the colon or any other part of the intestinal canal. Here we have five cases in which there was either no disease at all in the digestive tube, or, if there was any, the amount was quite insufficient to account for the symptoms. Louis, in a memoir which he has published, on sudden and unexpected deaths, gives a case of this disease where death occurred suddenly on the eighth day. The intestines were found to be in a healthy condition. Martinet gives two cases of persons who died of the cerebral symptoms whilst labouring under this disease; here, also, the tube was in the normal state. Thus we have eight cases with dissections detailed by various authors, all men of high professional celebrity, having no theory to support, and all agreeing in the statement, that there is little or no appreciable lesion of the digestive tube; that in the majority of cases it is in a state of health; that no contraction exists; and that such morbid appearances as have been found must be looked on as accidental.

There is one interesting circumstance in these cases which deserves to be noticed. With the exception of the first and fifth cases, all the patients presented that form of the disease in which the functions of the brain are decidedly injured. Here it seems probable that the cause of death was excessive irritation of the nervous system. Now, in the observations I made on the cases which were treated at the Meath Hospital, you will recollect I stated that where the cerebral symptoms were predominant the abdominal were more or less indistinct and latent, and that the cause of indistinctness, or even total absence, of these might be owing to the force of the disease being thrown upon the brain and spinal cord. Such was the case in the instances above recited, and such we have also seen to be the result in the case of those animals of an inferior order that have been exposed to the poison of lead. How far the predominance of cerebral excitement may explain the want of appearances of disease in the digestive tube may be a subject of consideration.

What is the state of science with respect to the brain and spinal marrow? Allow me here to call to your recollection the symptoms of functional derangement of the nervous centres, the coma, the violent convulsions, the amaurosis, the deafness, the delirium, the paralysis. All these are violent symptoms, and you would naturally expect to find them connected with some sensible alteration, some congestion, or inflammation, or ramollissement. But nothing of this kind can be discovered. In all the cases where death occurred under such circumstances, at *La Charité*, with the exception of some slight appearances of cerebral lesion in the second, there was no perceptible disease in the brain or spinal cord. The membranes and substance of the brain presented their normal condition; there was little or no fluid in the ventricles; the spinal cord was healthy

and natural in consistence and colour, and there was no effusion into its sheath. All these circumstances led to the conclusion that painters' colic is essentially a neurosis. Observe, too, how interesting it is to connect the circumstance of the absence of organic change with the singular fact which I mentioned in my last lecture, that the comatose symptoms of this affection may be treated with stimulants and opiates. Where we have coma with congestion of the brain, opium has the effect of increasing the symptoms; here it was found to have a contrary effect. So that our experience and the results of pathological anatomy, as far as they go, appear to square exactly. We see, then, that painters' colic is not inflammation of the intestines, or of the brain, or of the spinal cord, and this information, though of a negative character, possesses considerable value in a practical point of view. I do not know any cases of what have been termed neuroses, in which the bearings of pathological research on practice are so extensive and so satisfactory.*

Treatment. — It is a fortunate circumstance that this disease is seldom fatal, and it is some consolation to think that, although the patient's sufferings are dreadful and often protracted, there is little danger of life, and that the complaint is almost always amenable to judicious treatment.† I have been for some years in the habit of treating it in a routine way, and can speak from experience of its success — of course this treatment is to be modified by circumstances. Suppose a patient applied to you with violent pain about the navel, a hard and retracted state of the abdomen, obstinate costiveness, and the other symptoms which characterize an attack of painters' colic; the first thing I would advise you to do is to prescribe a full opiate. Many persons would object to this, and say that there is constipation enough already, and that opening the bowels would be much more likely to give relief. But opium does not here add to the constipation: indeed, so far from doing this, it sometimes acts as a laxative. At all events, it is a remedy which is perfectly unobjectionable. Give, then, in the first place, a full opiate; it will have the effect of relieving the patient's sufferings, and will enable you to gain time for the employment of other means. The next thing is to place the patient in a hip-bath, and keep him in it as long as possible. Do not neglect this, for I know of nothing that gives more decided relief. I have often seen

---

* [The impeded and perverted function of the nervous and muscular systems in lead poisoning, is now attributed to the presence of the metallic preparation itself in the organs and tissues, consequent on its absorption. The palsy, as of the hand, in *wrist-drop*, is owing, Dr. Budd thinks, to the local action of lead in the poisoned parts, and not to any change in the central organs of the nervous system. — B.]

† [Out of the entire number of cases of lead colic, 4809 observed and recorded by M. Tanquerel and others, 111, or 1 in 43, terminated fatally. It would be more correct to say, that the deaths here were from lead poisoning, as, with one exception, the fatal result is said to be either owing to cerebral affection, and to paralysis of the respiratory muscles, or to some accidental complication with disease foreign to those from lead. In a note by M. Chevallier, in the *Ann. d'Hyg. Publ.*, &c., we learn, that the cases treated in the hospitals at Paris, during the years 1844, 1845, and 1846, amounted to 1287, of which 39 were fatal, showing one death in every thirty-three cases of the disease.—B.]

cases where the patient was quite easy while he remained in the bath, but experienced a return of the pain as soon as he left it. If you have no means of procuring a bath in this way, the next best thing is to have recourse to emollient stupes containing some narcotic, after the manner first introduced by my colleague, Dr. Graves. One of the best of this kind is the tobacco stupe; if you cannot get this, you may employ poppyheads for the same purpose. The tobacco stupe is much better than the tobacco injection, because its effect can be more easily regulated; but in violent cases I am in the habit of combining both, employing the stupe during the paroxysms of pain, and throwing up a tobacco enema every four or six hours, until a decided impression has been made on the symptoms. In the success which has attended my distinguished friend Dr. O'Beirne's treatment of tetanus by the use of tobacco we have seen an analogous effect. In this way you will succeed in giving relief; you should also prescribe a brisk cathartic; and this you may do without any fear of injuring the patient, or exciting intestinal inflammation. The insensibility of the intestines to the stimulus of even powerful purgatives is a curious feature in this disease, and bears strongly against the idea of its being connected with any inflammatory condition of the tube. In the Hospital *La Charité*, the treatment is routine; it consists of an emeto-purgative [and narcotic] plan, which is continued day after day until the symptoms yield. The purgatives we employ in the Meath Hospital are croton oil, combined with castor oil and mucilage, or given in the form of pill. When the bowels have been freely acted on, the case generally goes on well. After the bowels have been opened, we continue the employment of the hip-bath, the narcotic stupes, and anodyne injections, taking care at the same time to persevere in the use of purgatives.

Andral makes a good remark on this point:—"Here (says he) are cases in which, from some peculiar alteration in the state of innervation, the mucous surface of the bowels is rendered less sensible than in its ordinary condition, and can bear freely the stimulus of powerful purgatives. May not this condition also occur in other states of the economy? We are, therefore, led to conclude that purgatives are not, in all cases, direct stimulants."

Painters' colic has been treated in Paris by bleeding and leeching; but this has not been found so successful as the ordinary purgative plan. I have never seen a case in which general bleeding seemed to be called for except one, and this was a most violent case, which had resisted the ordinary means of treatment forty-eight hours. I recommended bleeding from its well-known anti-spasmodic power; a quantity of blood was taken, and soon after the purgatives began to act, and the patient got relief. With respect to leeches, I have employed them only in those cases which are accompanied with symptoms of fever and gastric irritation; where there is quick pulse, hot skin, foul tongue, thirst, vomiting, and epigastric tenderness. In such cases I have applied leeches, but my experience of them is, that the relief afforded is by no means so great, or so decided, as in cases of intestinal inflammation, and it is a mode of treatment which I do not by any means rely upon for removing the disease.*

* [In the cases of painters' colic which have fallen under my notice and care, I have found but little benefit from other means, unless the lancet had been freely used. In one of the two last cases which I treated

After the violent symptoms have been subdued, the next thing you have to consider is, whether there is any paralytic affection, and how this

---

in this way, with the addition of cups on the abdomen, calomel, and castor-oil and turpentine, with opiates occasionally, there was no return of the disease for nearly twelve years, although the person had been regularly engaged in his trade during this period.

Alum is one of the most approved, in fact is the most entitled to our confidence, of any one single remedy, in the treatment of lead colic. In its favour we have the experience of practitioners in Germany, France, and Great Britain. Its administration long constituted the treatment of lead colic by M. Kapeler, at the Hospital Saint Antoine in Paris. M. Montanceix assures us, that in doses of three or four drachms daily, the potassio-sulphate of alumen cures, invariably, lead colic, however violent it may be, in less than six to seven days, and commonly also without relapse occurring. M. Gendrin tells us, that fifty-eight patients attacked with the disease, some of whom had been subjected unsuccessfully to other modes of treatment, were cured without a single exception and without any inconvenience to the digestive organs. In a dose of a drachm and a half to two drachms, the alum arrested the march of the disease in twenty-four cases, in a period of from ten to fifteen hours; and in six the persons were not obliged to suspend their work. But, he adds, that when the dose exceeds two and a half or three drachms in twenty-four hours, disagreeable effects ensue.

The next, and the last lauded remedy for lead colic, is sulphuric acid, to the use of which M. Gendrin was led by his investigations into the *modus operandi* of alum, and a suspicion that its activity was owing to the excess of sulphuric acid in this salt. He asserts that he has now treated three hundred cases of lead colic with sulphuric lemonade, — made by adding a drachm to a drachm and a half of the acid to three or four pints of water with sugar. Commonly he carries the dose of the acid as far as two scruples, diluted in a pint and a half to two pints of water suitably sweetened —taking care that this drink shall not be kept in vessels of metal. Unfortunately, however, for science and for medical ethics also, the accuracy of M. Gendrin's results has been not only denied by M. Tanquerel, but denied in terms anything but courteous or civil. This latter gentleman asserts, that the trials made with the sulphuric acid in the *Charité* were utter failures, and that the physicians, MM. Andral, Dalmas, and Sandras, were obliged, for conscience' sake, to desist from its use and to have recourse to the purgative plan. On the other hand, again, we have the averment of Liebig, in his *Organic Chemistry*, that sulphuric acid lemonade is a preservative from the injurious effects of lead, and that colic is entirely unknown in all manufactories of white lead in which the workmen are accustomed to drink it.

The alkaline sulphurets have been recommended in the treatment of lead colic, under an idea that the oxide of the metal would combine with the sulphur and form a sulphuret, — a substance insoluble and inert in the digestive tube. But practice has not sanctioned the theory.

Mercury has been given by different physicians for lead colic, with a view to procure its sialagogue effects; but salivation will not unlikely predispose more readily to palsy, and we are not, besides, reduced to the strait, in this case, of curing one kind of poisoning by exciting ano-

is to be treated. If the disease be severe or of considerable duration, you may look for paralysis of one or both of the upper extremities with a good deal of certainty. This part of the subject, I believe, more properly belongs to the consideration of nervous affections, but, as I have gone so far into the treatment of painters' colic, I may as well give the whole together. The paralysis which follows this disease is different from that which is the result of apoplexy; it is a neurosis of the passive kind, and to be treated as such. The patient, some time after the occurrence of the usual symptoms of colic from lead, begins to complain of weakness in his arm, he feels some difficulty in extending his fingers or raising his hand to his head, and then the symptoms become more marked. The arm and forearm become rapidly atrophied, the paralysis principally affects the extensors, while the flexors retain a considerable share of power, the fingers are bent, and the arm hangs by the side. Here the first thing you should do is to adopt the treatment recommended by Dr. Pemberton in his work on Abdominal Diseases, namely, to apply a splint to the inside of the forearm and hand, so as to counteract the preponderating influence of the flexors. Apply a splint to the forearm, wrap it up in flannel, and make the patient keep it supported by a sling. In this way you establish a kind of balance between the antagonist muscles, and place the extensors under favourable circumstances for bringing about a cure. If the patient has both arms affected, which is sometimes the case, change the splint from one arm to the other every second day, and continue this alteration until the cure is completed.

You will next have recourse to the use of strychnia, one of the best remedies we possess in cases where the paralysis does not depend upon organic diseases of the brain. This is a remedy which is given with good effects even in cases of paralysis from apoplexy, *where there is reason to suppose that absorption of the clot has taken place.* In cases of apoplexy it can be employed only after some time, and where depletive measures have been sedulously put in force, but in a paralysis of this description you may begin with it at once. Commence with the exhibition of one-twelfth of a grain of strychnia, two or three times a-day, and go on increasing the dose gradually, until a grain, or even a grain and a half, is taken in the twenty-four hours. To insure the exact division of this powerful drug, you should direct a grain of it to be dissolved in a few drops of alcohol, and then made into pills of an equal size with crumb of bread or conserve of roses. In this way you will succeed in bringing back the lost power of the muscles of the forearm and restoring its nutritive functions. I may mention here, that the atrophy of the paralysed limb, which occurs in this disease, cannot be accounted for by supposing

---

ther. But in some of the more unmanageable forms of the disease, attended with great irritability of stomach, lead itself, in the shape of sugar of lead, has been given by Dr. Harlan and others in this disease. Dr. H. combined the salt of lead with calomel and opium, as follows:—℞. Cal. ppt., gr. v.; Pulv. opii, gr. ij.; Pulv. sacch. sat., gr. iij. M. ft. pulv.: to be repeated every two hours until relief is obtained,—which, he tells us, is usually the case after two or three powders have been taken. But, in this prescription, we cannot say what is due to the opium, and what to the sugar of lead, or the calomel. The same difficulty occurs in his prescription of sugar of lead with opium as an enema.—B.]

that it is produced by want of exercise; the emaciation is so rapid (sometimes taking place in ten days or a fortnight) that we can only attribute it to some unknown lesion of innervation.

If the use of strychnia be followed by severe muscular twitches, pain in the head, or convulsions, you must omit it for some time, and then, when these effects have completely subsided, it may be resumed if necessary. You should also bear in mind that this remedy is one of those medicines which have been termed accumulative, that is to say, a patient may be taking it for a considerable time, without any perceptible symptom, and then its effects explode suddenly, the quantity which has been accumulating in the system manifesting itself at once by symptoms of great intensity. Here you omit it immediately, and, with a view of relieving the existing symptoms, prescribe a draught composed of camphor mixture, ammonia, and opium. This has generally the effect of calming the nervous excitement, and you will seldom have any more trouble on this account. *En passant*, I would advise you, whenever you employ strychnia in private practice, to inform your patient of the occurrence of such symptoms, and tell him that there is no cause for alarm. Instead of strychnia, some of the continental practitioners are in the habit of prescribing brucia, and, it is stated, with considerable advantage. I have tried it in two or three cases without much apparent benefit, and I am inclined to think that it is decidedly inferior to strychnia. In France, however, it has been very largely employed, and has the reputation of being a remedy of considerable value in the treatment of paralysis. It has one advantage at least over strychnia—it can be much more easily divided and regulated, so far as respects the quantity given, as it is a much weaker preparation than strychnia, one grain of which is equivalent to six grains of brucia.

In addition to these measures, I have seen much benefit result from the application of blisters and frictions, with stimulating liniments to the spine. It is also of importance to remove the clothes in which the patients have worked; they are frequently charged saturated with lead, and have a considerable tendency to keep up the disease.* I have often seen an attack of painters' colic re-appear so shortly after leaving hospital, and without any evident exposure, that I could only attribute it to the circumstance of their garments being saturated with lead.

In the foregoing plan of treatment there is nothing new; it is, in fact, a routine practice, but is one that is borne out by the results of pathology, and which, from long experience, I can strongly recommend. I may also remind you that the plan of treatment followed in the hospital of *La*

* [This precaution is a very proper one. To it should be added that of a regular and careful ablution of the hands and face, and arms, if they have been exposed, and a careful combing of the head and cleaning of the nails, before every meal, and also a daily washing of the feet. The night clothes ought always to be different from those worn during the day. By these means, and temperate living, which implies abstinence from all intoxicating drinks, painters and glaziers may escape for a term of years, if not for life, from an attack of painters' colic.

As respects the general therapeutic course required in this disease, I have not found it to differ materially from that which I have followed in *bilious colic*, with the treatment of which the reader is already acquainted.—B.]

Charité, which has more cases of this disease than any similar institution at Paris, is completely routine.

Other metals besides lead, as, for instance, copper, produce effects somewhat analogous. Copper is said to produce salivation, colic, and vomiting. Brass-founders are liable to these symptoms, as also other persons employed in the manufacture of copper. I have not seen the disease, but it is said to be analogous to lead poisoning, so far as colic is concerned; in other respects the symptoms differ. The convulsions are not so violent, nor is the paralysis or coma so frequent; there is often considerable fever, thirst, difficulty of respiration, præcordial anxiety, diarrhœa, and prostration of strength, so that it comes much nearer to ordinary intestinal inflammation with fever than painters' colic. Yet it is a curious fact, that notwithstanding all its array of symptoms so closely bordering on inflammation, it has been found in Paris, where several cases of this disease have been seen, that it is amenable to the same treatment as painters' colic, and that, under the use of purgatives, the fever, thirst, diarrhœa and tenesmus subside.

Mercury, under certain circumstances, will produce a most extraordinary affection, on which I shall here make a few observations. The disease is not of very frequent occurrence, but it is of importance in practice to be able to recognise and treat it properly. It is a proposition well known to almost every one, that many bad effects have resulted from the abuse of mercury; and I need not tell you how many persons are injured by the empirical employment of this potent drug on all occasions and in all constitutions. It is a common opinion that mercury acts principally on the capillary and absorbent systems, but there can be no doubt that it also acts upon the nerves, and that in a very remarkable manner. I have seen cases where the constant use of calomel has produced a marked derangement of the nervous system, manifested by great irritability, tremors, hysterical excitement, and hypochondriasis. You will see in the various works on Toxicology an account of the effects produced by mercury on persons employed in quicksilver mines, and on tradesmen, such as looking-glass manufacturers and others, who come in contact with mercury. I shall read for you the notes of a remarkable case of this kind, which was some time back under treatment in the Meath Hospital. It may be called a form of the paralysis agitans from the effects of mercury. Similar cases have been described.

A man, aged forty-six, was admitted into one of our medical wards in October, 1833. He stated that, from the time he was eight years of age, he had been employed in a looking-glass manufactory, and that his occupation principally consisted in what is technically termed the silvering of mirrors. In this process the operator's right hand is repeatedly immersed in a vessel filled with mercury, while the left fixes a sheet of tin-foil, on which the metal is rubbed. Artisans while thus engaged are in the habit of using a muffle, which covers the mouth and nostrils. This the patient said he had never used, because he found that those who were in the habit of wearing it did not enjoy better health. For thirty years he continued to enjoy tolerable health, with the exception of some bleeding from the gums, with shooting pains and a sense of formication in various parts of the body, accompanied by a slight loss of power in the hands, which came on at various times, and was generally relieved by the use of ardent spirits. He had been frequently salivated, and when

admitted had lost nearly all his teeth. The mode in which he lost them was this: gum-boils formed close to the roots of the teeth, which soon after dropped out, and in this way the local inflammation subsided. About three years ago, he had an attack similar to that for which he had been admitted; he went into the hospital, and was put under an active antiphlogistic treatment with relief. From that time up to the period of his admission, he had enjoyed tolerable health, except that the sight of the right eye was considerably impaired, and that his memory was slightly affected. He forgot the names of persons and places, and was frequently at a loss in endeavouring to recollect the persons to whom he had lent his tools. On being brought into the hospital he presented an extraordinary specimen of human suffering, and I was at first unable to give his complaint a name, the case being the first of the kind I had seen. It exhibited the phenomena of a violent spasmodic affection; it was different from tetanus, or hydrophobia, or hysteria, but it bore some faint analogy to chorea. The head, arms, and fingers, particularly on the left side, presented a succession of quick, convulsive, jerking motions. The angles of the mouth were retracted, the eyebrows twitching, the head constantly thrown back, but the agitation scarcely raised the arms. The nostrils were spasmodically dilated. The sterno-mastoid, trapezius, scaleni, diaphragm, and the abdominal muscles, were similarly affected. Their contractions were short, rapid, and painful. From the constant hiccup with which the spasms of the diaphragm were attended, and the jerking motions of the tongue, his speech was interrupted and indistinct. He was occasionally free from spasm altogether, but whenever he transmitted volition to any part of the muscular system, it became instantly affected. When he endeavoured to raise his foot from the ground, it quivered and fell quite powerless and useless. Whenever he attempted to carry a vessel to his lips, he generally overshot the mark, carrying the vessel towards his ear, nose, or forehead, and spilling its contents over his face or neck, so that it was a common saying among the patients in the wards, that he did not know the way to his mouth. But if the vessel was applied to his lips by another person he could swallow easily. A sudden blast of cold air, the application of a cold hand to the skin, or the abrupt entrance of any person into the wards, brought on an attack of spasms. The muscles of the left hand and of the left side were affected much more than those of the right. The mental powers were not impaired, the patient was intelligent, and seemed anxious to communicate the particulars of his case. During the whole course of the disease he retained a full power over the urinary discharge and defecation. There was some slight tenderness on pressure over the fourth and fifth dorsal vertebræ, but the rest of the spine exhibited no increase of sensibility. His skin was cool and dry, his pulse quick, weak, and small, his bowels inclined to be costive, but easily moved by laxatives. Here we see a marked difference between this affection and painters' colic.

The treatment adopted in this case was very simple. Leeches were applied to the tender part of the spine, the patient was placed in a warm bath, and got some laxative medicine, followed by an opiate. He was also ordered to have a large flannel shirt, and to be placed in a warm, comfortable bed. He passed the night tolerably well, and the next day appeared to be much improved. I shall not continue the daily reports of this case, but shall merely mention, that after a few days a great improve-

ment took place. The spasms of the left side continued, though much less severe. Those of the purely voluntary muscles on the right ceased, while the spasms continued in the respiratory muscles on this side. We found that all the muscles of the face which have been called respiratory by Sir C. Bell, the platysma, scaleni, pectoral, and intercostal muscles, and the diaphragm, were thrown into violent spasms, while the purely voluntary muscles remained in a state of perfect quiescence. I am not aware that this circumstance has been observed in any other case. As far as it goes, it tends to corroborate the views of Sir C. Bell. In the treatment of this case we employed narcotic frictions, particularly those composed of the extract of belladonna, to the spine, with considerable benefit. The patient was cured by very simple means, and at little expense to his constitution.*

LECTURE XXXVIII.

DR. BELL.

CHOLERA MORBUS—Definition—Sydenham's description—Divisions of cholera.—*Sporadic* or *Common Cholera*—*Symptoms*—Not a very fatal disease—Proportion of cases and deaths in the British troops in different regions—Greater proportionate mortality in northern than in southern latitudes—Often exceptions to this.—*Causes*—Mutations of temperature from heat to cold, and errors in regimen—Seat of the disease—Not often depending on inflammation.—*Diagnosis.*—*Treatment*—Diluents—External irritation—Emetics—Opium—Venesection occasionally—Calomel—Calomel and opium—Laxatives—Occurrence of gastro-enteritis—its appropriate treatment—venesection or leeching—laxatives, diluents, mild diaphoretics, and the warm bath.—Convalescence from cholera—Its treatment.

CHOLERA MORBUS, the name of the disease which will form the subject of the present lecture, is a barbarous compound of Greek and Latin, as bad as if in our own vernacular language we should say cholera disease. The term cholera itself has been in use since the days of Hippocrates; but, respecting its origin, subsequent medical writers differ. Celsus derives it from χολη, *bile*, and ῥεω, I flow; which is, literally, *bile-flux*. Trallianus, again, supposes it to be derived from χολας, intestine, and ῥεω; *intestinal flux*. With our present knowledge of the subject we may wish that this last explanation had always been the popular one; as it would have saved much erroneous speculation and practice, which have resulted from the predominant idea of the disease originating from an excess and acrimony of the bile.

A brief definition of cholera as, until late years, it presented itself in the adult subject, is,—griping pains followed by vomiting and purging, very rarely with flatulent eructations and dejections, and always with spasms of the extremities, particularly the inferior, and anxiety. To these should be added coldness of the skin, and often a cold sweat. The nervous and spasmodic character of the disease was dwelt on by Cullen, and its affinity to fevers pointed out by Pinel. I shall not occupy your

* [Sinapisms, following cups to the spine, constitute, with some, part of the regular treatment of lead colic.—B.]

time with repeating the descriptions of cholera by the ancient writers, but come down at once to him, among the moderns, who has treated the subject with the greatest clearness and practical acumen,—I refer now to Sydenham. He tells us, that "it comes almost as constantly at the close of summer, and towards the beginning of autumn, as swallows in the beginning of spring, and cuckoos towards midsummer;" thus declaring its epidemical visitations, and the state of weather which gives rise to it. He distinguishes cholera appearing under the predisposing operation of atmospherical causes from the occasional variety caused by a surfeit, "which happens at any time of the year, which, with respect to its symptoms, resembles the cholera morbus, and yields to the same treatment, and yet it is of a different kind." Sydenham notices a dry cholera, which he admits he saw but once, and which certainly is not, in the absence of retching and stools, and in its alleged causes, "flatus passing upwards and downwards," entitled to be regarded as cholera at all. The only useful divisions of the disease are into—1, Sporadic Cholera; 2, Epidemic Cholera; and 3, Cholera of Children, or *Cholera Infantum*. I shall speak of these in succession, and in the order of their enumeration.

Sporadic, or common cholera, is sometimes preceded by symptoms of indigestion—eructations, oppression at the epigastrium, colic, and distressing nausea. At other times the attack is sudden—purging followed almost immediately by vomiting—and the progress of the disease is short. The matters first discharged from the stomach are aliment mixed with fluids, if the attack has come on shortly after a meal. Soon, however, bilious fluid constitutes the almost entire discharge; which is unaccompanied with pain, and allows of intervals of some repose. The discharges by stool, after the first or feculent ones, are analogous to those by the mouth. After the lapse of a few hours these symptoms are aggravated; the cardialgia is insupportable, the violent movements of ejection of the stomach and bowels, and the forced contractions of the abdominal muscles, are accompanied by much pain and anxiety; the matter passed by vomiting and stool are also changed; they are now brown, or blackish, eruginous or porraceous, and diffuse a fetid odour; sometimes they are acid, and, occasionally, sanguinolent. But although the discharges generally are thus dark, they are not always so, particularly in warm climates. Celsus and others have noted their white appearance. The patient is tormented with excessive thirst; all his functions are perverted; the breathing is quick and panting; the voice hoarse; the pulse small, frequent, contracted, irregular, and extinguished by pressure. The tongue is dry: the urine scanty. The face, which was at first somewhat suffused, assumes a frightful paleness; it is bathed with a cold sweat, particularly evident on the upper part of the trunk; sinking and fainting away are common, and there is an extreme prostration of both physical and mental energy. Notwithstanding this extreme weakness, the muscles still contract, but it is in jerks, or with an almost tetanic rigidity; the arms and legs are motionless some minutes, until a new pain throws them into a new posture. The patients always complain of very painful cramps. It is difficult for them to take any drinks at this time; the contractions of the stomach reach the œsophagus; all is thrown back by the efforts to vomit and the hiccup; and the introduction of enemata is prevented by the emission of gas from the intestines.

Death is not by any means a common result of cholera, even in hot cli-

mates, unless it assumes an epidemic form. In the Island of Jamaica, the aggregate strength of the troops during twenty years, ending 1836, was 51,517, of which number, in this period, there were 12,282 cases of diseases of the stomach and bowels ; and of these, but 216 of cholera morbus, of which the deaths were only three in number. Among all the troops, in both the Windward and Leeward Islands, the aggregate number of whom, for twenty years (1817 to 1836, inclusive), was 86,661, the number of cases of cholera morbus during this period was 1173 ; of which only 24 resulted fatally, or a little over 1 death in 49 attacks. The proportion in Jamaica was but 1 in 72. A better idea of favourable result in this disease will be obtained by comparing it with remittent fever in the same island, among the same force, and for the same time : the proportion of deaths in this latter, was rather more than 1 to 9 attacks. In Gibraltar, the cases of cholera morbus during eighteen years was 1230, of which the deaths were but 7, or 1 in 175·7, in an aggregate strength of 60,269. In Malta, during the same period, in an aggregate force of 60,269 men, the number of cases of cholera morbus was 454, and the deaths 5, or about 1 in 91. On the western coast of Africa, however, the proportions are different ; for, of 9 cases of cholera morbus, in an aggregate strength of 1843 men, the deaths were 2, or 1 in 4½ cases of admission to hospital treatment. At the Cape of Good Hope, the number of deaths to cases of cholera morbus was 2 in 68 or 1 to 34. In Nova Scotia, in an aggregate strength of 46,442 men, in a period of twenty years, there were 427 cases of cholera morbus, of which the deaths were 4, or 1 in 106·7. For the preceding returns I am indebted to the *Statistical Reports on the Sickness, Mortality, and Invaliding* among the Troops at the different Foreign Stations of the British Empire, by Major Tulloch. If we compare Gibraltar with Nova Scotia, we find that the proportion of cases of cholera morbus in the troops was, in the former place, 1 in 59, and in the latter, 1 in 108, omitting decimal proportions, but that the proportion of mortality to the number of cases of the disease was greater in Nova Scotia than in Gibraltar. In the United States, there are more cholera and colic among the troops in the northern than in the middle and southern division ; the annual ratio of cases per 1000 is 145 in the former, and 131 in the latter. In the northern division only 2 deaths in 3221 cases are reported; and in the middle and southern, 7 in 3882 (Dr. Forry — *The Climate of the United States and its Epidemic Influences*). Hillary, speaking from his observations on the inhabitants of Barbadoes, thinks that cholera morbus is a lighter disease there than at home, in England.

Causes. — The preceding details are introduced to show the comparative infrequency of cholera morbus, and the small proportion in which it is fatal. I ought to have stated, however, in order to make the comparison more complete, that, in the Windward Islands, where the proportionate mortality from cholera morbus was greatest, or 1 in 49, the proportion of deaths from acute dysentery, during the same period and among the same number of soldiers, was 1 in 23, and from chronic dysentery, 1 in 5. These details are useful in another point of view, by enabling us to dispute both the propriety of regarding the disease as the effect of excess or of acrimony of bile, and of the division into *bilious*, *flatulent*, and *spasmodic*, as attempted by some writers. There is not a proportion in the relative frequency of cases of disease, certainly not in mortality, so much

greater in southern than in northern regions, to justify a belief in its hepatic origin. The mortality on the coast of Africa from cholera morbus is analogous to that from fevers in that region, but not to that from hepatic derangements. The differences in the amount of bile discharged and in the greater or less prevalence of spasm are fortuitous, and will vary at different times in the same individual. I speak now of merely one of the elements of climate, atmospherical heat, which is believed to be an exciter of the hepatic secretion. But if we extend the range of inquiry, after noting the causes of sporadic cholera morbus, we soon discover that these are more common at particular seasons and in particular localities; and that in such a degree as to render the disease endemic. It has been thus that it appears from time to time in the East Indies, and other tropical regions. Epidemically, or as occurring from a combination of causes produced or measured by particular seasons, it is not uncommon in northern Europe and America, according to the description of Sydenham and others.

But, however common cholera may present itself sporadically or frequent, and aggravated by epidemical influences, we recognise a general sameness of causative impressions. These are, exposure of the body, after it has been much heated and over-fatigued, to a cool and damp air, by which congestion is induced in the system of the vena portæ; the use of indigestible and irritating food, which acts as a morbid exciter to the already irritable gastro-intestinal mucous membrane; and drinking spirituous and newly fermented liquors, which serve still further to irritate this latter.

The effect of the prevalence of high atmospheric heat in the production of cholera morbus, was very manifest last summer (1846) in Europe. In London, the deaths in three weeks in July were 54; whereas, during a corresponding period in 1845, there were but 6 deaths.

Seat of the Disease.—The first effect of this irritation is the increased secretion from the gastro-intestinal glands, and, by continuous sympathy, from the liver; but the prevailing tendency to congestion soon locks up the supply from this last viscus, and the bile, poured out for a short time, is now arrested. The disease continues to manifest its violence, not owing to excess, nor, it may be said, to deficiency of bile; although, certainly this last mentioned fluid is after a while deficient; and one of the evidences of an amelioration of the disease and return to health, is the restoration of its secretion. Truly has Dr. Johnson said, "that in no disease has a symptom passed for a cure with more currency or less doubt than in cholera morbus." (*On Diseases of Tropical Climates.*) You will find many instructive views pleasantly expressed, both in this and other diseases of intertropical regions, in the work just referred to. I stated to you, in my remarks on bilious colic, that a slight modification in the state of the system of a person attacked with it, would have subjected him to cholera morbus, so much is there of sameness in the causes. Bilious colic is distinguished, it is true, in one essential particular; viz., in the absence of all purging; and in the comparatively small proportion of fluids discharged by vomiting; but in both there are gastro-intestinal irritation and congestion, and in both a transfer of this to the spinal marrow and its subsequent irradiation on the voluntary muscles, and cramps and other spasms are the consequence. The analogy is still more evident between the two diseases in a pathological point of view, when we observe the symptoms in some cases of cholera morbus in which the vomiting and

purging and spasms have ceased. The patient feels at this time some uneasiness in the epigastrium and other parts of the abdomen, which is increased on pressure. The pulse is frequent and resisting, the tongue dry and furred, or red and glazed; the thirst is great, appetite wanting; some nausea and constipation. When the bowels are moved the discharges are usually of a dark-brown appearance. These symptoms, so closely resembling what occurs in bilious colic after a subsidence of the disease, as I pointed out to you at the time, indicate gastro-enteritis, and demand no little watchfulness from the medical attendant.

But it would be a grave error to assume that this state of occasional occurrence represents cholera, as we commonly meet with it. Irritation we undoubtedly have, and its concomitant in all the mucous surfaces, increased secretion, followed, if this go on long, by congestion; but inflammation of the gastro-intestinal tissue is far from being proved; on the contrary, we must admit its absence in the greater number of cases of common cholera. Autopsic examinations of the bodies of those who have died of the disease are far from proving it to be a modification of gastritis or of gastro-enteritis; and the occasional presence of certain spots of discoloration and injection, sometimes in one part or other of the stomach or of the small intestine, sometimes on the liver, may be regarded as a casual association or effect, rather than the material cause of cholera. These lesions have been found more generally after the appearance and duration of symptoms described as characterizing the second but not common stage. Where death has come on rapidly, no organic change was seen. Nor can we derive more aid from morbid anatomy in the attempt to give an hepatic pathology to cholera, by enabling us to point out congested and otherwise morbid conditions of the liver. These are indeed seen, but not with a uniformity or a frequency that can allow of our regarding them either as causes or necessary accompaniments even of the disease. We shall not, it seems to me, be in error, if we admit, as the direct exciting cause of the phenomena of cholera, an irritation of the digestive mucous membrane, beginning chiefly in the duodenum, and extending upwards to the stomach, downwards to the small intestines and their continuation; and in another direction, along the common duct to the gall-bladder and liver; with, as a common sequence of mucous irritation, increased and irregular contraction of the muscular coats of the gastro-intestinal canal, and determination and accumulation of blood in its tissues.

Cholera sometimes ushers in another disease, or may lapse into one, such as fever of some kind, or dysentery. Cleghorn speaks of its assuming a tertian type; and Martin relates a case of intermittent cholera. Dr. Chapman mentions it as one of the forms of yellow fever, and states that he met with many instances of it during the prevalence of pernicious intermittents among us. (*Lecture on Cholera Morbus*, *op. cit.*)

To arrive at a correct *diagnosis* of cholera morbus, we have to distinguish it from epidemic cholera and from poisoning by acrid substances. Between a severe case of the first and a common attack of the second it is not easy to determine, unless in the circumstances of accompanying atmospherical constitution and epidemical extension of disease. The more precise characters of the epidemic kind will be given in a subsequent lecture, when it will be formally the subject of inquiry. Common cholera is not readily distinguishable from certain kinds of poisoning.

The more rapid termination of the latter, in fatal cases, has been alleged by Dr. Christison (*On Poisons*), to be a characteristic feature, but erroneously. Diarrhœa, common to both diseases, generally occurs almost simultaneously with vomiting, or somewhat precedes it in cholera, whereas it comes on after the vomiting where poisons have been swallowed. A common but far from universal difference is, in the sanguinolent fluid being mixed with the ejected matters in the latter case, and its absence in the former; but sometimes this feature is distinctly observable in cholera. The chief diagnostic sign, however, is the sense of heat, acridity, or burning in the throat, and along the œsophagus to the stomach, which is so much complained of in poisoning, and *precedes* the vomiting. In cholera a similar sensation is far from being so uniform; and when it does show itself, it is often confined to the stomach, and *follows* the vomiting. The diagnosis between cholera and colic, ileus, diarrhœa, and dysentery, is easy, and need not be repeated here.

Treatment.—That which is generally regarded as the first indication in the treatment of cholera morbus, is, to encourage the evacuation of the morbid secretions, and to diminish their acrimony. In order to effect this, free dilution is recommended, by the ingestion of simple drinks, such as herb teas, rice and barley water, and, as Sydenham prescribed, weak chicken broth or chicken water. But I believe that a more important indication to propose to ourselves, is a removal of the irritation of the gastro-intestinal mucous membrane, and the accompanying congestion, on which the morbid discharges are dependent. Hence, our remedies should be addressed to the organs rather than to their secreted products; the quantity and acrimony of which latter will seldom be detrimental, if the sensibility of the digestive surfaces be brought to a healthy standard. Even to accomplish this end, diluents and demulcents are not without their value; and of all, there is not probably any one better than water, cold or tepid, or warm or hot, according to the instinctive craving of the patient and his gastric sensibility at the time. The ingestion or tepid or moderately warm water will at first increase the vomiting; and might, if long continued, keep up the nausea; but, after a while, the stomach is more composed, and the feelings generally of the patient tranquillised. Cleghorn tells us, that the Spanish physicians found nothing more beneficial in the worst cases of cholera than drinking of cold water. The thirst being great, and the patient still clamorous for drink, water may again be administered—cold, if the inward heat be great and depression not alarming,—hot, if an opposite state of things exists. In any case, the quantity of fluid taken into the stomach, after the first draughts of tepid water, should be small. Repeated doses of water, as hot as can be drunk without scalding the mouth, will often be readily retained by the stomach, and act as an anodyne to this organ, and diffuse moderate excitement through the system at large and in a most beneficial manner to the skin. Favouring this latter operation, and at the same time contributing to the relief of the congestion of the chylopoietic viscera, will be warm applications, by dry heat, to the extremities, fomentations to the abdomen, or the warm bath, if it can be used without fatigue to the patient, or requiring him to change his recumbent posture. Conjoined with this means of procuring cutaneous excitement will be friction with the hand, or soft flannel, or a flesh-brush, steadily but not roughly applied along the limbs and spine. More potent applications are sinapisms, ammoniated lini-

ments, &c., to the spine and the extremities, and over the epigastric region.

Before detailing the farther treatment in this disease, I must speak of the course advocated and pursued in the first stage, different from that which I have just described. It is, to administer an emetic with the intention of exciting the stomach not only to an entire discharge of its contents, but also both it and the small intestine and liver to a healthier secretion. Hazardous as this practice would at first seem, it is not only sustained by plausible argument, but, still more, by successful results. I well remember my feelings of repugnance when I first heard it formally announced and advocated by Dr. Chapman in the first course of his lectures on the practice of medicine; and my private (written) criticisms on the occasion. I was at the time little aware that, in fifteen years from that time, I should be found among those who placed no little reliance on the emetic practice in the more formidable and dreaded variety of cholera. Hillary, antecedently, had recommended ipecacuanha in the cholera morbus, in the Island of Barbadoes, and particularly among children. When we design to administer a remedy of this nature, ipecacuanha should be preferred; and, as it is desirable to produce a deeper impression on the stomach than simple expulsive contraction of its muscular coat, we had better give the medicine, mixed with water, in a dose of two or three grains, to be repeated at intervals of half an hour until the dark and morbid matters are all discharged, and the healthier secretion of mucus, mixed with some bile from the liver, is visible. By the operation of an emetic, reaction is brought about more speedily and entirely; and the skin, before cold and clammy, now becomes warm and moistened with a natural sweat. There is a greater probability, also, of the purging being abated and checked by an emetic, than if the evacuation of the stomach is left to natural irritation.

Relief having been procured from vomiting and purging by these means, either the simpler ones first recommended or the emetic just described, the patient often falls into a slumber; and in milder cases the disease requires little else than a mild purgative infusion of rhubarb or senna to insure convalescence. But if the original symptoms remain or return after a slight remission, recourse must be had to opium in some form. In a solid state, or by pill, it is most apt to be retained by the stomach; in its liquid, or in the shape of laudanum, it is best adapted for use as an enema, with a small quantity of warm water or of gruel, or flaxseed tea. At this juncture, the question may well present itself, as it would do in bilious colic, viz., whether we require the aid of the lancet. The answer will depend not only on the existing symptoms,—the violence of the spasms, the intestinal heat and oppression complained of, obvious determination to some important viscus, and the resistance of the pulse,—but also on the antecedent circumstances, such as gastro-intestinal irritation, chronic phlogosis of some organ, or a course of life well calculated to bring on gastro-enteritis. If this state of things present itself, we ought to bleed,—as a measure of wise prudence, if not of imperative necessity. By so doing we shall probably relieve the congestion of the portal system, remove any existing gastro-enteritis and the oppression from accumulation in the great vessels and right side of the heart, and favour healthy reaction, besides predisposing the system to be more promptly and beneficially impressed by opium. I say nothing of

the various received remedies of the class of aromatics and spices which are supposed to be efficient in checking vomiting. They are in severe cases of little avail, and in milder cases hardly called for. Their preparation and administration are often indirectly injurious, by diverting attention from more important measures. This remark does not apply to camphor mixture, a few drops of tincture of camphor on sugar, or oil of turpentine, also, in small doses with sugar. Opium, and these remedies, and the simpler external irritants failing to check vomiting, or the oppression being great from the beginning, and no adequate reaction manifesting itself, a blister must be applied to the epigastrium.

In a large number of cases we shall be content to evacuate the stomach by diluents or a mild emetic, then tranquillise it by opium, and afterwards endeavour to carry off still retained excretions in the intestines, and to restore the proper secretions of these parts. If we can procure a remedy which, whilst it is congenial with the irritated stomach, also meets the indications just mentioned, we shall of course give it the preference. In calomel we have an agent of this nature; and ten or twelve grains of it, in pill, administered at the outset, will suffice to soothe the stomach, check vomiting and act on the liver, and determine downwards the still retained matters in the digestive canal, and finally procure their expulsion. It will be well, in general, in order to secure the first sedative operation of the calomel, to give opium, from half a grain to a grain, in combination with this latter. Failure of the first dose, or its incomplete effects, will justify a repetition of the calomel, either alone or with opium, as the symptoms, particularly the persistence of the spasms, may seem to require. Bile once seen in the stools, or their being coloured green with calomel, will indicate that an adequate effect has been produced by this medicine: and the propriety, if more abundant evacuations are required, of giving a laxative of rhubarb and magnesia with ginger,—or castor oil with cinnamon-water. Should the stomach remain irritable, we must be content with prescribing a few grains of blue pill, once or twice a-day, or *hydrarg. cum cretâ*, and enemata to open the bowels.

Mention has been made already of a state of things of occasional occurrence in cholera morbus, resembling gastro-enteritis. This is more liable to be met with after a sudden stop has been put to vomiting and purging by the premature use of opium and astringents: but it may come on without any such cause. In either case, it requires venesection, or, if there be much epigastric tenderness and a red and dry tongue, leeches to the affected part of the abdomen,—then laxatives, simple enemata, diluent drinks, and the milder saline diaphoretics, such as citrate or acetate of potassa with minute doses of tartar emetic dissolved in it, warm pediluvia, or the warm bath.

The languor and debility, often extreme, left after an attack of cholera, require great care, by an avoidance of the former causes of the disease, the use of a simple yet nutritious diet, simple bitters with some aromatic addition; and, if these do not suffice, sulphate of quinia, from three to five grains daily, for a few days.

LECTURE XXXIX.

DR. BELL.

EPIDEMIC CHOLERA—A counterpart to the pestilences of olden times—The great pestilence in the fourteenth century—Less mortality with advanced civilization.—First appearance of the epidemic cholera in India—Its progress in that country and in Eastern and Western Asia and the islands—in Russia; Poland; Hungary; Austria—Its appearance in England, Scotland, and Ireland; United States; Mexico; Havana; Southern Europe; Algiers.—Order of succession of the attacks of cholera—No regular rate of progress or rule of transmission—Quarantine restrictions useless—Singular limitations of its range by the smallest change of locality.

IF I still continue to occupy your attention by a more copious history of epidemic cholera,—viewed in reference to its causes, connexions, pathology and treatment, as well as prophylaxis—than lecturers and writers on the Practice of Medicine have deemed necessary on their part, it is because I believe the reasons which primarily influenced me in the task have since lost none of their force. In respect to one of these, or the probability of the disease again appearing among us, that which doubtless seemed to many random prophecy is, from present appearances, in progress of fulfilment, if we may take the re-appearance and diffusion of the disease in central and western Asia, to be an indication of its farther spread westward at this time, as was the case when it first broke out in those regions. Then, it lingered for seven years on the shores of the Caspian Sea, before it penetrated into Russia in Europe, but afterwards moved, in rapid progression, until our own continent felt its devastating power. Now, after having ravaged different parts of India and Persia, it again approaches the Caspian, and again seems to pause, as if for a second sweep over the fairest portions of the civilized world. Surely, therefore, we cannot be accused of indulging in imaginary fear, even if the importance of the theme, as a part of the history of medicine, did not fully justify the attempt, in dwelling with some emphasis on the various phases and relations of a disease which overspread the earth, and in its sudden, though brief, invasions destroyed millions of its inhabitants.

It was reserved for our own time to present a counterpart of those dreadful pestilences which devastated the world in the latter periods of the Roman Empire, and afterwards in the middle or dark ages of Christendom. The studious reader of history must have resisted his feeling of amazement at the extent and violence of those visitations, by a not ill-founded doubt of the accuracy of the narrator, whose ignorance, ministered to by his love of the marvellous, might have led him into exaggerations. But the appearance and spread of the epidemic cholera over all parts of the civilized world, or wherever men were largely congregated into thickly settled communities, and the frightful mortality which everywhere followed in its train, brought too convincing proof to the mind of the most skeptical, that historians, in describing the pestilences in the reign of the Antonines and of Justinian, and later, in the period which elapsed between the years 1345 and 1350, had not drawn the materials of their narratives either from their own fancy or the stores of fiction. Even while

thus reminded, in such fearful characters, of the times of imperfect civilization, or, what is sometimes worse, methodised barbarism; and although seemingly, for a time, the people of Europe in the nineteenth century were reduced to a level with those of the barbarous ages, it was soon discovered, after a proper comparison, that our arts and sciences and the social influences of our religion and institutions exerted a conservative power for the benefit of the many, which in former times was imperfectly secured to the few. Let me detain you for a few minutes in setting forth some data for a comparison of this nature. I shall draw them chiefly from a small work which, on the spur of the occasion, I prepared in 1832, in conjunction with my friend, Dr. Condie, at the time of the prevalence of the cholera in this city. It is entitled "*All the Material Facts in the History of Epidemic Cholera: Being a Report of the College of Physicians of Philadelphia to the Board of Health: and a Full Account of the Causes, Post-mortem Appearances, and Treatment of the Disease. Second Edition.*"

The great pestilence in the fourteenth century just adverted to, like the cholera in our own time, is represented to have begun in the East (China). It appeared in Egypt, Syria, Greece, and Turkey, in 1346; in Italy, and Sicily, in 1347; in France, and the southern parts of Spain, and in England, in 1348; in Ireland, Holland, and Scotland, in 1349; and in Germany, Hungary, and the north of Europe, in 1350, lasting generally, it was alleged, about five months in each country. In this period a comet was visible—also meteors of various kinds; the seasons were irregular—myriads of insects were seen—domestic animals sickened and died—and fish were found dead in immense numbers. So destructive was the onset of this plague, that at least half, some say two-thirds, of the human race, were destroyed by it. It was most fatal in cities, but in no place died less than a third of the inhabitants. In many cities, nine out of ten of the people perished, and many places were wholly depopulated. In London, we are told that 50,000 dead bodies were buried in one graveyard. In Norwich, about the same number perished. In Venice, there died 100,000. In Lubec, 90,000. In Florence, more than a third died, or upwards of 50,000 in all. In the East, it has been said, with what degree of accuracy we cannot vouch, that twenty millions perished in one year. In Spain, the disease raged three years, and carried off two-thirds of the people.

In England, and probably in other countries, cattle were neglected and ran at large over the land. The grain perished in the fields for want of reapers; and after the malady ceased, multitudes of houses and buildings of all kinds were seen mouldering to ruin. Although in the preceding year there had been abundance of provisions, yet the neglect of agriculture during the general distress produced a famine. Such was the loss of labourers, that the few survivors afterwards demanded exorbitant wages, and the Parliament of England was obliged to interfere, and limit their wages, and even compel them to labour. See 23 Edward III., A.D. 1350.

The disease reached the higher northern latitudes; it broke out in Iceland, and was so fatal that the island is supposed never to have recovered its population. It was there called the *sorte diod*, or black death. (Hecker *on the Black Death*, Amer. Edit.)

The pestilence was remarkably fatal to the monks and regular clergy of all descriptions. At Avignon, where the disease first appeared in France,

66 of the Carmelites had died before the citizens were apprised of the fact; and when it was discovered, a report circulated that the brethren had killed one another.

It is an important feature in the history of this epidemic, adverse to a belief in its contagion, viz., that the disease first appeared in a city not commercial, nor a sea-port: and in a monastery which was probably crowded with indolent and not over-cleanly monks.

In perusing the narratives of the awful plagues in the reign of Justinian, and in the first part of the fourteenth century, we learn that mankind have suffered more on former occasions from the visitations of disease, than, of late years, from the dreaded scourge of cholera; and we infer, also, the ameliorating influence of civilization — implying improved minds, and knowledge, and a greater amount of means for promoting personal comfort and protection against morbid causes. Dreadful as the mortality from cholera has been, we cannot but see that it is mainly restricted to a particular class, whose situation and habits reduce them to a level with a large majority of the people of the middle or barbarous ages, and expose them to the same calamities in seasons of epidemical disease. When a pestilential malady, call it what you will, yellow fever, cholera, &c., now appears in a city, but a small portion of the inhabitants are victims to the disease. In former ages, analogous diseases, passing under the common appellation of plague, would nearly depopulate a city. We have already mentioned the loss of 50,000 citizens of Florence, a third of the entire population, by the plague of 1347. In 1359, on a similar visitation, the mortality was estimated at 100,000; whereas the deaths from the cholera in Moscow, with a population of 350,000, in 1830, were short of 5000. St. Petersburg, also, with an equal population, encountered the like loss. Vienna, containing 300,000 inhabitants, lost not 4000. Even in Paris, where the mortality was excessive, amounting to upwards of 18,000, if we consider the population of that city, 800,000 inhabitants, we cannot but be sensible of the increased advantages which the people of the civilized world at this time enjoy, of either warding off pestilence entirely, or of greatly mitigating the violence of its attacks. London, with a population of 1,500,000, lost but 5000, and in all Great Britain, the deaths were somewhat more than 20,000. In Philadelphia, with a population of 160,000 souls, the loss by cholera was under 1000. In the East, the mortality from the cholera has been excessive, but this fact serves to confirm our proposition — since we know that the mass of the people in that quarter of the globe are in the same half-barbarous state now in which they were five and even ten centuries ago.

Without fear of being taxed with plagiarism I shall borrow with equal freedom from the Report of the College of Physicians in 1832, which I drew up in the name of the Committee on the occasion. First, I shall speak of its reputed origin and geographical range: — Most of the historians of cholera describe it as first showing itself in Jessore, a town 62 miles N.E. of Calcutta, about the middle of the month of August, 1817. But it is known that its appearance in this last mentioned city was nearly contemporaneous, nay, some say anterior, to its breaking out in Jessore. It is distinctly affirmed in the Bengal Medical Reports, that the disease appeared in the Nuddeah and Mymensing districts in May, 1817, raged extensively in June, and in July reached Dacca. Before the end of November, few towns or villages in an area of several thousand miles

escaped an attack. Across the whole extent of the Gangetic Delta, and especially in the tracts bordering the Hoogly and Jellinghy rivers, the mass of the population was sensibly diminished by the pestilence. It is needless to describe minutely, in this place, the ravages of the cholera in the various towns and districts of Hindostan. These were, in one direction, along the Ganges and its tributary streams. Delhi, the ancient capital of that country, on the western bank of the Jumna, was attacked in July, 1818. The disease appeared in Bombay, on the western coast, in August, and in Madras, on the eastern coast of the peninsula, in October, 1818. In Trincomalee, in the Island of Ceylon, it was first noticed in December of the same year. Since 1817, Calcutta has been a regular sufferer from cholera every season. The same remark will apply to Bombay, and, with the exception of two years, to Madras.

In 1820, the cholera showed itself in Cochin China, Tonquin, and the Phillipine Islands, and at the conclusion of the year it was in Canton, and the southern part of China Proper. Pekin, the capital, was assailed in successive years, and in Chinese Tartary, cholera appeared at two different times, with a considerable period intervening. In the Island of Java, it broke out in April, 1821, and in the Molucca Islands, and in Canton for the second time, in 1823. In July, 1821, it showed itself at Muscat on the southern end of the Persian Gulf, and in the same year at Bassorah and Bagdad. Persia has been subjected to its ravages five different times from 1821 to 1830. In 1822, the disease was raging in Mesopotamia and Syria, having appeared as far west as Tripoli, on the shore of the Mediterranean Sea, and in the year 1824, at Tiberias, in Judea, on the same coast.

In September, 1823, the disease showed itself in Astracan, a large and populous town at the mouth of the Volga, on the northern shore of the Caspian Sea. But it soon subsided there, and did not break out again in any part of the Russian Empire until the close of the year 1829, when the town of Orenberg was attacked. On the last of July, 1830, it again appeared in Astracan, in which city and province the mortality was this time excessive. Near the close of September, of the same year, it was announced as prevailing in Moscow, and in June, 1831, in St. Petersburg and Archangel. Riga and Dantzic had begun to suffer from the pestilence in May of the same year. Its presence was discovered among the wounded and prisoners, who had been conducted to Praga, a suburb of Warsaw, but separated from that city by the Vistula. On the same day it appeared in the Polish army, after the battle of Inganie. Hungary was the theatre of its operations in August of the same year (1831); Constantinople in July; and part of Greece in November. In Berlin and Prussia it appeared in August, in Vienna in September, and in Hamburgh in October of that year. It re-appeared in Berlin, Prague, and Dantzic, in 1837.

The first place attacked in England, by the cholera, was Sunderland, a sea-port town in the county of Durham, on the eastern coast of the island. The disease had appeared there as early as August, 1831, but did not engage general attention or excite alarm, until the latter part of the year. It then manifested itself in Newcastle-upon-Tyne, and many other contiguous places in the north of England; and in Haddington, Edinburgh, Glasgow, and other towns in Scotland, from January to August, 1832. It showed itself in London in February of this year, 1832; and again, in a more limited degree, in 1833 and 1834; and

attacked a few individuals in 1837. In the spring of 1832 it was in Dublin, Belfast, Cork, and other places in Ireland. In the early part of April, its presence was announced in Paris, and subsequently it appeared not only in the small towns around that capital, but in many other places in France. In June, 1832, it was ravaging Montreal and Quebec. In July, New York; and in August, Philadelphia, Baltimore, and Washington: Cincinnati and New Orleans were assailed in October. Boston suffered slightly, in this year, also. Richmond had its turn in the following year.

The different military posts of the United States were assailed, in succession, during the years 1832, 1833, 1834, and 1836. Mexico was ravaged by it in the summer of 1832, and Havana was a sufferer in the spring of 1833. In 1834 cholera renewed its attacks in New York and Philadelphia, but, especially in the latter city, with mitigated violence; Charleston, S. C., was visited in 1836.

The disease broke out in Portugal in 1833; its first appearance was at Oporto; but it did not show itself in Lisbon until the following year. In 1835, when the cholera had ceased its ravages in the south of France, it showed itself in Piedmont, Genoa, and Florence, and in September, 1836, at Naples; while Rome was not a sufferer until August, 1837; Malta also suffered about the same time. In the kingdom of Naples, all the machinery of quarantine, aided by the military cordons and the greatest vigilance of the government and its officers, was insufficient to prevent the breaking out of the disease in the capital, and equally unavailing were all the measures of separation and seclusion of the first attacked, to prevent its diffusion. Spain paid the tax of fright and death in 1833; Gibraltar, in 1834. Algiers and Bona were attacked in 1837.

Cholera has never been out of India since 1817; and it may be regarded now as one of the endemic diseases or curses inflicted on that country. During the past year (1846), the disease has committed great ravages in different provinces of Persia and in the pachalick of Bagdad, and in southern Arabia bordering on the Red Sea. The most western point attacked (October, 1846), is Tabriz (Taurus), a city near the Persian frontier, about 200 miles to the west of the Caspian Sea; we can credit the recent news of its having got to Diaberkir (November, 1846). Teheran, in Persia, is stated to have had its population reduced from 80,000 to 60,000 inhabitants by the ravages of the cholera. In Bagdad the mortality was 4000 in the months of September and October, 1846. Bussora has also suffered greatly from the disease.

A few observations will naturally follow, on the *Order of Succession in which different Countries and Districts have suffered from Cholera.* These will serve to remove the impression which the account of its progress from east to west, apparently along the great highways of trade and social intercourse, might produce in favour of the disease having been extended by contagion. The cholera, during the year 1817, that in which it first appeared in many different parts of Bengal, was mainly restricted to that province. It ceased to prevail anywhere on the approach of winter of that year. Up to this time the most southerly point along the coast, stretching to the south and west, which was attacked, was Cuttack, and that to the north and east (taking Calcutta as the centre), was Silhet.

In the following year, 1818, the order of procession was remarkably regular—a month's interval for every degree of latitude. Ganjam, which

is in 19° and some miles north latitude, was attacked on the 20th March; and Madras, in north latitude, 13°, October 8th. This was the rate during the dry season, and when there was no interference with the constant commercial intercourse which prevails on the Coromandel Coast. From Madras south, the order of succession was in an accelerated degree. It is worthy of remark here, that for two months, beginning on the 10th of October, the port of Madras is annually closed, and in consequence of the prevailing winds, and of the surf, which during this period breaks upon the whole of that open coast, every vessel is forced to leave it, and the small vessels are drawn high and dry on land. Yet still, as just remarked, the places to the south were assailed by the disease even in more rapid succession than those to the north of this city.

Not very dissimilar was the order of succession in which places in the interior of the peninsula were attacked—so that the disease appeared nearly simultaneously at the sea-port of Madras, and in places on parallel latitudes, in the interior. At Masulipatam, a town on the Coromandel coast, and situated near the mouth of the Kristnah river, the disease showed itself on the 10th of July, 1818; and at Punderpoor, on one of the head branches of this river, in a W.N.W. direction, and distant some hundred miles, it appeared on the 14th of the same month, while intervening places were affected at a later period. Bellary, in the centre of the peninsula, in latitude 15°, was attacked on the 8th September. Nellore, on the eastern coast, was first a sufferer, on the 20th of the same month—so that we cannot conceive of any direct progression of the disease, or of any substantive cause of its passing from the coast to the interior, nor from the interior to the coast. The long interval, also, between the appearance of the disease at Cuttack by the last of September, 1817, and at Ganjam on the 20th of March, 1818, forbids our supposing the transmission of any known substantive cause of the disease from one of these places to the other—both being situated on the coast, and within a moderate distance of each other. Aska, near Ganjam, in the interior, and on the main route south-west from Cuttack, was not visited by the disease till the 23d of April, 1818.

In China, we find that the disease one season attacked places in succession in a south-easterly direction from Tartary to Pekin, and at another time assailed them in a north-west course from Canton to Pekin. Persia was attacked in different years by cholera, and the order of succession and direction not regular. From Bassorah, on the head of the Persian Gulf, through Mesopotamia to Aleppo, and along the coast of Syria to Damascus, the direction was north-west—but the attacks were not in any very marked order. The period between its being in Bassorah and in Damascus was four years: a caravan would traverse the same space in nearly as many months. Egypt, contiguous to Syria, and holding regular intercourse with it both by sea and land, did not suffer from cholera until eight years after its appearance in Antioch and Tripoli, a Syrian sea-port, and nine after its attacking Aleppo.

During the month of May, 1831, the cholera broke out in Mecca and other places in Arabia, and in the month of August in Cairo and Alexandria, in Egypt. The disease was in Astracan, at the mouth of the Volga, on the Caspian Sea, in September, 1823. No places to the north and west were sufferers from the disease either on this or the following years, until the month of July, 1830, when it re-appeared in Astracan. From

this time, until the beginning of winter, a great portion of Russia in Europe was attacked with cholera; but in following a given line, from Astracan, along the banks of the Volga, in the north-west course, we cannot find any regular order of succession of attacks of towns and villages. Thus, Astracan, at the mouth of the river, was, as we have seen, the seat of the pestilence in July, 1830. Saratov, higher up, and Novgorod, some hundred miles still farther up the stream, suffered in August of the same year, while Samara, situated between them on the Volga, had no cholera till October. Asof, at the mouth of the Don, was attacked in October, whilst the region of country to the north and west, and on as far as Moscow, suffered from the disease in September. Kiow, on the Dnieper, felt its ravages in October, 1830, whilst Brody, on the south-west, had not the disease until May, 1831. On the Baltic, we meet with similar irregularities. In Riga, the disease prevailed in May; in Mitteau, to the south, in June; in Liebau, more southerly, in May; and in Polangen, still farther south along the same line of coast, in June. If, again, we take a city on the extreme eastern boundary, as Orenberg, for example, we discover that the disease prevailed there in September, 1829, and a year elapsed before places on the great roads, to the west or interior of the empire, were affected. Both Archangel and St. Petersburg, the first on the White Sea, the second on the Gulf of Finland, were the seats of the disease in the same month (June), 1831, while Valogda, directly in the line of water or commercial communication, had been a sufferer in September of the year before, or 1830.

The cholera appeared in Warsaw in April, 1831; in Dantzic in May; in Pest (Hungary), on the Danube, in July; in Vienna, higher up the river, in September of the same year. In Berlin, it broke out in the last of August, 1831; whilst Thorn, more to the east, and holding direct intercourse with Warsaw and Dantzic, escaped. In Hamburg, it appeared in October. Whatever line we may assume, we cannot observe any regular order of succession in which the different cities were attacked—either along rivers or on the great high-roads between capital cities. In Russia, Prussia, and Austria, where the greatest efforts were made to set limits to the disease by sanitary cordons and the most rigid system of quarantine, the periods between the attacks of cities and districts were not any longer than in India, where the most unrestrained intercourse by sea, and along the rivers and roads, was allowed. Any line by which we should pretend to mark the places attacked by the cholera, must be very irregular—sometimes approaching a town or village, and then passing around it—to return after the lapse of weeks or even months. Sometimes the disease would nearly depopulate small villages near a principal station, before it made its appearance there. It is worthy of remark, that, at the very time when the western part of Russia and Poland, and parts of Germany, were suffering from the cholera, it raged with great violence in Arabia and Egypt.

Perhaps we could not cite a stronger example of the difficulty of explaining, by any known law of transmission or order of succession, an attack of cholera, than its sudden appearance in the heart of Paris—the first city in France to suffer from the pestilence. Equally sudden and unexpected was the bound, as it were, of the disease from Montreal to the city of New York.

The annals of cholera prove, that, when it made its appearance in a camp, or a city, so far from extending to every habitation, it was almost

invariably confined to particular portions of even the most populous places. Sometimes in an army, for instance, one or two regiments encamped together, or separated by other corps, were the only sufferers in an attack of the disease; one division in one street only of a town had the disease existing in it—nay, its presence has been known to be limited to one side of a market-place. Removing a camp a few miles has frequently put an entire and immediate stop to the occurrence of new cases; and when the disease prevailed destructively in a village, the natives often got rid of it by deserting their houses for a time, though, in so doing, they necessarily exposed themselves to many discomforts, which would commonly be considered as exciting causes of this disease.

It has been said, that the course in which the cholera has successively appeared, has been westwardly. This is an error, if we have regard to the chronological order in which it has made its attacks, or assume any place as a point or beginning from which the disease may have been supposed to diverge. Thus, in the year 1823, we find the cholera to have shown itself as many degrees eastward of Calcutta, viz., the islands of Banda and Timor—as it had done westward, or on the shores of Syria and Judea. Nor has the line of its progress been either north-west or north-east.

"Assuming the cause of cholera to be poison in the air, its mode of progression is singular. Originating in India, it spread east and west, till, having reached China, its extreme eastern point, the stream suddenly wheeled round to the west, and pursuing its course through Tartary it joined in the attack on Europe. On the contrary, the western branch having reached England [and Ireland], the extreme point of western Europe, the stream has suddenly retrograded to the east through France, Spain, and Italy, to Malta, where it seemed to have become evanescent. In pursuing its westward course, it appears to have been developed in two different manners, probably according to the nature of the country, sometimes forming one or more centres, from which disease has radiated in every direction; and again running in lines of no great breadth, the country on either side being healthy." (*Dr. R. Williams's Elements of Medicine*, vol. ii., p. 606.)

The same writer from whom I have just quoted relates some of the peculiarities of cholera progress, as follows:—"Although the great streams of cholera have, on the whole, steadily advanced, they have not proceeded at an equal pace, the rate of progression varying greatly in different countries. In the year 1817, the cholera had overrun in India, in three months, a space westward of not less than four hundred miles, while to the south it had penetrated no farther than Ganjam, only eighty-eight miles from Calcutta, in six months. In the next six months, however, it had extended in a southerly direction from that point over more than four-fifths of the peninsula. It reached Pekin in about the same time that it attacked Muscat, the former being twice the distance of the latter [from the alleged point of departure]. In Europe its progress was equally capricious. It travelled from the Caspian to Vologda and Pskou, within one hundred miles of the Baltic, at a rate which would have infected all Europe in three months, while it did not reach Riga, only one hundred and eighty miles distant from the latter town, until eight months after. Its rate, however, appears to have been most retarded in its retrograde movements, for it took six years after London was infected to reach Rome. In a word, it took only one year to span the base of the Peninsula of India, while it occupied twenty years to compass the globe."

LECTURE XL.

DR. BELL.

CAUSES OF EPIDEMIC CHOLERA.—Connexion between cholera and other diseases.—Influenza—Influenza and cholera in 1780 and 1781—Both have pursued a similar course, including divergences from the main line—Prevalence of bowel affections in cholera seasons—Increased mortality at this time from other diseases—Scarlet fever with cholera.—The special cause unknown—Predisposing and modifying causes, in weather and seasons; low situations; poverty, destitution, and vice of the inhabitants; bad food; watery fruit and vegetables; intoxicating drinks; sudden debility of the nervous system; fear; great and unusual exposure to atmospherical extremes and changes.—*Atmospheric and other phenomena anterior to and contemporaneous with cholera.*—Attacks of the disease mainly in the summer half of the year—Prevalent winds—Sickness and mortality among animals coincident with cholera in different countries—Cholera not transmissible by contagion.

CAUSES. — Before speaking of the probably exciting causes of cholera, I wish to direct your attention for a few moments to the connexion between this pestilence and other diseases. Its precursor, in a very remarkable manner in Europe and America, was influenza, which pursued, also, very much the same course as the cholera in those continents. This order of appearance of these two great epidemics has occurred once before in India, in the latter part of the last century; but at that time the cholera did not pass the peninsula, nor indeed overspread it then as it did subsequently. But for English rule in parts of India at the period referred to, we should be at this day quite ignorant of such remarkable occurrences as are described by some of the medical writers who were on the spot at the time, or who had early and direct cognizance of the facts from the natives themselves. I shall first describe the course of the influenza, in the words of Dr. Williams, and then mention some of the particulars on record of the cholera, which, about the same time, committed such ravages in parts of India.

"In the month of September, 1780, an epidemic influenza broke out in Bengal and on the coast of Coromandel, and continued to prevail in India so long a time that the British army besieging Negapatam was attacked by it in November, 1781. Whether it spread thence to China, or coexisted there, is unknown, but it prevailed in that latter country also in 1780. From India, or, perhaps, more probably from China, its extreme eastern limit, it appears to have made its way to the west through Upper and Central Asia, to Tobolsk, a city of Russian Tartary, situated about 48° north latitude. From Tobolsk, it continued to advance in the same westerly direction till it broke out in Moscow, a distance of not less than 1200 miles, in December, 1781; whence it spread to St. Petersburg in February, 1782; and these are almost the precise stages by which the cholera penetrated into Europe in 1831–2. From St. Petersburg it continued its progress westward, so that in April it infected Denmark, and at the latter end of April, in the same year, it appeared at Newcastle-upon-Tyne, almost the identical spot where cholera first appeared in England. It was certainly in London the second week in May, and, as in cholera, without any of the intermediate towns being infected. In Scotland and in Ireland, it appeared rather later than in England. It is

also exceedingly remarkable that this epidemic, like the cholera, prevailed earlier in England than in France, for it did not reach Paris till June. Again, it is singular that, having reached France, it commenced a short retrograde course to the south-east, passing from that country into Italy; there it prevailed in July and August, and also in Spain and Portugal, which it attacked in August and September. A course precisely similar to that of cholera."

Continuing the account from where Dr. Williams stops, I shall direct your attention to the fact, that in the spring of 1781, as we read in that most industrious chronicler of epidemic visitations, Mr. Noah Webster, the influenza prevailed in North America.

At the very time of the influenza prevailing in India, it is on record that cholera destroyed first at Hurdwar in 1780, 20,000 persons, while a festival was held there; and in 1781, assailed, in its most malignant form, a division of Bengal troops then stationed at Ganjam, the theatre of this terrific disease thirty-seven years afterwards. An admirable account of cholera, which leaves no doubt of its identity with that since prevalent, was given by Mr. Curtis, who described it as spreading, in the year 1782, in Sir E. Hughes's squadron, then stationed in the East; and as having arisen from communication with an infected port in Ceylon. In the *Madras Reports*, it is stated to have raged at Arcot in 1787, and was accurately described by Girdlestone.—(*Appendix to all the Material Facts*, &c.)

The epidemic cholera which has gone round the globe, was in Europe and America preceded by influenza. That the course of this latter, as already described, "is not accidental, but according to some definite law, seems proved by the fact of the influenza of 1830–1–2 having taken a similar course in Europe, and having likewise passed the Atlantic. This epidemic immediately preceded the attack of cholera, and is traced as far back as Moscow, whence it spread to St. Petersburg, and in eight months had infected all Germany, and reached London. At this point the stream bisected; one branch taking the usual south-east direction, infected Italy and subsequently Gibraltar, reached America. One remarkable circumstance connected with the origin of this distemper is, that it prevailed, also, in Australia." It seems to belong to the features of great epidemics to affect some particular geographical range; as in the instances of the great plague in the reign of Justinian, and the black death or black pestilence of 1348–50, and the English sweating sickness which was months in Shrewsbury, but stayed only three days in Amsterdam, attacking 500 in a night in that city.

Along our Atlantic border, influenza prevailed in 1831–2 with great intensity; the mortality was considerable, especially among the aged and among those in the better walks of life. It was here, as it was in the valley of the Mississippi, the precursor of cholera.

So, also, we learn, were the crew of the United States Ship Columbus similarly affected in the month of March, 1846, while the vessel was sailing from Macao to Manilla. In two days there were 120 on the sick-list, with influenza; and in ten days afterwards, or two after reaching Manilla, the first case of cholera occurred.

The diseases which are more particularly blended or alternated with cholera, are, bowel affections in general, fevers of various types, and scarlatina. Some persons have argued that the mortality from other diseases was less in the year in which cholera made its invasion: but this is an

error. If the remark were intended to apply to the year following the epidemic, it would be in general correct. In India and in Great Britain it seems to be proved that the amount of sickness and of mortality was greater than usual; throughout northern India the epidemic year was remarkable for remittent and autumnal intermittent fevers, diarrhœa, dysentery, and small-pox.

The medical returns of the Madras army, also, show a marked increase of disease generally during the years that cholera raged so severely in that presidency, the proportion being from one-fifth to one-sixth greater than usual. In Europe, opinions have been discrepant on the subject. In Russia, for example, it was thought the total number of deaths was not increased. In France, however, the mortality in the cholera years greatly exceeded that of ordinary times. In the north of England it was said that typhous fever disappeared; but in London this disease raged with great violence, assumed new characters, and was more fatal and intractable than it had been for many years. According to the bills of mortality, the burials in 1832 exceeded those in 1831 by 5098, or more than one-fourth. (Williams, *op. cit.*)

Our home experience on this point is well represented in the following table, prepared by Dr. Emerson, to whose partiality for medical statistics, and industry in arranging and combining materials which would otherwise have remained isolated, and in a measure useless, his professional brethren are much indebted. It is called a

Table showing the prevailing Diseases independent of Cholera; what influence it exerted over them; and the rate of their Mortality.

DISEASES.	1831.				1832.			
	June.	July.	Aug.	Totals.	June.	July.	Aug.	Totals.
Consumption	35	41	33	109	44	52	73	169
Convulsions	18	26	29	73	28	29	39	90
Cholera Infantum	45	132	82	259	25	134	157	316
Diarrhœa and dysentery	18	28	49	95	15	47	83	145
Fevers	17	24	35	76	31	35	65	131
Scarlet fever	5	29	10	44	23	17	14	54
Inflammations in general	32	19	26	77	28	43	29	100
do. in the chest	16	10	8	34	16	15	7	38
do. in the abdomen	16	9	18	43	12	28	22	62
Dropsy in the head	22	22	29	73	5	33	23	61
do. in the chest	2	4	6	12	2	4	3	9
do. in general	6	12	11	29	3	10	9	22
Debility and decay	28	33	29	90	16	45	8	89
Apoplexy	9	8	4	21	4	8	7	19
All diseases (still born deducted	294	467	490	1251	369	785	1431	2585
All diseases (malignant cholera deducted)	294	467	490	1251	369	689	618	1676
Excess in mortality of 1832					75	318	941	1334
do. after deducting mortality from cholera					75	222	428	725

The mortality in the year subsequent to that of cholera, in 1833, was less by 2259; and even when allowance is made for the mortality from

the epidemic cholera, in 1832, the amount still falls short by 1311 of that in this latter year. The rates of diminution are particularly evident, under the heads of Fever, Bowel Complaints, Inflammations and Measles. (Dr. Emerson—*Am. Jour. Med. Science*, vol. xv., p. 267.)

The shortness of the period of its visit, in most places, may explain why there has not always been a closer relation or interchange of features between cholera and endemic diseases. Dr. Drake (*op. cit.*) did not find that so many cases of intermittent and remittent fevers commenced and terminated with that febrile type, as might have been expected, though the number was not a few—considering that the epidemic invaded Cincinnati in the season when those fevers prevailed. It is worthy of remark, that in India and the United States there has been a more manifest affinity between epidemic cholera and paludal fevers, as far at least as regards their localities, and the exposure to atmospherical influences of the persons who have suffered, than between it and other febrile, or indeed any disease, except those directly affecting the mucous membrane of the digestive tube, as set forth in the preceding table. Somewhat to our surprise, in Philadelphia, the first cases, and the largest proportion afterwards in the hospitals, came from the outskirts of the town and open lots adjoining the Schuylkill, rather than from the narrow streets and closes contiguous to the Delaware, where we were all on the look out, in expectation of the disease. We had forgotten the Indian cholera, and had fixed our attention on the badly built and badly ventilated and filthy houses, and equally filthy population, of the parts of European cities which suffered most.

Scarlet fever and measles prevailed to a great extent in Philadelphia during the cholera year. The deaths from the former were 307, nearly a third of the mortality caused by cholera; those from measles were, in the same period, 118. Throughout the valley of the Ohio, scarlatina prevailed at the same time with cholera; and was, as we learn from Dr. Drake, a coadjutor with it in the work of death; but their attacks were made in alternation, and seldom together. In New Orleans, cholera and yellow fever were in conjoint operation for a while.

The cause by the operation of which the common and appreciable causes of disease give rise to cholera is unknown to us. That it is in the atmosphere we have every reason to believe; but in what state or how combined, we have not been able hitherto to ascertain. The most probable supposition is, that it is a peculiar poison. It is, however, encouraging for us to know, as we now positively do, from all which has transpired in the history of the disease, that the concealed general or aërial cause is comparatively harmless, unless effect is given to it by subjecting it to evidently modifying agencies.

Preceding and accompanying the appearance of the cholera in a country or city, there have been deviations from the usual state of the weather and season — unwonted vicissitudes or extremes, with, often, changes in the electrical state of the atmosphere. These would not probably be of themselves adequate to the production of cholera but for the additional predisposing cause of unfavourable localities. The chief home and seat of cholera is in low, damp situations — on the banks of rivers, or near pools and ponds of water, — or which are encumbered with vegetable remains, and filth of any kind. Those parts of cities thus situated and circumstanced, have always suffered most, and sometimes have been the exclu-

sive seats of the disease. In all the chief cities of Hindostan, as in Calcutta, Madras, Bombay, Seringapatam, &c., &c.; of Russia, as in Moscow, St. Petersburg, Astracan; of Germany, as in Vienna, Breslau, Berlin, Hamburg; of France, as in Paris and other places; of Great Britain and Ireland, as in London, Sunderland, Newcastle, Gateshead, Musselburgh, Dublin, Cork, &c., this fact has been placed beyond doubt.

In Montreal, Quebec, and other places along the St. Lawrence, in our Atlantic cities, and in those on the Ohio and the Mississippi, similar testimony has been afforded. Additional intensity is given to unfavourable locality by narrow streets and numerous small and illy-ventilated houses, crowded with inhabitants. Low, underground lodgings increase greatly the risk of their inmates having the disease, and the danger of its terminating in death. Cholera has suddenly appeared with great violence and produced immediate and great mortality among the inmates of a prison, as in the instance of the Arch Street Prison, Philadelphia, in which there had been a sad infringement of the laws of hygiene, — as regards ventilation and personal cleanliness. In the Eastern Penitentiary, on the other hand, in which separate confinement prevails, the disease did not appear.

Experience has also fully shown, that, in regard to the manner of living, the intemperate, the devotedly sensual in any way, they who are unclean in their persons, and who are deprived of a suitable supply of wholesome aliment, are peculiarly liable to the disease, and to perish under its attack. The drunkard has everywhere been singled out as a victim of the disease, on its first appearance in a place. Women of the dissolute and abandoned class were among the foremost sufferers from cholera in India, as elsewhere.

"When Moscow was attacked, the mortality was severe only among those persons living in low, damp habitations, whose diet was poor, and whose conduct was irregular and debauched. The same fact was also observed at St. Petersburg; for, in ninety-nine cases out of a hundred, the victims, according to Dr. Gill, were the drunkard, the dissipated, and the poorly fed; and it may be stated as a general principle, that the ravages of the disease have been confined nearly to the same class of persons throughout the whole of Prussia and Germany."—(Dr. Williams, *op. cit.*) This remark may be extended to nearly every place where the cholera committed its greatest ravages. The most notable exception is in the case of its attack on Lexington, Ky.

Food of bad quality, irritating the stomach and bowels, has often proved an exciting cause of the cholera. In India, the crops of rice fell short and were damaged, and the inhabitants, whose chief reliance for nutriment was on this grain, suffered dreadfully from the disease. Similar deficiencies and badness of quality of the wheat in Russia and Poland, were attended with the like results. Wherever watery fruit and vegetables were largely used and relied on as food, such as cucumbers, melons, cabbages, &c., the disease committed great ravages. Meats, which, though nutritive, task excessively the digestive powers of the stomach, are to be avoided, such as fat pork, smoked beef, lobsters, clams, and crabs.

Among intoxicating drinks, distilled liquors are especially pernicious. At all times improper for an habitual beverage, they are little short of poison when used in seasons of epidemic cholera. Water, under all circumstances the best drink for mankind, may be given of such temperatures, and so

prepared by boiling, as to be adapted to every stomach, and to prove both safer and more healthful than any liquid whatever prepared by art.

Any sudden or considerable debility of the nervous system is to be greatly dreaded, as of itself laying the body open to an attack of cholera. On this account, anxiety, fear, and the depressing passions in general, should not be allowed an abiding place in our minds. Many have been destroyed by fear alone — but on the same ground as that on which a tranquil mind is recommended to be preserved, an equable state of the senses and functions generally should be maintained, by regular hours of sleep, regularity of meals, and the accustomed daily exercise.

Long exposure to the sun and great fatigue have been found to be powerfully contributing causes of cholera. If circumstances require such an exposure, additional circumspection is to be exercised in the manner of living in other respects, and in an especial avoidance of the night air and dews, or of getting wet with rain.

As a contribution of facts, but not as an attempt to assign causes, I shall repeat here some of the notices, which I collected, on *Atmospheric and other Phenomena anterior to and contemporaneous with the prevalence of the Disease.* Many of the British physicians and surgeons in India describe frequent and great deviations from the usual order of the seasons before and during the existence of cholera ; and they speak of unusually violent thunder-storms, " violent squalls," and storms of wind and rain. Earthquakes were also felt in various parts of Hindostan. At the time when the grand army under the Marquis of Hastings suffered so dreadfully from the disease, the thermometer ranged from 90 to 100°—the heat was moist and suffocating, and the atmosphere a dead calm.

The origin of the disease at Calcutta has been attributed to the extreme heats and drought of the seasons, followed by heavy rains, and the use of unwholesome food, viz., bad fish and ouze, or new rice. In the Island of Java the weather, when the cholera broke out (April), was represented as remarkably dry and hot.

At Bombay, the fall of rain was unusually great in August, 1818, in the latter part of which month the disease broke out. The same remark was made of the weather at Madras. It was observed that the different attacks of the epidemic in General Smith's force at Seroor, and other places, were *always* accompanied by a cloudy, overcast state of the sky, sudden showers, composed of large drops of rain, resembling those of a thunder-storm, and a thick, " heavy" state of the air, giving it a whitish appearance ; and whenever the weather cleared up, the disease disappeared. The person (an intelligent officer) who makes the above remarks, also observed that the disease was invariably preceded and accompanied by a large black cloud hanging over the place ; and added, that this had been universally remarked, and that the appearance had even received the name of the *cholera cloud.*

Similar notices abound of the connexion between the disturbed state of the weather and the appearance of the disease in various parts of India. It was also a subject of very general remark, that the prevalence of southerly and easterly winds seemed to give vigour and force to the disease, while after a change to the north and west, and a dry and pure atmosphere, it almost uniformly subsided. However aggravated the disease was in the summer months, or rather from spring to the beginning of winter, it was most generally quiescent in this latter season, in India.

It would seem, however, that of all the atmospherical phenomena which have been alleged to accompany the disease, none are universally present, except those which indicate a diminution in the density of the air, and a *tendency* to rain and storms. In other words, the atmosphere, during the prevalence of the disease, is in a rarefied state; and exhibits a great tendency to part with its moisture, forming thick clouds, heavy rain, or haziness; and to become agitated by storms. It has been further said, but not generally confirmed, that the meteorological occurrences which have been observed to accompany the disease are either produced by, or attended with, a diminution of the quantity of free electric fluid in the atmosphere.

At Kurrachee in Upper India, the disease showed itself among the troops in the course of the night of the 14th June, 1846. A writer, on the spot, says, that the day (Sunday) had been strangely hot. During prayers in the evening in church, at which as many of the Fusileers as could be accommodated were present, a hurricane arose, bringing columns of dust, which swept through and hung about the church. "As the Fusileers marched back from the church the wind fell as suddenly as it had arisen, the clouds of dust remained; *the very heavens seemed drawn down upon our shoulders;* the feeling was suffocating, all were under its influence. The 86th regiment were at roll call; many were carried thence to the hospital, and were never more seen alive outside."

At Aden, in Arabia, near the straits of Babelmandel, after four days of rain, the cholera broke out suddenly on the 6th of May, 1846, in the Jews' quarter. The weather at Aden, it was remarked, had been very unusual, much colder than at any year since its occupancy by the English."

The influence of season on the appearance and virulence of the disease in Persia and Turkey is thought to be as evident as in India: for we learn that, during the three years in which it prevailed in succession at various places from the shores of the Persian Gulf to the Mediterranean, in one direction, and to the borders of Russia in Europe, in the other, it prevailed *only in summer.*

Sporadic cholera was quite prevalent during the high heats of the summer of 1847, in London and Paris.

In the United States, the irruptions of cholera were, without exception, I believe, in the summer half or climate of the year.

The weather, before the breaking out of the cholera in Mecca (in 1831), was remarkable for the excessive heat—the thermometer being steadily as high as 102° F., and afterwards heavy rains, with the wind from the south and south-east.

Before the appearance of the disease in Suez, a very hot south wind prevailed.

At Cairo, during the first period of the disease, the wind was from the north-east, and the heat, during the day, suffocating.

At Nishni Novogorod in Russia, there suddenly succeeded to a warm and dry state of the atmosphere, in the month of August, 1830, a continuance of cold and wet. At this time the cholera began. Prevailing winds south-east.

The cholera appeared in Riga at the commencement of uncommonly hot and sultry weather.

In Poland, the cholera increased as the weather in March and April became cooler and more damp. With warmth and dryness of the air

the disease rapidly abated. When, however, in August and September the days became very hot, and the nights cold, it again raged to an alarming extent.

The prevalence of the disease at Moscow is stated to have been in proportion to the humidity of the atmosphere.

At Vienna, the cholera broke out on the 14th of September, after a hurricane and much cold rain.

At Dantzic, so irregular and unfavourable to health had been the weather of the spring, that pestilential diseases were expected as a consequence.

Prior to the appearance of the epidemic and during its continuance at Gibraltar, easterly winds were uncommonly prevalent. During May and June preceding the cholera period in July and August there were frequent thunder-storms accompanied with heavy showers.

But although the attacks of cholera were, in a large majority, at the period of the year between spring and fall, they were not confined to this time. Thus, it appeared at Edinburgh in January, at London in February, at Paris in March.

The prevalent winds, in most places in which the cholera committed its ravages, have been easterly, from N.E to S.E. These winds, be it remembered, have almost invariably preceded and accompanied some of the worst pestilences and various fevers—such as plagues, yellow fever, and violent bilious and intermittent fevers.

Among the phenomena worthy of record connected with the history of cholera, is the sickness and mortality of animals antecedent to and at the time of the ravages of the disease, in many parts of the world, where it prevailed. The general character of the disease in them was of a choleiform nature.

Dr. Holland (*Medical Notes and Reflections*) has suggested a cause of cholera, viz., the generation of insect swarms, which, in their migration, gave the course of the disease. He adduces many plausible facts and analogies in favour of this opinion, in the paper entitled, "On the Hypothesis of Insect Life as a Cause of Disease." In all our reasonings on this subject, the author lays it down, as the first obvious and assured condition, "that the cause of the disease must be a material poison; definite in its nature, and specific in its effects." He then speaks of a wandering cause of the disease, a migrating malaria, possessing the power of reproducing itself, and depending, as he supposes, on animal origin and reproduction. "In many respects, indeed, the erratic and ambiguous course of cholera is well represented by the flight, settlement, and propagation of the insect swarms which inflict blight upon vegetable life." "The re-appearance of the disease in the same locality at uncertain intervals, but generally during the latter part of the year, is another fact bearing on the same hypothesis." It is explained in "the contingency of fresh swarms arising, or of the development of ova deposited in these places during the preceding incursions of the disease, and called more or less numerously into life by increased temperature or other causes." But I cannot pretend to give you the entire argument of Dr. Holland, which is very plausible, and obviates more objections than any other. Were we to admit it, we must also receive, in a qualified sense, the infectious nature of the disease, and admit "that man, the peculiar recipient of this cause of disease, is also the principal agent in its diffusion."

Is cholera contagious? The scope of my preceding remarks will have

shown my disbelief in the contagiousness of cholera. My opinion in this matter is coincident with a majority of those who have seen and written on the disease, although I am aware that a contrary one is held by physicians of acumen and authority. Among these Dr. Copland and Dr. Graves abroad, and Dr. Dickson of the S. Carolina College of Medicine, at home, are entitled to more conspicuous mention. Dr. Watson (*Lectures on the Principles and Practice of Physic*, Am. Edit.) holds the same opinion, and refers to a paper in the 48th volume of the *Edinburgh Medical and Surgical Journal* by Dr. James Simpson, for a vast number of examples of contagion. Into the whole argument I cannot of course enter at this time, nor even reproduce all the facts, which I presented in the Report of the College of Physicians before referred to. I must content myself with a mere announcement of the, as it seems to me, prominent objections against the creed of contagion: The simultaneous outbreak of cholera in different parts of Bengal is noticed by the British physicians; a similar peculiarity marked its appearance in most of the cities which it attacked. The utter inefficiency of all quarantine regulations, as instanced in the Island of Bourbon, Astracan, Orenberg, St. Petersburg, Breslau, Berlin, Hamburgh, Vienna, Sunderland, Cairo, Alexandria, Naples, &c., &c., to say nothing of attempts of a similar nature here at home, as absurd as they were abortive. The sudden cessation and speedy disappearance of the disease among men, by a slight change of encampment. A corps encamped on low ground, in very rainy weather, was severely visited; of thirteen sepoys taken ill, six died. After a few days they moved to a higher spot, and only *one more case* occurs, which appears on the march to the new ground. During an attack of the epidemic, in April, 1823, in the sixty-eighth regiment in quarters, at the suggestion of the surgeon, the wing of the corps in which the disease prevailed the most was encamped on a piece of high ground in the neighbourhood, and, he reports, that *not a case* occurred in that camp. As illustrative of the influence of locality, but as adverse to contagion, the following facts are of interest: In the three grounds of encampment of the centre division of the British army, in the year 1818, the soil was low and moist, the water foul, stagnant, and of a brackish quality, and everywhere not more than two or three feet from the surface of the earth, and the vicinity abounded in animal and vegetable putrefied matter; whereas, at Erich, where the army regained its health, the situation was large and salubrious, and the water clear and pure, from a running stream. The disease, though prevailing so fatally in the camp, did not appear in Allahabad for four months afterwards, and yet the intercourse between this town and the camp was very great. Even some corps of the division, stationed at a little distance, escaped, though a diseased party arrived among them from the main body. The crew of a ship from England were seized with the disease immediately on her coming to anchor in Bombay harbour, before there was any communication with the shore. The rate of transmission of the disease in the order of time, is not explicable by the doctrine of personal communication. Cholera appeared at Orenberg in September, 1829, and yet a year elapsed before places on the great roads to the west or interior of the empire were affected. As I have already stated; in Russia, Prussia, and Austria, where the greatest efforts were made to set limits to the disease by sanitary cordons and the most rigid system of quarantine, the periods between the attacks of cities and

districts were not any longer than in India, where the most unrestrained intercourse by sea and along the rivers and roads was allowed.

The instances of the incommunicableness of cholera by persons and goods are innumerable. Let a few among these suffice. The persons composing the family of the Persian prince quitted the city of Tabriz after the violence of the disease had already begun to abate. They, however, carried the cholera along with them, and continued to be attacked, from four to six a-day, for about ten days, but not a single person in the village through which they passed, or where they slept, took the disease. During the prevalence of the cholera in Moscow, about forty thousand persons quitted that city, of whom a large number never performed quarantine; and yet no case is on record of the disease having been transferred from Moscow to other places. (See *Report, &c.*) The general immunity of the physicians and nurses, and other attendants on those sick with cholera, both in hospitals and in private practice, is utterly irreconcilable with a belief in the contagiousness of the disease. Even regarded as an epidemic, the general exemption of all these persons is surprising. Their consciousness of the discharge of a high and noble duty, their intentness in watching the disease and studying its phenomena, together with their freedom from fear, will go far to explain the escape of medical men from an epidemic disease, but not from a contagious one. Eight hundred and sixty patients with other diseases were in the hospital of Ordinka at Moscow, during the time in which five hundred and eighty persons were sick with cholera in the hospital, which consisted of three stories, communicating by stairs placed within the hospital wards. Not one of the former class of patients became affected with the disease, although they had the same attendants as the cholera sick. Of these attendants, a hundred and twenty-three in number, many of whom were employed in washing the clothes of both classes of patients, two only were affected with cholera, a man and a woman, both of whom were disposed to the disease by very irregular conduct, for which they had been censured.

Adverse to the doctrine of contagion is the fact, I believe, that dissections of subjects dead of the disease were, in nearly every instance, performed with entire impunity. Dr. Mackintosh, on this point, says: "In the Drummond-street Cholera Hospital there were 280 bodies examined. Two, and sometimes three, hours were spent in examining each body. The room where these examinations were conducted was a miserable place, eight feet square; generally six or eight persons were present, sometimes more; and, in an inner apartment, about ten feet square, there generally lay six dead bodies. Not one of those who frequented this den of death, and who had their hands imbrued in the secretions of the dead for six hours out of the twenty-four, were affected with cholera, although their hands were irritated and punctured daily." (*Practice of Physic*, Dr. Morton, editor.)

Unlike contagious diseases, under circumstances of free intercourse, cholera was not spread generally in agricultural districts, except, as in parts of India, and in some instances in the southern and western regions in the United States, where there were obvious peculiarities of an endemic character, which would give additional power to any epidemic visitation. Cholera was chiefly confined to towns, and mostly to particular parts of towns, — a restriction, where no quarantine is in force, not to be expected of a contagious disease. In 1837, when cholera appeared in the seamen's

hospital, Dreadnought, in the Thames, none of the nurses or medical officers were attacked: nor did a case occur in any other vessel in the Thames, although, during the prevalence of the disease, patients were discharged almost daily from the Dreadnought, who immediately entered other vessels. The persons attacked with cholera were admitted into the Dreadnought for other complaints. Bearing on the present argument is the fact, that while cholera existed in this isolated manner in the Dreadnought, and when other parts of London were free from it, some cases occurred in the Marylebone Infirmary, situated in a part of the metropolis the most remote from, and maintaining the least intercourse with Greenwich, where the Dreadnought was stationed.

In the United States, the great weight of medical evidence and opinion is adverse to a belief in the contagion of cholera. The almost general immunity from attack of medical and other attendants on the sick, and the peculiarities of the circumstances of the appearance and diffusion of the disease, and, indeed, nearly all the facts already mentioned, have been repeated in this country, showing that the disease was not communicated nor communicable from person to person.

The shortness of duration of epidemic cholera in a place, the suddenness and rapid diffusion of the disease beyond what could occur from personal intercourse, and its entire disappearance, are facts adverse to a belief that it is contagious. To the same purport is the disorder of the digestive organs among the inhabitants, preceding its regular attack, and anterior, also, to any imputed importation or intercourse of any kind with the sick in other parts.

The occurrence of sporadic cases of cholera, as in the one recorded by Dr. Busham, at the Westminster Hospital, in June, and by Dr. M. J. McCormick, in the county of Donegal, Ireland, in July, 1846, is quite adverse to a belief in the contagion of cholera.

Although cholera, in the period of its attacks as well as in their intensity, has been not a little modified by the seasons and atmospherical vicissitudes, yet there are facts enough to show that it has appeared in all seasons and states of weather; unless we were to assert, that in cities, where alone it has made its attacks in winter, there is a combination of circumstances ever present, which keep up a state of air in many of their close and illy-ventilated courts and houses analogous to that of an unhealthy autumnal season. It has been said of the great plague in the reign of Justinian: "Such was the universal corruption of the air, that the pestilence which burst forth in the fifteenth year of the reign of this emperor was not checked or alleviated by any difference in the seasons." On the ground of the difficulty of explaining the cause of cholera, from any particular condition or combination of states of the atmosphere, a telluric origin has been supposed, and by some believed to be the true one; "for if we suppose it [the poison of cholera] to be generated below the crust of the earth, and consequently beyond the influence of the atmosphere, it is easy to understand why its course is entirely independent of the seasons." (*Williams.*) By some, again, it has been alleged that the poison, if not the electrical or magnetic fluids themselves, must be extricated by their agency.

LECTURE XLI.

DR. BELL.

SYMPTOMS OF EPIDEMIC CHOLERA.—To be described under the head of *diarrhœal stage, or cholerine; confirmed cholera, collapse and reaction*—Importance of attention to the first, or diarrhœal stage—Time of attack of.—Confirmed cholera—Disorder of the stomach and bowels; of the circulation; of animal heat—Vomiting and purging vary in extent—Collapse without evacuations—Mind undisturbed—Symptoms of disordered innervation—Spasms and cramps—Symptoms of collapse, or blue stage—Sinking of the circulation the most constant and alarming symptom of cholera—Thirst, and sense of heat in the stomach—Respiration, how affected—Symptoms connected with the blood and circulation—Sameness of cholera in all parts of the world—Stage of reaction, or consecutive fever—Urea in the blood, an alleged cause of the consecutive fever—Analogy between cholera and pernicious or malignant intermittents—Torti cited—The lecturer's case of comatose intermittent.

SYMPTOMS. — I shall speak of these under the shape of the several stages of the disease, viz.: — 1. The *Diarrhœal*, or *Cholerine*. — 2. *Confirmed Cholera*. — 3. *Collapse*. — 4. *Reaction or Consecutive Fever*.

Cholerine. — On an early attention to the premonitory symptoms, or to this first or forming stage of the disease, will greatly depend the favourable issue of the case, and of course the life of the patient. He complains of lassitude; has, frequently, partial uneasiness in the region of the stomach; but this not to such a degree as to alarm him. He has frequent evacuations from the bowels — from two to a dozen times a-day — not attended with much griping. His countenance is sharp and dark. He knows not of this symptom; and it is only recognisable to the eye of experience. Occasional nausea may oppress him: but this is not a very common occurrence. These symptoms may continue, varying in severity, from one to ten days, before the second stage of the disorder supervenes. The evacuations at the first are generally of a dark-brown or blackish hue, and not unfrequently bilious. As the looseness continues, they gradually become less and less of a natural appearance, until they assume the consistence and aspect of dirty water. Some headache, cramp of the fingers, toes, and abdomen, and almost always slight giddiness and ringing of the ears, accompany these symptoms. Sometimes, an intervening two or three days of costiveness supervenes, which is followed again by the diarrhœa, and in a few hours collapse may come on, and in general nausea and vomiting. On the prompt appreciation of the nature of this diarrhœa, and timely application to a physician, will greatly depend the issue of the cure. Dr. Kirk says, that it was found, from regular records of upwards of 4000 patients, to prevail in all. The same fact has been generally noticed in an immense majority of those who have suffered from cholera in the Canadas and in New York, Philadelphia, and other parts of the United States. It has been said, that the premonitory symptoms constituting cholerine were not by any means so common in India as in Europe and America. During the recent invasion of Persia by cholera, its approach was announced, in Teheran, Astrabad, Meschid, and Ispahan, a considerable time in advance by cholerine. In the sporadic cholera which prevailed in Paris, in the summer of 1847, diarrhœa was a common precursor.

Symptoms of confirmed Cholera. — From among the numerous minute and graphic accounts which have been published of the phenomena by which the epidemic cholera is accompanied, from its invasion until its termination, it is somewhat difficult to make a selection; but, as my desire is to present rather a general summary of the symptoms than a detailed account of every trifling deviation from the ordinary course of the disease, I shall follow very closely the excellent description presented to us by Mr. Scott in the Madras Report.

The attack of cholera generally takes place in the *night, or towards morning*. The patient becomes sick at the stomach, vomits, and his bowels are at the same time evacuated. This evacuation is of a nature peculiar to the disease—the entire intestinal tube seems to be at once emptied of its fecal or solid contents, and an indescribable, but most subduing, feeling of exhaustion, sinking, and emptiness is produced. Fainting supervenes, the skin becomes cold, and there is frequently giddiness, and ringing in the ears. The powers of locomotion are generally soon arrested; spasmodic contractions or twitchings of the muscles of the fingers and toes are felt; and these affections gradually extend along the limbs to the trunk of the body. They partake both of the clonic and tonic spasm, but the clonic form chiefly prevails. In other words, they consist more generally of permanent contraction than of convulsive movements of the muscular fibres. The *pulse*, from the first, is small, weak, and accelerated, and, after a certain interval, but especially on the accession of spasms or of severe vomiting, it sinks suddenly, so as to be speedily lost in all the external parts. At this time, however, there is strong pulsation of the cælic trunk, and often of the abdominal aorta. The *skin*, which at first is suffused with a deep or almost bronzed flush, soon falls below the natural temperature, and becomes colder and colder, and pale; it is very rarely dry; generally covered with a profuse cold sweat, or with a clammy moisture.

During the progress of these symptoms, the *stomach and bowels* are very variously affected. After the first discharges by vomiting and purging, however severe these symptoms may be, the matter evacuated is always watery; and in a great proportion of cases it is colourless, often homogeneous, and without fecal fetor, but giving out a peculiar odour, which is imparted by all the secretions, and which, once experienced, is afterwards readily recognised. In some, it is turbid, resembling muddy water; in others, it is of a yellowish or greenish hue. A very common appearance is that which has been emphatically called the "*congee stools*," or like rice-water, an appearance produced by numerous mucous flakes floating in the colourless, watery, or serous part of the evacuation. The discharges from the stomach and those from the bowels do not appear to differ, excepting in the former being mixed with portions of the food which may have been eaten. Neither the vomiting nor the purging is a symptom of long continuance; they are either obviated by art, or the body becomes unable to perform such violent actions; and they, together with the spasms, disappear a considerable time before death. If blood be drawn, it is always dark, or almost black, ropy, and generally flows slowly, and with difficulty. Towards the close of the attack, jactitation or restlessness comes on, with evident internal anxiety and distress; and death takes place, often in ten or twelve, generally within eighteen or twenty hours from the commencement of the attack.

Cholera, however, like other diseases, has presented considerable variety in its symptoms: thus, it may, on one occasion, be distinguished throughout by the absence of vomiting and by the prevalence of purging; on another, by the excess of vomiting; and, though more rarely, by the absence of purging. Spasm may be generally present in one instance; in another, it may not be distinguishable. A frequent variety, the worst of all, is that which is marked by a very slight commotion in the system—in which there is no vomiting, hardly any purging, perhaps one or two loose stools; no perceptible spasm, no pain of any kind: a mortal coldness, with arrest of circulation, comes on from the beginning, and the patient dies without a struggle.

Vomiting is sometimes, as already remarked, entirely absent, or, if it has been present, soon ceases from an atonic state of the stomach, under which that organ receives and retains whatever may be poured into it, as if it were really an inorganic cavity. *Purging* is a more constant symptom than vomiting, and in a large majority of cases it is the first in the order of occurrence; but being a less striking deviation from a state of health than vomiting, which instantly arrests the attention, it has usually been spoken of as occurring subsequently to the latter. Purging has been very rarely absent altogether—its absence appears, indeed, to denote a peculiar degree of malignancy in the attack. There is seldom much griping or tenesmus, although the calls to stool are very sudden and irresistible. They also sometimes take place simultaneously with vomiting, spasm, and a suspension of the pulsation at the wrist; as if all these symptoms originated at the instant from one common cause. In advanced stages of the disease purging generally ceases, but in many cases a discharge of watery fluid takes place on every change of posture. The matters evacuated after the first emptying of the bowels have been occasionally observed to be greenish or yellowish, turbid, of a frothy appearance, like yeast, and sometimes bloody; but by far the most common appearance is that of pure serum, so thin and colourless as not to leave a stain on the patient's linen. The next, in order of frequency, is the congee-like fluid; the mucus is at times so thoroughly mixed, however, with the serum, as to give the whole the appearance of milk. The quantity of the clear watery fluid, which is sometimes discharged, is very great, and were it uniformly so, it might afford us an easy solution of the debility, thirst, thickness of blood, and other symptoms; but it is unquestionable, that the most fatal and rapid cases are by no means those which are distinguished by excessive discharges. Death, on the contrary, has ensued in innumerable instances after one or two watery stools, without the development of any other symptom affecting the natural functions. *Collapse has even come on before any evacuation by stool has taken place.*

The undisturbed state of the mind in this disease has been the subject of general remark: instances are not wanting of patients being able to walk, and to perform many of their usual avocations, even after the circulation has been so much arrested that the pulse has not been discerned at the wrist. The cases here alluded to are those chiefly in which the disease has begun by an insidious watery purging: and many lives have been lost in consequence of the patients, under these fallacious appearances, not having early taken the alarm and applied for medical aid. In other cases again, the animal functions appear to have been early impaired, and the prostration of strength to have preceded most of the symptoms. The *voice*, in general, partakes of the debility prevailing in the other functions; it is usually noticed as being feeble, often almost inaudible. Deafness

has also been remarked, in some instances, to have been completely established. Coma does occasionally occur, especially towards the termination of the case, when it is fatal: but delirium has seldom or never been observed, unless as a sequela of cholera.

Spasm has been held to be so essential a feature of the epidemic cholera, as to confer on it a specific name, *Spasmodic Cholera:* in so far, however, as relates to the muscles of voluntary motion, and it is that description of spasm only to which we now refer, no symptom is more frequently wanting. Spasms of the muscles chiefly accompany those cases in which there is a sensible and violent commotion of the system — hence they are more frequently found in cases where Europeans are the subjects of the disease than when it attacks the natives of India, and in robust patients more frequently than in the weakly. In the low and most dangerous form of cholera, whether European or Indian, spasm is generally wanting, or is present in a very slight degree. The muscles most commonly affected are those of the toes and feet and of the calves of the legs; next to these, the corresponding muscles of the superior extremities, then those of the thighs and arms — and lastly, those of the trunk; producing various distressing sensations to the patient.

Stage of Collapse, or Blue or Cold Stage. — In the description of confirmed cholera, which I have just placed before you, no attempt has been made to separate it into two stages; and in fact the transition is sometimes so gradual, from vomiting and purging with spasms, to a sinking of the circulation, cessation of pulse at the wrist, shrinking of the outer teguments, and blueness or lividness of skin, that we cannot positively define the line between the two. The more obvious features of the stage of collapse may be, however, summed up as follows: the skin assumes a blue or livid hue; the whole surface appears collapsed, the lips become blue, the nails present a similar tint, and the skin of the feet and hands becomes much corrugated, and exhibits a sodden appearance; in this state the skin is insensible, even to the action of chemical agents; yet the patient generally complains of oppressive heat on the surface, and wishes to throw off the bed-clothes; the eyes sink in their orbits and are surrounded with a livid circle; the cornea becomes flaccid, the conjunctiva frequently suffused with blood; the features of the face collapse, and the whole countenance assumes a cadaverous aspect, strikingly characteristic of the disease. There is almost always urgent thirst, and desire for cold drink, although the mouth be not usually parched. The *tongue* is moist, whitish, and cold; a distressing sense of pain and of burning heat at the epigastrium is common; *little or no urine, bile, or saliva is secreted*, nor are tears shed; the voice becomes feeble, hollow, and unnatural; the respiration is oppressed, and generally slow, and the breath of the patient deficient in heat. The *pulse*, from being very feeble, is now extinct at the wrist, and is felt with difficulty at the larger arteries. The spasms are sometimes so violent that the whole body is drawn, as it were, into a ball. In other cases, no complaint of this nature is made.

The duration of this stage varies from a few minutes to twelve, twenty-four, or forty-eight hours, and even to three days. Of all the symptoms of cholera, none is so invariably present, nor indeed so truly essential and destructive, as the immediate *sinking of the circulation*. The period at which a marked diminution of vascular action takes place, is somewhat various—the pulse sometimes keeps up tolerably for several hours, though

very rarely; it more generally becomes small and accelerated at an early stage, and on the accession of spasm or vomiting, suddenly ceases to be distinguishable in the extremities. The length of time during which a patient will sometimes live in a pulseless state is extraordinary.

The reduction of temperature at this time is great. A thermometer placed on the skin indicates 84° F., or even only 79° or 72°. The blood itself is of reduced temperature: a thermometer introduced into the cephalic vein has fallen to 88°, 84°, and even to 82° F.

Thirst and a sense of heat or burning in the region of the stomach are generally connected together and form very prominent and constant symptoms of cholera; yet not only in individual cases, but even in epidemic visitations, these symptoms have often been altogether wanting. Even when they are present in the highest degree, the mouth is not parched nor the tongue often dry; on the contrary, there seems in general no want of moisture in these parts. The sense of thirst seems to subdue all other feelings—cold water is constantly craved and eagerly swallowed.

The *skin* is cold, generally clammy, and often covered with profuse cold sweats; nevertheless, varieties occur in this, as in other symptoms of cholera—the skin is sometimes observed to be dry, though cold; and sometimes of a natural, and even, in some rare cases, of a preternatural warmth. An increase of temperature has been repeatedly observed to take place just before death; but the development of heat appears to be confined then to the trunk and head; and, in almost all cases, this partial development of heat is found to be a fatal symptom: it is entirely unconnected with any restoration of the energy of the bloodvessels, or any improvement in the function of respiration. Often, at a very early stage of cholera, leeches cannot draw blood from the skin; when the sweat is thin, it is usually poured out in large quantities from the whole surface of the body, but when thick or clammy, it is more partial, and generally confined to the trunk and head. The action of the vapour and hot baths is said to increase the exudation or secretion from the skin; and the application of dry heat, as the natural temperature of the skin augments, appears to restrain these discharges. The perspiration or moisture is often free from odour; at other times it has a fetid, sour, or curdy smell, which has been said to be peculiarly disagreeable, and to "hang about the nostrils" of the bystander.

In some cases, patches of eruption like urticaria and still more often resembling roseola, or again, minute miliary vesicles, were observed: the appearance of those eruptions was generally a good augury.

That remarkable shrinking of the features of the face, which has acquired the emphatic designation of the "true cholera countenance," appears in every case not quickly cut short by medicine. This expression of countenance, which conveys so truly that of death itself, cannot be mistaken; and by an attentive observer it will be perceived that a similar shrinking takes place throughout the limbs and all the projecting parts of the body.

Respiration is not usually interrupted in the early stages of cholera. In many cases terminating in death, respiration has gone on in its mechanical part with little or no interruption, excepting that it becomes more and more slow. Numerous cases, on the other hand, are noticed, occurring especially in Europeans, where the interruption of respiration was most distressing, and could only be compared to the most violent attacks of

asthma. Modifications in this respect must occur when pneumonia is present; for this latter complication was far from being uncommon. Although the breath is stated, in many reports, to have been deficient in heat, it is not clear that this is a general symptom, nor is it understood that this coldness is more particularly observed in cases of difficult and laborious respiration, than in those where the function seemed to be at least mechanically performed without interruption. Dr. Davy ascertained that less than the usual proportion of caloric was developed at this time.

No symptoms of cholera are so uniform in their appearance and progress as those connected with *the blood and its circulation.* It is established by undoubted evidence, that the blood of patients attacked with cholera is of an unnaturally dark colour and thick consistence. The changes in the circulation of the blood are likewise observed to be in direct ratio with the duration of the disease, and, in general, only well manifested after the gastro-intestinal discharges have set in.

In a great majority of the reports of physicians in India it is stated unequivocally, that after a certain quantity of dark and thick blood has been abstracted, it is usual for its colour to become lighter, and its consistence less thick, and for the circulation to revive—such appearances always affording ground for a proportionably favourable opinion as to the termination of the case. In many instances, however, no such changes have been observed to accompany the operation of bleeding, and yet the result of the case was favourable. The blood is generally found to be less changed in appearance in those cases of cholera which have been ushered in with symptoms of excitement, than where the collapsed state of the system has occurred at an early period. The blood has been occasionally found, on dissection, to be of a dark colour in the left as in the right side of the heart—affording reason for believing that in the whole arterial system it was equally changed. In fact the temporal artery having been frequently opened, the blood was found to be dark and thick like the blood of the veins. It is the laboured respiration and almost stoppage of the circulation, and darkness of the blood, that have procured for the disease the name of *Cholera Asphyxia.* But as this, if at all, is only applicable at a particular stage, and that generally the fatal one, or that of collapse, the epithet cannot serve to designate epidemic cholera.

In the natives of India, in whom respiration is pretty generally free, until the very last stage, the colour of the blood in the instances in which venesection was performed, has been very uniformly found to be dark, whether excessive discharges prevailed or not. In the majority of cases, the secretion of urine is diminished—and in violent cases it is entirely suspended throughout the attack.

The general symptoms of cholera, as it presented itself in the different districts of India, correspond with those observed in the disease during its prevalence in Russia, Poland, the rest of Europe, the Canadas, United States, &c., &c. This is proved by the history of the disease which is contained in the circular distributed by the Austrian Government, and the elaborate epitome of its symptoms, transmitted by Dr. Keir, of Moscow, to the British Government, and in the accounts received from Montreal and Quebec, as well as our own published ones, in this country. It is needless to dwell on this topic, with a view of establishing the identity of the symptoms of the epidemic cholera which prevailed in Europe and America, with those observed by the English practitioners in the cholera

of the East Indies. All the Russian and German reports agree, that in the generality of cases there were the same excessive evacuations, upwards and downwards, of a watery turbid fluid, the same collapse of the skin, coldness of the surface, sinking of the pulse, failure of the strength, lividity of the face, shrinking of the features, spasms of the muscles, sense of pain at pressure on the region of the splanchnic plexus of nerves, entireness of the mental faculties, and blackness and inspissation of the venous blood; that, in Europe, as in India, some instances occurred of rapid death, with collapse and spasms, and without vomiting or purging; that in other instances chronic irritation of the bowels continued for a long time after the violence of the disease was broken; and that sometimes symptoms of cerebral congestion supervened on the violent constitutional disorder which accompanied the intestinal symptoms, and quickly terminated in coma and death, when not counteracted by an appropriate treatment.

Stage of Reaction or Consecutive Fever of Cholera.—The mention of this stage, as coming next in order in those who survive the collapse, suggests the very natural, and, as I think, correct idea, that confirmed cholera is but a stage of fever corresponding with the cold one of intermittents. The forming stage of cholera is marked generally by diarrhœa and some other disturbances of function. The stage of reaction corresponds with the febrile reaction after the chill of intermittent fevers, or still more after the stupor, coma, &c., of pernicious or malignant intermittents, as they have been termed. In both cases, the collapse and asphyxia of cholera, and the chill and coma of intermittent fever, will kill — in both, escape from these may be followed by fever and phlegmasia, which will often destroy the patient.

Mr. Searle, a judicious writer, who witnessed the disease both in India and Poland, observes, that "cholera was generally based upon, or succeeded by, fever of a bilious inflammatory type—in Europe, of a low remittent or typhoidal character. In Europe, the choleric symptoms were less marked than in India, and the succeeding fever evinced less of simple reaction.

"I have said remittent, though the first few days I have generally found it to be intermittent; coming on daily at about the same hour, preceded by coldness of the extremities, quivering of the lip, and depression of the circulation; but from the excitement of inflammation, which but too frequently becomes developed in the organs previously congested, the intermissions become imperfect, and, in consequence, it assumes a remittent, and from the conjoint debility, a typhoidal form."

One of the best descriptions of the stage of reaction which I have seen is that given by Messrs. Haslewood and Mordey, in their "*History and Medical Treatment of Cholera, as it appeared in Sunderland, in* 1831." "The fatal termination of the cold blue stage of cholera," say those gentlemen, "occurs often without a struggle, or is preceded only by a few short convulsive heavings of the chest: but in other instances a slight appearance of reaction, indicated by some throbbing of the carotids and warmth of the chest, is succeeded by sleep, from which the patient can only be roused for a moment; perfect coma succeeds; and the patient survives, perhaps, for a few hours. From the large doses of opium administered in some of the cases, we were at first disposed to attribute this state to narcotism; but we were subsequently convinced that it was by no means confined to such cases, and was rather to be attributed to the

general tendency of the febrile stage of cholera to produce cerebral congestion.

"The comatose state is sometimes preceded by a sudden attack of furious delirium; the patient throwing off the bed-clothes, attempting to get up, striking every one within his reach, and raving wildly, the muscular strength exhibited is considerable; but the struggle is short, and soon succeeded by total insensibility.

"When the spasms, the vomiting, and the purging have ceased; when the pulse begins to return at the wrist, and the breathing becomes unembarrassed, and a genial warmth diffuses itself gradually and equably over the surface, the patient falls into a tranquil sleep, which continues some hours, accompanied with gentle perspiration; he awakes refreshed, declares himself 'quite well,' asks for something to eat, and is ready to be up and away. It is at this period the medical attendant is most likely to be thrown off his guard. Very limited experience, however, will convince him that there is yet a period of the disease calling for unremitting attention and decisive treatment. An almost invariable symptom at this period is a considerable suffusion of the eye; the cornea looks dull; vessels containing red blood are visible on the surface of the sclerotic, and are most numerous at the lower part of the eye.* The appearance differs from that of inflammation; the vessels are large and numerous, but terminate abruptly, rarely forming the vascular network observed in ophthalmia; the redness is dusky, and the affection unattended with pain. At the same time there is often some degree of stupor; and if the patient moves the head suddenly, he complains of a dull, deep-seated pain. The tongue is coated with white fur, and rather dry; or becomes red, glistening, and chapped. The secretions are not restored; or, if restored, present unhealthy appearances; that of urine has continued suppressed for four or five days. When this has been the case, its restoration is attended with uneasiness in the bladder, and the attempt to void urine gives great pain,—arising, probably, from the accumulated sensibility of the mucous membrane, so long devoid of its natural stimulus. The discharges from the bowels become highly offensive, and contain an abundance of vitiated bile, and of the glutinous matter (sometimes in large masses) which gives the flocculent appearances to the earlier evacuations.

"The patient is, in fact, labouring under a fever, bearing a considerable resemblance to the ordinary fever of this country,—assuming in mild cases, a remittent or intermittent type, but always accompanied with a strong tendency to local congestion, especially of the brain; but where strong predisposition existed, or, in other words, when some organ was, from natural or accidental causes, peculiarly weakened, manifesting itself in it.

"The first approaches of coma are often so insidious as to escape observation; but the pulse continuing quick, with fetid watery discharges, and, above all, the continued suppression or insufficient secretion of urine, will convince the observer that all is not right; drowsiness gradually increases

* "The following case occurred in the practice of Dr. Odgen:—December 12, John Parkin, aged 4, attacked with malignant cholera in a severe form: during the cold stage the eyes had a dry and shrunk appearance, and the lower half of each cornea became opaque. The child recovered. In the febrile stage, an onyx was formed in each cornea, where the opacity had been previously observed. For about three weeks the child was in a state of incoherence."

and his sleep is attended with stertor; he may still be roused, and will swallow what is offered him, but quickly falls back into the same state. If the eye is examined, the suffusion is found to have increased, the pupil is dilated, and almost or quite insensible to light; and this phenomenon is sometimes confined to one eye. Complete coma succeeds."

Urea, which has been found largely in the blood of cholera patients, is regarded by Dr. Roupell, who first noticed the fact, as the cause of secondary fever. But even were this element always found in cholera blood, its presence alone would not explain the state of the system at this time.

No other disease serves as an exclusion of cholera. It attacked in Paris the patients at St. Louis Hospital, heretofore labouring under itch, and the insane at Saltpetrière and Bicêtre. It was not uncommon among the phthisical, and has supervened on the treatment of inflammations.

Analogy of Cholera to Malignant Intermittents and other Fevers.—The views which I hold of cholera being properly a stage of cholera fever, are corroborated by the descriptions of pernicious (congestive) fevers by Torti and Morton.

The following case from Torti presents (says Dr. James Johnson) a complete picture of the Sunderland cholera:—

"When I reached the patient, he had been several hours labouring under the disease. I found him universally cold as marble, with the pulse altogether, if I may so say, absent, breathing laboriously, and having a leaden-coloured countenance. There was some torpor, but no confusion of intellect (*he never mentioned delirium*), and his urine was secreted in a small quantity. I prescribed the bark in large doses. A gentle heat soon pervaded his entire frame; the pulse gradually returned; the respiration became natural; the face lost its leaden hue; the urine was secreted in its ordinary quantity, and in three days he was quite recovered."

I have myself met with a still more marked case of complete collapse, which represented the paroxysms of intermittent fever. It was of a tertian type, and came on twice. There was complete insensibility, and with a pulse barely perceptible—coma, in fact. I had the patient leeched over the abdomen in the first attack, and cupped in the same region, and on the temples in the second one. Sulphate of quinia prevented the return of a third paroxysm, and the man soon got well. He had suffered antecedently from a long, harassing, and dangerous attack of bilious remittent fever. Dr. Jackson, of the University of Pennsylvania, in describing the stage of collapse in cholera (*Personal Observations and Experience of Epidemic or Malignant Cholera in the City of Philadelphia —Am. Jour. Med. Science*, vols. xi. & xii.), represents it as "analogous to the last periods of particular cases of malignant fevers, and to the algid form of intermittents."

LECTURE XLII.

DR. BELL.

PROGNOSIS OF EPIDEMIC CHOLERA—Common and individual signs—Modification by age, sex, occupation, and race—Promptness of recovery—Congestions with slower convalescence—Immediate causes of death—Remoter causes, in the constitution and habits of the individual—Misleading signs in the consecutive fever—*Post-mortem Appearances*:—1. The adventitious, though common; 2. The peculiar, and in a measure pathognomonic, textural and visceral changes in the digestive canal and liver, lungs, and sometimes brain and visceral ganglia—Changes in the fluids—Automatic muscular movements—Increase of animal heat.—*Mortality* from cholera—In India—Russia—Poland—Hungary—France—Great Britain and Ireland—Berlin—Naples—Geneva—Leghorn—Sunderland—Glasgow—Quebec—Montreal—New York—Philadelphia—Cincinnati.—*Law of Recoveries and Mortality* in cholera.—*Comparative Mortality.*

PROGNOSIS.—I shall first speak of the probabilities of recovery, or of death, depending on circumstances anterior to the morbid condition of the organs and derangement of function pending the disease: and, afterwards, of signs derived from these, as constituting the prognosis.

The anterior circumstances belong to the history of the patient, and may be regarded as so many predisposing causes of the disease, and modifying ones, also, of its progress and termination. They may properly be considered under the heads of *age*, *sex*, *employment*, *race*.

Age.—The various periods of life give rise to differences in the susceptibility to cholera. Children were less frequently attacked than adults, and the proportion of deaths to cases was, I believe, less. In the British army, the deaths from this disease have been nearly in the ratio of the age of the party. The following table, formed from Major Tulloch's statistical reports, will distinctly prove this to be the case:—

Age.	Mortality in the household troops from cholera per 1000 mean strength	Mortality of troops in Canada from cholera per 1000 mean strength	Gibraltar.
under 18 years	·0	.0	·0
from 18 to 25	2·3	15·5	47
25 — 33	2·5	25·—	41
33 — 40	4·—	36	54
40 — 50	4·9	70·4	60

In civil life, although the calculation is less to be relied on, the mortality has in almost every country increased with advance of age. The deaths from cholera in Paris were estimated at 18,402 or 23·42 per 1000. Of this number it was remarked that the mortality was least from six years to twenty, greater from thirty to forty, and greatest in old age. In Philadelphia, according to Dr. Jackson, the rate was as follows:—

Age.	Deaths.	Ratio to population.	Age.	Deaths.	Ratio to population.
under 1 year	4	1 in 604	from 40 to 50	159	1 in 46
from 1 to 2 years	4	1 — 503	50 — 60	100	1 — 28
2 — 5	30	1 — 912	60 — 70	71	1 — 102
5 — 10	39	1 — 919	70 — 80	47	1 — 212
10 — 15	19	1 — 188	80 — 90	5	1 — 36
15 — 20	22	1 — 96	90 — 100	1	
20 — 30	179	1 — 81	100 — 110	1	
30 — 40	228	1 — 60		999	

In Cincinnati, as we learn from Dr. Drake, the proportion of children among the whites, who fell victims to the disease, was 22 to 472, or something less than a twenty-second part.

Advanced age is not only unfavourable to recovery, but predisposes to the disease. "By a recent regulation, the ages of all the sailors who enter the port of London are registered at the custom-house. We have obtained permission to examine these registers, and have found that, of 5000 sailors, taken consecutively, 961, or considerably less than 1 in 5, had arrived at the age of 40. But the predisposing influence of advanced age is rendered more manifest by taking, in the two classes, ages still greater. Of the cholera patients, 22 in 160, or more than 1 in 8, were of the age of 50 or upwards; while of the sailors registered at the custom-house, 289 in 5000, or less than 1 in 17, were of this age; so that the proportion of cholera patients of the age of fifty or upwards, is more than double what it would have been were all ages equally liable to this disease. The influence of age on mortality is even more clearly shown. The mortality was least in patients between the ages of fifteen and thirty; and in these the number of deaths was less than that of recoveries; it was greatest in patients above the age of fifty: of the 22 who had arrived at this age, only two recovered; the age of each of these two was fifty-three: of 13 whose ages exceeded fifty-three, not one recovered." (Dr. Budd, *Lib. Pract. Med.*)

Sex.—The sex probably has an influence in predisposing to cholera, though this fact cannot be considered as quite determined, since the proportion has greatly varied in different countries. In Calcutta, Mr. Jameson states, that it appears from the returns that of the native inhabitants attacked by cholera, the males were to the females as four to one. In Bombay, the reverse appears to have been the case; the deaths of the women being to those of the men as two hundred and fifty-four to one hundred and seventy-two. In other parts of India, also, the results were equally opposed. Mr. Corbyn, however, affirms distinctly that men were generally more susceptible than women: but in Canada, the soldiers' wives were observed to suffer nearly in an equal proportion with their husbands; and this was the case at Gibraltar among the civil inhabitants.

Age.	Estimated numbers of the civil inhabitants of Gibraltar.	Number attacked by cholera.		Died.
		Severe.	Slight.	
Men . . .	6000	193	345	104
Women . .	5000	216	267	107
Children . .	6000	58	95	41

In Paris, up to the 20th of July, 1832, of 12,259 persons attacked with cholera, 6,243 were men, and 6,106 women. The number of children affected is said to have been few, but the proportion of deaths great. Up to this period only 693 had fallen under seven years of age; and of these, some were not more than four months old.

At first the mortality in England was much greater among women than men; but the entire results do not manifest such a disproportion. In Philadelphia, the proportion was, according to Dr. Jackson, as follows:

	Males.	Females.
	539	370
Under 20 years of age . .	70	48

The difference is not in sex, but in the kind of occupation and the exposure of the women.

Occupation.—The loss by cholera in one detachment of five companies of United States troops, on the way from Fort Monroe (Chesapeake Bay) to Chicago, was equal to one out of every three men. It was at Fort Dearborn, situated on the south-west shore of Lake Michigan, that the disease displayed its most fatal effects among the troops. According to the report of Assistant-Surgeon S. G. J. De Camp, 200 cases were admitted into the hospital in the course of six or seven days, 58 of which terminated fatally. The strength of the command at this time was about 1000. In Detroit, the soldiers, then on their march to the theatre of Indian hostilities, suffered greatly, after indulgence in every kind of excess, and being quartered in an old back building on the banks of a river in the most filthy part of the town. In a command of 200 men, there occurred, between the 6th and 26th of July, 1832, 47 confirmed cases of cholera, of which 21 terminated fatally. (*Statistical Report of the Sickness and Mortality in the Army of the United States*, pp. 81, 86, 90–91.) The total number of cases of epidemic cholera reported during the years 1832, 1833, 1834, and 1835, was 686, in the United States army, of which 191 terminated fatally; but this does not comprise all, as many troops became victims to the disease in the campaign against the Sac and Fox Indians in 1832, of which no official returns were made, in consequence of the death of medical officers. Dr. Forry, from whom I derive this information (*Climate of the United States and its Endemic Influences*), adds:—"It is a singular fact, that this epidemic exerted its fatal influence in nearly the same ratio among all the troops whose statistics have been investigated; for example:—

	Years.	Deaths per 100 cases.
United Kingdom, 1832, 1833, and	1834	32
Gibraltar	1834	30
Nova Scotia and New Brunswick	1834	28
Canada	1832	36
"	1834	34
Black troops at Honduras	1836	32
United States, 1832, 1833, 1834, and	1836	28

I may remark on the above, that these proportions are not so nearly the same as Dr. Forry indicates: the difference between 28 and 36, or 7 and 9, must count for something. In and around Paris the proportion of cases of disease among the military was 25·66 *per cent.*, while that among the inhabitants generally was 22·75 *per cent.* In India it was observed that the disease was less fatal to the Bramins than to Rajpoots; to Rajpoots than to the lower castes; and that Mussulmans suffered the least of all.

Race.—We have not data enough to enable us to institute detailed comparisons between the different races of mankind, either in regard to their susceptibility to cholera, or their proportionate mortality from it. The disease has, we know, attacked the three great divisions—white, yellow, and black; and in all has committed great ravages among them. In China, Siam, &c., its devastations were excessive. It was thought, *à priori*, that cholera would spare or pass lightly over our black population, particularly in the southern states; but everywhere, I believe, the deaths

were proportionately more among them than among the whites. Their depressed condition socially, and their common degradation and poverty, brought them too surely under the law of cholera mortality. In Philadelphia, the ratio of cases in the coloured population was 1 to 41 of their entire number: that among the whites 1 to 74. The entire number of deaths in the former was 338, in the latter 1927. The ratio of coloured people to the white population is 1 to 14; that of fatal cases of cholera among the coloured people to that among the whites, 1 to 6. (*Dr. Jackson, op. cit.*) The actual mortality is not stated. In Cincinnati, the deaths among the blacks, as we learn from Dr. Drake (*An Account of the Epidemic Cholera as it appeared in Cincinnati*), was forty-five, the entire number being 545; which gives them a proportion of one-twelfth of the deaths. Their entire population was 1500; and hence, the ratio of the loss was three *per cent.*, or, compared to that of the whites, was as one and a half to one. In the slave states the proportionate mortality was still greater. In Louisiana it was enormous. At Honduras, "none of the white troops, and but few of the European population, died from cholera. The fatal cases occurred almost entirely among the negroes and natives, and it seems most to have affected those who were irregular, drunken, and dissipated. The inhabitants of the Musquito Shore, who have in general that character, suffered more than any other; few of them having survived an attack longer than six hours." (*Statistical Report, &c., among the Troops in the West Indies*, p. 78.)

In connexion with our present subject of inquiry, it should be known, that in Mexico the mortality was frightful among its Indian, which is its chief, population. In the States of Central America, the disease committed dreadful havoc. At St. Salvador, a seventh part of the population was cut off by it, and whole villages were depopulated. Drunkenness is a prevailing vice among all these people.

Though the fact does not strictly come under the head of a comparison between different races, yet it is worthy of remark, that the native troops, or sepoys, in the British army in India, were more subject to cholera, and lost more of their number, than the European portion of the army. The circumstances of food and diet generally must, however, be taken into consideration; the Europeans having greatly the advantage in these respects over the natives. The proportion of deaths to admission was about 19½ *per cent.* in Europeans, and something more than 23½ *per cent.* in natives.

When medical aid is early administered, and the constitution of the patient is otherwise healthy, the recovery from an attack of cholera is so wonderfully rapid as perhaps to be decisive of the disease being essentially unconnected with any very marked morbid change in the several organs of the body. In the natives of India, in whom there is ordinarily very little tendency to inflammation, the recovery from cholera is generally so speedy and perfect, that it can only be compared to recovery from fainting, colic, and diseases of a similar character; but, on the other hand, when the attack was exceedingly severe, the constitution sank, with scarce an attempt to rally; and in those who recovered, the stage of reaction was mild and of short duration. In Europeans, in whom there is a much greater tendency to inflammation and determination to some of the internal organs, the recovery from the disease is by no means so sudden or perfect; on the contrary, it is too often complicated with affections as

various as the diseases of various internal organs are known to be in India. The most frequent of the sequelæ of cholera are affections of the intestines, brain, liver, and stomach. When cholera, however, is of long continuance, and when the congestions appear to have been thoroughly established, few, either Europeans or natives, who outlive the attack, are restored to health without considerable difficulty. It has already been remarked, that recovery from an attack of cholera is indicated by the return of heat to the surface of the body and rising of the pulse; a deceitful calm, however, sometimes attends these favourable appearances, which too often mocks our hopes and expectations: whereas, on the contrary, patients have been observed to remain for one, two, and even three days, in a state of the greatest collapse, and yet, contrary to all expectation, have recovered.

The tendency to death in cholera consists in a general suspension of the natural, and gradual cessation of the vital functions, rather than in the establishment of morbid actions. Cases have been remarked, where the vital functions have been more suddenly overcome, and where death took place before the usual development of the symptoms of the disease. Fatal terminations likewise occur from topical inflammations supervening, as of the stomach, intestines, or liver. The intestinal canal seems especially obnoxious to the effects of cholera—numbers of those attacked with it having been subsequently seized with dysentery.

It was almost uniformly observed that health was soonest restored in those cases in which feculent, black, and acrid motions were easily procured; and that, on the other hand, their absence was almost uniformly marked by feverishness, sour eructations, flatulence, constipation, and other signs of want of tone and sluggish action of the hepatic system. This is an observation made by Mr. Corbyn, and is especially applicable to the subjects of the disease in India.

Children, we are told, recover sooner than adults from the cataleptic or collapsed state. The first mark of rallying in them was a slight injection of the conjunctiva, with general restlessness and tossing of the head. After these follow often all the symptoms of cerebro-meningeal or hydrocephalic inflammation, which, unless rapidly controlled, cut off the patient. In one case of this kind, Mr. Fife, of Newcastle, had leeches applied to the head twelve times.

In persons with broken down constitutions, the period of convalescence from the severer forms of cholera has been usually protracted, and several weeks have elapsed before they have regained their usual health.

"The most decidedly favourable symptom in the second stage of cholera, is a full and early secretion of healthy urine. On this symptom we may rely with safety; and without it we can never with confidence offer a favourable prognosis.

"The most enduring memento of cholera, however, is the irritable and debilitated state of the muscular system, which continues painful on slight exertion, and subject to constant recurrence of cramps. These attacks occur most frequently at an early hour of the morning, on awakening from sleep; perhaps the patient is aroused by them: they are also apt to attack after long fasting, or on any slight disorder of the stomach and bowels."—(*Haslewood and Mordey.*)

In general, they whose constitutions have been weakened by fatigue and prior disease sink rapidly. The drunkard has rarely survived an

attack of cholera. Almost everywhere the poor and needy, they whose lodgings and food are bad, have been the greatest sufferers, and often the disease was confined to this class. But in Paris and London, it took, after a while, a wider range, and in the former capital particularly, it assailed at once those in good circumstances, who in considerable number fell victims to it during the whole period of its prevalence. This fact is in unison with observations made in other diseases, as typhous fever, small-pox and scarlatina, and points out the direct personal interest, independently of philanthropic considerations, which the rich have in the well-being of their poorer neighbours. Casimir Perrier, the prime-minister and favourite of Louis Philippe, died from cholera. It has been said (Griffin's *Recollections of Cholera in Limerick—Lond. Med. Gaz.*, 1837–38), that although the rich are less liable to be attacked than the poor, yet that the disease is much more fatal among the former than the latter. Previous high health even is thought by some to constitute a similarly unfavourable prognosis; but general experience leads to a different conclusion. Pregnancy increases the danger of a fatal result. A sudden outset of the worst symptoms indicates speedy death ; such as excessive coldness of the body, blue skin or cyanosis, dyspnœa and a rapidly failing pulse. Dryness of the cornea and ecchymosis of the sclerotica were indexes of certain death. They who discharged reddish-coloured serum, or had "port-wine stools," hardly ever recovered. Coma or delirium coming on before reaction were almost always mortal signs. Cessation of the vomiting, purging, and cramps, favourable signs in the first stage of confirmed cholera, are of bad omen in collapse without reaction. Unappeasable thirst is a very bad sign.

A singular, and, to those who see it for the first time, misleading appearance, is exhibited in some of the cases of those who pass into consecutive fever. It is hard to conceive, says Dr. Griffin (*op. cit.*), how human life could come to its close in a more quiet way than it did with some who lay down and died ; as if, a little wearied, they were only enjoying a refreshing slumber. "This treacherous end was slow of approach, and had its forewarnings. A beautiful blush first appeared on the cheek, which the day before was of a corpse-like paleness ; there was a constant drowsiness or disposition to sleep, and when addressed, the patient usually answered, perhaps with a smile, but always with a happy expression of countenance, 'I'm finely, sir.' On the succeeding day he was usually found in a still sounder sleep ; but when roused up and questioned, returned the same reply. On the third day he was snoring ; it was harder to awaken him, and though yet muttering 'finely, sir!' to all inquiries, there was an appearance of stupor and wandering about him. On the fourth morning he was generally found insensible."

Post-mortem Appearances. — These were of two kinds : — 1, the adventitious or occasional, though common ; 2, the peculiar, and in a great measure pathognomonic. The first depended very much on predisposition to organic disease induced by climate, and its actual occurrence owing to personal habits prior to the coming on of cholera.

The *lungs*, whose function is so much impaired, during the disease, as to have given rise to its being described, by some writers, under the title of *cholera asphyxia* or *asphyxia pestilentia*, were not attended with that uniformity, which might, from the frequent and dominant symptoms, have been expected. These organs, however, were frequently found engorged in

India, and in different parts of Europe, and not seldom flaccid and collapsed. Dr. Craigie, of Edinburgh, describes a doughy state of the centre of the lungs, in some cases. This lesion, in connexion with bronchial induration, which was also noticed by him, explains, he thinks, the difficult and oppressed respiration which precedes the fatal event.

The appearances of the *digestive canal* were various: in some instances dilatation and contraction, as also intus-susception, were met with; and in regard to colour of the mucous membrane, there was no uniformity. Mr. Scott asserts that in some cases the whole intestinal tube presented a blanched appearance, both externally and internally; and at Moscow, both the stomach and bowels were in the like state; while, on the other hand, the French pathologists describe the surface of the mucous membrane, particularly of the small intestine, to have been deeply ingested, of a rose or violet tint, and with various ramifications and arborizations. Similar testimony is borne as the result of post-mortem inspections in Great Britain. Abrasion and pulpiness of the gastro-intestinal mucous surface was occasionally met with.

A congested and lacerable state of the *liver*, together with an impermeable *gall-duct*, and the *gall-bladder* filled with viscid, pitchy bile, or nearly empty, are mentioned in India; while in France we are told, that any lesion of the liver, spleen, and pancreas, should be regarded as accidental.

By Dr. Craigie, the *kidneys* are described to be the organs which were most frequently and remarkably diseased in both sexes, and at all ages. In these there were witnessed almost every gradation and variety of the morbid changes delineated by Dr. Bright. Similar observations were made by Dr Mackintosh. The French pathologists notice ingestion of the kidneys with black blood, and that a creamy, viscid matter could be squeezed from the *tubuli uriniferi*.

No visible lesion was observed in the *brain and spinal marrow*, or their membranes; except we regard as such venous injection with black viscid blood; and patches at the posterior part of the cerebral hemispheres of sanguineous infiltration. The nerves in connexion with the encephalo-spinal centre were, like it, quite sound. By Mackintosh and some others, alterations in the tissue of the ganglions and plexus of the sympathetic were pointed out; but these lesions were not of general, nor even common occurrence.

But the stage of collapse survived and that of reaction or of cholera fever begun, then there ensued new and diversified disturbances of function; and if the patient died afterwards there were found organic changes of a different appearance, and, we may believe, character also, from those occurring in the early and sinking period, ending in collapse. There was more capillary injection, more inflammation of the tissues, and particularly of the gastric intestinal mucous membrane, and often of the brain or its meninges. In fine, as the disease approximated to the character of typhous or remittent fever so did the state of the organs correspond with that observed in these diseases.

Most of the symptoms of disorder of the functions of the brain and other parts of the nervous system, are referable to venous congestion or accumulation of blood in the veins of the organs, the temporary influence of which was manifested in the often prompt restoration to the healthy state, after reaction had supervened by the arrest of the intestinal and cutaneous excitation and flow.

The distinctive and pathognomonic lesions in epidemic cholera, if we can as yet justifiably admit such, are exhibited in a *psorenterie*, or follicular eruption, extending over the whole mucous membrane of the small intestines, and an exudation consisting of a layer of coagulable lymph, in the same part, and sometimes in the stomach and colon. Sometimes the eruption consisted of small miliary vesicles, white and semi-transparent, at other times of true patches with a dark and depressed centre, and seemingly filled with dense matter. In some instances in which the cholera had reached its last or typhoid stage, that following febrile reaction, true ulcerated patches were met with. The alterations were not confined to the glands of Peyer and Brunner, though often most marked in them.

Dr. Wm. E. Horner, of the University of Pennsylvania, whose patience in investigating healthy and morbid structure is made the more valuable to anatomical science by his accuracy in describing, has given greater extension, and at the same time precision, to the views of the French pathologists, whose observations I have just placed before you. In two papers which appeared in the two successive numbers of volume sixteen of the *American Journal of Medical Sciences*, Dr. Horner assigns the following morbid anatomical characters to Asiatic (*epidemic*) cholera, as far as relates to the alimentary canal:—

"*First.* A copious vesicular eruption, entirely distinct from the tumefaction of villi, muciparous follicles or glands, and which pervades the whole canal.

"*Second.* A lining membrane of coagulated lymph, which exists in the small intestines at least, if not in the stomach and colon also, and resembles in texture and mode of adhesion the membrane of croup.

"*Third.* Vascular derangements and phenomena, which are confined almost exclusively, if not entirely, to the venous system.

"*Fourth.* An exfoliation of the epidermic and venous lining of the alimentary canal, whereby the extremities of the venous system are denuded and left patulous."

M. Dalmas (*Diction. de Med.*) describes three degrees and stages of intestinal eruption; the first is of small, whitish, semi-transparent vesicles disseminated over the surface of all the small intestines, but neither numerous nor confluent. In the second degree are seen true white follicles, which, M. Dalmas thinks, are the glands of Brunner morbidly enlarged. The third degree of eruptive development is ulcerous inflammation of these follicles. The eruption is seen, according to this writer, in about two out of five cases of cholera; and from this showing can scarcely be considered pathognomonic; the less so as a similar eruption exists in typhoid fever and in phthisis.

A layer of coagulable lymph on the internal surface of the digestive canal is represented to be diagnostic of cholera. It had been noticed by Corbyn in India, and by Girardin and Gaimard in Russia, and subsequently by Dr. Horner.

The presence of a whitish or muddy-coloured fluid in the intestines was also a distinctive feature of the *post-mortem* appearances in the bodies of those dead in the collapse of cholera. In some few instances no fluid of this kind was found in the canal; but it had been discharged freely both upwards and downwards; and its secretion or exudation may be regarded as one of the characteristics of the disease. It was generally watery, with shreds and patches, and coloured so as to resemble rice-water. In addition to this fluid there was generally more tenacious matter, erroneously

called mucus, adherent to the mucous membrane, and requiring some effort to scrape it off. Sometimes, this latter was as hard as coagulated albumen, or curd; and, although of a white colour, it received in spots a tinge of pink, owing to the vascular (venous) congestion beneath. The thick mucus seemed to be produced first, and then the thin fluid. (Fergus — *Hist. and Treat. of Malignant Cholera at Vienna.*) I have mentioned, before, these fluids among the occasional yet common appearances in cholera subjects. It would probably be more correct to describe them, as I now do, as part of the distinctive characters of the disease; the exudation on the mucous surface, and the more fluid exhalation in the intestinal cavity, bearing the same relation to the morbid state of the gastro-intestinal mucous membrane in cholera that the exudation on the pleura and peritoneum or effusion into the cavity of the chest and abdomen do in pleurisy and peritonitis; and the plastic exudation on the mucous membrane of the larynx and trachea in croup. The flaky particles mixed with the serum consist of albumen and some fibrin. The thick, exuded matter coating the intestine was in relation with, and, we may believe, a product of the glands of the intestines.

The vesicular eruption noticed by Dr. Horner was chiefly seen at the base of the *vulvulæ conniventes:* the vesicles are there closely disseminated, with scarcely an interval between them: but they decrease in frequency towards the summit of the *valvulæ.*

Another and almost invariable appearance in the bodies of those who died in the first period of cholera, and before reaction had taken place, was contraction of the bladder, "so as to be as small and dense as a virgin uterus," and its containing no urine, because receiving none from the kidneys. But even to this there are exceptions, few, it is true, in which there was an excessive secretion of urine, which seemed to take the place of the discharges from the bowels. (*Am. Journ. Med. Sciences*, vol. xi., pp. 151–2.)

Changes in the Fluids in Cholera. — Chemistry has come in aid of anatomy to enlighten us on the pathology of cholera. The first attempt in this way, by Dr. Hermann of Moscow, was not, however, successful.

Subsequent experiments made by Dr. Foy at Warsaw, MM. Rose and Wittflok at Berlin, Dr. O'Shaughnessy at London, MM. Lecanu and Rayer at Paris, enable us to reach more diversified yet more accurate conclusions than those of the Moscow professor. I shall place before you the chief points.

Certain physical and chemical changes in the blood are in a great measure peculiar to epidemic cholera. The first and most striking to the observer is the blackness of the blood, which is of a shining appearance, and when spread on a white surface resembles in colour the darkest cherry; it has also been designated as tarry, thick, ropy, syrupy. It fills the right sides of the heart and the great veins, and is found of the same character in the left side and in the arch of the aorta and some of the large arteries. It is less serous than common, and does not readily colour the inner surface of the bloodvessels, nor is it reddened so soon by exposure to the air as healthy blood is. The veins and their ramifying capillaries, even on the membranes, contained as much blood after death as during life, and blood could be drawn almost as readily from a vein in the former as in the latter state.

The blood of cholera patients is dark or black, and viscous, with a shining

appearance like that of varnish. It is less readily oxygenated, when drawn and exposed to the air in an open vessel, than blood most commonly is. It is also less readily reddened under the serum. *The blood in cholera contains much less water and saline matters and more albumen than common or healthy blood.* The chief changes, therefore, in this fluid during an attack of the disease is in its serum, by the escape of its water and saline ingredients, particularly the alkaline carbonates. There is also notable diminution in the quantity of fibrin. The proportion of albumen, on the other hand, is greatly increased: Dr. O'Shaughnessy found that there were 133 in place of 78 parts, the healthy standard in 1000 parts. The blood-corpuscles fall below the average. Urea was detected in the serum of the blood of some cholera patients who had secreted very little urine for several days. Urea has also been found in the bile of cholera subjects.

The fluid ejected from the bowels was found to contain carbonate, acetate, muriate, phosphate, and sulphate of soda, coagulable lymph, or a compound of albumen and fibrin, some mucus and water. The sediment in the evacuations in cholera is composed, according to Dr. Bohn of Berlin, of fragments of the epithelium of the mucous membrane of the intestines.

Among the phenomena noticed in some of those dead of cholera, were, automatic muscular movements, and a sudden increase of the temperature of the body after death. The arms, extended at the moment of death, have afterwards gradually been brought to the body, and the hands, at the same time, performed a movement of pronation, as if they were really under the influence of volition. In one instance the temperature of the body two hours after death was noted at 105° F. (*Lancet*, 1832.) Commonly the extra heat is lost when cadaveric rigidity comes on. For a great deal of new and curious information on both these points, unconnected with cholera, however, I would refer you to the papers of Dr. Bennet Dowler, of New Orleans, which contain the results of experiments, both novel and ingenious, conducted by this gentleman himself.*

Special Pathology of Cholera. — After the detail of the symptoms of cholera, and anatomical lesions of those who have died of the disease, it is natural to inquire into its special pathology, or the intimate cause and nature of the changes which constitute it. The first and most abiding impression is, that cholera is caused by a poison which finds entrance into the blood, and through it affects the nervous system, and the tissues and organs. But like other poisons, the transmission of its noxious effects through the animal economy may take place at the same time through the nerves — and by its impression on the cerebro-spinal axis, or some part of it, give rise to symptoms of muscular disorder.

There are two series of functional disorders which it is worth our while to note on this occasion, as making up collectively the group that represents cholera. The first, consisting of thirst, nausea, vomiting, eructations, frequent desire to go to stool, diarrhœa, constriction, as if of a bar on the hypochondrium, heat of the stomach and intestines, pains, colic, also, tenderness of the epigastric, umbilical, and lumbar regions on pressure, increased pulsation of the cæliac trunk or of the aorta, are abdominal, and

* Experimental Researches upon Febrile Carolicity, both before and after Death. *Post-Mortem* Fever.—*West. Journ. Med. and Surgery*, June and October, 1844. Experimental Researches on the *Post-Mortem* Contractility of the Muscles, with Observations on the Reflex Theory.

manifest profound disorder of the digestive system. The other series, which includes cramps, convulsive movements, headache, a sense of constriction in the temporal region, painful rigidity and reddish injection of the eyelids, oppression and painful constriction of the base of the chest, disposition to syncope on almost the slightest movement, trembling of the limbs, rapid exhaustion of the strength, slowness of pulse, cessation almost of the arterial beats, coldness of the body, of the tongue, and breast, feeble and slow respiratory movements, loss of elasticity of the skin, and its bluish hue, and death by asphyxia, — all these are effects of derangements of nervous centres, and particularly of the spinal marrow. These symptoms belong almost entirely to innervation, muscular motion, respiration, circulation, and calorification, — functions more especially under the government of the spinal marrow. Partial destruction of this axis, particularly the upper portion, as in the experiments on animals, is followed by diminished respiration and circulation, and animal heat; and the animal perishes after a while in a state of asphyxia analogous to the blue stage of cholera. In irritation or inflammation, on the other hand, of the medulla spinalis, we find all the symptoms of cholera of the second series, or those which are not abdominal, such as cramps and convulsive movements in one person, — oppression, and retarded circulation, imperfect hematosis, in another; palpitations, syncope, constriction of the chest, in a third, &c.

But, before proceeding any farther with this comparison, or attempting to draw any conclusion from it, we must bear in mind the fact, that one of these two series of symptoms may be entirely or nearly wanting in some patients with cholera. M. Roche, whose course of illustration and argument (*Dict. de Med. et de Chir. Pract.*, Art. *Gastro-Enterite*) I now follow, tells us, that he has seen this entire separation of the two series, and appeals to his brother practitioners of Paris as witnesses to similar facts.

In confirmation of the opinion, that cholera poison produces the group of symptoms indicative of the disorder of functions already detailed, we may refer to the histories of the effects of injections of poisonous substances into the veins, furnished in the experiments of MM. Magendie, Roulin, Gaspard, Gendrin, Bouillaud, &c. Among these, we note vomiting and diarrhœa; and when the animals on which the experiments were performed were opened, the gastro-intestinal mucous membrane was red and tumefied in its whole extent, and its follicles often enlarged. The symptoms indicative of lesion of the brain and spinal marrow were not less distinctly marked, but varying according as the poison was narcotic or irritant, or narcotic-acrid. Sometimes, also, ecchymoses on the heart and the kidneys were also seen.

Shall I cite, in confirmation of this view, the experiments made by Dr. Namias, at Venice, during the prevalence of the cholera in that city in 1833. He was desirous of ascertaining, whether the blood of cholera patients possessed properties injurious to life. With this view he took a portion of the blood from the heart of a patient dead of cholera; and through an incision of the skin he inserted it into the subcutaneous cellular tissue of a large rabbit. The animal seemed to suffer but little from the operation; but five days afterwards it became dejected, its evacuations were less solid, appearances of white dejections were observed on the ground, and the animal died on the tenth day. The blood in the heart

was found black and grumous, but without any particular lesion of the organs. The blood of this rabbit introduced under the skin of another, caused its death in twenty-four hours. These experiments were several times repeated with the same results. In contrast with these effects were the absence of any positive or deleterious ones ensuing on the introduction of the black, liquid, fetid blood of a person dead from intestinal gangrene, under the skin of a rabbit. The animal health was not at all affected by it. A similar experiment with the blood of an individual who had died of aneurism gave the same result. Experiments of this nature require to be repeated and diversified before we can form positive deductions from them.

I have frequently had occasion, in my lectures on Toxicology, as part of those on Medical Jurisprudence, to point out the close resemblance in many, indeed most of the chief and alarming symptoms of cholera and those caused by certain poisons. The same violent action is set up in the secretors and depurators to free the system from the deleterious agent in the latter, as there is in cholera; and of these the chief apparatus thus inordinately excited, in both, is the digestive. (See *Christison*, passim.)

Different from the pathological views of cholera hitherto presented, and additionally illustrative of the uncertainty which still besets the subject, is the opinion of Mr. Rankin, Assistant Surgeon to the Calcutta General Hospital, given in a letter which he addressed, under date of September 15th, 1843, to the Medical Board of Bengal. Mr. Rankin believes—

"1st. That it is in the absorbent system the seat of the disease must be sought.

"2d. That obstruction, from whatever cause, takes place in the absorbents, interrupting the passage of the chyle into the circulation.

"3d. That the chyle so interrupted in its progress to the receptaculum chyli and thoracic duct, is regurgitated into the digestive canal; and

"4th. That the so-called 'rice-water' fluid ejected from the stomach and bowels is neither more nor less than the chyle so regurgitated, and which ought to have passed into the circulation, as well for the purposes of nutrition, &c., as to maintain the blood in a sufficiently dilute state for capillary circulation, and the sudden interruption of which necessary supply fully accounts for all the phenomena of cholera—for the almost immediate and rapid collapse, as well as for the subsequent capillary obstruction so conspicuous in those lingering cases where so much depends on the cautious attention and judgment of the physician."

Without indulging in elaborate comment on this speculation, we may be allowed to doubt its applicableness to the various phenomena of the disease, among which the immense loss of serum is so conspicuous; a loss that is not a part of the regurgitation of chyle.

Mortality.—It will be impossible to have accurate ideas of the real value of the remedies, and treatment in general, in cholera, unless we know the ratio of mortality from the disease, and the modifying influence depending on locality, season, and, above all, the duration of the epidemic. When we learn that, in nearly all the countries in which epidemic cholera has committed its ravages, the mortality has seldom been less than a third, and has sometimes amounted to half of the whole number attacked, we might at first be tempted to declare the nullity of medicine, or, at any rate, the little advantage of one mode of treatment over another. In India, out of a population of forty millions, it has been estimated that the deaths

were eighteen millions between 1817 and 1830, both inclusive. But we soon recover from this gloomy skepticism on learning that, without medical treatment, the vast majority of those attacked with cholera die, and that if medical means be resorted to in the first, forming or diarrhœal stage, *cholerine*, a correspondingly large majority of those who are thus attacked can be saved; and finally, that under regular treatment, even of a diversified nature, many survive who would otherwise have invariably perished. If all the cases of every degree in which medicine has been administered were recorded, the mortality would not be alarming. Dr. Taylor of Bombay gives the following return:—Medicine administered to 7450: of whom died, 441. Being a proportion of nearly six to a hundred. It is stated in the Report of the Medical Board at Bombay, that there is reason to believe that of 1294 cases which received no medical assistance, every individual perished; and, it is added, that it is not ascertained that any case has recovered in which medicine has not been administered. Now, although we may not receive this assertion in its literal extent, since undoubtedly out of a thousand persons attacked with cholera in almost any part of the world, some few will struggle through the disease, by the unaided powers of nature, yet it is in the main correct, and gives additional force to the experience of an opposite course which I am about to narrate. According to the documents collected by the Madras Medical Board, the number of deaths in the army of that presidency during the year 1818 and four subsequent years, was 4,430, of which 695 occurred among the European troops, and 3,735 among the sepoys. The number attacked was 19,494, namely, 3,664 Europeans, and 15,830 natives. The average strength of the army during the period included in the reports being 10,112 Europeans, and 73,254 natives, it follows that, in five years, $23\frac{1}{3}$ *per cent.* of the troops were attacked, and that of these $22\frac{3}{4}$ *per cent.* were carried off, or $5\frac{1}{4}$ *per cent.* of the whole army. Of the natives, 45 *per cent.* died. March, April, and May, are the months in which the disease generally prevails at Calcutta, but May is much the most fatal. These statements, though sufficiently distressing, are still a proud monument to the skill of the medical men employed, and to medical science in general.

Subsequently, for the six years ending 1837, Dr. Stewart (*Report of the Committee on the Medical Topography of India*) estimates the mortality of the Hindoos from cholera, at 1·26 *per cent.* of the entire population of Calcutta; of the Mahomedans, at 0·66 *per cent.* In the seven years, 1832–8, 15,204 died of cholera out of about 157,000 Hindoos; and 2911, out of 60,000 Mussulmans in Calcutta. Of the 18,115 deaths, 8135 occurred in the months of March, April, and May; 2831 in June, July, August; 4051 in September, October, November; 1586 in December; 696 in January. The smallest number of deaths from cholera occurs in the month of January, the greatest number (3180) in the month of April, the middle of the *hot and dry season in Bengal*, when the temperature rises gradually from 80° to about 90–95° in the shade.

The number attacked in Moscow, from September, 1830, to January of the following year, was 8130. In the small town of Redischeft, of 800 sick, Dr. Reimann states that 700 died in one week. Taking the whole number attacked, it is said that the proportionate number of deaths were, at Astracan, as one to three; in the government of Kertroma, a fraction less; in that of Nishni Novogorod, one-half; in Casan and

Moscow, as three to five; and in Penza, the country of the Don Cossacs, as two to three. In Jassy (Moldavia) the deaths were more than 6000 in a population of 27,000. In the summer of 1831 the mortality at St. Petersburg, Riga, Mittau, Limberg, and Brody, according to the Berlin Gazette, was about one-half, while at Dantzig, Elbing, and Posen, it was about two-thirds of the whole number attacked. (*Dr. Robert Williams, op. cit.*) In Archangel the deaths were 1200 in a population of 19,000. In Dantzig the mortality was more frightful even than that just stated. The whole number of sick was 1387, of whom 1010 perished, in a population of 72,000 persons. It was in this city that the most strenuous and systematic exertions, under the direction of the government, aided by the military, were made, to enforce a rigid system of quarantine, in order to keep out the disease. The result was a commentary on the absurdity,—ought we not to say, in reference to all its effects, the wickedness of such an attempt.

The period of the season greatly influences the mortality; and the proportion of deaths to recoveries observed in Moscow, at the various phases of the disease, has been nearly that of all Europe. At the first onset nine-tenths of the number attacked perished; then seven-eighths, and the proportion of deaths forms a gradually decreasing series of five-sixths, three-fourths, a half, a third, till towards the close of the season, a large proportion of those attacked recover. The uniformity of this law, although the proportions may differ, in every country attacked by cholera, whether India, China, Europe, or America, is extremely remarkable. It may be added, that the influence of locality was also manifested at Moscow, as the greatest number of deaths occurred in the marshy sections bordering on the Moskwa and Kanal. These rivers frequently overflow to such a degree that the water reaches the lower windows of the houses in the neighbourhood.

In Hungary, cholera proved fatal to 240,000 persons, during its prevalence from July, 1831, to April, 1832.

In Paris, the mortality from cholera was 18,402, in a population of about 800,000 persons. In all France, the deaths in 1832, from this cause, were 95,000 and the cases 230,000. During the three years it lasted in Great Britain and Ireland, not more than 30,000 persons fell victims to it. In Berlin, the cases in 1831 were 2271, deaths 1426; in 1837, the cases were 3561, and deaths 2174. The period of the first attack was 46 days; that of the latter, 16 weeks. In Prussia generally, the estimated mortality among the sick of cholera was 58·6 *per cent.* of those attacked. In the city of Naples, with a population of about 330,000 persons, the number of cases from the second of October, 1836, to the last of January, 1837, were 9725; of which the deaths were 5293. In Naples, the greatest mortality was in the unhealthy districts, and among the poor and ill-fed inhabitants: at Genoa, with a population of 80,000 persons, the mortality was 2151 out of 4250 cases; and in Leghorn, with a population of 66,000, giving 2031 cases, the deaths were 1146.

In Sunderland, where the cholera first appeared in England, the number attacked, from the 26th October, 1831, to the middle of January, 1832, was 534, and the deaths 202, in a population of 40,735.

In Glasgow, from the 13th of February to the 11th of November, 1832, the number of deaths from cholera was 3005 out of 6208 persons attacked, in a population of 202,426. The greatest mortality was in the month of August, in which there were 1133 deaths.

In Quebec, with a population of 37,000 persons, the mortality from cholera during the period of attack, or from June 9 to September 2, was 2218. The number of cases not stated.

In Montreal, the mortality was rated at 3000, in a population about the same as Quebec.

In New York, with a population of 205,000, the cases of cholera were 5814, from the 4th of July to the 28th of August, 1832, of which the deaths were 2245. In 1834, in which year the disease re-appeared, the deaths were about 900.

In Philadelphia, in a population of 160,000, the cases of cholera were, during its period of invasion, from July 11, or mainly 28, to September 13, 1832, 2314—and the deaths, out of this number, 948.

In Cincinnati the mortality was 545, in a population, at the time, of 25,000; and in New Orleans 6000, in a population of 55,000.

Law of Recovery and Mortality in Cholera.—Mr. Farr, from 9372 registered cases in 1837, published by the Roman Board of Health, has constructed several tables illustrative of the chances of recovery and death in this disease.

One of these tables exhibited the numbers dying and recovering on each day after attack, and contained calculations from theoretical considerations, which closely approached the amounts derived from facts. The following table will show this more clearly:—

Out of one hundred constantly sick:

	Deaths.		Recoveries.	
	Observed.	Calculated.	Observed.	Calculated.
5th day . .	5·471	5·650	6.747	6.747
6th	5·684	5·056	8·295	7.929
7th	4·500	4·523	9·219	9·317

The following table expresses the probability of recovery and death during the first ten days after attack:—

Days.	Probability of Recovery.	Probability of death.
0	·422	·578
1	·542	·458
2	·668	·332
3	·729	·271
4	·763	·237
5	·791	·209
6	·821	·179
7	·843	·157
8	·862	·138
9	·873	·127
10	·883	·115

From the tables may be deduced the following problems:—viz., 1st, the mean duration of the disease; 2d, the mean future duration of the disease at any period; 3d, the probability of dying at any period of the disease.

The following table from different data presents the question somewhat differently:—

Table of the Probability of Recovery from the severer Attacks of Cholera, at the end of 12 *hours, and* 1, 2, *and* 3 *days.*

Cases.	To Recover.	To Die.	Probability of Recovery.	
0 hours 10000	5093	4907	·509 nearly	1 to 1
12 ... 9181	5093	4088	·555	1·3 . . 1
1 day 7616	5093	2523	·669	2 . . 1
2 ... 6793	5093	1700	·750	3 . . 1
3 ... 6291	5093	1198	·809	4 . . 1

These facts prove that, in cholera, the probability is generally not in favour of death; they also establish the importance of early treatment, for half the deaths happen in the first twenty-four hours. What the practitioner does, he should do quickly.

Comparative Mortality.—As regards the great mortality in cholera, we shall be less disposed to call it excessive, by comparison with that in other diseases, if we refer to the ratio of death in some of them. "In typhous fever, the inevitable mortality varies according to the virulence of the epidemic; among the poor, from one in ten to one in thirty-two; among the rich from one in five to one in twenty; being generally the same in the same epidemic. The mortality in the simply confluent small-pox is, according to Dr. Gregory of London, three in five, which is little short of that occurring in the collapse of cholera when judiciously treated. In the common description the mortality is one in four; and on the whole it has been computed that, out of every six persons who take small-pox in the natural way, one inevitably dies. (*Griffin, op. cit.*) In the *Statistical Reports*, &c., of the diseases among the British troops in the West Indies, I find, under the head of fevers, that the proportion of deaths to admissions in "yellow fevers (*Icterodes*)," is stated to be 1 in $1\frac{1}{4}$. Even in 'remittent fever' the proportionate mortality to the cases treated, was 1 to 8. On the western coast of Africa, as we learn from another report emanating from the same source, the deaths from remittent fever are nearly one-half the admissions, or in the proportion to the latter as of 1 to 2.

LECTURE XLIII.

DR. BELL.

SPECIAL PATHOLOGY OF CHOLERA—Poisoning of the blood and disorders of the nervous system, and secretions dependent on it.—TREATMENT OF CHOLERA—Difficulty of the subject from defective data—Almost certainty of death, unless medicine be given—Therapeutic indications—The sedative class of remedies most useful in cholera—Evidences of increased innervation—Increased glandular secretion—Indications of cure.—*Treatment of the diarrhœal stage*—Necessity of prompt attention to the first symptoms of irregular digestion—Mild purgatives, sometimes an emetic; laudanum; diluents; rest; moderate warmth—Case—Selection of purgatives.—*Treatment of Marked Cholera*—An emetic—Bloodletting—Sedative or contra-stimulant remedies—Calomel; its primary and sedative effect; is to be given in large doses, sometimes alone, often with a full dose of laudanum—Opium—Tartar Emetic—Ipecacuanha—Magnesia—Sub-acetate of lead—Sub-nitrate of bismuth—External sedatives—Warm, tepid, and cold baths—*Enemata*—Laudanum—Sub-acetate of lead—*Stimulants*—Alcohol injurious—Carbonate of ammonia—Spirits of turpentine—Camphor—Capsicum—Aqua ammoniæ—Camphorated ether—External stimulants—Blister—Cauterization of skin—Irritating liniments to spine—Dry vapour to skin—Advantages of dry friction—The hot bath.

NOTWITHSTANDING all the array of statistics of cholera, we are not in possession of the requisite data, from which to draw the proper deductions

respecting the results of any one plan of treatment, nor of course the most appropriate course to be pursued in future exigencies. Patients have not been classed, nor have specific returns been made of the different appearances of the epidemic and of its proportionate mildness or malignancy at these times. In another important particular, viz., in the hospital and other returns of cases and deaths of cholera, there has also been a great want of uniformity: the period of collapse, for instance, conveying different ideas to different writers. In approaching the subject of the treatment of cholera we seem, in our inquiries into dynamic forces and organic lesions, to forget, that there is, in each individual, an original, inherent, and constitutional power of resisting morbid influences — poisons or other destructive agencies,—which may be aided, but not increased, by medicinal means. At other times again, under similar circumstances of violence and assault, this power is insufficient, even with the aid of all the efforts of art. But as these circumstances vary often in a very short period, we must endeavour to seize the most favourable juncture, ere the powers of life have been too fiercely assailed. Thus, a little assistance on the inception of a disease will enable the constitution to throw it off; the same on the following day will have more doubtful efficacy; and on the third, will be utterly unavailing. There are some in whom this constitutional power of resistance is so feeble that they almost of necessity sink under any epidemic disease. They belong to the class of the weak, the sickly, and the diseased; but not to these alone, for sometimes the robust and those of full habit are found to be equally unable to resist the morbid influence. It has been noticed, in more than one place in which epidemic cholera prevailed, that, although the better classes of the community were less liable to an attack of cholera, yet, if once they did sicken, they were more apt to die than others less favourably situated.

In estimating the value of medical treatment in cholera, such as has been furnished in different parts of the world, and with the results of which we are in a measure acquainted, we ought first to ascertain what is the amount of mortality in cases abandoned to nature. At its onset the disease is always violent and causes death in a large proportion of the persons attacked; and this is brought and admitted as an argument against the curative power of medicine. But the last is not a legitimate sequence of the first proposition. In the beginning of an epidemic, people are ignorant of its prodromes, do not know the real constructions to be put on their pains and disorders, think these are slight, and either fail to procure medical assistance at all, or send for it when the citadel of life is sapped and about to yield. The true data are yet to be furnished on this point, to enable us to ascertain what, if any, is the difference in the success of the treatment of those who are seized at the beginning, of those in the middle, and those at the decline of an epidemic, under similar circumstances of age, constitution, habits, and duration of premonitory symptoms.

I have already stated to you some facts, coming under the observation of East India physicians, which place medical treatment and abandonment to nature in strong contrast, and entirely to the advantage of the former. We may, on this part of our subject, lay down the following proposition, which is almost entitled to be called the expression of a law of cholera. It is thus enounced by Dr. Griffin (*op. cit.*) :—"*That without medical treatment every person attacked with it will fall into collapse, although they may not eventually die; and that such as recover do not do so by an arrest or*

cessation of the disease, but by struggling through and outliving all its stages." In estimating, therefore, the probable chances of recovery in all cases left to nature, we may regard them as collapse, the frightful mortality of which is everywhere acknowledged. Sometimes it has amounted to nineteen out of twenty cases, and under the most successful treatment, furnished in the most authentic reports of large hospitals, never proving less than seven in ten. But they who are allowed to run the course of the disease without interruption by medicine, are not in the same category with those treated for collapse; for, even if the former survive in a small proportion, it must be after struggling through the period of collapse into consecutive or cholera fever, or the stage of reaction, in which, if unassisted, they will die. It is, therefore, correct to abide by the opinion of some of the East India physicians, viz., that unless medical treatment be rendered to persons attacked with regularly formed cholera, they will almost inevitably die.

Before I proceed to describe the details of treatment best adapted to the cure of cholera, I will premise the chief therapeutic indications. Even although pathologists have failed to prove the presence of inflammation in any one organ or apparatus, in a majority of cases of cholera, yet the evidence is abundantly strong to show that often the lungs are great sufferers from pneumonic congestion, and that the digestive tube, often the seat of inflammation, is almost always that of irritation of its glandular or secretory apparatus. The venous congestion which takes place in nearly all the organs in distinctly formed cholera, but which is most manifest during the stage of collapse, although often readily removed, may and does complicate the state of things during the period of reaction or of consecutive fever; and the danger in this latter is greatly increased by inflammatory congestion of some important organ—the brain, the lungs, or the intestines. If we look at what passes in the nervous system we shall find symptoms indicative of increased and excited innervation; a craving for sedatives, and especially for cold drinks; an intolerance and dislike of stimulants. It is true, that this innervation is not equally active in all the organs of the economy; but, as in the case of the bloodvessel system, diminished activity in one system only or region augments irritation and danger from accumulated action in another: organic life both in the skin and lungs is weakened; the former being cold, the latter not performing its customary depuration of carbonic acid. These and other phenomena of apparent debility and weakened nervous power result from the singular severance of function at this time of the nervous and vascular systems in cholera. The two systems, as I have already said, do not act synchronously with each other. "They are not both torpid or dead for the time being, as in syncope and some analogous states of the body; nor are they both active and morbidly excited, as in the phlegmasiæ and inflammatory fever. A strong evidence, and at the same time effect of this interrupted harmony of action between the nervous and vascular systems, is deficient calorification. This process requires both innervation and capillary circulation—the former is a prime agent, but it is incompetent to produce the effect without the latter." (*Op. cit.*, 128.)

Glandular secretions of all kinds, as of saliva, bile, semen, and those from the intestines, are often augmented to a great extent under general as well as partial nervous excitement; and hence, I am disposed to regard the immense outpouring from the intestines as the result of such excite-

ment, and by its very excess causing a diminution or entire suspension of other secretions. The predisposition once acquired, any irritant to the digestive canal is sufficient to excite thus morbidly its secretors; and we have, in consequence, vomiting and purging in alarming excess. Sedation of the skin from cold, by accumulating sensibility in the interior, indirectly produces the same effect. If we place cholera on the same line with the eruptive fevers, as the appearance frequently observed in the skin and the *psorenterie* or eruption on the gastro-intestinal surface, noticed by MM. Serres and Nonat and by Dr. Horner, seem to entitle us to do so, we can the more readily understand why there should be disordered and morbidly excited innervation in cholera, as there is so generally in all the exanthemata.

Proceeding to the administration of remedial means under these views, our chief object, at first, will be to remove all irritants of the morbidly sensitive nervous system, whether applied to the brain through the senses, or to the ganglionic system through the stomach and bowels, or the skin. In fact, it matters little at the moment, whether there be indigestible food, a heavy supper, for example, in the digestive canal, or a changed state of sensibility in its mucous membrane, by which common and healthy food irritates it. In either case the phenomena are nearly the same, and the mode of relief will not be essentially different. In the first case, it is true, the call will seem to be more urgent for the expulsion of the offending matters; in the latter, for altering or modifying the morbid sensibility, either by direct impression, or by diffusing and equalising sensation in all parts of the economy. So far the problem for solution is comparatively simple, and, happily, it is the one presented to us in the preliminary or forming stage of cholera, *cholerine* of the French writers, and the symptoms of which have been already described.

Treatment of the Diarrhœal Stage or of Cholerine.—The patient, for so he ought to be regarded and addressed at this time, even although his own judgment be faulty as to his real state, will generally exhibit an atony of the skin, with some irritation of the bowels. The two-fold indication here will be, to remove the former by genial warmth, and the latter by carrying off, by mild purgatives, the offending irritant. Our treatment should be, at this time, precisely identical with that in common diarrhœa, when we are very desirous of shortening its duration. We direct the patient to confine himself to the house, and still better to his bed, as the best means of securing a uniform temperature of the skin; and by mere rest, also, of abating the intestinal discharges. We prescribe, at the same time, a laxative, with a view of removing any offending matters, such as food, either originally indigestible, or still, after the full period, indigested, which by their stay irritate the gastro-intestinal surface. Nausea and occasional pains will be obviated by some slight aromatic, taken either before or after the administration of a laxative. The latter may consist of a few grains of calomel and rhubarb, or of castor oil with a drachm of oil of turpentine; or you may give rhubarb and magnesia with a little ginger, or blue mass with rhubarb, in pills. Of the aromatic class, I should use tincture of camphor, in doses of five or six drops, on a lump of sugar, repeated every hour or so, or cajeput oil in doses of two or three to five drops, taken on sugar or in emulsion. In the value of the first I have great faith, from full experience with it both in this and in analogous affections of common or sporadic occurrence. With the latter I am unac-

quainted, except through the favourable reports of German and some British physicians. During the operation of the laxative, and after it has ceased, simple diluent drinks, such as barley, rice, or toast water, should be freely taken.

This treatment will be found adapted to a great proportion of patients in the first, or forming stage of cholera, who, if they neglect themselves at the time, will, in large majority, sink victims to the disease, in its more advanced and less curable stages. If the symptoms continue after the evacuation of the bowels by medicine; or if there be confusion of head, and increase or persistence of cramps of the legs, with a pulse somewhat full, the safer practice will be to draw blood from the arm, to the extent of ten to twelve ounces, and even more if necessary to procure manifest relaxation; and then to give opium in a dose of a grain, or camphor-water one ounce, with twenty drops of laudanum. Nausea and retching, with more or less pain distinctly referable to the stomach, and following the recent introduction of food into this organ, will be best removed by a mild emetic, consisting of a few grains of ipecacuanha, or two tablespoonfuls of common salt in a half-pint tumblerful of warm water, the good effects of which extend beyond the mere removal, important as this is, of a now irritating substance in the stomach. Our great object, at this time, is to restore the lost balance of function; and, whilst bringing back the skin to its natural action, to restore the bowels to their healthy secretions. These indications will be often met by the patient going to bed, getting himself warm, and taking a draught or two of hot herb tea. The warm bath and friction are good adjuvants to the means already mentioned, as applicable to the forming or simple diarrhœal stage. If the prostration be considerable, at an early period after the coming on of the diarrhœa, it will be most prudent to give at once a full dose of laudanum, say thirty drops, by the mouth, or fifty by injection *per anum;* and afterwards, if the patient complains of disease in any particular region, to follow out the treatment already prescribed.

I know that exceptions have been taken to purgatives in the forming stage of cholera, and cases are recorded of their use being followed by hypercatharsis, vomiting and the worst features of the disease, terminating in death itself. Even where constipation had previously existed they have displayed these sinister effects. It is not easy, in cases of this nature, to be able to say how far the imminency of an attack coincided with the administration of purgatives, which may only have been not sufficient to ward it off, though possibly not instrumental in bringing it on. But the practical question is—Are they adequate to prevent the coming on of regularly formed cholera? In a majority of cases a mild purgative, given under the precautions already laid down, will, I believe, be found to do so. I may here introduce, in connexion with this subject, the outlines of a case, evidently one, I think, of choleric diarrhœa, treated by me in conformity with the views now inculcated. It serves at the same time to show the gradual manifestation of epidemical influence in a place some time before the outbreak of the disease in all its terrific characters. My patient, who had then charge of the rooms of the Philosophical Society, after having gone to bed one evening in the month of May, 1832, as well as usual, was awoke in the night with urgent desire to go to stool, which was often renewed, and barely allowed of his getting out of bed for the purpose. The discharges were profuse; resembling, as he expressed it,

gruel, and at another time he compared them to rice-water. The comparisons were his own, and not suggested by me, in questioning him about his symptoms and feelings. Some nausea and heat of the stomach accompanied the discharges, which were very exhausting. The tongue was white and loaded; pulse small, and rather frequent. He complained, also, of severe cramps in his legs. On visiting him by times in the morning after his attack, I had him bled to the extent of about twelve ounces, and directed rhubarb and calomel pills, the proportions not noted at the time; and after their operation in the evening I gave him a grain of opium combined with a drachm of carbonated magnesia. Under this treatment he was promptly restored, and passed through the period of the cholera in July, August, and September, without any inconvenience or complaint. I am partial to the combination of magnesia with opium, as the first and best effects of the latter are not interfered with, whilst its kindly operation on the stomach and intestines, in the correction of diarrhœa, is increased, and the tendency to subsequent costiveness and diminished renal secretion, in a good measure, obviated. In directing venesection in this case, I was not so much swayed by the choleric form of the disease, as by my knowledge, from former attendance, of the proneness of my patient to enteritis. His habit of body was spare: temperament, lymphatico-bilious.

In prescribing laxatives or mild purgatives in choleric diarrhœa, a preference should be given to those already indicated over the saline, and, *à fortiori*, over the resinous and drastic kinds, neither of which can be administered without danger. Failing to procure the desired relief in the forming stage, the patient is thrown into the second stage, or cholera proper. Sometimes this stage is very short, and the third or fatal stage, that of collapse, comes on with great rapidity.

Treatment of the Second Stage, or of Distinctly Marked Cholera.—Bearing in mind the fact, that by far the most powerful causes, both predisposing and exciting, are to be found in the diet of the persons attacked; and remembering the habits of those who are the most ready victims to the disease, as well as its great frequency and mortality in countries, the rural population of which has been compelled to use damaged or imperfectly matured grain, or vegetable productions of an indigestible nature, we can hardly doubt of the gastro-duodenal seat of cholera proper. The first symptoms—an uneasy constriction or cramp, deeply seated in the epigastric region, speedily followed by profuse vomiting and purging of watery fluids, would seem to show the duodenum to be the part more immediately affected. Farther corroboration of this view is furnished in the effects of poisonous substances and putrescent animal matter taken into the stomach. After a time, their ingestion is followed not only by vomiting, but by great prostration of strength, cold and clammy sweat, shrunken features, small and frequent pulse, and often violent spasms of the voluntary muscles.

In admitting this view of the immediate seat of the irritation which gives rise to vomiting and purging, we see a general coincidence between the epidemic or malignant, and the endemic cholera or cholera morbus, as we commonly designate it; and, in fact, the resemblance is in all essential features most striking, quite enough, at any rate, to induce us to infer from the treatment of the latter the remedies to be had recourse to in the former. In both cases we are left free still to admit, at the same

time, the influence of other organic and functional changes, viz., those on the skin and the respiratory mucous membrane, as also on the nervous system, all of which we know do, on occasions, give rise to great gastro-intestinal disorder. Solar heat long acting on the skin, a close, impure air on the lungs, and strong mental emotions on the nervous system, will each, severally, disturb, and even greatly disorder, the stomach and duodenum, as manifested by nausea, vomiting, and the discharge of bile. How much more readily will their morbid effects be evinced, if the gastro-intestinal surface be already irritated by indigestible substances, even without the additional agency of an epidemic constitution of the atmosphere.

It would have been more creditable to medical science if physicians had exhibited confidence in their actual knowledge of the endemic diseases with which they were, to a certain extent, familiar, as a basis for a critical examination of the epidemic cholera, rather than to have, in a measure, shut their eyes to all past experience, and allowed themselves to indulge in a course of empirical trials, which resulted as empiricism generally does result, in leaving behind a few, very few, available hints amidst a vast deal of absurd imaginings and mischievous practice. It is ever folly's chase when we run after a remedy, as *the* only means of cure, in place of devising a suitably methodical treatment from a careful observation of all the successive phenomena occurring naturally, and of the modifications to which they may be subjected by art.

In all the varieties of cholera, the copious discharge from the stomach and bowels, although an alarming symptom, is a means of relief set up by nature, or, less equivocally speaking, an effort of the suffering organ to abate the irritation and congestion which really constitute the disease, and which, so long as they last, are the true disturbing causes and, also, the sources of danger. Do we not act on this belief when a known poison has been swallowed? We are in no hurry to arrest the fluid discharges upwards and downwards, which are produced by the irritation of the poison on the mucous glands, but, on the contrary, encourage them by an emetic and an enema, and often a purge and the free use of diluents with a view of expelling all the offending substance. He would be liable to a severe rebuke who, on coming to a patient thus poisoned, should at once prescribe astringents and opiates, except as antidotes, with a view of stopping the temporary cholera. The duty of a physician under such circumstances is, to endeavour to expel the poison, to administer, if there be such, an antidote, and then to protect the suffering organ,—the digestive mucous surface—as far as inflammation is set up, from the consequences of the poisoning, and to abate and remove the sympathetic disorders in other and remote organs. If we were to suppose a somewhat different case, one in which the poison was introduced from the skin, or by a wound, and was not applied at all to the stomach and intestines, but yet these organs were affected with vomiting and purging, and subsequent inflammation, we should find, also, a resemblance between such a case and one of epidemic cholera occurring without the exciting cause of indigestible food; and if in the former, we still shape our measures to allay the morbid state of the digestive canal, without perplexing ourselves about the accidental fluid discharges, we may, in the latter, very well forego attempts to stop vomiting and purging irrespective of the condition of the parts from which these discharges take place.

In endemic cholera, or common cholera morbus, the symptoms and progress of the disease so nearly approximate to those of the epidemic cholera, that, without any strained inference, we should feel ourselves justifiable in having recourse to the treatment for the latter which experience had tested the efficacy of in the former. In neither of them is there time allowed for delay; but in neither is the exigency of the case so great as to justify every violent and desperate remedy which empiricism, quickened by fear, may suggest.

The discharges from the stomach and bowels, regarded as a means set up for the natural relief of the suffering organs, may properly be at first encouraged until the irritating cause, whether it be indigestible food or noxious drinks, or the remains of a former and imperfect digestion in the ileo-cæcal portion, is removed; or the congestive condition of the digestive mucous surface is abated. I have already mentioned the prominent parts of treatment in common cholera morbus; and now, after a careful survey of all that has been written on the subject of the therapeutic management of epidemic cholera, I feel that I cannot do better than recommend the adoption, in its main features, of this treatment, for the frightful disease which, at present, engages our attention.

We begin then with an emetic, with a view, not only of procuring, by this means, the discharge of offending matters from the stomach, but, also, of bringing about a healthier secretion from this organ, as well as from the duodenum, and through this latter of relaxing the constriction of the gall duct, by which, in the opinion of some writers, the disease is mainly caused. Salutary reaction in the capillary circulation, so much needed in cholera, often follows the operation of an emetic, which, in its secondary effect, contributes to remove existing irritation of the nervous system and to procure quietness and sleep.

I can testify, from personal observation, to the good effects of an emetic of twenty grains of ipecacuanha in cases of cholera, in which there was vomiting and purging, but absence of bile in the matters discharged—extremities cold and clammy, pulse small, respiration laborious, eyes suffused. The emetic procured a discharge of bile and arrested at once the purging, restored warmth to the skin and activity to the pulse. In one case, in which there was imminent danger of collapse, with most harassing and exhausting efforts at vomiting and purging, and a discharge of a turbid fluid, laudanum, in a dose of sixty drops, having been promptly rejected, as camphor mixture with bicarbonate of soda in divided doses had been before, I gave the Russian vomit of salt and water, in the proportion of two tablespoonfuls of the salt to a half-pint of water. The effect was a speedy ejection of the contents of the stomach in two efforts; subsequent composure of this organ; general quietness and a refreshing sleep, from which the patient awoke in the morning entirely relieved, and in fact convalescent. In Paris, great faith was placed in the virtues of ipecacuanha, as an emetic. Testimony of a favourable nature is furnished also of the curative powers of tartar emetic, in doses of two or three grains; but this was given with a view to its producing effects additional to, and, in a measure, independent of those from vomiting, as I shall soon explain. Mustard in the dose of a tablespoonful had also its advocates.

Tartar emetic was employed in several countries (India and in different parts of Europe) in which cholera prevailed, as a sedative or contra-stimulant remedy. When frequently repeated, it was found to operate in the

same way as on the phlegmasiæ, viz., by abating the violence of the symptoms, but without causing evacuations. A good measure of the propriety of its use in the disease, was a prolongation of the periods of suspension of vomiting. The most accurate report which I have seen of the treatment by potassio-tartrate of antimony is that published by Mr. Longford of Manchester. He administered it in a dose of half a grain frequently repeated, with toast and water, or whey, *ad libitum*, prohibiting all heat and friction. (*Med. Chir. Rev.*, Jan. 1834.)

Let us, however, fix our attention on the first step of the treatment of cholera, the administration of an emetic. We are to aid its operation, and contribute to meet the primary indication of subduing irritation, by the free use, at the same time, of diluents, such as of warm water or other bland fluid.

If not simultaneously with the administration of an emetic, at least immediately after its operation, it will be consistent therapeutics to have recourse to enemata of warm salt and water, with the hope of relieving the lower bowels of any irritating matters remaining in them, and of giving rise to new and healthy secretory action in these parts, as well as of restoring, by sympathetic action, excitement to the cutaneous functions. By this means, a series of actions is begun in the lower portion of the digestive canal of an analogous kind to that induced by an emetic in the upper. Some deem it advisable, under circumstances of great depression, and where it is believed that the colon has not yet been entirely emptied of its fecal contents, to use a terebinthinate injection; and the success has, in cases, corresponded with the intentions of those who directed this kind of medication. In any case after mere stimulating enemata, those of simple water will be had recourse to advantageously, provided the more active ones are not followed by a speedy relief of the urgent symptoms.

When moderate reaction is produced by these means and no urgent morbid symptoms are present, we may very properly follow the advice of the French Academy,—to rest satisfied as spectators; ever remembering one important precaution through the whole disease, viz., not to allow the patient to change his recumbent for any other posture. The least muscular effort, as in rising in the bed, is always exhausting, and has been fatal.

Guided by that which some consider the leading indication in the treatment of cholera, viz., to relax the spasm of the gall duct, and to procure a free evacuation of bile from this organ, and its discharge from the intestines, active purging, and even accompanying emesis, have been recommended. To a certain extent these results are obtained by the use of ipecacuanha and tartar emetic followed by calomel; but still more decided and even violent medication of an emetico-cathartic nature has been had recourse to by prescribing croton oil in large doses. Dr. McGregor, surgeon in the East India army, and author of a recent work on the diseases of soldiers in the north-western provinces of India, relies with entire confidence, in the treatment of cholera, on croton oil and opium. Of the former he gives five drops, and of the latter three to five grains. He tells us: "If no blood can be obtained I give the following draught immediately: ℞. Croton, gtt. v.; Tinct. hyosc. dr. i.; opii (hill,) gr. v. M. ut fiat haustus. If the spasms remain, and free vomiting does not succeed, the following pills are administered: ℞. opii (hill,) gr. iij.; Ol. Croton,

gtt. v. M. ut fiat pil. If the symptoms continue the pill is to be repeated (the mass may be made into two with bread crumb) until they subside, and *free* vomiting ensues, when the cold, clammy skin becomes warm and moist, and the tongue and expired air participate in the healthy change: in general nine grains of opium and fifteen drops of the oil, in repeated doses, will produce these effects; but in one case (continues Dr. McGregor), I gave eighteen grains of opium and 27 drops of croton oil before the disease yielded, and it is satisfactory to learn that in every case the treatment has been successful, where I have had the sole management of the case. To prevent a relapse the use of quinine is advisable." (*Quart. Med. and Surg. Journ. for the North-western Medical Provinces.*) In a case related by the same writer, the patient took forty-five drops of croton oil, and thirty grains of (hill) opium in the course of five hours, and what will surprise many, some having in mind the violence of the disease which would seem to require such doses of medicine, and others the violence of the treatment itself, he recovered. Allusion is made to another case, in which thirty-five drops of the oil were given in the course of one hour. We ought, it seems to me, to put these cases on the same line with those in which such enormous doses of calomel have been given by some, and of sulphate of quinine by others, among ourselves, as a proof of the powers of toleration or endurance of the animal economy rather than of therapeutical skill and adaptation to the exigency.

In justice to Dr. McGregor, if indeed any extenuation of a practice which is claimed to be uniformly successful, be called for, it should be known, that while he admits the drastic operation of the usual dose of croton oil, "half a drop, or a minim or two at most," in its causing violent catharsis, great uneasiness, and often nausea and vomiting, yet he claims for it in a larger dose, as of five drops, a directly sedative as well as powerfully purgative effect. He points out its analogy to tartar emetic, the use of which, in cholera, "has often been marked, and successful when persevered in until free vomiting has taken place."

After all, it is by no means clear, that the success of the treatment laid down by Dr. McGregor is not to be divided between the croton oil and the opium, associated, as we find them so constantly to be, in his formulæ.

Although based on a different pathological view of cholera, the treatment for the disease recommended by Dr. Jephson is not dissimilar to that pursued by Dr. McGregor. The former had recourse to a solution of one ounce of Epsom salts and two grains of tartar emetic in eight ounces of water, of which an ounce was given every half-hour. After the third or fourth dose, the vomiting and purging often ceased. We are not told whether this effect was directly procured by the mixture, or ensued after its causing vomiting. We are left, however, to infer the former, from Dr. Jephson's adding, that in some cases the use of this mixture was preceded with an emetic of ipecacuanha, and, also, that it is to the *sedative* influence of the saline tartar emetic to which he attributes the benefit derived from its use. The adjuvants, which to him seemed the most useful, were one or two large doses of calomel, effervescing draughts, sinapisms, and turpentine epithems to the abdomen.

The main conclusion to which Dr. Jephson wishes to reach is not quite so evident from his therapeutical premises. It is, that cholera and ague are strictly analogous, alike in their symptoms and origin. He generally gave quinine after the cholera symptoms had subsided.

Bloodletting.—But if the patient be of a sanguineous habit, or complain of pain in the abdomen, headache, or vertigo, with accelerated pulse, or the vomiting and purging be accompanied with much epigastric weight, we should have recourse to venesection. This remedy is, of itself, when resorted to at the outset, sufficient to cut short the disease. Even in cases of approaching collapse, full venesection, *ad deliquium*, has, to all appearances, saved life. In a somewhat more advanced period of the disease, in which bleeding from the arm would be either difficult or of doubtful efficacy, an emetic of ipecacuanha, followed by cups over the abdomen, has been found to be a good practice.

Where the heat of the stomach and tenderness of the epigastrium are considerable, leeches freely applied over the affected part have given great relief; but as they are slow in their operation, and often difficult to be procured, cupping is, in general, preferable.

In prescribing venesection, we must lay due stress on the necessity of its being early had recourse to—within an hour or two from the coming on of vomiting, &c., and when the pulse is yet somewhat full.

A remedy akin to bloodletting in its tranquillising effects in cholera, is *calomel.* It is with no desire to give a novel turn to the direction of your inquiries into the curative powers of this medicine in cholera and some other important diseases, that I invite your attention to the immediate effects of calomel on the system, which are neither dependent on nor proportionate to its operation as a purgative on the one hand or a sialagogue on the other. In India, Great Britain, and the United States, the power of calomel to tranquillise an irritable stomach and irritable bowels, is a fact of frequent, one might say almost daily, observation in some form of disease or another. In cholera we have had abundant manifestations of its efficacy in this respect. But, solely attentive to its indirect effects, in promoting the secretion of bile from the liver and of mucus from the intestines, physicians generally have failed to recognise its first beneficial and often eminently curative impression on the nervous and sensitive surface of the digestive mucous membranes, and secondarily, or by sympathy, on the respiratory and genito-urinary ones. Could testimony be stronger than that furnished by men of skill and observation in three different continents, and without previous concert or imitating one another, than is found among the physicians in India, those of Great Britain, and those of the United States, respecting the adaptation of calomel to distinctly formed cholera? Mr. Corbyn and Mr. Martin in India, Dr. Craigie in Scotland, Dr. Griffin in Ireland, Dr. Drake in Cincinnati, and a long list of men of observation and experience in these countries and in the United States, generally hold identical opinions on this subject.

In a well-marked case of cholera, after an emetic or venesection, perhaps after both, we should not hesitate to give calomel, as a sedative, to allay the inordinate gastro-intestinal excitement, call it catarrhal, irritative, or inflammatory, as you will, and, to repeat the medicine at intervals, watching its effects until the desired relief is obtained The dose will be from ten to twenty grains, mixed with a little sugar, and six or eight drops of tincture of camphor, or three or four drops of cajeput oil. The majority of practitioners were in the habit of combining with the calomel, opium or laudanum, one or two grains of the former, and twenty to forty drops of the latter. A suitable time having been allowed to test the

impressibility of the system to its influence, we have recourse to other remedies. The relief may be followed by bilious stools, or it may take place without any such immediate or direct effects: but, be this as it may, we shall not think it necessary at this time "to follow up" the administration of calomel by purgatives: the union will not be a happy one for the patient; it is not called for by the intention with which we direct calomel in this case. Let us feel our true position. We are not in the dilemma to which the common limited views of the operation of mercury would subject us. Failing to purge, we are not obliged to salivate our patients. We shall be content with the simply sedative operation of our medicine, and not push its use so far as to poison the tissues and bring on a fever of reaction, or ptyalism, with all its distressing accompaniments. In cholera, as in dysentery and in bilious remittent and yellow fever, salivation is an evidence of the abatement, often perhaps crisis, of the disease, but not a cause of this result. Patients are salivated because they recover, but they do not recover because they are salivated. In my lecture on dysentery I gave abundant proof to show that the sialagogue operation of calomel or other mercurial preparations is neither preventive nor curative in this disease. The same remark applies to cholera. Dr. Griffin (*op. cit.*) ascertained by inquiries made in Dublin and Liverpool, as well as by cases detailed to him which occurred in Limerick, that, "not only had patients in salivation for other complaints fallen into cholera, but some who had been salivated for cholera had, during the salivation, sunk back into collapse and died."

The use of calomel ought, therefore, to be restricted to the first and second stages of cholera; in the one it is primarily sedative and indirectly purgative; in the other it is primarily and mainly sedative, and incidentally purgative and cholagogue. Sometimes it is called for in the fourth stage, or that of reaction with fever.

More akin to calomel, in its soothing and sedative effects, than to the class of astringents under which it is commonly placed, is the acetate of lead. By Dr. Graves of Dublin, this medicine has been extolled as the remedy in cholera. He made large use of it in the second attack of the disease to which Dublin was subjected in 1834. Although his sanguine expectations have not been realised by other practitioners, yet, unquestionably, from our knowledge of the beneficial operation of this medicine in certain stages of dysentery, and in cholera infantum, and diarrhœa, we ought not to hesitate to have recourse to it in those cases of cholera which are not promptly amenable to the treatment already indicated, and in which the cramps are violent, and there is yet activity of the vascular system. If I am correct in this view of the best period for its use under a belief of its truly sedative, and in fact depressing influence, both of this salt and of all the preparations of lead, I should be slow in using it in the period of collapse, in which, also, Dr. Graves recommends it. His prescription is:—℞. Acetatis plumbi, ℈i.; Opii, gr. i. M. ft. *secundum artem massa, in pil.* xii. *dividend.* In the premonitory diarrhœa, one of these pills is to be given, at first every hour, and afterwards, as the stools become less frequent, one every six hours. In the completely developed cholera and in the collapse, a pill is to be taken every quarter of an hour. I have expressed my doubts of the utility of the sugar of lead in the collapse; and I may now add, that it is not, I think, a reliable medicine to combat the premonitory or diarrhœal stage, until, at least, we are sure of the

bowels having been entirely relieved of their fecal contents, and of any residue of digestion in the upper portion of the alimentary canal.

Although classed among tonics by systematic writers on Materia Medica, the sub-nitrate of bismuth is much more sedative than stimulating, if we take its operation in gastralgia and cramp of the stomach, sickness, vomiting, &c., as a measure of its remedial powers. Dr. Leo (*Ideen und Erfahrungen, &c.*), who saw much of the cholera at Warsaw in 1832, extols this article in high and extravagant terms. The dose which he recommends, is from two to four grains every two or four hours. Dr. Lefevre, who manifests much judgment in his appreciation of the value of various remedies, believes that much good may be derived from the prudent use of the sub-nitrate of bismuth. There is, he thinks, scarcely any other article which seems to quiet the cramps and check vomiting more effectually; and when employed in moderation, it does not produce those unpleasant effects on the nervous system which follow the use of some of the articles lauded for their curative powers in cholera. In large doses we no longer obtain its sedative effect; it then operates as an irritating poison, causing gastro-enteritis, *cramps of the hands and feet*, disordered viscera, &c.

Opium.—I may be thought remiss not to have placed opium in more prominent relief, and at the head of the list of remedies in cholera, as the medicine which first presents itself to the minds of a large majority of physicians, and which, in the opinion of many, is entitled to the greatest confidence. Even they who are less sanguine of its curative powers, hardly feel themselves free to dispense with its use as an adjuvant, as you have just now learned, when I spoke of its union with calomel and sugar of lead; and as I shall have occasion to point out in other combinations yet to be described.

In speaking of the remedies which experience has pointed out to be the best adapted to a disease, we must of necessity mention them in succession, and in the order in which their use is believed to be called for. But it does not follow that they are all required in one case; and hence the student and younger practitioner is sometimes embarrassed in making his selection. In the disease before us emetics may not be admissible; they may have been administered without effect before our arrival, or the stomach has been perhaps adequately evacuated of all remains of ingesta which previously disturbed it. The state of the patient, manifested by want of fulness or strength of pulse, or of any notable determination to an important organ, may not justify venesection; our confidence may not be great in calomel: yet the symptoms are violent; there is severe and torturing cramp, continued vomiting and purging, and rapidly increasing debility. It may be that this condition of things exists despite of the other remedies, and we have not a moment to lose. What shall we do? We should apply cups to the abdomen, plain or scarifying, sinapisms to the extremities and on the epigastrium: and give at once a full dose, from 60 to 80 drops, of laudanum. This will often allay the cramps with which the patient is often tormented, quiet jactitation, and procure sleep; in fine, remove neurosthenia. The patient should, at this time, be kept in bed, and well but not heavily covered with clothing; warm applications are to be applied to his feet, and gentle frictions practised, particularly over his lower limbs; in order to encourage what the laudanum itself is so well calculated to produce—a gentle but diffused perspiration.

The opium practice was a favourite one in the East Indies. Mr. Orton

deems it "probable that a single dose of opium alone, given at the very commencement of the disease, would be found, in a great majority of instances, to put an effectual check to its progress." He warns us, however, against an excessive use of the remedy: but some might think that the dose of four grains which he recommends is somewhat excessive. The medicine is to be repeated in diminished doses, at intervals of from three to six hours, if a favourable change is not produced (*Essay on Epidemic Cholera*). The opinion of Mr. Twining is still more strongly, perhaps also somewhat extravagantly expressed, when he declares, that previously to collapse taking place the disease may be stopped quickly, safely, and with human certainty, by full and energetic doses of opium proportioned to the age, idiosyncrasy, and condition of the individual. On the other hand, we know that, both at the *Pitié* and at the *Hotel-Dieu* hospitals in Paris, where this drug was at first largely prescribed, the physicians of the former discontinued its use, and those of the second limited its administration chiefly to enemata and liniments. Many of the Parisian practitioners continued, however, to use it through the whole course of the epidemic. By some of the Polish and German physicians it was objected to opium, that it was apt to cause congestion of the brain and of the spinal marrow; but it was found that this state of congestion, so common in the period of reaction, ensued after other remedies of a totally opposite nature, such as cold water. In cholera, the animal economy often displays a singular toleration of opium in large doses, as we see it in other diseases of neurosthenia, tetanus for example.

Let us not, however, be led away by this testimony in favour of opium in cholera, to an abandonment of the principles on which we based the general treatment. If we had only to deal with simple irritation, or neuropathic condition of the organs, there could be no hesitation in immediate recourse to this medicine; and in fact we meet with cases of cholera morbus and cholera infantum, as well as of colic and dysentery, in which this is a safe and an efficient practice. But so soon as there is superadded congestion, whether in the mucous membranes of the digestive and respiratory apparatus, or in the brain, spleen, and liver, and lungs, then is the problem a more complex one; and we cannot forget the tendency of opium to cause and increase congestion, and consequently of its inappropriateness under these circumstances. Here, again, however, we must distinguish between the congestion analogous to a turgid state of the erectile tissue, resulting merely from neuropathy, and that associated with and forming an essential part of inflammation. In the former case opium, by soothing strong and irregular nervous excitement, gives expansion to the capillary tissue, and abates in place of increasing congestion — at least, that congestion which we most dread, viz., of the brain and great viscera. In this way it does good service just before the approach of a paroxysm of intermittent fever, and even during the stage of alarming chill, and depression in the aggravated variety of this fever, or the congestive.

In cholera, we have been recommended to give opium early and in full doses, but the advice can only properly apply to a certain number of cases, the adequate appreciation of which is not very easy. When we are sure that no errors in regimen have been committed, and that no irritating ingesta or imperfectly digested matters are lodged in the alimentary canal; and when we have to deal with a nervous subject of a thin

and spare habit, and in whom fear has had its full share in bringing on the attack, we not only are free but bound to prescribe opium very early in the disease, and to repeat its administration at short intervals, but in moderate doses, beginning with a grain or its equivalent in laudanum, and continuing in doses of half a grain every hour, until the desired effect is observed or its failure is obvious.

As a general rule, it will be proper to wait until the stomach is relieved by an emetic, and the bowels by saline or even simple aqueous enemata; or, in the cases justifying the practice, until inflammatory congestion has been abated by venesection or cupping, — before we administer opium, at least with the freedom and frequency that would imply our mainly relying on it. If the indication in the mind of the physician be to procure a discharge of bile, recourse to opium will be withheld yet a while longer until calomel has been administered, or until this latter shall be given in combination with it.

Magnesia has been ranked by Mr. Corbyn among the sedatives, which he found to be useful in cholera. He attributes its soothing effects to its neutralising acid in the primæ viæ. This explanation would be too chemical, even if there were acid to be neutralised; but when we know that the discharges are rather alkaline than otherwise, it is untenable. The carbonates of magnesia and of lime produce a peculiar impression on the digestive canal, and through it on the system at large, not explicable by any chemical hypothesis. Their operation is at times evidently anodyne; so much so, indeed, that after prescribing chalk mixture to a child with gastro-intestinal irritation, I have been repeatedly asked by the mother whether there was any laudanum in the mixture, for, after taking it, the child slept so much more than usual. Magnesia might very well be directed to be taken with some pleasant aromatic or camphor mixture, at intervals, after an adequate dose of calomel.

I recur now to the pathological view of the congestive character of cholera, and of its analogy to malignant intermittent fever, in order to fix your attention on the therapeutical deduction, that quinine ought to be had recourse to, and administered in full doses at short intervals, in the disease now under consideration, in the manner which has been found to be so eminently serviceable, in the recognised malignant or pernicious intermittent and remittent — the congestive fever of the southern and western portions of the United States. But, if satisfied of the propriety of the use of quinine, we shall not wait for a subjection of the cholera symptoms, as practised by Dr. Jephson, but give it, either from the very beginning of the disease, or at the latest, after an emetic or venesection. As in the instance of the disease to which we suppose cholera to be analogous, we may give the quinine in combination with calomel or with opium, according to the additional indication which we propose to fulfil, — as, for example, emulging the gall-duct by calomel, or relieving the atrocious spasms by opium. Our confidence in this remedy will depend, in a considerable degree, on the locality in which the cholera prevails, and the predisposition of the patient to attacks of periodical fever, as well as the extent of prostration and want of reactive power at the time.

The Saline Treatment. — Applicable, it has been alleged, both to the regular stage of cholera and the collapse, is the *saline treatment*, as it has been termed, which consists in the administration of small doses of neutral and alkaline salts. It failed, however, to accomplish the wonders which

were promised for it at the time. In India and Eastern Europe, the sulphates and muriates of soda were employed, and they acquired some reputation for the cure of cholera, but did not by any means secure the general approbation of the profession. By many they were declared to increase the disease and to diminish the chances of relief from other remedies. Dr. Stevens, formerly of Santa Cruz, and afterwards of London, influenced by his views of the pathology of cholera, its dominant feature, in his mind, being the dark and otherwise altered colour of the blood, as well as by the change in these respects caused by the addition of certain neutral salts to this fluid out of the body, strenuously urged their use as all-sufficient curative agents in cholera. Trials made in different parts of Great Britain and in this country have not corresponded with these confident anticipations. Dr. Mackintosh of Edinburgh, Dr. Tweedie and other practitioners of London, and different physicians in Liverpool and Dublin, had recourse to the saline treatment without success. Dr. Griffin states that it was employed in every hospital in Limerick; but it proved in a great many of them a failure. The most advantageous, and in some measure extraordinary, exhibition of the effects of the saline treatment, as suggested by Dr. Stevens, was in the practice of Mr. Wakefield, at the Cold Bath Field Prison, and of Mr. Bossey, surgeon to the Convict Hospital-ship at Woolwich. But even their cases, subjected to a suitable analysis of stages of the disease and curative results, give little, if any, evidence of the superiority of the course pursued.

After proper abatement for the extravagance of eulogy in favour of the saline treatment, we may receive it, as on occasions, adjuvant to other and more active means, such as venesection, and intermediate between the doses of calomel, or following the operation of an emetic. The formula recommended by Dr. Stevens is as follows:—

Bicarbonate of soda, ℥ss.
Muriate of soda, ℈i.
Chloride of potassa, gr. vii.

Mix, and dissolve in a tumblerful of water; to be given every hour, until there is evident and well-established reaction. External irritants and frictions, together with injections of hot salt and water, have, in some cases, been used at the same time.

The tranquillising effects of carbonate of magnesia and bicarbonate of soda, in small doses,—as twenty grains of the former and ten of the latter, — I have repeatedly observed, both in epidemic cholera and in analogous derangements of the digestive canal.

In that part of the treatment which consists of the use of *external remedies* there was the same discrepancy of opinion and practice as in that of internal remedies. Towards the last, however, the fact was forced on the attention of medical men generally, that irritating agents were not generally serviceable either externally or internally, and that other means must be had recourse to for the relief of the neurosthenia of the skin, analogous to those found serviceable for the digestive mucous surface. Of a mixed nature are dry frictions, which have been found to be so signally serviceable in cholera. More directly sedative, and as such allaying neurosthenia, excitement, and cramps, is water employed as a bath, of a range of temperature from the freezing point to within a few degrees of blood heat. Different as the cold, tepid, and warm baths are to our sensations,

they all come essentially within the class of sedatives; each, on occasion, varying in its effects with the extent of excitement and the habits and the constitution of the individual. There are many instances of successful results recorded from the use of the warm bath, when it could be readily procured, and the patient was immersed in it for a length of time, without his having been obliged previously to arise or assume any other posture than the recumbent one. Let me now ask you not to confound the warm with the hot bath, which most people, and I am afraid the majority of medical men, also, habitually do. The bath above 98°, or blood heat, is a hot bath; it is a powerful excitant, and is applicable to a limited number of diseases, compared with those in which warm and tepid baths are so serviceable. But I cannot enlarge on this point at present; and shall merely refer to my work (*On Baths and Mineral Waters*), in which the requisite facts and illustrations are detailed. You may, perhaps, impatiently ask: whether it is proper or safe to apply cold water to the skin, already cold and sodden with sweat, in the more formidable and advanced stage of cholera. I reply, that this has been done; and with more alleged success than attended the hot bath and other stimulating applications to the surface.

Enemata. — While thus endeavouring to rouse the skin to its healthy action as an organ of nutrition — by restoring its circulation and proper secreting and absorbing function — and to abate the inordinate neurosthenia of the gastro-intestinal surface by calomel or calomel and opium, in the doses already mentioned, it is advisable, indeed exceedingly important, to check as speedily as possible, by enemata, the excessive and inordinate evacuations from the bowels. These are but a symptom, it is true, but they are also an effect, which contributes to exhaust the patient beyond reaction and recovery. We do not hope to cure the disease by this means, but we may gain time for other remedies to operate in a more diffused and permanent manner. Mr. Annesley (*Diseases of India*, p. 156), who adopted the calomel practice, by giving a scruple of this medicine every two hours, until three or four scruples had been taken, recommends small anodyne enemata with camphor, when the bowels are very irritable, and constantly discharging a watery fluid. Mr. Corbyn, at the same time that he directed a scruple of calomel, 60 to 80 drops of laudanum and 20 drops of peppermint by the mouth, had also 40 drops of laudanum, mixed with rice-water, introduced as an enema. Dr. Craigie found that the best and most effectual means of stopping the purging, "was a small enema of four or six ounces of dissolved starch, containing a drachm of sedative liquor, or paregoric, repeated every hour according to its effects, and injected as far up the intestines as possible." Dr. Griffin was so fully convinced of the necessity of invariably suppressing the diarrhœa in the choleric stage, that he constantly made it a rule to give an astringent injection after each evacuation, however frequent, until his object was accomplished. "The injection generally consisted of half a drachm of the acetate of lead, mixed with thin starch, to which a teaspoonful of laudanum was added, either when the injections were repeatedly returned immediately after administration, or the cramps were distressing and resisted other remedies." The term sedative is much more applicable than that of astringent to the preparations of lead; whether we have regard to their effects on the vascular or on the nervous and muscular systems. And, in fact, the enemata which the gentlemen in India, Scotland, and Ireland, have

found most useful, are of the sedative kind, and in harmony with the other part of the treatment, or that of giving calomel by the mouth at the same time. But, whether we regard them as astringents or sedatives, we could not feel ourselves justifiable in using enemata in this way, if we prescribe calomel as a purge, and with a view to its procuring feculent and bilious discharges, in place of acting as a sedative. We should have, in the one case, to wait its operation on the bowels before we venture to prescribe anodyne or astringent enemata ; whereas, in the other, we feel that we are giving by the mouth and *per anum* remedies of the same class, whose effects on the two parts of the digestive tube will be in harmony with each other. Reference has been already made to saline enemata. Cases are related of decided benefit from the use of an enema. composed of half an ounce to an ounce of common salt and one drachm of carbonate of soda in a pint of warm water, to be repeated every hour or oftener, until some decided effect is produced. This properly constitutes a part of the saline treatment.

If, notwithstanding the use of the remedies hitherto recommended, and notably of an emetic, calomel, opium, and quinine, frictions and the warm bath, and in justifiable circumstances of bloodletting, the patient still suffers from exhausting discharges, and continues to sink, recourse is then had, as a matter of presumed justifiable necessity, to *stimulants*. Experience showed, after a while, however, that when medicines of this class were resorted to, those of the milder kind were the best.

Great mischief was done in many places by the early and large use of alcoholic stimulants, such as brandy and the like (Kirk, *Practical Observations on Cholera*). Carbonate of ammonia, oil of turpentine, and capsicum, are among the safest remedies to cause moderate excitement at this time; the first, by its alkaline properties, and the two second, by their special action on the mucous membranes, seem to meet the immediate exigencies of the case, without either causing inflammation of these membranes or over-exciting the nervous system. In yellow fever and in puerperal peritonitis, in which the stomach is often so distressed, turpentine in small doses has displayed a very beneficial operation. By many its use in cholera was held to be equally advantageous. When I speak of its special action on the mucous membranes, I would not have you to overlook its secondary powerful action on the nervous system, by which it is of such signal service in epilepsy ; for, by its double operation in this way, we can explain its efficacy in cholera. More will be gained, I think, by giving ten to fifteen drops on a lump of sugar with a tablespoonful of camphor mixture every fifteen minutes, or half-hour, than in drachm doses at longer intervals. In the form of enema it has also been employed, but with contradictory results. It is no bad succedaneum to calomel, especially in the more advanced period of cholera, short of collapse. Capsicum was a frequent adjunct to calomel, in the dose of two or three grains, repeated every half-hour or hour. Another, and a still more popular remedy, both with the profession and the people generally, was camphor, held in solution in alcohol. Its efficacy is chiefly procured through its action on the nervous tissue and general nervous system. Camphor alone can hardly be called a stimulant. Its use in this state, or in that of mixture, would bring it more appropriately under the head of sedatives.

When still more active stimulation was deemed advisable, tincture of capsicum, liquor of ammonia, or camphorated ether was used. But these

should be given with a sparing hand. Mr. Bell, author of one of the best works on the subject (*Treatise on Epidemic Cholera*), mentions that some individuals, in whom the disease appeared to be checked by them at first, nevertheless eventually died from their poisonous operation.

External Stimulants. — The early use of a blister, while calomel was administered internally, was a favourite prescription of Mr. Corbyn and other East India practitioners. Some express a preference for the hot water blister. As this means of vesication will be found serviceable in other cases of violent disease, in which prompt counter-irritation is required, I shall repeat here the directions for its use by Mr. Corbyn.

"Have ready a square pad of flannel, which has pretty long tapes sewed to it, and crossed so as to bring one end out at each corner of the pad; the pad should consist of six folds of flannel, and should be about five inches square. The water being ready at the bedside of the patient, either at the boiling point, or at such lessened temperature as may be previously determined upon, the flannel pad is to be dipped into it. The operator, holding the pad by the tapes, should give it a smart shake on withdrawing it from the water, and apply it immediately to the skin. By shaking out all the superfluous water, in applying it, the patient is saved from any scalding which might be occasioned by its dribbling down from the pad. If the water be used at boiling heat, a momentary application of the pad will, in general, be sufficient to cause vesication. This point, however, must be regulated by the judgment of the practitioner, according to the state of the patient's skin."

Irritation or partial cauterization of the skin, by a mixture of nitric acid two parts with water one part, has also been employed. Strong ammonia mixed with lard or tincture of cantharides, will give rise to speedy vesication. Flannels immersed in a liniment of liquid ammonia and oil of turpentine, and applied along the spine, and then a warm smoothing-iron run over them, have been found powerful means of excitement by M. Petit in Paris. Moxa, caustic, and the actual cautery, have, severally, been applied to the same region, with a view of producing salutary reaction.

More promising than these extreme measures, which have but partial effect after all, is the application of dry vapour, by burning alcohol or sulphur, to the skin; or simple watery vapour, of an elevated temperature, similarly employed. Dry heat, when heat is proper, has been preferred by most writers on the subject. Mr. Kennedy recommends it in the first stage, after bloodletting, the warm bath, and other remedies which are immediately demanded. He directs that, as soon as the cramps are subdued or have received a decided check, the patient, with all possible expedition, should be removed from the bath, and placed between dry, heated blankets. Dry heat should be further applied by surrounding his body and limbs with bags of heated sand or ashes, bottles of hot water, &c. In the application of heat externally, as in the use of hot or warm drinks or stimulants internally, we shall be guided not a little by the sensations of the patient, and the pleasure or discomfort which he experiences from their use. Again I must remind you of the superior efficacy of dry frictions, in a uniform manner, sedulously continued, by a mixed movement of pressing and grasping the skin and muscles beneath, especially of the limbs and back.

Drinks.—Early in the disease the patient becomes clamorous for drink, and it is then a question as to the kind and quantity adapted to his case.

A great diversity of opinion exists among the writers upon cholera, on this point; but these differences grow out of the different constitutions and gastric habits, as well as idiosyncrasies of the sick, manifestations of which we see continually in gastric irritation and vomiting, in fevers and other diseases. By some, diluents of every kind were entirely prohibited, in consequence of a supposition that they increased the vomiting. The great desire of the patient is for cold water—he appears to labour under the most distressing thirst, the calls of which, it must be evident, cannot be disregarded, without materially increasing his sufferings, and eventually the disease. Mr. Scott, in common with nearly all the best practitioners, concedes the propriety of allowing some bland diluent, but he maintains that it should be given of a tepid temperature; he conceives that *cold* drinks are always dangerous and mostly fatal. This was the opinion of the surgeons in India. Mr. Annesley, however, gave cold water with a slight impregnation of nitric acid. This was the common drink in the hospital under his care, and was found to relieve that most distressing symptom of the disease, the burning sensation at the stomach. From the experience of the European physicians, it would appear very fully settled, that cold drinks are not only allowable but beneficial; and when desired by the patient they should be freely given. According to Lefevre, iced lemonade has often been taken with advantage, and even the lower orders of the Russian people drank their *quass* as usual, and with seeming benefit. The diluted nitric acid, he states, may be added with great benefit to the common drink. Fifty drops of the diluted acid, added to a pint of water, sweetened to the taste, is a grateful beverage. By Mr. Bell, also, and some few of the practitioners of India, cold lemonade was allowed. (*Bell on Cholera*, p. 108. See also Searle's second publication on *Cholera*.) Mr. Orton allowed usually only moderate quantities of a weak infusion of ginger, with the addition of a little sugar and milk (*On Cholera*, p. 309). Dr. Dyrsen, of Riga, says, that when the thirst is great, warm or even hot drinks are the best and are often retained and even desired by the patient. He directs infusions of the various mild aromatic herbs, or when these are unpleasant to the patient, of common black tea. But when cold drinks are earnestly desired, they may be given in small portions at a time, without fear of any bad consequences. Fresh milk, moderately cool, he states, was very beneficial, and when the diarrhœa is considerable, a decoction of rice or pearl barley, thin tapioca, and the like, to which, when there is entire absence of pain or tenderness of the abdomen, a little red (port) wine may be added. A cup of strong coffee he has found very readily to suspend the vomiting in this disease: he advises the patient, in case of the drinks being rejected by the stomach, to be allowed to swallow small portions of ice somewhat rounded into the shape of a pill (*Kurzgefaste anweisung die Orientalische Cholera*, p. 38)—a practice also recommended by Broussais. Dr. Craigie found, that the liquors which most perfectly quenched the thirst, and quieted the irritation of the stomach, were coffee, tea, and weak chicken soup. For patients who required a stimulus as well as mere drink, he believed port wine, diluted with two parts of water, to be the best. Brandy, or ardent spirits of any kind, he rarely used; having discovered that they increased the thirst, caused a burning sensation at the stomach, and aggravated other symptoms, by increasing congestion of the organs. This, I believe, was the general experience.

The strongest testimony in favour of warm water, is that given by Dr. Sturm, a surgeon in the Polish army. Writing from the encampment near Kamienka, he says, "The treatment which we now pursue is probably already known to you, as Dr. Helbig had been ordered to publish an account of it in the newspapers. It consists in nothing else than giving to the patient as much warm, nearly hot, water, as he is able to drink, in the quantity of a glassful every fifteen or thirty minutes. By the time he has taken fourteen glasses, the cure is complete, with the exception of a slight diarrhœa, which it is not proper suddenly to suspend. The effects of this plan of treatment are so quick and effectual, that in two hours, or often sooner, the patient is well, particularly when it is commenced with sufficiently early." (*Deobachtungen uber die Asiastische Cholera*, von Dr. Hille, page 92.) The inference from all these opinions and clinical experience is plain, viz., that we may safely consult the taste of the patients themselves respecting both the temperature and the taste of their drinks. The chief restriction that we are bound to impose on them is, respecting quantity. Whether we give hot water or cold water, we ought not to allow more than a mouthful at a time. Pellets of ice gradually melted in the mouth, have the advantage of cooling the inward heat and quenching the burning thirst, without oppressing by quantity.

LECTURE XLIV.

DR. BELL.

TREATMENT OF THE STAGE OF COLLAPSE—Difficulty—Stimulants and sedatives often alike fail—External remedies; friction, ammoniacal liniment; friction with ice; the cold dash—Sudden collapse treated sometimes by venesection—Arteriotomy useless and cruel—Cups to the abdomen—Astringent injections—Stimulant injections—Astringents—Special stimulants; oil of turpentine and capsicum—Ice grateful and serviceable—Cold water treatment—Dr. Shute's views in directing it—Tobacco enemata—The saline treatment—General experience not in its favour—Saline injections into the veins—Delicacy and difficulty of the operation.—*Treatment of the Stage of Reaction.*—This and the diarrhœal stage less common in India.—*Convalescence.*—PROPHYLAXIS—The chief means are temperance, cleanliness, and equable temperature of the body—Importance of early attention to the very first symptoms of the disease.

STAGE OF COLLAPSE.—It is now generally admitted, that the resources of our art are chiefly available, first and mainly, in the forming stage of cholera, or that in which some diarrhœa alternates with constipation; and, secondly, in that of cholera proper, ere it has reached the stage of collapse. Sedative remedies, and, occasionally, depletion, which were chiefly indicated in the antecedent period of the disease, are now either injurious or of slight efficacy; and the small excitability left forbids the use of strong and diffusible stimulants. With some exceptions to be soon mentioned, the physician is reduced to the condition of an observer, a keen, an anxious, and a discriminating observer, it is true; but one who must wait for the turn which nature may give to the disease before he attempts decisive action. For want of a precise definition of the stage of collapse, we cannot derive the aid which might be expected from the numerous indications and details of cure laid down by different historians of cholera. The best and most easily recognisable test of collapse, is the cessation of pulse at

the wrist, which will serve, at the same time, to define our position in reference to treatment.

Of the external means of rousing the sensibility, or perhaps we should say, of diffusing it, and blending the excitement of organic with that of animal life, as far as the skin is concerned, assiduous friction with the hands of assistants, if they are near and willing, or with a flesh-brush or soft flannel aided by dry mustard-flour, will be the foremost. If more potential stimulation be deemed advisable, it should be applied along the spine, by rubbing in some active ammoniacal liniment, or warm spirits of turpentine, in the manner already mentioned. It has been alleged, and I fear with too much truth, by Recamier and others, that sinapisms and all rubefacients are equally as unavailing as internal stimulants and tonics in the blue stage of cholera. The remark is strictly correct, if applied to those agents which cause inflammation of the skin, by which this system is merely killed; there is neither diffusion nor transfer of the excitement to the rest of the skin or to the internal organs. Remedies of an opposite effect from stimulants have been tried, at this time, with some alleged success. Their use by the physician, and still more their toleration by the patient, shows that the neurosthenia, so dominant in the active stage of cholera, still remains, though in a minor degree, in that of collapse. I refer now to the cold bath, and even frictions with ice, which have been employed by some practitioners. Recamier directed, that water of the temperature of 58° to 60° F., should be poured over the patient for a minute or two; he is then to be well dried and put into a warm bed. Internally he gave, at the same time, a solution of the sulphate or of the bichlorate (hypochlorite) of soda, according to the state of the stomach, every quarter of an hour.

If the collapse has come on suddenly without much exhausting discharge, or any depleting remedies having been tried, and the patient be strong, robust, and sanguineous, might we not incline favourably to the recommendation of Mr. Annesley, to have recourse to venesection from the arms or local detraction of blood by leeches, and after reaction has been established, but not, as he advises, while the collapse lasts, give calomel and purgatives. Arteriotomy, by opening the temporal artery, was had recourse to in a number of cases by MM. Magendie, Recamier, Gendrin, and others, in Paris; but without any benefit. Some spoonfuls of rose-coloured blood, with impaired fluidity, trickled out, as if from a venous tube. In two subjects, the radial artery was opened a little above the articulation at the wrist, but the jet scarcely rose beyond the lips of the wound; and, even after reaction came on, there was no hemorrhage, properly so called, and a ligature of the vessel was dispensed with. Still less justifiable was the course of some Berlin surgeons, who opened the brachial, and even the crural artery. No human being ought to be the subject of experiments of this nature.

During the time that the blood is flowing, frictions of the limbs should be assiduously practised in the manner already directed, and continued perseveringly until some signs of reaction are evinced. A warm, saturated solution of common salt, well rubbed in and on the skin, promises to be useful at this time. Commonly, however, venesection will neither be necessary nor admissible in the collapse of cholera. Dry cups and even scarifications over the abdomen have been well spoken of at this time. But of all the common means relied on, injections have been most freely used; and we may infer with relative success: of these the astringent

kind are preferred. Some recommend the sub-acetate of lead, in dose of half a drachm dissolved in a little water, and then mixed with a suitable measure of starch enema. This was the practice in the Limerick hospitals. In other parts of Ireland, the same astringent, so called, was administered in half-scruple doses only, combined with equal proportions of the sulphate of copper and alum. Dr. Griffin's plan in cholera was, whenever there was much pain, or the injections were too readily returned, or the patient appeared to be on the verge of collapse, and it was important to prevent even one other evacuation, to add a teaspoonful of laudanum to the mixture of the solution of the sub-acetate of lead with starch. In making use of the salt of lead alone, Dr. G. was in the habit of repeating it after evacuations, however frequent. A preference is indicated by Dr. Jackson, for rhatany root in decoction. Hot saline injections have been used in India and other countries, but with limited success.

Stimulants of great strength are not admissible, even in this stage of such extreme prostration, in which they would at first seem to be so imperatively required. The powers of life are too feeble to bear to be forced into sudden action, even if they manifest susceptibility to stimulation. Specific stimulation, as by an emetic, has, in some instances, been productive of salutary effects in this, as it has undoubtedly been so often in the earlier, yet marked and violent stage of the disease. The mustard emetic had considerable vogue in Great Britain. Three tablespoonfuls of mustard-flour are mixed with half a pint of water, and the whole given as speedily as possible. A tablespoonful of common salt, and the same quantity of mustard, was also a common prescription.

The most approved remedies by the mouth in the stage of collapse, are the astringent; such as the sub-acetate of lead, the sulphate of copper. Dr. Mackintosh gave strychnia at first, in the dose of a twelfth of a grain, gradually increased to a grain, every hour or two; and he conceived that, besides checking the discharges, it had the effect of shortening the collapse, and rendering the reaction more permanent. The observation of Dr. Griffin on this class of medicines is a sound one:—"On the whole, I should say, astringents, from whatever class they may be selected, and whether given by the mouth or in the form of enema, should form an essential part of the cure of cholera. But none of them has yet been proved capable of absolutely controlling or suppressing the disease to an extent that one would confidently trust to in general practice."

The stimulants, whose action was more immediately exerted on the mucous membrane, with but little secondary excitement of the arterial or even nervous system, were sometimes of service at this time; such as oil of turpentine, in a dose of a few drops at a time, with half an ounce of camphor-mixture, or eight or ten drops of tincture of camphor on a little sugar; and capsicum, in a dose of ten to fifteen grains. Dr. Hodge, of the University of Pennsylvania, in his paper on Cholera (*Am. Jour. Med. Scien.*, vol. xii.), speaks very highly of capsicum.

Our leading object at this time must be to aid the natural powers of the economy in the severe struggle in which they are engaged, but not to exhaust them by over-excitement. One of the chief indications is, to restore animal heat; but this is better done by aiding the organs, and especially the nervous and capillary systems, to develop and diffuse it, than to introduce it, as it were, from without by external applications. They would suggest, what experience indeed has confirmed, viz., the

good effects of impressions made on the region of the spine, with a view to rouse the nervous system of the medulla to increased action. For this purpose, assiduous friction should be practised; or running a smoothing-iron, of a moderate heat, along the surface; and these means failing, we are then to apply the ammoniacal liniment in the manner already stated.

Galvanism, electro-puncture, inhalation of factitious gases, are remedies of experiment more than of available use, even if their value were greater than has yet been shown.

Dr. Rankin, whose view of the pathology of cholera has been mentioned in a preceding lecture, recommends with great confidence, in the stage of collapse, the hot bath, at 110° to 115° F., continued for a full hour or more according to circumstances, until the restored circulation indicates the removal of that obstruction on which he conceives collapse in cholera to depend.

There is nothing so grateful to the patient in the stage of collapse and in that tending to it, and really so beneficial at the same time, as cold water, and, still more, ice kept continually in the mouth by the introduction of fresh pieces of a small size (pellets), so soon as the preceding ones are dissolved and the fluid swallowed. Sometimes even the swallowing of the pieces themselves was productive of much good. The *cold water* treatment, as it has been called, was first distinctly recommended, in Great Britain at least, by Dr. Hardwicke Shute, who had charge of the Gloucester Infirmary, when cholera patients were received there. Dr. Shute watched the progress of cholera, uninfluenced by remedies, in order to ascertain the natural efforts of the constitution to free it from the disease. The result of these observations and of his cold water experiments is, to enable us to determine, with some confidence, the real value, or, perhaps I ought to say, the absurd pretensions, set up in favour of certain remedies, which, when not negative in their effects, are too often mischievous.

Dr. Shute tells us very distinctly, that his observations on the advantages of the cold water treatment are intended to apply exclusively to the stage of collapse. Reliance on it in earlier stages would be a criminal waste of time, and loss of opportunity for the administration of remedies, without which the disease would most probably run into collapse. The results of Dr. Shute's practice were most encouraging; but they are not presented in such a definite form as we could wish: that is, the proportion of cases of collapse in the entire number treated are not given; although he tells us that the first cases gave twelve recoveries out of fourteen; the pulse having been nearly imperceptible in all. Dr. Griffin endeavours to supply the omission of Dr. Shute, by classifying the cases of this latter gentleman, as follows,—Of 26 cases in the primary stage, died 2, or 8 in 100; of 26 cases in collapse, died 18, or 7 in 10. Total deaths in 52 cases, 20; or more than one-third. This would be the most favourable result we could expect under the common treatment; but Dr. Shute lost only 15 out of the 52; and if the cases of collapse exceeded 26, his success was still more extraordinary.

Swayed by an hypothesis, that there is a spasmodic stricture of some of the important organs, as of the ventricles of the heart, the intestines, and of the duct of the gall-bladder, and the urinary bladder, as well as of the secreting organs, some of the British practitioners prescribed

tobacco enema. It was used in infusion, made with half a drachm to a drachm of the tobacco in a pint of water. Mr. Baird, of Newcastle (England), the originator, I believe, of this practice, tells us, that if his pathological "opinion had been at variance with the fact, the powerful remedy he had adopted must of necessity have hurled the patient into the grave." Although the cases which Dr. Kirk appends to his essay on cholera would seem to entitle it to some confidence—yet we cannot forget that the symptoms produced by an over-dose of tobacco on a healthy man, are nearly the same as those met with in the collapse of cholera—with this difference, that in the former case the neurosthenia is of very brief duration, or hardly perceptible, and is followed by complete and deadly prostration. As a sedative relieving not tetanic spasm, but the cause of this spasm, excessive neurosthenia, tobacco may be entitled to our notice. Dr. Kirk says, "I have seen ten cases of the exhibition of tobacco myself, and though in two life was not saved, yet in all distinct reaction took place; and all the symptoms were improved."

Aqueous and Saline Injections into the Veins.—In speaking of this kind of medico-chirurgical treatment last, I believe that I give it the place to which it is entitled, whether regarded on the score of safety or of remedial value. The hypothesis on which it is founded is briefly told. It is, that, owing to the immoderate fluid discharges from the digestive mucous membrane and the skin, the bloodvessels have parted with an undue quantity of serum, by which the blood, now thick and fibrinous, becomes prone to coagulate in the great vessels and cavities of the heart, and cannot be circulated—hence, asphyxia, with its concomitants of the collapsed or blue stage. The indication, therefore, is, we are told, to replace, by artificial means, this loss. Unfortunately for this speculation, it happens in many cases, that collapse is not preceded either by copious serous exudation from the skin, nor discharges from the stomach or bowels—of course, the blood cannot, in such cases, have lost its fluidity, or rather, its changes cannot be the effect of the loss of its watery and saline parts, or of serum. At no time is there a well-ascertained or admitted proportion between the prostration of the functions generally, and the discharge of serum by the channels just mentioned. The change in the blood is, in fact, an effect of pre-existing derangement of important organs, those to which we have already directed attention, viz., the digestive and respiratory mucous membranes and the skin; and unless we alter and amend their morbid condition, by appropriate means, they will neither act nor be acted on by the blood with any chance of permanently good effect. Our attempts to modify directly one of these surfaces—the respiratory mucous, or that of the lungs, by means of oxygen, nitrous oxide gas, chlorine, ammonia, or ether, have not, indeed, proved very encouraging. The natural hygienic agent of fresh cool air, is, after all, that best adapted to the condition of the lungs, and one which, in the hurry and eagerness to afford relief, and the crowding around the patient of anxious friends, and intrusive and idle spectators, is too often lost sight of. There remain the other two surfaces to be acted on by agents, and in modes already fully pointed out.

Some of the objectors to the use of saline medicines by the mouth have expressed a favourable opinion of a more direct method of introducing them into the circulation. This has been done by injections into a vein previously opened for the purpose. Before resorting to so hazardous and daring a practice, we ought to ask ourselves whether, 1st, in the particular

state of the patient at the time, there is no other remedial means which presents any fair chance of reviving him? And 2dly, if this practice do not, though affording temporary relief, introduce fresh causes of subsequent disease, and more certainly seal the patient's final doom?

The notice of this practice, and the commentaries on it by Dr. Griffin (*op. cit.*), are so pertinent, that I shall make use of them for your benefit on the present occasion.

"Transfusion of blood into the veins of persons dying of hemorrhage was long since proposed and practised in this and other countries; but Magendie was the first who proposed, and, I believe, ventured to inject, water, or medicated fluids, into the veins as cure for hydrophobia, many years back. M. Hermann, of Moscow, more lately, on observing the quantity of aqueous fluid ejected from the body in cholera succeeded by collapse and death, suggested the injection of warm water into the veins, to preserve the circulation and volume of the blood which remained; and this suggestion was subsequently carried into execution by Professor Delpech, of Paris, though without any success. The practice in this country, however, did not originate in anything which had been done on the continent; it arose entirely out of the ingenious and clever papers of Dr. O'Shaughnessy, on the analysis of the blood of cholera patients as compared with that of healthy persons. As it appeared that the great loss which the circulating fluid sustained, and which seemed to be the immediate cause of collapse, consisted of water, albumen, and saline matter, it occurred to the late Dr. Latta, of Leith, that death might be protracted, if not altogether prevented, and other remedies become available, by directly restoring to the circulation the materials of which it was robbed by the disease. He instantly put the remedy to the test: and his skill and ability are displayed in nothing so strongly as in the fact, that his first inexperienced application of it in the cure of cholera was more successful than any trials which were subsequently made, when there had been extensive experience of its effects. He saved three patients out of nine in his first set of cases, and five out of seven in his second; of which number, on the whole (16 cases), it is acknowledged by all practitioners in and about Edinburgh, two would not otherwise have recovered, taking the ordinary mortality in such states there as the standard. Injection by the veins seemed, notwithstanding the early encouragement given by these cases, to be losing credit towards the decline of cholera, after having been very freely tried; and it is well worth consideration, whether this failure of reputation is founded on judicious inferences.

"All the published cases of injection of the veins which I can find amount to 282, among which there were 221 deaths, and only 61 recoveries. As all these cases were in collapse, sometimes very deep and protracted, before this treatment was employed, it only remains to see what portion might fairly have been expected to recover if no such remedy had been resorted to. According to the statements of Drs. Christison and Mackintosh, not more than one in twelve recovered, in Edinburgh, under any previous mode of treatment; and even this calculation of recoveries is looked upon by the latter gentleman as too high. Sixty-one recoveries in 282 cases gives, on the other hand, somewhat more than two recoveries in ten. It may be said, perhaps, that our own reports of the Limerick cholera hospitals give an amount of two and a half, and even three, recoveries, out of ten. The average of all the reports from hospitals in that

city, however, does not exceed, if it indeed reaches, the average recoveries by venous injections. At the same time it should be considered, that no fair comparison can be instituted between cholera cases occurring among the half-starved pauper population, crowded together in the lanes of Limerick, with those which occurred among the well-fed artisans and labourers of Edinburgh.

"It can hardly be necessary to remind the reader of a fact referred to when treating of the mortality of the disease, that persons living on a poor vegetable diet, though much more liable to fall into cholera than those living on a sufficiency of animal food, recovered nearly in the proportion of two to one comparatively. In Limerick the recoveries from collapse among the wealthier classes of the population, in private practice, were, I should say, quite as low in amount as the proportion named in the Edinburgh report; and even in the hospital reports of St. Michael's Parish, the one in which all the wealthy portion of the population of Limerick reside, and where the class of patients admitted consisted chiefly of well-fed servants and small shopkeepers, the average recoveries from collapse did not exceed one in ten, while in every other hospital in the city it exceeded two in ten. The legitimate conclusion from all I have stated is, that the average recoveries from collapse by injection of the veins has far exceeded the amount by any other treatment, in the same district and under the same circumstances, and has equalled the utmost proportion which has been obtained on the average of large numbers, in any district and under any circumstances."

"There are certainly two points of great difficulty in applying injection by the veins: 1st, a difficulty in ascertaining when enough of fluid has been thrown in; and 2dly, in selecting the most opportune period of the disease for the operation. With respect to the first, Dr. Lawrie's recommendations seem exceedingly judicious: he says, he would cease injecting whenever the pulse was steadily improved—whenever the patient fell asleep, whether the pulse were improved or not—whenever the respiration was much hurried—and whenever acute pain was felt in the abdomen. In the first instance, because injection had done all that it can do; and in the others, because it had begun to do harm."

Dr. Mackintosh employed a solution of ℥ss. of common salt, ℈iv. of sesqui-carbonate of soda in ten pints of water, of a temperature varying from 105° to 120° F.; this solution was injected slowly, half an hour being spent in the introduction of the ten pints.

The most favourable time for injection would seem to be at the earliest period of the collapse, or just previous to its becoming quite decided. It is essential, as Dr. Griffin justly remarks, as soon as the patient is a little revived, to resume the active medical treatment, as if no such operation had ever been performed, and we were only anxious, as before, to prevent the occurrence of collapse.

The greatest nicety and delicacy of manipulation are required in the introduction and adjustment of the injecting syringe, to prevent phlebitis.

Treatment of the Stage of Reaction, or of Cholera Fever.—It would be well if we could almost forget the existence of the previous stage of prostration and collapse, if it so far occupy our minds as to induce a dominant idea and fear of debility, and lead to the exhibition of stimuli, in the reaction, or third stage. It is in the complication of symptoms, by phlegmasia of the gastro-intestinal surface, and oppression of the brain at this

period, that the injurious effects of the unrestricted use of brandy and laudanum in the previous stages, including the period of collapse, become evident. At this juncture, we must draw upon the resources of rational pathology, and be guided in our practice by the symptoms of lesion and inflammation of the organs. Patience and firmness are now virtues to be put in requisition—the former to prevent undue haste in forcing up the system to an imaginary standard of strength by stimuli, the latter to induce perseverance in judicious local depletion and a cooling practice, in order to moderate the excitement of particular organs and prevent disorganising inflammation in them—the stomach, intestines, or brain.

In two important particulars there would seem to have been a difference between the course and features of the epidemic cholera in India and that occurring in Europe and in this country. These are, in the absence or comparative infrequency of premonitory symptoms, as diarrhœa, &c., and of secondary fever, in India. When this latter did occur, it partook very much of the nature of the common bilious attacks of those latitudes. There was hot, dry skin; foul, deeply furred, dry tongue; parched mouth; thirst; sick stomach; depraved secretions; restlessness; watchfulness; and quick, variable pulse, sometimes with delirium, stupor, and other marked affections of the brain. (*Bengal Reports*, p. 56.) Generally when the disorder proved fatal after having reached this stage, it assumed the characters of low or typhous fever, with black, hard and furred tongue; teeth and lips covered with sordes. In other cases, again, the secondary fever ran a somewhat different course. The reaction was marked by an unusual degree of energy—the brain was evidently affected; pulse as high as 120; great heat, especially in the large cavities, and distressing thirst. To this state of excitement that of collapse quickly succeeded. Among other symptoms at this time, was complete absence of the former unnatural irritability of the stomach.

In Europe, and in this country, the consecutive fever of cholera was more common, and put on great varieties, the chief of which, however, were due to the former habits and constitution of the individual, and the kind of treatment to which he had been subjected during either the second, or the subsequent collapsed stage. The intemperate, the free liver, those prone in former times to phlegmasiæ of the organs, are in danger from this reaction, as are also those who have been freely stimulated by brandy, &c., during the first periods of the disease. In speaking of the stimulating practice of Magendie, in one of the Parisian hospitals, a writer in the *Archives Générales* says: "This treatment has been followed by a degree of reaction which it is often difficult to control. The circulation excited by alcohol soon produces congestions in the head and digestive apparatus; and more than one patient sank with delirium, and afterwards deep coma. For the relief of this congestive state, local and general depletion were always as inadequate a remedy as the application of cold to the head, and the most active revellent irritants to the feet."

Gentle aperients, as of castor oil, magnesia, and the like, with small doses of blue mass and quinine, will be the most valuable remedies in cholera fever.

Convalescence.—The diet of the convalescent should be simple, yet nutritious; regard being paid, in the selection of articles, to former tastes and habits. With some, a milk diet, consisting of rice and milk or bread and milk, custard, &c., answers very well. In most instances, the lighter

animal broths—such as beef tea or chicken water, are preferable, to be soon followed by meats themselves—chicken, mutton-chop, or beef-steak, with bread and rice. The rigorous prohibition of stimuli during the period of the disease, does not extend to that of convalescence. Hence, in those whose stomachs have long been accustomed to other than simple nutritive excitement, we allow condiments to their food: such as pepper, capsicum, and mustard. The habitually intemperate, when such recover from cholera, and the free liver and gourmand, may be indulged in a little wine, of that kind which can be obtained the purest. Adulterated as Port so generally is, it must not be the one selected. But by far the safer practice, whether we regard the present period, or future results, is to administer to these persons a simple bitter; and few are so good as the sulphate of quinia, or, in its stead, chamomile tea, infusion of columbo, &c., in the day, and where wakefulness is present, to give an opiate at night. By pursuing this course, we carry the patient entirely through the period of convalescence, without ministering to his depraved appetite for strong drinks, and, in fact, we rather wean him from his evil habit—certainly furnish him with no excuse for after-indulgence when he is discharged from our care.

Prophylaxis. — The means of preventing an attack of cholera will readily suggest themselves to you, after having been made acquainted with the causes of the disease. The preventive and precautionary measures will consist in a careful avoidance of those situations in which the air is foul, stagnant, and loaded with moisture, and of everything which has a tendency to reduce the energies of the system, either by over-excitement or direct debility, to impede the functions of the skin, or to induce disturbance of the digestive canal.

The first and most important rule for the avoidance of cholera is, to preserve habits of strict temperance—no excess of any kind is to be indulged in, nor experiments made of what the body will endure, either in the way of abstinence or repletion.

The next rule is to observe the strictest cleanliness of person, clothes, and habitation.

The third rule is to preserve the body, by means of warm clothing, from the sudden impression of cold following heat, or cold with moisture. More care is demanded at this time than under ordinary circumstances, and garments of cotton, or still better of woollen, next the skin, should be worn, even though they may be thought a little too oppressive. The feet should, above all, be preserved warm and dry.

An avoidance of late hours, crowded assemblies, long-continued mental exertion and depression, will be so many circumstances worthy of attention by those who would diminish the chances of an attack of cholera.

Another important rule is not to sleep in damp beds, or in low, damp, illy-ventilated apartments, and to shun exposure to the night air, especially that of swampy or marshy districts.

In fine, no medicine ought to be taken during the prevalence of cholera in a place, without proper medical advice. All pretended preventives and specifics for the disease, offered by advertising quacks, ought to be ranked among the most effectual means of inducing an attack of the disease. During the prevalence of the epidemic at Montreal, the authorities very judiciously forbade apothecaries making up and vending, without medical prescription, the medicines and nostrums eagerly sought

after, with the hope of preventing or arresting the disease. Similar restrictions were recommended in New York. Time is invaluable in cholera, and much of the success in curing the disease will depend on the early administration of suitable remedies. But, urgent as may be the demand for assistance, it ought not to be rendered at mere hazard—with the risk often of increasing in place of diminishing the danger of the patient.

LECTURE XLV.

DR. BELL.

CHOLERA INFANTUM—Is endemical in the United States—Scarcely noticed by the English and French writers—Dr. Cheyne's *atrophia ablactatorum* resembles it.—*Symptoms*—Ushered in generally by diarrhœa—state of the circulation—skin—discharges from the bowels—thirst—nervous symptoms—state of the brain—expression of the countenance.—*Prognosis.*—*Causes*—High heat of the summer—Irritation of teething—Errors of regimen—Predisposition—Anatomical lesions—chiefly disease of the mucous follicles of the intestines—Softening of the gastro-intestinal mucous membrane—Billard's case—Entero-mesenteric fever of Serres and Petit,—dothinenteritis of Bretonneau.

CHOLERA INFANTUM, the subject of the present lecture, is a disease which may be considered endemical in a large portion of the United States. In some of its features, including symptoms and anatomical lesions, it bears a no small resemblance to epidemic cholera; for, although generally less rapid in its course than the latter disease, it sometimes runs to a fatal termination in twenty-four hours. From European writers we need not hope to procure much information, either as to the nature or treatment of infantile cholera. Neither by Underwood, nor by his annotators, Drs. Merriman and Marshall Hall, is it even mentioned. M. Billard, in his excellent work (*Treatise on the Diseases of Infants*), after saying that the cholera of infants is not generally noticed in that climate, proceeds, after due acknowledgment, to give in detail the symptoms from Dr. Dewees's *Treatise on the Physical and Medical Treatment of Children*. It is true that he regards cholera as presenting the symptoms of a violent gastro-enteritis, similar to that which he had just described. M. Billard adds: "And although cholera [infantum] is rare in our country, yet there sometimes exist instances of it, particularly in our hospitals, where children are brought that are born in the midst of the most frightful misery, scarcely protected by a few rags from the inclemency of the atmosphere."

When yet a young student, I read with much satisfaction the small essay by Dr. Cheyne on *Atrophia Ablactatorum*, or Weaning-brash, a disease which, as described by this able writer, resembles more nearly infantile cholera, than any noticed in British productions which have fallen under my notice, except the article *Cholera Fever of Infants*, by Dr. Copland (*op. cit.*).

In many points, Dr. Cheyne's description is applicable to the American infantile cholera: as where he says, "The disease is more frequent in children who have been weaned before the eighth or ninth month, and,

in particular, in those who, in consequence of some accident happening to the nurse, have been weaned abruptly." In representing it as a disease of the autumnal months, which he seldom, comparatively speaking, saw before the summer solstice, nor after the end of the year, and as most general in sultry seasons,—he gives a parallel etiology, as far as regards atmospherical distemperature, to that of our cholera. In the climate of Britain, unlike our own, little uniform heat is experienced before the summer solstice. The coincidence of weaning-brash with the period of first dentition is another feature of resemblance. Dr. Cheyne also mentions, that "the first symptom is a purging with griping pain, in which the dejections are wholly of a green colour. When this purging is neglected, and after its continuing for some time, there is added a retching, with or without vomiting; when accompanied by vomiting, the matter brought up is frequently coloured with bile.

"These increased and painful actions of the alimentary canal produce a loathing of every kind of food, and naturally are attended with emaciation and softness of the flesh, with restlessness, thirst, and fever." A physiognomical trait, which we so generally notice in the subjects of our cholera, is also mentioned by Dr. Cheyne: it is the settled discontent of the features, and also a constant peevishness, the effect of unceasing griping pain, expressed by the whine of the child. The discharges, he tells us, are sometimes of a natural colour, at other times slimy and ash-coloured, and sometimes lienteric. "Towards the end of the disease the extremities swell, and the child becomes exceedingly drowsy." The anatomical lesions noticed by Dr. Cheyne are, singular contractions from the stomach downwards, with one or more intus-susceptions, and the liver exceedingly firm, larger than natural, and of a bright red colour, and the gall-bladder filled with a dark green bile.

I refer the more willingly and freely to this little treatise of Dr. Cheyne, from a feeling of gratitude for the assistance which I think I derived from it very early in my professional career, and from its being the only English work that described a disease analogous to infantile cholera, to which, even at that time, I was not a stranger. Dr. Armstrong's (*Diseases of Children*) description of the watery gripes is analogous to that of cholera infantum.

Dr. Copland, whilst referring to his personal experience of the disease in London, and more particularly at the Children's Infirmary, of which he was chief physician, draws, notwithstanding, nearly all his description and the chief parts of its treatment from American writers, and particularly Drs. Rush and Dewees. Useful additions have been made by his editor, Dr. Lee. Drs. Evanson and Maunsell (*A Practical Treatise on the Management and Diseases of Children*) do indeed describe a disease under the title of cholera infantum, but it is meagre in its details both of symptoms and treatment. To home tuition and guidance must the student look to be enlightened respecting the pathology and treatment of this disease.

Symptoms.—Cholera infantum is mostly introduced with diarrhœa, accompanied with more or less pain and fever. After a period of varying duration, the stomach manifests irritability, and vomiting supervenes, which becomes more frequent and distressing, until, finally, hardly anything, even to the simplest drink in the smallest quantity, is retained. Sometimes, after anorexia and slight fever, the vomiting first appears, and is very soon followed by excessive purging. Rarely do the vomiting and irritable sto-

mach persist with, at the same time, a regular state of the bowels. In the beginning there is considerable pain and spasmodic action of the digestive canal, fever, and restlessness; but, as the disease advances, the contents of the stomach are ejected with very little effort, and the irregular motion of the bowels is manifested, chiefly in straining, with tenesmus, from irritation of the lower portion of the great intestine. The circulation is, at first, hurried; the pulse being frequent, but small, and sometimes resisting, though more commonly it is easily compressed. The pulse may be called one of irritation, by its frequency and want of volume. The skin in the first period is hot over the whole surface, except during the paroxysms of vomiting; but in the second, or more advanced stage, the feet and legs are frequently cold, while the abdomen and head are preternaturally hot. At this time, and in proportion as the disease advances, the skin generally is cold and damp, or sodden, and the cutaneous capillary circulation greatly enfeebled. The temperature of the skin will vary with the remissions and paroxysms of the disease, which are frequent, but without much uniformity—the fever being, however, in its intensity, in the main, proportionate to the irritation of the stomach.

The discharges from the bowels vary, in appearance and consistence, with the different stages of the disease. At first, they are greenish, and contain some fecal matter, with bile, or consist of matter having a chopped appearance; after a time, they are slimy, watery, and involving small whitish lumps, with a brownish coloration; and not unfrequently there is lientery, and the articles of food pass off with little or no change. A pink hue in the dejections is regarded by Dr. Chapman as a bad augury. They often give out an unpleasant, sourish smell, in place of the proper fecal one; and at times, as mentioned by Dr. James Jackson of Boston, they resemble water in which putrid meat had been washed.

Thirst is urgent throughout the whole of the first or febrile stage of cholera infantum; and the craving for cool drinks, and especially water, is continual. Often, I have no doubt, the child seeks with avidity its mother's breast, in order to quench its thirst, rather than from any call of hunger, during this time. The distinction in many cases is important, when we wish to save an irritated, it may be sometimes an inflamed, stomach, from even a nutrimental stimulus, beyond what is required by the most limited wants of the animal economy. A few spoonfuls of water, especially during the oppressive heat of a summer night, will be both more grateful, and certainly more salutary, under the circumstances, to the little patient, than milk from the maternal bosom, which is so soon ejected after it has been swallowed, in the inception and height of the disease. The appetite, at first, is small, and at all periods of the disease unequal and capricious. Spoon victuals are often taken by a child that has been weaned, from the same cause that prompts, in other cases, its drawing food from the breast, viz., on account of the fluid portion, which allays thirst. The same advice is applicable, therefore, to this, as to the other case, viz., to allow the child plain water at not unfrequent intervals. In this matter, however, the little sufferer soon contrives to make its wants understood, after it has been allowed to choose between its drinks and its common food.

The tongue, at first white and somewhat loaded, becomes subsequently redder, and finally smooth and chapped at its sides. It and the mouth are often the seat of aphthæ at this time.

The nervous system is deranged in various ways, as might be antici-

pated from an observation of the causes of the disease, which act primarily on it, and of the secondary ones through the irritation of the stomach and bowels. Preceding the disorder of the digestive system, the child manifests impatience, peevishness, and excessive sensibility; and in the first stage of the disease, the expression of the countenance is that of excitement and irritation, as is seen in the contracted brow and shining eye. There is restlessness, desire to change position, or going from one person to another, and tossing about in the cradle or bed; the limbs are somewhat drawn up, sometimes with spasm; and, altogether, the muscular system exhibits its participation in the irritated state of the nervous. But as the disease advances, and it assumes the character of chronic diarrhœa, the decubitus is on the back, the limbs are relaxed, and the head is thrown back. The features are puckered, rather than actively contracted; the eyelids are half-closed during sleep. This sign, in advanced disease, was declared by Hippocrates to be a bad omen, except in diarrhœa and other bowel diseases, in which it is quite common, and has no longer the same unfavourable meaning. Drowsiness and wakefulness alternate rapidly in the first stage of the disease; but in the second and advanced one, the child becomes indifferent to surrounding objects; its fretfulness and impatience are exchanged for feeble querulousness or languid indifference; it sleeps much, or is in a drowsy state simulating sleep. To this state not unfrequently succeeds a partial stupor, and symptoms of oppressed brain, which, by-the-by, are manifested the more, the greater is the debility of the system at large. If, occasionally, there be reaction at this period of what may be properly called collapse, it shows itself more in augmentation of heat of the surface, renewal of thirst, and frequency of pulse, than in symptoms of well-marked phlogosis.

Rapid are the changes made in the nutritive system from infantile cholera. A fat and stout child is reduced greatly in its dimensions, even in forty-eight hours of violent seizure; and if the disease pursues its course unmitigated, the absorption of adipose and cellular tissue is very great, leaving the cutaneous integuments in folds; or, at least, the flesh becomes flabby and destitute of any plumpness or well-defined outline. Even where death is long in making its approaches, the outlines of the Hippocratic face are well defined,—in the tightly drawn skin of the forehead, sunken eyes and cheeks, elevated eyebrows, nose sharp, and the alæ compressed; cheek and lower lip depressed. This expression of countenance has not the same evil portent in intestinal as it has in other maladies; and if proof were wanting in the adult subject, it would be manifested in the disease now under consideration. Children will live for days, and even weeks, with this physiognomy, and in some cases ultimately recover.

The *prognosis* of cholera infantum is not easy, if drawn solely from the intrinsic signs of the case. Thus, of two children exhibiting analogous appearances of disease, we shall augur a greater probability of successful issue of the one who still derives nutriment from the breast of the mother or a good nurse, over the one who is weaned and has no such sustenance. The child in whom dentition has just begun, will have more difficulty to rally under the attack, than the one in whom this process has been in a measure completed. If the subject of a case enjoy the advantages of daily change of air, by a ride into the country, or excursion on the water, and a well-aired spacious room to sleep in, he will be more likely to recover than another who is pent up all day in the city, and confined during the

night in a small, close, and imperfectly ventilated room, the air of which is rendered more impure by several of the other members of the family sleeping in it.

In general we augur well of the termination of the disease, if the stomach can retain food and the bowels recover a better tone, manifested by fecal and bilious discharges, even though these be still quite frequent and not unaccompanied by pain; also if the pulse become fuller and slower and the skin of a more equable temperature with a warm moisture. Often, after convalescence has undoubtedly set in, and all fear of fatal result is over, the disposition still retains its irritability, and the child is both fretful and cross. Where the appetite has been lost, and the patient begins to exhibit a desire for food, even though it be for some unusual article, we regard it as an encouraging sign, unless in the midst of others which indicate approaching death. So, also, is the abatement of the previously intense thirst. The renewal of any of the former habits, although these may be called tricks of the child, such as that of keeping a finger in the mouth when it is asleep, or taking a particular, though an awkward and inconvenient attitude, is favourable.

On the other hand, continued jactitation, only relieved by drowsiness, imitative of stupor rather than of sleep; increase of the vomiting and purging, and spasmodic pain; occasional convulsions; continued heat of the head; intolerance of light at first, or, afterwards, little sensibility to it; tumid and hot abdomen; dry skin, without any remission by sweat, and unquenchable thirst, are unfavourable signs. Aphthæ are certainly adverse to speedy restoration, and in connexion with any other bad sign, must excite great solicitude for our patient; but we often, not to say commonly, notice their appearance in cases of any duration, many of which end happily. Their increase and extension, with a persistence of the bowel complaint, cold skin, and weak pulse, indicate the probability of a fatal termination. Dr. Dewees mentions one appearance, which he observed to be uniformly a fatal sign: "it is a crystalline eruption upon the chest, of an immensity of watery vesicles, of a very minute size." This gentleman also noticed another symptom of bad augury: "which is the thrusting the fingers, nay, almost the hand, into the back part of the mouth, as if desirous of removing something from the throat." I have already mentioned the symptom which Dr. Chapman, in his fine description of this disease, regards as indicating death, viz., a pink-coloured discharge, or rather the napkin is stained in spots of this particular hue; so also when there passed from the bowels a fluid resembling greasy dish-water. A cold, damp, surface is bad, in connexion with other symptoms of sinking, and especially if no nutriment is taken or can be retained; but I have often met with it in cases in which, although the subjects were greatly reduced, they finally recovered. Such a symptom is more common in protracted disease and towards the end of the summer, and when the air is much reduced in temperature, than under other circumstances.

Causes.— Physicians are generally agreed as to the obvious causes of cholera infantum. Some are inclined to add not only a less appreciable but at all times a very doubtful, and in the present case, a very improbable cause — malaria. The disease appears in our cities with the first heats of summer, and continues through the months of July and August into September; abating in this latter month, as the weather becomes cooler. But, although thus manifestly connected with high atmospherical heat, cholera infantum cannot be said to be the product of this alone; for

otherwise it ought to increase in violence in proportion to the warmth of the climate, or as we advance south; which is not the case. Such ought to be the state of things, also, if malaria were the cause. We believe it will be found that it is a more common disease in Boston, for example, than in Charleston; certainly it is more so in Philadelphia than in New Orleans. The explanation I take to be this: that the system of a child, on the approach of its first and even second summer, is very much in the same condition as that of a person newly arrived from the north at a southern city. The susceptibility to heat being great, its effects are felt more sensibly on the nervous system, which it excites, and through it on the vascular system, and even still more the tegumentary; the skin first and afterwards the mucous membranes. These last are kept in a state of irritation short of phlogosis by the high and continued heat acting on the skin; and the digestive ones, in their turn, transmit the irritation to the liver, which is often excited in consequence. Now, in this state of predisposition, if the person be exposed to close and impure air, the circulation and nervous system become more and more disturbed, and there is the very imminence of violent disease, which only requires for its coming on an excess or irregularity in food, loss of rest, or any morbid excitement of the nervous system, whether from bodily pain or mental anxiety. In a child, the disease will be cholera; in an adult, bilious remittent fever, or yellow fever. In both there will be great gastro-enteric disorder, with hepatic and cerebral complications.

In recurring to the original proposition, that the disease is brought on by high atmospherical heat in our cities, we cannot overlook the fact of this being the chief and main endemical agent,—without which other coinciding causes, such as the irritation of teething and of indigestible food, would be generally insufficient for its production. It is, however, the high heat following winter's cold, acting for the first time on an infant whose functions have barely acquired the necessary rhythm, certainly are not accustomed to such stimulation. An infant, exposed from birth to a mild temperature, might be expected to feel less even the great heat of our cities during the summer months. Atmospherical agency is made manifest in the amelioration of existing cases of the disease, and diminution of fresh attacks during the interval of a few cool days at any time in the summer; and, on the other hand, augmentation in both during great heats, and particularly during a close and damp state of the air, when the thermometer is at the same time high.

In a table now before me, I find the number of deaths from cholera infantum in Philadelphia, during a period of nine years (from 1823 to 1831), to be 2323, or on an average 232; the maximum having been in 1831, or 303, and the minimum in 1824, or 155; and those from cholera morbus during the same period, of subjects over ten years of age, 114. You will have observed, in my last lecture on epidemic cholera, that the cases of infantile cholera were augmented in 1832, the 'cholera year,' to 316 in 3 months, as were, indeed, all the diseases of the bowels in that year. In 1833, the amount was 197, or less than it had been for eight years preceding.

The influence of a tropical climate, for under this designation the summer in one of the large cities of the Middle States is entitled to be spoken of, is well illustrated in the following memoranda of diseases of the digestive apparatus among children in Philadelphia and New York,

for the years 1838 and 1839. In the former city, with a population of 200,000, the entire mortality of 1838 was 5118; of which the deaths of children from *cholera infantum* were 382: of these, 364 were under two years, viz., 247 under a year, and 117 in the second year after birth. In 1839 the deaths from this disease were 230; the excess in 1838 being explained by the unusually long period of high atmospherical heat in the summer of that year. The number of children who thus perished within the first year from birth was 142; in the second 75; and between the termination of the second and the fifth year, 13. The entire mortality from the diseases of the digestive canal was as follows:—

	1838.	1839.
Cholera Infantum	382	230
Diarrhœa	65	96
Dysentery	45	68
Inflammation of the Stomach and Bowels	80	83
	572	477

In Washington, the proportionate mortality from cholera infantum is considerable, as might, *à priori*, be inferred from the excessive heat of its summers, without the mitigation of sea-breeze, by which even Charleston and Savannah are made more tolerable for infant life. Dr. Lindsly (*Amer. Journ. Med. Sciences*) gives us some useful information on this point, which is best conveyed in his own words.

"It will be seen by the following table, that of the whole number of deaths in the months of July and August, nearly one-half, and in two instances *more than one-half*, were under two years of age; and that of this number, almost three-fourths died of what is usually termed here 'summer complaint,' under which general term are included cholera infantum and simple diarrhœa of children. Also, that the cases were much more numerous in July and August than in June, that a slight diminution took place in September, and that in October the number was again very small.

"The ratio of cases of infantile cholera in the above table is about the same as that exhibited by the record for several years past, and this may therefore be assumed as the proportion of victims annually destroyed by this fatal disease in Washington, during the months referred to." Cholera infantum was the most fatal malady among children, in 1844, in St. Louis, as we learn from a valuable paper by Dr. Fourgeaud, in the St. Louis *Med. and Surg. Journal.*

In Boston, also, we still find that the summer gives a tropical climate, particularly for children under two years of age. For a period of ten years, from 1821 to 1830, inclusive, in which the entire number of deaths was 10,731, the mortality of children under two years, in the months of July, August, September, and October, was 1537; the whole mortality of this class, for the entire period, being 3182. Hence we see that the deaths of children between birth and two years old, in Boston, in the four months in which the summer temperature predominates, was just one-seventh of the entire number, and one-half of the particular class; or, in other words, the deaths are as numerous among children of this age in these four months, as in the remaining eight of the year. The deaths

from cholera infantum, during the above period of ten years, was 149. Those from 1831 to 1839, or a period of nine years, was 407;—the annual average of twenty years was but a little over 27. This is quite a small proportion of deaths from cholera infantum, in a population averaging, during the entire period of twenty years, about 65,000, and which, in 1840, was 93,470. But if we add the kindred, and probably in most instances identical diseases, reported under the head of gastritis, teething, and dysentery, the amount of cases of deaths of children from gastro-intestinal disease, in the summer months in Boston, will be more easily accounted for; and place this city, on the score of infant mortality, in a line with, but quite behind, Philadelphia and New York. For much valuable information on the vital statistics of Boston, I refer you to the paper by Dr. Shattuck in the *Am. Jour. Med. Scien.*, 1841.

The effect of high atmospherical heat, in the production of infantile cholera, is shown in the great increase of deaths among children in England during the summer quarter of last year (1846). The additional and combined influence of impure air is also manifest by the fact of the mortality having occurred chiefly in the larger towns.

The aggravation of disease by the irritation of teething is manifest to every physician: it aggravates bronchitis in winter and cholera in summer; it might even be said to cause them, by inducing a morbid susceptibility —a predisposition to cold and moisture, in the former season, and to great heat in the second, without which these atmospherical extremes would be relatively innocuous. But, that teething is only of secondary importance in the etiology of cholera, is manifest from the fact that, however suffering from this irritation at other seasons, rarely will children then have cholera. The same reasoning applies to weaning, and the additional irritation to which the digestive system of the little being is exposed by new and unaccustomed articles of food in the stomach. Still, that weaning, or the privation of breast milk, is an active contributing cause, is shown in the proportion of children attacked at this time over those which continued to be suckled. I may go still farther, and while repeating the language used by me in another place (*Underwood on the Diseases of Children*, Philadelphia edition), truly say, in reference to teething and weaning, that "even these causes combined, powerful as they would seem to be in the production of disease, and at times fully adequate to bring it about, are borne with relative impunity by a majority of children, as far as the digestive function is concerned, unless the irritation of high and continued heat, with its too common associate of close and confined air, be added. Teething and high atmospherical heat frequently give rise to the disease." Let it be observed, also, that children have, on occasions, been attacked with cholera under the exposure of heat, but without the irritation of unusual food or of teething.

It would be an error to suppose that cholera infantum is confined to our cities, and does not prevail in the country. I believe, that in all parts, in villages and even farmsteads, as in cities, in which the extremes of temperature in the seasons occur, this disease will be found. Dr. Blue (*Western and Southern Med. Rev.*, Jan. 1842), of Missouri, represents infantile cholera to have been epidemic, within the sphere of his own personal observation at Chariton, Missouri. Were it of malarious origin, it ought to be most frequent in rural districts, and bear a close proportion to the cases of intermittent and remittent fevers, diseases so commonly accredited to this cause. But this is not the case.

There is often a great predisposition depending on temperament and constitution, to be acted on by the common causes of cholera, so as to develop the disease. Thus, I know some families residing in the eastern part of this city (Philadelphia), in closely built streets, whose houses, though comfortable, are without gardens, and any facility for procuring a ready renewal of air, the children of which hardly ever suffer from cholera, although they are not robust; and I am often required to prescribe for them in the diseases of winter. While, on the other hand, some children living in spacious houses, and sleeping in large and well-aired rooms, with opportunities for airing in gardens adjoining, are frequent sufferers, and would sink under the disease, notwithstanding my best efforts, but for a removal to the country. If I were to hazard an opinion, derived from my own observations, which were on a large scale, owing to my long connexion with the Philadelphia Dispensary, and practice among the class of our population whose children are the greatest sufferers from cholera, I should say, they were most readily attacked by the disease whose temperaments were lymphatico-nervous, and whose constitutions might be regarded as anemic, and with a tendency, in after-life, to scrofulous disease. A great development of adipose and cellular tissue, common in children of a strumous habit, is often an external character in those who suffer most from cholera.

Anatomical Alterations.— Connected with a knowledge of organic causes of cholera infantum, is an inquiry into the extent and signification of the *anatomical changes* in subjects dead of this disease. These are not identical in all subjects examined, either as regards the degree of alteration or the organ affected. In some we find follicular inflammation, with redness of the mucous membrane of the intestines; in others a softening of this membrane, with scarcely a trace of existing inflammation, although the latter is believed by many to be a cause of the softening. By many, perhaps I ought to say the majority of American physicians, the liver is regarded as the organ chiefly if not mainly implicated; although, for my own part, I am disposed to regard its enlargement and some other less frequent vices of growth, as an effect of the pre-existent derangement in the intestinal circulation. But still, it cannot be denied that, when hepatic disorder is once established, it may become itself a secondary and powerfully disturbing cause.

The relation, if not identity of follicular gastro-enteritis with cholera infantum, has been set forth in the strongest light by Dr. W. E. Horner (*A Treatise on Pathological Anatomy*, pp. 171–190), who leans to the belief that it is a disease, like hooping-cough and measles, peculiar to man. He has repeatedly seen, in dissections of those who died of the disease, clusters of muciparous glands or follicles of the small intestines, very distinct to the naked eye, and with their orifices enlarged and tumid, and often studded with minute ulcerations. Confirmation of this view is furnished by Dr. Edward Hallowell, in his valuable paper on Cholera Infantum, or as he terms it, *Endemic Gastro-follicular Enteritis* [Follicular Gastro-enteritis?]. —*Am. Journ. Med. Sciences*, July, 1847. Dr. Hallowell asserts that the chief lesions are of the follicles of the large intestine, which are ulcerated in the second stage of the disease.

A softening of the mucous membrane of the stomach, so that in one case it could be scraped away easily in the form of pulp with the finger-nail, is mentioned by Dr. Horner, when describing the *post-mortem*

appearances of some of the fatal cases of infantile cholera; but he is hardly prepared to speak of this appearance as a morbid peculiarity. By Billard, Cruveilhier, and other French pathologists, it would be called a gelatiniform softening of the digestive mucous membrane, of which there are two varieties described by the first of these writers (*op. cit.*), viz., the inflammatory softening and gangrene, and the white softening of this membrane; the latter of which is seen in children who die in marasmus, and who had suffered from insufficient food. For a description of this state of organic alteration, I refer you to my note to the lecture by Dr. Stokes on Gastritis. Dr. Gross (*Patholog. Anatomy*, vol. ii., p. 229) states, that he has repeatedly noticed softening of the mucous membrane of the stomach and colon in the subjects who had died of cholera infantum. In a few instances, it was also seen in the lower half of the ileum. A few pages before, he speaks of chronic inflammation of the mucous membrane of the alimentary tube, as common in infantile cholera, "of which, and of almost all the protracted fluxes of the bowels, it is the principal cause, the affections themselves being merely the symptoms." M. Billard records a case of inflammation of the follicular apparatus of the intestines, which closely resembled the symptoms of our cholera infantum.

In this case, there was a perfect identity of symptoms with those of cholera infantum, and of the *post-mortem* appearances with those described by Dr. Horner. Softening of the brain, injection of the pia mater, and effusion of serum, in the sub-arachnoid tissue, are common in the advanced or third stage of protracted cases of cholera infantum, as indicated by Dr. Hallowell. But the remarks of M. Billard would give a different turn to our opinion of the causes of the disease; as when he tells us, that it is not until about the seventh, eighth, or tenth month, that this follicular inflammation produces any peculiar symptoms, the assemblage of which constitutes the disease described under the name of entero-mesenteric fever by MM. Serres and Petit, and dothinenteritis by M. Bretonneau. To this form of disease, — diarrhœa with slow remittent fever, — reference has been made by Dr. Stokes (*Lecture on Ileitis and Tabes Mesenterica*). We may regard as analogous in its character, "Inflammation of the Mucous Membrane of Infants," described by Dr. Abercrombie (*op. cit.*); "it frequently occurs about the period of dentition, and in many cases appears to be connected with weaning."

LECTURE XLVI.

DR. BELL.

CHOLERA INFANTUM (*Continued*).—Farther dissections exhibiting inflammation of the small intestines and follicles—Dr. Horner's opinion of the nature of cholera infantum—M. Billard's view of the cause of follicular development applied to the pathology of infantile cholera—Resemblance between this disease and epidemic cholera—Hepatic pathology of cholera infantum not sustained by autopsic examinations—Mode in which heat causes hepatic derangement—Contents of intestinal canal.—TREATMENT—Indications to guide us—To reduce excessive sensibility and to remove irritations—Modifications depending on temperament and constitution—Treatment of first stage—Demulcents, chalk mixtures—an opiate, if the teeth irritate—Calomel in minute doses—Oil of turpentine—Cold affusions and cold water injections—Sugar of lead.

THE hepatic pathology of cholera infantum is the favourite one of most of our writers on the disease; but they fail to demonstrate it by the anatomical lesions really met with.

Dr. James Jackson of Boston, in a well-written account of cholera infantum, under the heads of its history, causes, and treatment, gives the results of numerous autopsic examinations made by himself and Dr. J. C. Warren. Among these we find marks of disease of the digestive mucous membrane in every case. In the stomach, one or two small spots of irregular shape, of a red colour inclining to purple, at which also the membrane was swollen; in the intestines, the duodenum invariably exhibited one or more spots larger than those on the stomach, inflamed and swollen. In almost every case such an inflamed patch has been found at the very commencement of the duodenum. "In other portions of the small intestines, other such inflamed portions of the same membrane have been seen, varying in size." Marks of disease were rarely observed in the large intestines, unless when dysenteric symptoms had existed. In one case, throughout the whole of the large intestines, the membrane showed "strong marks of inflammation, and had frequent small ulcerations resembling the canker spots of the mouth." If minute anatomy had been as commonly attended to at that time (1812) as it is now, Dr. Jackson would probably have noticed, at the inflamed spots of the intestine, enlarged follicles, and have designated the small ulcerations as those of the follicles.

In the *New York Medical Gazette*, vol. i., pp. 291–4, two cases of dissections after death from this disease are described by the editor (Dr. Turner). In both there was much gelatinous softening of the mucous membrane of the small intestines, with enlargement of the mucous follicles; in one case, at the lower end of the ileum and the large intestines, and ulceration in the former; and in the second case, there was development of the follicles of the duodenum, and still more, amounting to hypertrophy, of those of the colon, particularly at the lower part. Dr. Swett (*op. cit., ut supra*, p. 294) details the particulars of a dissection, in which the mucous membrane of the small intestines was softened. The glands of Peyer were somewhat enlarged, and some of the solitary glands at the lower part of the ileum were ulcerated. The follicles of the large intestines were generally enlarged, and many of them ulcerated in their centres; some near the rectum penetrating quite to the peritoneum. Dr. W. C. Roberts (*N. Y. Med. Gaz.*) believes the seat of cholera to be in the muciparous glands of the intestines.

Dr. Dewees describes the mucous coat of the alimentary canal as manifesting the effects of previous inflammation during the life-time of the patient. "Dark livid spots are disposed over this part of the stomach and small intestines, particularly the duodenum near the pylorus," coincident with the observation of Dr. Jas. Jackson. "Coagulable lymph is also, in some instances, spread over the surface, or is found in detached pieces."

A morbid state of the follicular apparatus of the intestinal canal being shown to be the chief organic cause of cholera, at least of the more urgent symptoms of vomiting and purging, with fever, it remains for us to ascertain the circumstances under which these glandular bodies have become thus morbidly developed and ulcerated; or, in other words, why they should become specially the seat of irritation and inflammation at this time. Dr. Horner leans to the opinion that the follicular disease constituting or giving rise to cholera infantum is analogous to the exanthemata, both in its anatomical characters, and in its attacking all persons, with more or less intensity, at some time or another, and but once in their lives. An inference from this opinion would be the contagiousness of cholera infantum, of which we cannot be said to have even plausible evidence.

There is yet another view of this subject, which I would say is based on inevitable physiology, or the development of the follicular apparatus, and its greater functional activity in every individual, at a particular epoch, or at any rate, period of his life. Disease may ensue, but it is not a necessary consequence of the great susceptibility of the follicles at this time. This is the view taken by M. Billard, in reference to the greater readiness of follicular inflammation in the mouth, or follicular stomatitis, and of follicular gastro-enteritis and entero-colitis in children, from the eighth or tenth month to the first few years from birth. Aphthæ or thrush (follicular stomatitis), I have before told you, is the most common kind of sore mouth in children; and it is that which is a frequent accompaniment of diseases of the gastro-intestinal mucous surface in subjects of all ages. Now, I wish to apply this view of Billard to the pathology of infantile cholera. Coinciding with the period of first dentition — from eight months to two years from birth — there is a very great increase of growth, and organic and functional activity, of the follicles of the whole digestive system, keeping pace with that of the lymphatic glands. Teething, although of itself a physiological process, and one that may be gone through without pain and disease, is often productive of both, or at least of a high degree of nervous irritation, which is readily converted by any occasional cause into serious disease. We have seen that it is competent to impart a morbid excitement to the mucous follicles of the mouth and pharynx, one of the manifestations of which is aphthæ, or follicular stomatitis. Nor does the irritation stop here; it is sometimes transmitted to the stomach and bowels, the follicular apparatus of which is disordered, and there is diarrhœa, griping, and sometimes vomiting; often loss of appetite, and great thirst. But the causes which more especially affect this division of the follicular system are, irritating ingesta acting primarily on the digestive mucous membrane itself, and atmospheric heat acting secondarily on it through the skin and pulmonary mucous membrane.

If this view be admitted, we have a ready explanation of the occurrence of cholera infantum in children at a particular age; that in which the digestive follicles are most notably developed, and most susceptible to new impressions; and also that in which this susceptibility is liable to be injuriously acted on by the irritation of teething. But the physiological predisposition may and does often pass away, if the process of dentition be easy; and it requires the operation of another cause to generate open and violent disease. This cause is found in high heat; and we see now why there must be coincidence of a particular age or of a predisposition with a particular exciting cause or even causes. Follicular development and susceptibility, teething and high atmospherical heat, can only be brought into conjoint action to the production of diseases within a limited period: it is that in which cholera infantum takes place.

You cannot fail to have been struck with the resemblance between some of the symptoms, and still more of the lesions of the follicular apparatus, in epidemic cholera and in cholera infantum, now that both have been detailed to you; and let us remember that for a knowledge of the anatomical features which establish the resemblance we are indebted to the same indefatigable and truthful observer, Dr. Horner. Dr. Lindsly (*op. cit.*) mentions another feature, tending still further to show the affinity. It is, an empty, shrivelled state of the bladder—noticed by him in three or four cases, in his dissections of subjects of cholera infantum. Diminished

secretion of urine, amounting to suppression, is mentioned by Dr. Abercrombie in the disease referred to at the end of my last lecture.

Dissections of subjects who have died of cholera infantum do not, I repeat, sustain the hepatic pathology of this disease. The only case of very marked organic change of the liver was that related by Dr. Turner (*op. cit.*). This viscus occupied both hypochondria; and "it could be squeezed into a pulp between the thumb and forefinger, and scraped away in a fluid state with the knife; on incising it a drop of blood appeared at each venous orifice." Dr. Gillman detailed a case to Dr. Turner, in which the liver was healthy. Dr. Baxter (*New York Med. and Phys. Journ.*, 1836, p. 276) describes the *post-mortem* appearances of a subject of this disease which he examined: the liver was healthy; and a yellowish mucus was found throughout the intestines.

The chief evidence of a morbid state of the liver in subjects dead of infantile cholera, is its enlargement; as in the cases mentioned by Dr. Lindsly, in which this organ "was so immensely increased in size as to fill very nearly one-half of the abdomen." But we should remember, that in children the liver still retains somewhat of the large, and, as compared with the adult, disproportioned size which it had in the period of fœtal existence. Both the frequency and extent of hepatic congestion, or of congestion of the abdominal viscera generally, are greatly overrated, and are assumed on speculative grounds as the necessary result, it is thought, of deficient action and torpor of the cutaneous system, rather than demonstrated by the appearances of these viscera on dissection. I early advocated (in my Inaugural Essay—Upon the Liver, &c.) the doctrine of what has since been called, by Dr. James Johnson, cutaneo-hepatic sympathy; but I cannot consent to the common hydraulic explanation of the mode in which the liver and skin exert a reciprocal action on each other. The proper, and it seems to me, vital action, is that by which the atmospheric heat excites the skin, and with it simultaneously the capillaries of the portal system. In both, there is at first increased activity of circulation and augmented secretion—of sweat from the skin, and bile from the liver. In both, after a while, there is indirect debility from over-excitement, and then there is suspended secretion; the skin is dry and parched, or at times cold and sodden; the liver ceases to secrete, or separates a watery and imperfect bile. This is, I believe, a truer representation of the state of things in cholera infantum, as well as in cholera morbus and in certain forms of dysentery, as far as the liver is concerned, than the hypothesis of flux and reflux, and congestion, owing to the blood being driven in from one quarter and accumulated in another. That derangement of hepatic function, manifested chiefly by a diminished and depraved secretion of bile, is one of the complications of cholera infantum, is, I think, very probable; but that it alone or mainly constitutes the disease, and gives rise to the chief remote and sympathetic phenomena, I cannot, with a knowledge of the inflammation of the intestinal follicles before me, admit. This last is of uniform occurrence, or nearly so, in cholera infantum; congestion of the liver and other lesions of its structure are only occasional.

The character of the contents of the intestinal canal in the subjects examined is a point of some interest—as showing that the function of the liver is not implicated to the extent assumed. The large intestine is represented, by Dr. James Jackson, to contain feculent matter, and mucus,

sometimes without bile, but usually coated yellow or green by that fluid. This, it will be remembered, like the picture drawn by that gentleman of the lesions of the mucous coat, is intended to represent, without particular specification of period, a common feature of the disease. Dr. Horner, in the three cases more particularly detailed by him (*op. cit.*), found bile in them all. In the first, "the upper part of the small intestines contained yellow bile, almost pure, excepting some mixture of mucus. In the large intestines the contents were also bilious, but greenish, like the discharges which had prevailed." The case had been of three weeks' duration. In the second one, in which the disease lasted two weeks, the little mucus contained in the small intestines was here and there greenish. The large intestine contained no feces, but its two inferior thirds were occupied "with pure pus, of a cream colour, proper consistence, as well elaborated as ever I saw, and destitute of any excepting a very faint odour." In the third case, Dr. Horner found healthy bile in the duodenum, and abundant fecal matter of a light yellow colour. "There was, also, fecal matter in the cæcum, of a light yellow and chapped appearance, but none in any other portion of the large intestines."

The contents of the intestines are not noticed in the cases recorded by Drs. Turner, Swett, and Parker.

As already mentioned, it is not uncommon to see, in the more advanced stage of the disease, some effusion into the ventricles and on the surface of the brain. The viscera of the thorax were, with very few exceptions, healthy.

Treatment.—The symptoms of the disease and the *post-mortem* appearances indicate, with tolerable clearness, the course which we have to pursue in the selection of curative means. They are, in the first stage of cholera proper, to remove gastro-intestinal irritation, which is sometimes merely functional, but in a majority of cases depends on follicular enteritis, associated not unfrequently with erythemoid inflammation of the mucous membrane of the intestines, and occasionally of the stomach. In the second stage, or the chiefly diarrhœal one, we have to bear in mind the probability of softening of the intestinal mucous membrane taking place, and that the follicular disease is either on the decline, or has reached the stage of ulceration. Our treatment of cholera infantum would be not a little modified, at least as regards energy, if we are to believe in its being a disease dependent on specific follicular inflammation, to which all are subject, and which when once fully developed must run its course, from inception to increment, height and decline, and termination in resolution or ulceration, commonly both, in different patches of the intestinal mucous membrane. This is the view suggested, rather than very positively affirmed, by Dr. Horner. Against its accuracy we may object the very different periods which the disease is observed to run in different individuals; its relapses, and distinct renewals after intervals of some duration—a course of things quite at variance with the uniformity observed in the exanthemata, to which infantile cholera is supposed by this pathology to be analogous. Taking the physiological basis, or the development of the intestinal follicles and their irritability at the age in which children are chiefly liable to cholera, we can readily understand why, under a renewal of the exciting causes, there should be a return of the disease.

Removal of Irritants.—A review of the causes, chief symptoms of

cholera, and of the anatomical lesions observed after death, will go far to guide you to the treatment, both hygienic and medicinal, of the disease, and, what is yet more important, its prophylaxis. All the irritants by which the mucous and respiratory membranes primarily, and the nervous and vascular symptoms secondarily, are excited, must be removed, or their force mitigated. They are, high heat to the skin, hot and impure air to the pulmonary mucous, and new and disproportionately exciting ingesta to the digestive mucous membrane. Unless we succeed in reducing the morbid sensibility of the system, kept up by these causes, we shall gain little mastery over the disease; and in order to accomplish this end, we must, from the very outset, draw on hygienic agents, viz., cool and pure air, cool water for bathing and drink, and mild, unirritating ingesta. Without we enlist these in our service, and from time to time, as the symptoms indicate, abate the irritation of teething, by topical and chiefly surgical means, we must not hope for much from medical means, prescribed with the common intention of restoring the healthy secretions of the liver and muciparous glands, and giving tone to the digestion, &c.

The different diagnostic value of certain symptoms will prevent your becoming routinists and reposing implicit confidence in a mode of treatment for the whole disease, which is applicable only to a particular stage, or for the beginning, which is only proper in the concluding period. Thus, for example, heat of the skin and a burning heat over the abdomen, a frequent and somewhat active pulse, restlessness, intense thirst, scanty urine, bilious and acrid discharges, will call for a different treatment from a cold and clammy skin, small and feeble pulse, watery and nearly colourless discharges or scourings from the bowels, a moist tongue and aphthæ, and heaviness and somnolency approaching to stupor—even though in both series we have vomiting. The modifications depending on temperament and primary constitution are not to be lost sight of: they will form elements in our calculations as to the intensity of the disease and the propriety both of selecting certain remedial means, and of insisting with more or less freedom on their use.

In the first stage, or that of more manifest gastro-intestinal irritation with exalted sensibility, the treatment will consist in a prompt withdrawal of all but the simplest nutritive articles, and an avoidance of medicinal irritants. The drinks should be cool, mild, and mucilaginous; the lungs should be subjected to fresh air, the skin to tepid bathing. Suspicion of indigestible substances having been recently given will authorise a mild emetic, as of ipecacuanha, or the state of the stomach forbidding this, a laxative enema, to be followed by simple mucilaginous ones. Vascular excitement being manifest, a few leeches over the epigastrium will be of service; their application to be followed by emollient cataplasms or warm stupes, extending over the abdomen; or if the temperature of the surface be unequal, the warm bath should be used. The state of the gums will early engage attention, and if they are swollen and inflamed, or spongy, and the teeth may reasonably be expected to appear, the former should be freely lanced. The more obvious and probable causes of irritation in the gums and contents of the stomach and bowels being removed, and any tendency to high irritation or inflammatory action being abated or subdued, recourse, if need be, to different medicines and compounds, is proper with a view of quieting the stomach. Of these, the simplest are to be preferred, such as mucilage of gum arabic, alone or mixed with lime-

water, or mint, or peppermint, or camphor-water; then small doses of the alkaline carbonates with mucilage, or chalk powders or mixtures; one effect of which is to allay the gastro-intestinal irritation and to soothe the nervous system. Restriction to gum-water or cold infusion of the leaves of the bene plant is often alone sufficient, in such cases, without any drug being used. On this point I shall say more when speaking of drinks.

The temporary controlling power of opium is often manifested so far as to procure a cessation of the vomiting and purging, while its hypnotic effects last; after which the symptoms return as before. We gain little by persevering in its use under these circumstances, unless the child be irritated and wakeful and restless by a protruding tooth; or in a state of great exhaustion by the prolonged vomiting and purging, and want of sleep. A suspension of the disease for a single day is often of great moment under these circumstances. But narcotism is to be deprecated, as deranging still more the nervous system, and increasing its susceptibility to existing morbid causes.

Calomel.—Sometimes relief is obtained at once, though seldom a cure, unless suitable prophylaxis be attended to, by the administration of minute doses of calomel, as when a twelfth to an eighth of a grain, mixed with five grains of gum arabic, is given every three or four hours. Of late years I often prescribe, in place of gum, about the same quantity of prepared chalk to be carefully mixed with the calomel, on which it exerts of course a chemical, and, in reference to its therapeutical activity, what might be called a reducing power. A practice, occasionally successful, consists in giving in the early stage, in advance indeed of any other remedy, one to two or three grains of calomel, regardless of its causing a sickness of stomach and vomiting itself, as these soon subside: the subsequent purging and evacuation of green, slimy, and bilious stools are regarded as proofs of beneficial action on the liver, by exciting it to a freer secretion, and thus unloading it of congestion. With similar therapeutical intentions, small fractional doses of calomel are used by many practitioners, especially in Philadelphia. There is not, I believe, any one remedy which displays such strikingly curative powers, in either arresting the disease or mitigating its violence as this does: but a recurrence or relapse is frequent after its use, and then a repetition of the remedy will not be followed by the same sanative effect as before. Oil of turpentine, in a dose of from three to five drops on a few grains of sugar, has acted favourably in relieving vomiting.

Cold Affusion and Cold Enemata.—When the heat of the skin, and especially that of the abdomen, is great, cloths dipped in cold water, or even affusions of cold water on this region, have been used with satisfactory results. I have found such means afford temporary relief, by abating the fever and restlessness; but they did not exert any controlling power over the disease. More might be expected during the period of febrile excitement and gastric irritation by the injection of cold or even iced water, as recommended by Dr. Miller. He refers to Cleghorn's report of the Spanish medical practice of allowing the drinking of cold water to patients with violent cholera. I have often directed, with soothing effect, an enema of water of the common temperature of the air, at the time, between 65° and 70° F.; and upon the whole, I am inclined to believe this to be the better practice.

Sub-Acetate of Lead.—Sugar of lead is found to be well adapted to allay the vomiting and abdominal pains, and certainly may be had recourse to

long in advance of any other medicine of the class (astringents) under which it is, but, as I conceive, somewhat arbitrarily ranked. The sub-acetate of lead is certainly more distinctly sedative than astringent, and is best adapted to follicular inflammation of a sub-acute or chronic kind; hence its use in chronic diarrhœa and leucorrhœa, and as an injection in this latter disease and in gonorrhœa. Failing to tranquillise the stomach in twelve hours, the use of this medicine should be withheld until the disease falls into the diarrhœal stage, when recourse may be had to it with greater benefit. If its use is thought proper in the stage of which I am now speaking, it will be given in a dose of a fourth, to a third, or half of a grain, combined with a few grains of gum arabic, every two hours. It is given often in conjunction with opium, so often indeed in this as in all the diseases in which it is used, that there would seem to be a necessary, I was going to say inevitable connexion between sugar of lead and opium. The fact illustrates both the strong adherence to routine practice, and some mistrust in the therapeutical powers of the salt of lead. Better, by far, particularly in the early stage of gastro-intestinal disease, give it alone, and if it fail to produce the expected effect, then, either to suspend its use, or to combine with it a minute quantity of opium. The same remark applies with equal force to calomel in cholera, as well as in many other analogous diseases.

LECTURE XLVII.

DR. BELL.

Cholera Infantum (*Concluded*).—Caution not to irritate the stomach by needless repetition of either food or medicine—Danger of relapse during hot weather—Remedies for the diarrhœa after vomiting has ceased—Nitrate of silver—alumina—Dr. Durr's cases, illustrative of German practice—Astringents,—of secondary value—Treatment when the disease remits—Renovation by fresh air—Treatment in the state of collapse with diseased brain—Proper food for the patient—Drinks,—great importance of selecting them and regulating their use—Removal of irritation from teething—Paramount importance of pure air, day and night—Bathing—Continued watchfulness on the part of the mother to withhold all irritating ingesta—Preservation of equable temperature of the skin—*Prophylaxis*,—cool air, cool bathing, cool drinks, and proper food at stated intervals.

Avoidance of Gastric Irritation.—In the administration of both medicines and food at this period, and when the patient is no longer harassed by vomiting, but still has irritable stomach, it is a point of the greatest importance to let suitable intervals elapse between the dose or the meal. Not unfrequently we have the mortification of learning that the first dose stayed the vomiting, while after the second it came on, must we not say, was brought on. So in respect to food, whether derived from the mother's breast or given by the bottle or by spoon, it is deemed by many highly necessary that the supply should be frequent but in small quantities. Now, this is a means itself of keeping up perturbation of the stomach. The preferable plan is, to allow the child nearly as much as its appetite craves at the time, and then not present any food to it until a period has elapsed when we may suppose that already taken to have passed from the stomach.

Frequent feeding I hold to be as bad as excessive repletion at long intervals. Nor can prolonged abstinence be recommended in the disease now under consideration. It alone will render the stomach irritable, or at least less able to retain and digest the proper allowance of food afterwards.

Towards the decline of the first stage of cholera proper, or that of vomiting and purging, the least indiscretion on the part of the mother or physician will renew the sickness of stomach. The slightest change in the food, as when the mother allows herself to be irritated or needlessly annoyed, and secretes bad milk in consequence, or carelessly gives cow's milk, which is ever so little turned, or yielding to the persuasion of the last intrusive gossip, some new specific, will bring back the vomiting. Medicine, continued after the more pressing indications for its use in the first instance are fulfilled, will sometimes have the same effect. Change of posture from the recumbent to the sitting, or that approaching to it in the mother's or nurse's arms, will also bring back the vomiting; and hence the injunction, on both mother and nurse, to keep the child in a posture of half-recumbency, whether it be in the arms, in the nursery, or in the open air, or in a carriage. A hot night, during which fresh air has been excluded from the room, will also have the same deleterious influence, which is not a little increased, if, in place of quieting the restlessness of the patient by giving it a few spoonfuls of cool toast and water, or plain water, it is attempted to be soothed by being put frequently to the breast, or, worse still, allowed to remain at it asleep.

The vomiting once checked, and the more immediate distress of stomach removed, there is often such an abatement of the other symptoms as to promise speedy convalescence. This result cannot, however, be considered permanent, so long as the great heats of summer prevail, and the irritation of teething is continued. There is a risk that the complaint, after a temporary cessation, will become a fixed diarrhœa, varying in its character; in its being sometimes bilious, but more commonly serous or mucous, and gradually by its persistence wearing out the strength of the patient. If it continue, the symptoms of cerebral disease increase, and towards the fatal conclusion of the disease, they might impose on a person, who had seen the case only in this stage, a belief of its being true hydrocephalus, or dropsical effusion on the membranes of the brain.

Diarrhœa.—It is not necessary to enumerate the different remedies and their combinations, which are supposed to be applicable at this time, as most of them have been noticed at the time when speaking of 'Diarrhœa.' Of those which may be considered as of more recent introduction and use in cholera infantum, sugar of lead stands high in the opinion of some practitioners,—both in the first cholera stage, and, still more, in the second or diarrhœal. Nitrate of silver, also, you may remember, I pointed out to you as an available remedy in dysentery, and in the chronic diarrhœa of children. Some years ago, it was used in the case of his own child, by Dr. Skinner, of Hertford, North Carolina (*Am. Journ. Med. Science*, vol. xi., p. 253). Dr. S. gave the nitrate, in the advanced or diarrhœal stage, in a dose of a grain mixed in a teaspoonful of mucilage of gum arabic, every four hours; gradually, after the first day, increasing the dose, and giving it at shorter intervals. It was discontinued on the third day; all the urgent symptoms having been removed, and convalescence fairly begun. The dose of one grain is larger than it would be thought advisable to begin with in a subject of the age of Dr. Skinner's

child, which was seventeen months old. M. Trousseau advises a fifth of a grain for a dose, and a grain for an enema.

Prepared alumina (*argil*) has been extolled by some German practitioners, and particularly by Dr. Dürr, as a remedy adapted to even the earlier stage of cholera infantum. To be successful with its use, the doses must be pretty large, as from half a drachm to a drachm in divided quantities, in syrup, or any proper vehicle, during the twenty-four hours. It will not be without instruction, if I repeat here the outlines of the practice of Dr. Dürr, as somewhat illustrative of the treatment of the disease in Germany, where it prevails, I should suppose, to a greater extent than in France or England. I will even go further, and premise a sketch of the symptoms as I find them laid down by the writer in question in the *British and Foreign Medical Review*, vol. i.

"The chief symptom of this dangerous affection, which runs its course in from two to ten days, is profuse vomiting, without any effort, of a sour-smelling fluid, varying in consistence; in many cases diarrhœa had lasted a whole week, when the first alarm was excited by the sudden appearance of vomiting. Collapse and rapid emaciation of the body followed, with depression of the anterior fontanelle; hollowness of the eyes, paleness, alteration and shrinking of the features, cold extremities, hot occiput, and more or less fever; *agrypnocoma*, or a lethargic state without actual sleep, restlessness, crying, whining, throwing itself from one arm of the nurse to the other, drawing up the feet to the abdomen, want of appetite, great thirst, stiffness in the nape of the neck, and the stomach so distended that it projected in the left hypochondrium like a distended bladder.

"Dr. Dürr's practice in this disease was, to quiet the irritation in the stomach and bowels by emollient oleaginous remedies in combination with the argil; to excite the activity of the skin by extr. cicutæ internally, and the application of an epispastic powder externally. The immediate effects of this were, diminished frequency of the evacuations, the natural yellow colour returning, quiet, excoriations in the folds of the skin about the neck and groins. In very young children the cerebral affection was often allayed merely by the chlorine water (aqua oxymur.); in older children, or where the symptoms were more violent, by leeches to the scrobiculus cordis, or behind the ears, according to circumstances; the dryness of the skin, the lethargy and coldness of the extremities, were treated with baths of chamomile and salt, and with cold lotions to the head; warm stimulating aromatic fomentations were used from time to time, and enemata of elder and linseed, to which the yolk of an egg rubbed down with linseed oil was added. Dr. D. assures us that, in other acute diseases also, where the rough, dry state of the skin had defied the usual remedies, gentle perspiration had followed the use of these enemata. The epispastic powder which he mentions, was first described by Autenrieth; it consists of fresh prepared mezereon bark powdered. When the skin is not very delicate, it not unfrequently fails to produce any effects. Dr. D. has used it combined with calomel, and in very severe cases with corrosive sublimate, with great certainty and effect. The spot to which it is applied usually becomes red in the course of from six to twelve hours, and in about as much more time, moist and excoriated. If the powder will not stick, he moistens the spot with a little saliva of lard.

"The result of his practice is decidedly favourable: of 67 children from

the time of birth to the age of fifteen months which he has treated for this disease during 1833 and 1834, he lost only seven. Dr. Dürr has given several interesting cases, both successful and unsuccessful, together with the examinations of the latter after death. Great congestion of the cerebral vessels, and considerable softening of the stomach, so that portions of it were quite pulpy, were the chief features; and in one case there was perforation."

It is not necessary, nor to be expected of me, to enumerate every astringent which, by one practitioner or another, has been used in cholera. In their strictly curative powers, I have small faith. Early in the disease, they are injurious; later, they may commonly be dispensed with, unless we are assured that there is simple anemia, and, as regards the follicular apparatus, a simple relaxation of tissue without inflammation either of the glands or the intermediate mucous membrane. When we have recourse to them, it is better to take one or two from the class which contain in largest proportion the tannic acid, or we may administer this latter itself in suitable dose; and thereby avoid the risk of offending the stomach and intestines by woody and inert extractive matter. Next to tannin will come nutgalls in powder, tincture or infusion, rhatany (krameria), and kino. Tincture of kino or of rhatany with chalk mixture forms one of the best preparations in infantile diarrhœa, when the fever and abdominal heat are inconsiderable. Country practitioners, on whose judgment in the treatment of diseases and the relative powers of medicines with which they are familiar, we may repose considerable confidence, employ several indigenous plants of the astringent class in the diarrhœa of children. Of these *cranesbill* or *geranum*, *rubus villosus*, and *r. trivialis*, or blackberry and dewberry roots, *uva ursi* or bearberry, and *chimaphila*, or pipsissewa, are the most esteemed. The tincture of the sesquichloride of iron, I have found to check obstinate diarrhœa in children. Dr. Chapman speaks highly of the bisulphate in solution with sugar, in a dose of a fourth of a grain. Starch, with a few drops of laudanum or infusion of rhatany and as an enema, will be of service on the subsidence of the acute stage.

Remedies for the Remittent Form.—In my own practice I rely more on the means before indicated, both of a hygienic and medicinal character, for the reduction of gastro-intestinal irritation, and of nervous and vascular excitement, than on any specific operation from a particular remedy, or class of remedies. Following out this view, if, after a subsidence of the vomiting, and an abatement of febrile action, there should be daily paroxysms or distinct remissions, I prescribe sulphate of quinia, in a dose of from an eighth to half a grain twice in the early part of the day; and a minute portion of Dover's powder, or a fraction of a grain of calomel with chalk, or chalk and ipecacuanha in the evening; and direct the warm bath at the same time.

In a degree of the disease beyond this again, it is not unusual to find the little patient with the skin cold and clammy, and the prostration and torpor of the system considerable. He lies nearly all the time listless and unobservant of anything passing around; but when roused, will take food with considerable avidity. It is now that animal broths, especially beef and chicken, from which the fat has been carefully skimmed, can be given with advantage; but not to the exclusion of the farinaceous food heretofore used by the patient. At this time I have derived the best effects

from sulphate of quinia administered in solution. It invigorates the patient, serves to correct the morbid state of the bowels, and every way exerts a cordial effect. Its use does not, of course, prohibit the continuance of other remedies adapted to particular symptoms,—such as the chalk mixture, Dover's powder, or ipecacuanha and magnesia. Oil of turpentine is used, in the advanced stage, with benefit, and even in the earlier stages sometimes quiets the irritability of the stomach. The warm, or if there be any reaction, the tepid bath, to be followed by assiduous frictions over the body, and paticularly the abdomen, along the spine and the lower limbs, is an exceedingly useful adjunct to the remedies already indicated. Rubefacients over the epigastrium or other parts of the abdominal surface are to be preferred to vesication, from which, and especially if repeated, I have seldom seen good to result. The restorative effects of fresh air in cholera infantum are strikingly evinced in the relief procured to many hundreds of children every summer in Philadelphia, by their simply crossing and re-crossing the river Delaware in steamboats once or twice a-day. New life is restored to the little beings, who on leaving their homes in the city seemed almost exanimate and in the last stage of incurable exhaustion.

In the stage of collapse with symptoms of oppression and effusion on the brain, as insensibility to light, dilated pupil, or strabismus, stupor alternating with restlessness and slight spasm, or more decided convulsive movements, a modified treatment is demanded. Sometimes the heat and sensibility of the skin are still considerable, and the pulse frequent. In such a case, a few leeches may be applied to the temple, cold cloths to the head, and warm pediluvia or stimulating liniments to the feet; a cold dash over the chest and abdomen will at times be proper as a means of rousing the patient by the first shock and subsequent reaction. Calomel is to be given either alone at short intervals, if the bowels are still loose, or alternating with small doses of castor oil and a few drops of oil of turpentine, if they are not free.

Collapse, on the other hand, attended with cold skin, slow and very feeble pulse, and general insensibility, requires counter-irritants to the feet by sinapisms, to the nucha by blister, or to the whole scalp by a similar application, and oil of turpentine and assafœtida mixture as an enema, and in smaller doses, alternating with volatile alkali, by the mouth. Wine-whey, by teaspoonfuls often repeated, is at times signally useful. When reaction is established with febrile excitement, we suspend the use of stimulants, but not too suddenly; and give calomel if the stomach and bowels be still in a morbid state.

Food in Cholera Infantum.—As regards the food of the patient, simplicity is to be our first and chief study. Milk must be regarded as its chief aliment. If, unfortunately, the disease appears soon after the child has been weaned, measures ought to be taken to procure for it the breast of a healthy nurse. This being out of our power, a period of some months having elapsed since weaning, or the age of the child no longer making this point a question, we must see that our patient receives food the most resembling that from the maternal fount. Milk, with the addition of a small quantity of hot water, and some sugar, at first, and afterwards of a little rice or arrow-root flour to thicken it when it is in the process of boiling, will be the best succedaneum. In the more advanced stage of the disease, cream is sometimes better borne by the stomach and better

digested by it and the intestines than milk. By some, pounded or grated crackers, or ground rice; by others, wheat flour, mixed with milk, in its boiling state, is preferred for the child's food. The difference is inconsiderable except in the case of the flour of wheat, including, of course, that in the form of crackers or bread baked, which, by its gluten, has an additional nutritive principle to that of fecula: this latter makes up, you know, the chief bulk of rice, arrow-root, sago, tapioca, potato, starch, Iceland moss, *tous les mois*, &c. In the beginning of the disease one or other of these articles may be given, as nutriment, boiled in water to the consistence of jelly and sweetened. After the stomach is composed, a little milk or cream may be added to the powder thus prepared with water. We can better proportion the quantity of milk in this way than when it is originally boiled with the arrow-root, or rice, &c. The addition of a little nutmeg, cinnamon, or ginger, gives flavour, and often enables the stomach to retain it more readily. There are peculiarities in respect to the precise kind of food which best agrees with an infant, worthy of notice. Sometimes milk, which alone disagreed with the stomach, and kept up purging, becomes easily digestible by the addition of a little wheat flour or rice flour. At other times common pap, or milk boiled with wheat flour, continually disagrees.

As the disease advances and symptoms of mere feebleness and imperfect nutrition—cold skin, weak pulse, diarrhœa, without thirst or fever—are manifested, animal food may be more freely given, either in the form of broth carefully divested of its fat, or of a jelly, prepared by long boiling, of a little veal or chicken, or finally, by allowing the child to suck the juice of a piece of meat, but without swallowing it. At this time, good effects have been procured by salt meat, such as a piece of ham, used in this way. The salt itself is a healthful stimulant to the weakened digestive function, and when tolerated by the taste of the child, it may very well be substituted for sugar in its common food. It is sometimes preferred, even alone, to the latter. Plainly boiled rice with salt, I have every now and then found to be well relished by infants. Quite a palatable and nutritious broth is made by boiling two handfuls of rice in a pint of water slowly to half the quantity, after an ounce of good beef, or the leg of a chicken, divested of its skin, has been introduced.

Drinks constitute one of the chief means of treating cholera infantum with advantage. Not only are they required for quenching thirst, but they exert a no small influence over the vomiting and purging, when judiciously administered. The drink entitled to the preference over all others is cold river or rain water; if these cannot be procured, spring or well water first boiled and then made cold. So long as there is vomiting the quantity at any one time ought to be small. If the thirst continue urgent, notwithstanding a reasonable allowance of simple water, a little gum arabic should be added. Gum-water has the advantage of sheathing, as it were, the mouth, tongue, and fauces, and preventing the rapid evaporation and dryness of these parts, on which the sensation of thirst and craving for drink depends fully as much as on the state of the mucous membrane of the stomach. Gum-water I have often found to suffice in place of all medicine in cholera infantum; at first to allay the vomiting, and afterwards to restrain the purging. Whenever you feel yourselves embarrassed in the treatment of this disease by the want of the expected effects of the customary medicines, and by seeing that everything you

prescribe seems to irritate the digestive canal, or at any rate fails to check its morbidly frequent discharges, you may, with no little confidence, withhold all of them, and give gum-water alone, in their stead. I have repeatedly succeeded, by its exclusive administration for a day or two, in giving a most salutary turn to bowel complaints which seemed, from the bad success of all the most approved remedies, to be unmanageable. The quantity of gum in the water will vary according to the intention,—either as a mere drink, or as a demulcent, and for nutrition. In the latter case it may be slightly sweetened. On the same line with gum is rice or barley-water, especially if it be drank slightly salt. But as I have already enlarged on the virtues of these articles in diarrhœa, I shall not farther speak of it in this place. Both the rice or barley-water, and gum-water, may be given cold, and even iced during the first and more evidently febrile stage of the disease, when the thirst is urgent and the heat of the skin is great. Grains of ice in water will be found both grateful and salutary at this time, to check the vomiting and nausea. As the tastes or appetites of children differ much respecting the temperature of their drinks—some preferring them cold, others warm—we may safely trust to their inclination on this point. Slightly acidulated drinks, rendered so either by vegetable or mineral acids, tea of any of the milder herbs, such as of balm, toast and water, &c., will be relished by many.

Irritation of Teething.—The irritation of teething I have mentioned as one of the causes of infantile cholera. This in a child under two years of age is always to be suspected, and when present will be found to give additional power to any existing disease, whether it be of the digestive or respiratory apparatus. It will be enough for me to refer you to my remarks in a former lecture (*On the Diseases of Dentition*), for the course proper to be pursued in the emergency. Opiates are, as I stated a few minutes ago, more admissible, indeed more called for, in cholera with troublesome and painful dentition, than where this complication is not present. The warm bath and warm pediluvia are also more serviceable than in the simple disease of the digestive passages, unaccompanied by much nervous irritation.

But with all our skill in the selection and administration of the best therapeutical means, and of suitable food and drinks, we shall not make sensible progress towards a cure, unless we can improve and alter the deleterious air breathed by our little patient. Its deleteriousness is not from any malarious impregnation, but from its want of perflation and renewal, and the excess of heat, of which it is the conductor. Direct experiments, and accidental occurrences, from exposure of individuals and of numbers crowded together, render it certain that the stomach and digestive apparatus generally are as much offended by the inhalation of impure air as by the eating of indigestible and even poisonous substances. "Water! water!" was the cry continually repeated by the unfortunate persons who were confined in the Black Hole of Calcutta; and their sufferings from thirst and a burning heat and sickness at the stomach were greater than from their oppressed breathing and disordered circulation, caused by the impure air inhaled and acting on the lungs. Having availed myself of this illustration, I shall continue the remarks which follow it in my supplementary chapter to Dr. Combe's work on the *Physiological and Moral Management of Infancy*, pp. 294–7.

Hygienic and Prophylactic Treatment.—The indispensable condition,

therefore, in a vast number of cases for the avoidance of the disease as well as for its cure, is the access of fresh and somewhat cooler air both to the lungs and skin—a condition this, also, for restoration from the irritation, and feebleness, and fever, which harass so often in the summer months a child during the process of teething. Parents who are desirous that their children should avoid bowel complaints, under the various names already mentioned, must contrive to change the air which their children breathe, by taking them into the country. Some do this for the whole summer; others take their children daily out a-riding; others, and the larger class, have not the facilities of either of the other two classes, but they have still much in their power. They can so manage that their children shall enjoy early in the morning the air of some of the public squares of the city; or at this time, or if it must be, later in the day, the still fresher air on the water, in one of the many steamboats which are plying at all hours. I am sure that the lives of many hundred children are saved annually in Philadelphia, by their mothers availing themselves of the resource offered in crossing and re-crossing once or twice a-day the Delaware, and by spending a while on the Jersey shore. Still greater and more diversified facilities are presented in New York.

The period of the severest trial and greatest suffering of children in the cities, and particularly in the less favoured parts already specified, is during the night. The heat which was absorbed during the day by the walls of the houses and the pavements of the streets, is now in process of being given out, and prevents any notable change in the air until near morning. But slight as the change may be on the score of heat, it is desirable to allow of the free access of the outer air during the night to the bed-rooms, in which often the father, mother, and several children sleep, or rather are lodged together. If the inmates do not gain a cooler, they at any rate breathe a fresher, a more elastic air, and suffer less. Attention should be paid to the minor, though far from unimportant economy of the sleeping-room, respecting the bedding, which should consist always of a mattress and a hard feather or hair pillow. A child tossing about in feverish heat in a feather bed, or buried under a load of clothes, will often be revived at once, and restored to sound and refreshing sleep, by putting it on a folded sheet, which again rests simply on a piece of matting or floor cloth, and by throwing a light coverlid or sheet over it.

Another and a valuable resource is afforded to all classes in the use of a bath. Water and a wash-tub are the only conditions required for this purpose. Regularly every morning, during the summer season, ought the child to enjoy the benefit of a shower bath, given by pouring over it a bucket or even a pitcherful of water, while it is seated in a tub of any fashion. In our cities the water procured from the hydrants will seldom be found too cool; but if doubts be felt on this score it can be drawn over-night, and allowed to remain in the room until it is wanted in the morning. There are cases of great delicacy of frame and nervousness in which it is proper to raise a little the temperature of the water for the bath, so as to render it tepid or slightly warm. This will be more frequently proper in the evening, at which time cold can be illy tolerated, and is seldom serviceable. After a morning bath the child is better able to bear without suffering the great heat and close air of its lodging, should it unhappily be thus restricted. Friction assiduously practised on the

whole skin, especially along the spine and on the abdomen and chest and lower limbs, ought to follow the bath.

If reason and proper conscience be allowed to rule the conduct of the mother to her child at this time, she will be zealously watchful that nothing is received into its stomach, but what, in the opinion of prudent advisers, and from her own positive experience, will contribute to its nourishment, with the least fatigue to this organ, and distress of any kind to other parts. Whim, vulgar rumour, or ignorant suggestion must not sway her in a single particular on this subject. The slightest deviation from its plain and simple, and healthy food, may be attended with consequences as fatal as if her child had swallowed poison. And, in fact, any kind of food or cake, or fruit not adapted to the state of its stomach and power of digestion at this time, is a poison; and they who advise, and she or he who administers it, are guilty of poisoning.

At such a time, when the stomach is peculiarly irritable and liable to be inflamed by any unaccustomed article swallowed, it is of paramount necessity and duty to withhold all the nostrums which have been so boastingly and so falsely lauded by their manufacturers and venders, as sovereign cures for *cholera infantum* and the bowel complaints generally of children. The manufacture originally of such articles was begun in ignorance, and their circulation and sale are kept up by falsehood and deceit, to which the perjury that is whipped and branded by law is often venial in comparison. The true restoratives for a child threatened with disease at this season are, cool air, cool bathing, and cool drinks of simple water, in addition to its proper food taken at stated intervals.

As the season advances, and the difference between the temperature and other states of the atmosphere, particularly in regard to dryness and moisture, becomes manifest, a modification will be required in the regimen of the child. The food may then be a little more stimulating; and less free exposure to the night and very early morning air will be advisable. So, also, the clothing, which, during the extreme heats, particularly in the city, could hardly be too light, must now, as autumn approaches, be of a thicker substance and warmer texture: the feet especially will require protection against sudden changes of temperature, as well as against moisture.

The details into which I have been led respecting the hygienic, at the same time with the strictly medicinal treatment of cholera infantum, will render any formal summary of the means of prevention unnecessary. They have been set forth with adequate distinctness in my preceding observations. They are summed up in the very words which I have just used when describing the true restoratives for a sick child threatened with disease in summer—viz., "cool air, cool bathing, and cool drinks of simple water, in addition to its proper food taken at stated intervals."

LECTURE XLVIII.

DR. STOKES.

GASTRITIS, WITH DELIRIUM TREMENS.—Intestinal worms—Varieties of—Organization and origin of—Occurrence in the fœtuses of various animals—Formation—Pathology of—Perforation of the intestines by.—Worms in tumours and abscesses.

You may recollect that, when treating of acute gastritis, I alluded to the great importance of being aware of its complication with delirium tremens; and stated, that in the form of delirium tremens, which is the result of an excessive debauch, and where the stomach has been subjected to powerful stimulation, we have reason to believe that there is more or less of gastric inflammation. I have it in my power, to-day, to exhibit to you a very accurate drawing of the stomach of a patient who laboured under this form of disease, and whom I had an opportunity of examining several times before death. You will remember, also, I mentioned that in cases where symptoms of delirium tremens had arisen from excess, and not from a want of the customary stimulus, the ordinary routine treatment of giving wine, brandy, and other spirits was extremely improper; and that where it was persevered in, and the patient died, you commonly found, on dissection, evident marks of inflammation in the brain and stomach. On that occasion, too, I quoted this as an example of the latency of gastric symptoms when complicated with an affection of the nervous centre. I have now to exhibit this drawing, which represents the stomach of a man who died of delirium tremens, supervening on a severe debauch. This patient was treated entirely on the stimulant plan; he got wine, porter, brandy, and opium, but their exhibition was not attended with the slightest benefit. Under their use his symptoms changed, and assumed a decided cerebral character; he had hot skin, quick pulse, great thirst, and general symptoms of fever, accompanied by a comatose condition. Previously to opening the body, I gave it as my opinion that the stomach would be found to exhibit marks of inflammation. Here is an accurate drawing of the stomach, and, from its appearance, you will be able to judge for yourselves. (*Here Dr. Stokes exhibited the drawing to the class, representing the stomach in a state of intense vascularity.*) Observe the generally diffused dark red colour of the whole organ, and the excess of inflammation towards its cardiac orifice. The brain, in this case, was but slightly vascular.

INTESTINAL WORMS.—I propose to devote this day's lecture to the consideration of an interesting subject in practical medicine—intestinal worms. There are few subjects possessing so much interest, in a physiological and pathological point of view, as this; and, in order to have correct notions, it will be necessary for you to be acquainted with the investigations of modern science on this subject. You are well aware that worms are found in most classes of animals. They occur in reptiles, fishes, birds, in the different classes of quadrupeds, and in man. In man they do not exist in such abundance, nor so frequently, as they do in birds and fishes. With respect to their places of habitation, we find them,

first, in cavities which have an external communication, and next, in the parenchymatous substance of organs; and we generally observe, that those which inhabit the cavities are different from those met with in parenchymatous parts. We observe, also, that the species existing in the different organs and cavities are not only different in their nature, but that there is a difference between the worms which inhabit separate portions of the same organ or cavity. In one part of a cavity or organ we find one species, in another a different, and this occurs almost invariably, as if it was regulated by a fixed law of the economy. A peculiar species of worm, occurring in man, called the *distoma hepaticum*, is never found except in the liver or gall-bladder. If this animal had been introduced from without, it would certainly be detected in some part of the intestinal canal, but this is never the case. Rudolphi states, that the *strongylus horridus* is to be met with only in the œsophagus of aquatic birds, and the *ascaris obtusa* in the stomach of mice.

Generally speaking, worms are of three different forms — cylindrical, ribbon-shaped, and vesicular. Their organization varies from the lowest scale, in which we can scarcely trace, as it were, the rudiments of an animal; beginning with the tape-worm, which presents little more than a cellulo-gelatinous mass, we ascend gradually until we arrive at a high degree of organization, where we find well-developed muscles, a difference of sex, generative organs, and, according to some anatomists, a tolerably perfect nervous system.

Now, to remove all sources of doubt and error on this interesting subject, and to establish proper principles of treatment, let us examine into the origin of these animals. I shall confine myself to the consideration of the origin of those worms which inhabit the human intestines, as they are the only species which we have to do with as practical physicians.

You will at once perceive that worms must be derived from one of two sources: either as introduced from without, or formed originally within the bodies of man and other animals. It is maintained by those who are in favour of the first supposition, namely, that they are introduced from without, that similar animals are to be found in the external world, and that they are introduced either in the form of ova, or in a state of perfect development, with the food or drink, or by the respiration of the animal. Observe, this doctrine is founded on the validity of the assertion as to whether animals similar to intestinal worms are to be met with in external nature. Linnæus states, that he found the tape-worm, and the small ascarides, a species now called *oxyuris vermicularis*, in a marsh in Lapland; but Müller, a much more accurate helminthologist, has since shown most satisfactorily, that Linnæus was completely mistaken, and that those he had observed are never found to exist in any animal whatever. There are many observations on record similar to those of Linnæus; but as they were made at a time when natural history was in its infancy, and as they have been disproved by the researches of modern zoologists, I shall not notice them. I believe there is no well-authenticated instance on record of tape-worm, lumbrici, or ascarides, being found living in any situation external to the animal body. Every one of you have seen worms in the intestinal canal, or recently discharged by stool or vomiting; but I will venture to say that not one has ever observed them in any article of food, in earth, or in water. Bremser, who is a high authority, makes a very pertinent remark on this subject. "We find," says he, "all animals

most abundant in that situation which has been assigned to them by nature. Now, if these animals were accidentally introduced from without, we ought to find them more abundant in the earth, water, &c. ; but the contrary we have seen to be the fact."

But it is contended that these animals might have been introduced from without, and that, in consequence of a change in situation, nutriment, and other circumstances, their forms may be altered ; and it is argued, in support of this hypothesis, that external circumstances will and have been observed to change the forms of plants and animals in a very remarkable degree. In addition to this, it may be said that an alteration in the nature of its food may even produce an actual change in the function of the animal. It is a singular fact, that neuter bees may be made prolific by changing their food ; it is shown that when a queen bee dies or is lost, the neuter bees take a grub of their own species in place of her, and by feeding it in a particular manner, it becomes capable of laying eggs.

Now, supposing that intestinal worms are introduced in the form of ova into the human body, there is no reason why this sudden, remarkable, and complete change should take place. We see nothing similar to it in nature. The plant which springs from any particular seed will resemble that from which it derives its origin ; the egg of any particular bird, no matter in what way it may be hatched, will produced an organised being similar to its parent. The form and character of the animal are given during the act of generation, and remain unchanged. Again, admitting that a difference in circumstances and nutrition might produce a total change in form, it should be in our power to demonstrate the individual in the process of transition ; we should find those animals in a state half between what they were and what they are, and this state we should observe of very frequent occurrence. No such thing, however, has been ever demonstrated. Out of a vast number, Bremser did not find a single one in any stage of transition, nor has it been demonstrated by any zoologist. He also states expressly, that after having diligently examined fifteen thousand specimens of worms in the cabinet at Vienna, he never was for one moment at a loss to say which were intestinal worms and which were not. If there was any such transition, it would have been discovered, but no such thing has ever been observed.

It appears, then, obvious that there is no direct evidence to prove that these animals have been introduced into the body from without, either in the form of ova, or in a state of perfect development. We have nothing, then, I think, but to come to the other conclusion, that they originate within the body, and this seems to be the opinion of the best physiologists and pathologists. This doctrine appears to be almost brought to a demonstration by the following facts. First, it appears that the worms which have been found in man and animals have a peculiar structure and organization, differing materially from that of the worms which inhabit the external world. This is a point admitted by almost every modern writer on natural history. In the next place, we find that the worms of certain animals present peculiarities differing from those of the same species in others. Thus the *bothricephalus* and *tænia solium*, in man, differ from those of other animals. You are not, however, to conclude from this that every animal has its peculiar worms, for such is not the case. Thus the lumbricus and small ascarides of man are found to exist in various animals, both carnivorous and graminivorous.

It appears obvious, that if worms were introduced from without, we should not find peculiar worms in the bodies of certain animals; yet taking a certain number of different animals, living on the same food and in the same situation, we find a difference in the nature of the worms which are met with in the bodies of each. Another important fact is, that worms are to be found not only in the intestinal canal, but in almost every part of the body. We find them in the cellular tissue, in the liver, gall-bladder, lungs, and trachea; in the brain, heart, kidneys, and spleen. They have been met with in the air-bladders of fishes; and Treutter states that he has found the *polystoma pinguicola* in the ovaries of a woman which were steatomatous, and the *strongylus* in an aneurism of the mesenteric artery of the horse. These animals have been observed in the anterior chamber of the eye in birds and horses, and there are innumerable examples of their occurrence in situations equally strange and anomalous. Another circumstance already mentioned, and which must be coupled with the fact just alluded to, is that there are certain species of worms which occur only in the same organs, and are never met with in any other situation.*

Now, observe the importance of these facts—we find that worms not only exist in the digestive tube, and parts having an external communication, but also in the very substance of deep-seated viscera, and that the worms which are found in the various cavities and organs are peculiar to them. In one case, we find a worm in the digestive tube, in another in the brain, in a third in the liver, in a fourth in the pulmonary apparatus, but no one has ever been able to demonstrate the trajet of a worm from one of these cavities or organs to another. It would be ideal and absurd to say, in the case of worms found in the substance of viscera, that they had been introduced from without, or came from the intestinal canal. The *distoma hepaticus*, which is found in the liver and gall-bladder, might be supposed to arrive at those situations by passing along the ductus communis choledochus; but in the various cases in which it has been found, it has never been detected in the intestinal canal; and this, I think, would not have been the case if the digestive tube had been its original situation. One of the most important facts which have been stated is, that certain forms of these animals are found invariably in certain situations; and this has been observed not only in man, and other animals of the class mammalia, but also in reptiles and fishes. In man, we generally find the *lumbricus* inhabiting the stomach and small intestine, the *tricocephalus* in the cæcum, and the small *oxyuris*, or thread-worm, in the rectum. The preparation before me exhibits a specimen of the rarest form of worms which inhabit the intestinal canal, the *tricocephalus*. Here is the cæcum filled with these singular worms. The males are distinguished from the females by the whirl of the tail. If these little animals, or the *oxyuris*, had been introduced from without, we should expect to find them in various parts of the intestinal canal; but we find, on the contrary, that their situation is separate and distinct.

Lastly, *intestinal worms have been found in the fœtus both of man and other animals.* Kerkring describes a fœtus, the intestinal canal of which contained a vast quantity of small worms; and another of six months, in whose stomach a large *lumbricus* was found. Rudolphi, Blumenbach, and others

* [Worms have been found in the blood.—B.]

of nearly equal authority, have recorded abundance of examples of worms existing in the fœtuses of various quadrupeds, *and also in those of birds which had just broken the shell.* Those who are obstinately attached to the doctrine that worms are introduced from without, have gone so far as to assert, that the ova of the worms have been transmitted at the moment of generation, a doctrine so absurd that it is unnecessary for me to enter into any refutation of it.

With respect, then, to the formation of worms in animals, we cannot help coming to the conclusion that they are originally formed within the body, and that, in fact, there is an original generation of these animals, the result of one organization taking place within another—the production, in fact, of a distinct being. This idea does not appear so difficult of conception when you recollect that circumstances analogous to it are extremely familiar and of almost constant occurrence. There is not much more difficulty in conceiving the formation of a living worm within the body than there is of conceiving the organization of a portion of lymph thrown out upon the surface of a serous membrane. What occurs in both cases is, that, under the influence of the vital principle of the original animal, a portion of matter, previously inorganic, assumes the properties of life, presents distinct traces of organization, vascularity, and sensibility. The only difference between them is, that in one case the organised mass remains adherent to the matrix, and, in the other, it is cast off, and forms a separate being. In the present state of our knowledge, all speculation on the mechanism of the formation of worms must of necessity be nothing more than mere hypothesis. The idea which Bremser entertained on this subject is, that *intestinal worms* are formed by the presence of semi-assimilated nutritious matter in the digestive tube. Food taken into the system under ordinary circumstances, is converted into a substance fitted for the purposes of absorption and nutrition; but when the process is not perfected, it is not taken up by the absorbents, and is then, according to Bremser, converted into an animal substance. This appears to be but a crude idea, unsupported by any facts; and it would be more philosophical to say that we know nothing about the matter. Besides, worms occur in various parts of the body as well as the digestive tube; and to suppose the presence of unassimilated matter in such situations would be only supposing an absurdity. Bremser brings forward, in support of his theory, that worms are of very frequent occurrence in cases where the assimilating powers are weak or deranged, and says that nothing is more common than to meet with an abundance of these animals in scrofulous persons, in those who have great appetites and bad digestion, and in children labouring under disease of the mesenteric glands. On the other hand, there are abundant instances of worms existing without the slightest apparent injury to the general health. In certain countries, almost all the inhabitants have worms. But I believe all that we can affirm on this subject is this, that they are not introduced from without, and that they are formed within the body by a process, the nature of which is exceedingly obscure.

Now, to come to the pathology of this subject, can we connect the formation of intestinal worms with any known pathological condition of the intestinal canal? This is a question of no ordinary importance; for if we were able to connect their formation with an inflammatory or any other state of the digestive tube, it would furnish us with a key to correct and successful treatment. The school of Broussais are of opinion that worms

are the result of an acute or chronic inflammation of the gastro-intestinal surface. This doctrine is by no means supported by the evidence of facts, for it has been established *that worms are found to exist not only in connexion with every possible pathological condition of the intestinal canal, but also where the tube presented the appearance of perfect health.* We cannot, then, safely affirm that intestinal worms are connected with an inflammatory or non-inflammatory condition of the digestive tube. Andral states that he has found them in all conditions of the intestine, whether red or pale, dry or covered with mucus. They are more commonly, he says, enveloped in a quantity of mucus, and there is some redness in the place where they are lodged; but this appears to be rather the effect of their presence than the cause. I believe it to be the fact, that persons in excellent health, and with the intestinal canal in the normal state, may have worms. Dogs, who are killed while in a state of apparently perfect health, are often found to have a large quantity of tape-worm in their intestines. It is idle and hypothetic to say, that the formation of worms depends upon an inflammatory or non-inflammatory, an asthenic or sthenic condition of the digestive tube; their formation is owing to some modification of the vital power, the nature of which is unknown. I again repeat, that nothing can be stronger against the supposition that worms depend upon inflammation than the fact of their being observed in considerable quantities in healthy individuals.

A very curious point, connected with this subject, is the question of perforation of the intestines by worms. This question, which is an interesting one in many points of view, has been lately the subject of medico-legal discussion, and therefore demands a share of our attention. Of the different kinds of intestinal worms, the only one which is supposed to be capable of perforating the coats of the digestive tube, and escaping into the peritoneum, or some adjoining organ, is the lumbricus, which is remarkable for its vigour, and for the sharp and pointed shape of its head and tail. Many of the most eminent pathologists of modern times, and among the rest, Andral, Rudolphi, and Carswell, are of opinion that these worms are totally incapable of perforating the intestinal tunics. Andral states that there is no well-authenticated instance of this occurrence on record: and Rudolphi declares that they have no apparatus for effecting a passage through any continuous tissue. On the other side of the question, however, there are some curious facts and cases given, which, supposing that worms are incapable of perforating, are very difficult to explain. Dr. Fischer, of Vienna, gives the case of a female, in whom the following circumstances were observed on dissection. Two circular orifices were found in the colon, communicating with the cavity of the peritoneum; in one of these openings a worm was discovered, one-half of which lay in the peritoneal sac, the other in the intestine. No other worms were found in the digestive tube; but a second worm, like the former, was found in the peritoneum. Here we have a very remarkable coincidence of perforation of a portion of the gut, with the existence of one worm in the cavity of the peritoneum, and another of a similar description, as it would appear, in the act of making its way in the same direction. These circumstances, together with the existence of a double perforation, seem to be in favour of the idea that the openings had been made by the corresponding worms. Another case is mentioned in the *Elements of Pathological Anatomy*, by Andral, and he quotes the case, not as one of perfora-

tion merely, but to show that the symptoms of effusion of matter into the peritoneum may, under certain circumstances, be nearly latent. The subject of this case, a young man labouring under phthisis, had a tumour near the umbilicus which increased rapidly in size, and presented a distinct fluctuation. Soon afterwards, the integuments gave way, and a large quantity of matter was discharged, together with a lumbricus. During the progress of the disease, there was some tympanites, but little or no pain had been complained of. On dissection, there was a considerable number of worms and a quantity of matter found in the peritoneum, and a perforation in the arch of the colon, corresponding with the extravasated matter. Bremser gives a curious instance of this kind, as occurring in a species of fish. In this case, the fish died; and it would appear, says Bremser, that the worm, finding some extraordinary change had taken place, was determined to take a peep and see what was the matter, for it had perforated not only the intestinal tube, but actually made a passage or itself through the whole body of the fish until it reached the water in which it had been lying. Here, finding that its world extended no further, it stopped, and began to make its way back again to its original situation by a new opening, so that when it was observed by Bremser, the two ends were in the intestinal tube of the fish, and the middle portion external. This, however, does not resolve the question, as to whether lumbrici are capable of perforating the intestinal canal or not. My own impression on the subject is, that we have not, as yet, any distinct and unquestionable evidence of these worms being possessed of any perforating power; but it is a fact, that there are a great many cases on record of worms being discharged in considerable quantities from openings in the intestinal tube, and where it would appear that the openings had been formed, not so much by the action of the worms themselves, as in consequence of their exciting an irritation in some portion of the intestine, followed by inflammation, ulceration, and escape of the contents of the tube into the peritoneum. There are many instances of this kind. An interesting case is mentioned of a female, who was attacked with pain in the groin, followed by the appearance of a tumour, which she was directed to poultice by her medical attendant. After some time, the integuments gave way, a quantity of matter was discharged, followed by a large lumbricus; and, during the progress of the case, about one hundred of these animals were discharged through the opening. This is a well-authenticated case. Another case is mentioned of a patient who had been subject to constipation and violent attacks of colic. A tumour began to appear in the right hypochondrium, followed by pointing and ulceration of the integuments, and a discharge of matter. A number of worms (I believe twenty-four) were discharged through the opening, which remained pervious, and the patient lived for many years afterwards with an artificial anus. This case appears to be not an example of direct perforation from worms, but of the accumulation of a mass of these animals in a particular portion of the intestine, giving rise to irritation, which terminates in ulcerative absorption of its tunics, and escape of its contents. Inflammation is set up in some part of the intestine, this goes on until the coats are all destroyed, and the matter and worms escape into the peritoneal cavity; but if adhesion should prevent this, an opening will be formed in some part of the integuments covering the belly. In both cases, the opening is produced not by an exertion of the worms, but by an ulcerative and

vital process. In support of this view, it has been observed that worms have come out through these apertures not head foremost; the centre portion appears first, and you can draw it out like a loop. Such cases as the foregoing, then, cannot be fairly given as cases of perforation from worms, but as cases in which these animals, acting somewhat like foreign bodies, produced irritation, inflammation, and an ulcerative absorption. There is a very curious case on record, of a patient labouring under abscess of the liver, which burst externally, and a lumbricus was discharged with the matter. The patient died; and, on dissection, it was found that the cavity of the abscess had a communication with the stomach, through which it was conceived the lumbricus had got into the liver.

The worms which inhabit the intestinal canal in man are the following:—First, the *lumbricus*, or common round-worm; next, we have the tape-worm, of which two varieties have been described; thirdly, we have the very curious worm, of which there is a specimen before me—it inhabits the cæcum, and is called *tricocephalus;* lastly, we have the thread-worm, to which the name of *oxyuris vermicularis* has been lately given. The lumbricus generally inhabits some portion of the small intestine, but is also frequently found in the stomach. Persons have often vomited them, and they have been known to have crept out by the mouth. They have been found also in the pharynx, œsophagus, and large intestine. There is an interesting case mentioned by Andral, of a child who, in a state of apparently good health, was suddenly seized with symptoms of suffocation, and died. On dissection, it was found that a large lumbricus, which had come up from the stomach, had, when it arrived at the glottis, turned into its orifice, and, by irritating the larynx, produced spasmodic closure of that organ, and suffocation.

The lumbricus presents very marked appearances of an advanced state of development. The male has a peculiarly formed penis; the female has her generative organs well developed; and both have an extensive alimentary canal. The tricocephalus is about an inch in length, terminating in a point: the sexes are different, and the male is distinguished from the female by the circular whirl of his tail—it is always found in the cæcum. The small thread-worms, with which you are all acquainted, are almost exclusively found in the rectum. These worms are found in vast numbers in some children; and it is said that the quantities of them which are discharged by the West Indian negroes are extraordinary.

The tænia, or tape-worm, is generally found in the small intestine; but it has also been observed in the stomach, colon, and rectum. The length to which this animal sometimes attainsis almost incredible. Bremser mentions a case in which a tape-worm one hundred and fifty feet in length was discharged by stool. Another case is given, in which the tænia had the enormous length of three hundred feet. I have myself seen a large wash hand basin filled by a mass of tape-worm, discharged after a strong dose of castor oil and turpentine. Still more extraordinary instances are recorded. Thus, in the Copenhagen Transactions, we read of a tape-worm eight hundred ells in length. But, in all probability, there has been an error in these measurements, and many worms have been taken for one. This is rendered probable by the fact observed by Robinus, who found in the body of a man, who had before death discharged fragments of tape-worm, a tape-worm extending from the pylorus to within six inches of the anus. The length of this single worm was scarcely

thirty feet. One interesting circumstance connected with this animal is, that it is inferior in its organization to every other species of worm. It appears to be nearly a simple, homogeneous, cellulo-gelatinous mass, without any division of sexes, and without a nervous system, or generative organs. It is said, also, to occur principally in persons whose powers of life are low; and if this be the case, as I believe it is in many instances, it furnishes us with a very curious and interesting fact. The other better developed kinds are found in persons of healthy, good constitutions; but the tape-worms, though sometimes met with in such persons, are generally found to occur in persons of low and weak diathesis. Here we see a curious connexion between the product and the producing cause.

With respect to the exciting causes of worms, a vast number of circumstances have been mentioned by authors, as giving rise to their formation. Foul air, low, damp situations, bad diet, the constant use of milk, cheese, sugar, vegetables, have been reckoned among their exciting causes. I believe we are not well acquainted with these causes. They appear often to be connected with some morbid influence produced upon the system by bad diet, and other circumstances; but what the nature of this influence is, we know not.

LECTURE XLIX.

DR. STOKES.

Symptoms of Intestinal Worms—Sympathetic irritations—Affections of the nervous and respiratory systems—Various diseases mistaken for worms—Exciting causes of worms—Farinaceous and milk diet—Verminous fever.—Treatment of worms—Specific and mechanical purgatives; calomel, turpentine, &c., &c.—Remedies for each species of worms—Preventive measures.

Let us proceed with the consideration of intestinal worms. At my last lecture you will recollect that I spoke of the different kinds of worms, and stated that there was a difference between the worms which are found in various parts of the body; that I examined the question as to the origin of these animals, and came to the conclusion that they are formed originally within the bodies of man and other animals. I mentioned the various kinds of worms which inhabit the digestive tube in man, and examined at some length the question of perforation of the intestinal canal by lumbrici. We come now to the investigation of the symptoms.

With respect to the symptoms of worms, it is a singular fact, that we have not one single pathognomonic sign of their existence, except the circumstance of their being occasionally passed by stool, or vomited; almost all their symptoms are referable to irritation of the gastro-intestinal surface, and its sympathetic relations. Persons, who are much subject to worms in these countries, are generally of a pale complexion, with a bluish circle round the eyes; the belly is more or less prominent, and there are various signs of irritation of the digestive tube, with itching at the nose and anus; headache; foul breath and tongue; irregular and sometimes canine appetite, nausea, hiccup, borborygmi, tenesmus, diarrhœa, and constipation. Though the patients take abundance of nutriment, they are

generally thin and pale; and in such cases there is either one or two very large worms, or a great number of smaller ones, or their presence is complicated with disease of the intestinal canal. Such persons are also observed to be of an indolent and languid habit; they have perspirations, disturbed sleep, with grinding of the teeth, and irregularity of pulse.

The sympathetic irritations produced by worms are numerous and extraordinary. The genital organs may be excited, and we may have priapism and seminal emissions in the male, and irritation amounting to nymphomania in the female. There is a very singular case on record of a female, aged seventy, being seized with a violent attack of nymphomania from this cause. The nervous affections produced by worms are so Protean and so numerous, that it would be almost impossible to detail them; in fact, there is not a single nervous disorder which may not be simulated by the sympathetic irritation of worms. Epilepsy, hysteria, convulsions, dilatation of the pupil, amaurosis, symptoms of hydrocephalus, and even mania, are among the affections of the nervous centres or their immediate connexions, which, in repeated instances, have been found to depend on the presence of worms. Kraus gives an extraordinary case of a man, who, at a very advanced age, became subject from this cause to fits of continued and inordinate laughter.

There is another case on record of convulsions depending on worms, which, like those from the bite of the tarantula, are said to have been soothed and relieved by music. Hufeland, in his journal, mentions a case of yellow vision from the same cause; and there are several instances of aphonia and mania on record, which have yielded to treatment which had removed intestinal worms. A case is mentioned of a person who got violent spasmodic action of the muscles of the eye, producing inversion of that organ to such a degree that the eyeball appeared to be nothing more than a mass of red flesh. A case is recorded by Serres, in which the symptoms strongly resemble those of hydrophobia; and it is probable that some of the cases of hydrophobia, said to have been treated successfully, were nothing more than this extraordinary irritation of the nervous system produced by worms. I saw, myself, a case in which two eminent physicians made the diagnosis of hydrocephalus: it was that of a child, who was certainly, to all appearance, labouring under cerebral disease—for he had convulsions, coma, and dilated pupils. It was remarkable, however, in this case, that the treatment directed to the head, though early and well applied, proved totally inefficacious. A large dose of calomel was given, and some lumbrici passed: in the space of two or three hours there was an evident improvement, and the child quickly recovered.

During the course of practice I have met with several examples of affections of the respiratory organs, depending upon the irritation of worms. This affection has been long known. I recollect the case of a boy who was brought to me with an extraordinary affection of the chest. He was of a gross habit of body, of a flabby, scrofulous appearance, and labouring under disease of the elbow-joint; but his chief complaint was, that he passed the night in great distress from incessant cough and wheezing. On examining the chest, I found the respiration healthy, and no other symptoms of pulmonary derangement except a very slight bronchitic *râle*. On expressing my opinion of the case to the mother, she said that he was easy during the day, but that his condition was very different at night. To ascertain the truth, I took the child into the hospital, and found that her

statement was substantially correct; for, from four o'clock in the afternoon until next morning, he was in a state of perfect orthopnœa, with loud, ringing, incessant cough. During the rest of the day he was free from cough, and tolerably quiet. The case was treated with calomel and ipecacuanha, tartar emetic, and other similar remedies, but the disease was rather exasperated than improved. The boy had swelled belly and constipation, and for this he was ordered to take a dose of turpentine and castor oil. He passed some worms with relief to the existing symptoms; and from the consideration of this, and the failure of the treatment for bronchitis, we were determined to persevere in the use of anthelmintic medicines, and for this purpose put the child on syrup of cowhage, to be followed by castor oil draughts. He passed vast quantities of thread-worms in the course of a few days, and when they had been all removed the cough disappeared altogether; but, as long as any of them remained, the symptoms of pulmonary irritation continued. There could be no doubt that this was a case of intermittent bronchial irritation from worms, for their evacuation was immediately followed by a complete cessation of cough and dyspnœa. I have also, since the foregoing, met with many other instances of a similar description. A young girl came into the Meath Hospital with chronic bronchitis, and some degree of hepatization at the lower part of the left lung. Having heard from her friends that she was extremely subject to worms, I determined to try what would result from the use of anthelmintic medicines, and put her on the syrup of cowhage with aloetic pills. Under this treatment the cough was quickly removed, and the lower portion of the lung recovered its permeability. Here it was remarkable, that not only irritation of the bronchial mucous membrane, but even solidification of the lung, were cured by treatment calculated to remove worms. Mr. Ramsay, in his paper published in the Medico-Chirurgical Transactions, gives several cases of hæmoptysis from this cause. I think I have seen several cases of phthisis, where the original source of pulmonary irritation seemed to be the existence of intestinal worms.

Let me here, however, remind you that we should be cautious in attributing too much to worms as the causes of morbid symptoms. There are several reasons why you should be on your guard in this respect; one of the most obvious of which is this: it does not follow, in the first place, that the symptoms in any particular case are produced by worms; because the same cause which may have predisposed to the formation of worms may have produced the symptoms in question, and there may be merely a coincidence of worms and of these symptoms. Even if we look to the results of treatment, there is a great deal of doubt and difficulty. There are many cases on record which are described as cases of epilepsy from worms, and where all the symptoms have subsided under the use of anthelmintic medicines. In many of these cases we find the medicine chiefly employed has been oil of turpentine, and I need not tell you that this is an excellent remedy in many cases of epilepsy totally uncomplicated with worms. The results of such cases do not necessarily prove that worms were the source of irritation. Again, immense injury is frequently done to children in persisting in the anthelmintic treatment for the supposed existence of worms. Recollect, the prominent phenomena of worms in the intestines are irritations of the digestive system and of other functions. Now, it is very well known that these symptoms may occur with or with-

out worms. If, then, you have a case where these phenomena are present without the coexistence of worms—and if, under a mistaken impression, you treat it with anthelmintic medicines—you inflict a double injury: you exasperate the original disease by the drastic and irritating medicines which are ordinarily used for the removal of worms, and you do an indirect injury by neglecting to adopt proper means of treatment. There is nothing more common than to see children labouring under some irritation of the digestive tube, which is mistaken for worms, purged again and again, until they get incurable enteritis or tabes mesenterica. When a child has foul tongue and breath, picking of the nose, diarrhœa, and turbid urine, it is a common notion that he is labouring under worms. If he gets feverish, it is said to be worm-fever, and the anthelmintic treatment is pursued with unabated vigour. Now, I believe that a great majority of such cases are, in reality, disease of the mucous surface of the intestine, and that the consequent feverishness is dependent on this state. Another reason why you should be cautious, is this: in persons of a hypochondriac habit, there is nothing more injurious than their getting the idea that they have a worm in the bowels. When once this notion gets into the head of a hypochondriac, it is generally impossible to eradicate it. Some of the most melancholy and fixed cases of hypochondriacism are produced in this way: every symptom is attributed to this worm; the patient is in a state of constant feverish anxiety about it; he talks of nothing else, and is constantly taking medicines to expel it, to the great detriment of his general health, and with a manifest exacerbation of his symptoms. Medical men should be extremely cautious on this point. The patient is perhaps a female of hypochondriac and nervous habit; she has gnawing sensations about the epigastrium, which she supposes to depend upon the presence of a worm, and an injudicious practitioner favours the notion. He gives her various medicines to expel the worm; no worm is passed; she becomes more anxious, takes more medicine, and gets weak and emaciated. She then begins to think that all the nutritious matter in her body is going to support the worm, falls into a desponding state, and continues for the rest of her life an incurable hypochondriac.

We come now to consider the exciting causes of worms. On this subject I believe our knowledge is very scanty and inaccurate. The following, however, are generally looked upon as remote causes:—Foul air, residence in damp and unhealthy situations, sedentery habits and want of wholesome exercise, over-feeding, the constant use of certain articles of diet—as farinaceous substances, milk, cheese, sugar, &c. An eminent authority (Bremser) asserts, as I have already stated, that unabsorbed chyle in the digestive tube constitutes the most fertile source of worms. It is a common idea, that poor diet has a strong tendency to give rise to the formation of these animals, but it has been frequently observed that worms are met with in persons who are by no means in want of nourishment; and it is said, that, in cases where nutrition has been diminished in man and other animals, the worms die. If this be the case, it would appear that, so far from being the exciting cause of worms, poor diet rather tends to favour their removal. Uncooked vegetables and fruit are also reckoned among the causes of worms, but I believe this arises from the mistaken notion that the ova of intestinal worms occur in vegetables, and, being taken with them into the stomach, are there developed, or even changed in their organization—a position which we have already proved to have

no foundation in truth. Persons who live principally on vegetable food have not been observed to labour under worms in a comparatively greater degree than those who use an animal diet. It is said that the Swiss, who consume a great deal of vegetables, are very subject to worms; but other nations, who live in a similar way, have not been remarkable for the same liability.

Worms have been stated to be occasionally epidemic. It is not very easy to determine this point, but it has been remarked that, at particular periods, these animals have been more than usually frequent and numerous. Many authors have described an epidemic of what has been called *verminous fever;* that is to say, fever of a gastric or bilious character accompanied by worms in quantity. It is hard to say what the nature of this fever really was, and whether it might or might not be fever with irritation of the digestive apparatus, one of the consequences of which was a discharge of worms already existing. That worms are endemic, is a proposition very easily conceived; for we see it illustrated by the extraordinary prevalence of these animals in sheep which are kept in low, damp pastures. In such situations worms are met with in great abundance in the liver and other parts of these animals.

It would appear from the following remarkable case, detailed by Bremser, that the use of milk and farinaceous food predisposes to the formation of intestinal worms. This gentleman, who was physician to a monastery, and had ample opportunity of studying the habits of its inmates, was called to visit one of the oldest of the monks, who was said to be labouring under great derangement of the digestive system. On inquiry, he found that the patient had lived for sixty years in excellent health, using animal food, which, however, he had been latterly induced to change for farinaceous diet and milk. For a few days this agreed tolerably well with him, and then he began to be tormented with colicky pains, flatulence, sour eructations, and other distressing symptoms. His physician gave him some purgative medicine, and he passed a large quantity of tape-worm with relief; the treatment was persevered in, his former mode of living resumed, and he recovered quickly. This case bears strongly against the fanciful hypothesis that the ova of worms are transmitted in the act of generation; for how could it be possible that the ovum of this tape-worm, transmitted in this manner, could remain undeveloped in the system for the space of sixty years? This case derives additional interest from the fact of a change to a farinaceous diet being apparently connected with the formation of worms.

Another remarkable case is given by the same author. The patient was a married female who had twelve children—six boys and six girls. This woman observed, that whenever she was pregnant of a girl she had a great longing for milk and farinaceous food, and lived on these articles of diet almost exclusively. After living in this way for some time, she uniformly got an attack of worms; and this, as well as the longing for vegetables, coincided with the birth of a female child so invariably, that she was able to tell with certainty whether the child she carried was a male or a female. This is a singular and well-authenticated fact.

We come now to the treatment of worms. Generally speaking, this is extremely simple—the principles of treatment in the various kinds of intestinal worms being nearly the same. Simple as they are, however, some persons entertain false notions respecting them. They appear to

think that all they have to do is to evacuate the worms; and, having accomplished this, they rest satisfied, and take no steps to prevent their recurrence. But the mere evacuation of worms is no proof of a cure; to effect this you must prevent their return. From what you have learned with respect to their exciting causes, you will be able to give such directions as to the patient's mode of living as will obviate their recurrence; and, with regard to the means to be adopted for removing them, we may divide them into the following:—We have, in the first place, what is called the mechanical treatment; next, the specific; and, lastly, the purgative treatment. The first and last are nearly connected. For instance, purgatives appear to act in the same way as mechanical anthelmintics, by irritating the mucous surface of the intestine and the worm, and thus causing its dislodgment and expulsion.

Among the principal mechanical anthelmintics are filings of tin, cowhage, powdered charcoal, and crude mercury: among the specific are a variety of substances, most of which have a strong and peculiar smell. This is a very curious fact. Valerian, assafœtida, camphor, ether, and other odorous substances, have been found to be anthelmintic; and the *Geoffræa inermis*, which has been employed for this purpose, is remarkable for its strong, unpleasant odour. The same thing may be said of tobacco, the oil of chenopodium or worm seed, garlic, artemisia absinthium, and many others. With respect to purgatives, there is not one in the whole list, particularly those of the drastic kind, which may not be looked upon as an anthelmintic.

It is the opinion of the most eminent men, that the thread-worm is the most difficult to expel, because they are generated with an extraordinary rapidity, and accumulate in a very short space of time. You are satisfied of their existence, have seen them in the alvine discharges, and the patient has all the ordinary symptoms. Well, what is the best way of getting rid of them? You shall commence by the exhibition of a mercurial. It is difficult to explain why it is that mercury has such an effect in removing these worms, but the experience of the best practitioners can be adduced in proof of its efficacy. The statements of Dr. Latham of London, and of many practitioners in this country and on the continent, go to prove this. In whatever way it acts, mercury appears to be a powerful anthelmintic; and it is a fact, that these worms have been expelled where it was given in very small doses, and not sufficient to operate as a purgative. The best plan is, first, to give a mercurial purgative, and then to have recourse to the mechanical treatment—giving, with this view, the syrup of cowhage, one of the most efficacious of this class. It is a remedy which is easily managed, and will do no harm; for though it produces violent itching when applied to the cutaneous surface, it produces very little sensible effect on the intestinal mucous membrane. The form which I employ is the following:—Take of the hairs of the *dolichos pruriens* one scruple, syrup of orange peel an ounce; of this an electuary or syrup is to be made, of which you may give a child a teaspoonful three times a-day. This is the remedy on which the West India practitioners, who have frequently to treat this affection in the negroes, place the greatest reliance; and you will find that, if you employ it, a vast number of worms will be often passed. It should be continued for two or three days, and then a purgative must be given, after the operation of which it may be again resumed if necessary. An excellent adjuvant to this is the use of

aloetic injections, composed of two parts of milk and one of the decoction of aloes. In this way you will be able to remove a vast quantity of these little animals from the rectum. It has also been observed, that injections of cold fresh or salt water have a great power in promoting their expulsion. Bremser mentions, that, in cases where these worms pass from the rectum into the vagina in females, and excite irritation, there is nothing so effectual in destroying them as injections of cold water and vinegar. This you should bear in mind. You should also remember, in the case of administration of syrup of cowhage, to give strict orders not to let any of it drop on the child's skin, as it would excite a great deal of irritation. You should forewarn the attendants of its effects on the skin; and if any of it should be spilled on the hands, neck, or face, the best thing is to wipe and wash the part well, and then rub it with a little almond oil.

For the expulsion of lumbrici there is nothing so successful as the ordinary purgative treatment. A bolus composed of calomel, rhubarb and jalap, will answer this purpose extremely well; you may also use the syrup of cowhage with much advantage. Bremser gives a formula for an electuary, which I have not tried, but have no doubt of its value, for it appears to combine all the qualities of a good vermifuge electuary. It is made as follows:—Take of the seeds of santonicum, and of the flowers and leaves of tansy, reduced to powder, each half an ounce. Here you have two anthelmintics of the specific kind. Add to these two drachms of powdered valerian: here is another. You then combine with these two drachms of sulphate of potass and a drachm and a half of jalap: these are purgatives. You then make them up into an electuary with syrup of squill, which is also an anthelmintic of the specific kind. Of this electuary two or three teaspoonfuls are to be taken during the course of a day. Bremser states that this combination is of great value, particularly against lumbrici and tape-worm.

The treatment of tape-worm is not difficult. All the specific and mechanical anthelmintics are useful in promoting its expulsion, but there is nothing which appears to have such a powerful effect as full doses of turpentine and castor oil. This constitutes the best remedy we possess against the tænia; but, if you wish to get rid of it entirely, you must give the turpentine in full doses. You will frequently be astonished at the vast quantities of this worm which will be passed. When you give turpentine, it is safer to order a full dose of it; for, if it be given in small quantities, it is very apt to irritate the urinary organs. Half an ounce of turpentine, with the same quantity of castor oil, form an efficacious though very disagreeable draught. You may, however, obviate its nauseousness by the addition of a small quantity of camphorated tincture of opium and mucilage of gum arabic. The celebrated empyreumatic oil of Chabert is, in my mind, nothing more than a modification of the turpentine. This is the remedy which Bremser looks upon as most efficacious against the tape-worm. You have all, I presume, heard of the animal oil of Dippel—the oil which is produced by the distillation of bones or hart's-horn shavings. To one part of this are added three parts of turpentine; these are left to combine for four days and then distilled; the first three parts of oil which come over are called the empyreumatic oil of Chabert. It is an exceedingly nauseous remedy, has a most disgusting smell, and is seldom used in this country. Bremser recommends it to be taken in doses of a teaspoonful three times a-day. Some persons who have tried it have assured me that it is extremely difficult to be taken,

and that it excites a train of most disagreeable abdominal sensations. Bremser, however, thinks highly of it; he is in the habit of directing his patients to take it for three or four successive days, then to omit for a day or two, and then to return to it again; and he says that it not only succeeds in evacuating the worm, but also in preventing its return. In addition to this, he recommends the use of a fortifying tincture, which I think very useful in worm cases. It is a combination of one of the salts of iron with a preparation of aloes. If you take equal parts of the muriated tincture of iron and tincture of aloes, you will have a remedy somewhat similar to the strengthening tincture of Bremser. Twenty drops of this mixture, taken three or four times a-day, will prevent the recurrence of worms.

SUPPLEMENT TO LECTURE XLIX.

DR. BELL.

Double Indication in the Treatment of Worms—Iron with purgatives—with calomel, followed by purgatives—Bark of pomegranate root—Spigelia Marilandica—Chenopodium anthelmintica—Pride of China—Common salt—*Treatment of ascarides*—Purgatives occasionally—Injections,—chiefly of turpentine, aloes, &c.—Mixed treatment of worms,—by bitter, saline, and sulphurous waters.

In the *treatment* of worms it is necessary, first, to procure their discharge from the digestive canal, and, secondly, to impart such a degree of healthy functional action to it as to prevent their recurrence. I shall add a few observations on these heads to the judicious plan laid down by Dr. Stokes. One of the best vermifuges for children, and that which answers the two-fold indication just laid down, is rhubarb and carbonate of iron, in the proportion of five to ten grains of the first, and ten to thirty grains of the second, with the addition of from five to ten grains of ginger or cinnamon, made into a powder, and administered daily in a little syrup. I have also frequently prescribed with good effect a more active combination; viz., calomel and carbonate of iron,—the former in from three to five grains, and the latter with the aromatic powder in the proportion as just mentioned. We cannot of course continue this prescription daily for a length of time, as we would the rhubarb and iron. Two or three mornings' use must suffice; after which, free evacuations of the bowels are to be obtained, by castor oil, senna and salts, or the compound powder of jalap. The carbonate (rust) of iron, was a favourite with the late Dr. Rush; and it merits all his good opinion, if not as a mere destroyer of worms, at least as giving the requisite tone to digestion, and removing the symptoms attributed to worms, even when they are not present. Very probably, similar praise is applicable to the preparations of iron, and notably to the tincture of the chloride, or the muriated tincture, in tolerably full doses. In cachectic subjects suffering from worms, or those with tumid abdomen, pale, and somewhat bloated face, and irregular and depraved appetite, chalybeates are especially beneficial. The sulphate of iron given in union with aloes, and made with syrup into pills, is a good formula on such occasions.

Among the specific vermifuges overlooked by Dr. Stokes, the pomegranate-root bark is entitled to particular commendation, for the destruction of tænia. In India the decoction has long been used as a remedy for

tape-worm, and by several practitioners in Europe and America, with success. Dr. Elliotson prefers the powder in doses of two scruples repeated at short intervals, as every half-hour, until six doses have been taken, and the next day twelve similar doses to be repeated in the same manner. Three days afterwards, a drachm is to be given every half-hour to the sixth time, and all this with no other ill effect than occasionally a slight giddiness and nausea; the bowels being opened two or three times daily, either spontaneously, or with the aid of salts and senna. The decoction of the fresh root is, however, generally the preparation used. H. Cloquet speaks of it as the medicine now most trusted to in France in the treatment of tænia. It is prepared by boiling two ounces of the fresh bruised bark in two pints of water to a pint; the dose is a wineglassful every half-hour till the whole is taken. The patient had better be prepared for the use of the remedy, by a dose of castor oil and a strict regimen, the day previously. At any rate, its administration should be followed by an ounce or an ounce and a half of castor oil, so as to obtain free evacuations from the bowels.

A new vermifuge has been mentioned of late, in the kosso (*Hagenia abysennica*). The medicinal part is the flowers, the dose of which is from six to eight drachms in cold water, taken early in the morning.

Among indigenous plants with vermifuge properties, is the *Spigelia Marilandica*, or pink root. It is given in the form of powder, in doses of ten to twenty grains, to a child three years old, morning and evening successively for some days, and then followed by a purge. The more common and convenient form of administration is by infusion, with which senna is frequently conjoined. The proportions for simple infusion are, one ounce of *spigelia* root to one ounce of boiling water; after two hours strain. The dose for a child three years old, is from half an ounce to an ounce. There is a composition commonly sold in Philadelphia by the druggists, for the preparation of what is called "worm tea;" it consists of pink-root, senna, manna, and savine, in varying proportions to suit the views of the prescriber.

Common salt (*chloride of sodium*) was much esteemed by Dr. Rush as a vermifuge. "I have administered," says he, "many pounds of common salt, coloured with cochineal, in doses of half a drachm, upon an empty stomach, in the morning, with great success in destroying worms."

Ascarides are one of the most common and troublesome varieties of worms; and are most annoying to children and young persons. The itching to which they give rise is greatly increased by rubbing the parts: its return is sometimes periodical,—at a certain hour every evening. The chief means for abating the annoyance from ascarides, is by keeping the bowels regularly open; so as to procure at least one or two stools daily. Certain drinks, such as tea, coffee, and beer, have, in some cases, brought on or greatly exasperated the irritation. Purgatives taken by the mouth are at the best only palliatives against ascarides; for the removal of which injections of various kinds are most effectual. Of these, there have been recommended oil of turpentine, which is one of the best; next to this are common salt, a decoction of chamomile with salts and castor oil, aloes, tincture of chloride of iron—half an ounce in half a pint of water, preceded by a purgative of calomel and jalap—chloride of soda, vinegar and water; all to be injected cold, and retained as long as possible. Infusion of quassia (℥j. of the wood to ℥j. of water) has been employed with great success by M. Schultz. Cyanuret of iron (Prussian blue) in a dose of five grains rubbed up in two ounces of rain water or mucilage of gum arabic,

thrown up the rectum and retained until the next defecation, has been represented, in the *Am. Journ. Med. Sciences*, to be an effectual remedy.—The dose, gradually increased, is thus to be repeated daily. Occasionally I have found calomel and aloes by the mouth serve very effectually for the expulsion of large quantities of ascarides, and exemption, at least for some time, from irritation caused by them. Mechanical means, by the introduction and withdrawal of a cylindrical body, such as a candle or greased bougie, or even finger of the patient, has brought away large packs of these worms.

As part of the mixed treatment, by administering remedies which, whilst they destroy and expel worms, tend also to improve the tone of the digestive apparatus, may be mentioned some bitter saline, such as Epsom salts, sea water, and more especially sulphurous waters, as of Harrogate in England, and our innumerable springs of this nature in the United States. An enema of these may be used at the same time with advantage in cases of ascarides. A combination of bitters and purgatives constitutes a popular part of the mixed treatment of worms.

Croton oil has been recommended by Dr. Wenzel, of Erlangen, as one of the most active remedies against both the *ascarides lumbricoides* and tænia. The smallness of its dose and facility for disguising it, are collateral arguments in its favour. This writer assures us, that a few drops rubbed on the abdomen will very often cause the expulsion of the worms.

I have prescribed with advantage sulphate of copper in a case of tænia. I may premise that my patient was captain of the vessel in which I went to China, as surgeon. He had used various remedies without much effect. I first gave him full doses of calomel and gamboge, from which he derived no benefit. I then began the use of the carbonate of iron in a dose of ℈j., gradually augmenting the quantity, until the last dose amounted to half an ounce. This was given at night, and was followed by no perceptible change of any of the functions, except that the pulse was much *diminished* in force the next morning, at which time there was a motion of the bowels. After an interval of three days, in which a powder of calomel and jalap, each ten grains, was given, I began the use of the sulphate of iron, six grains combined with half a drachm of the carbonate, and continued to give the two daily for a fortnight; gradually increasing the dose of the sulphate until it reached a hundred grains—the common dose of the carbonate during the time being one drachm. Occasionally calomel was added to the powder of the two preparations of iron, with the effect of acting freely on the bowels; but no portion of worm was passed. The patient did not complain of any nausea, nor did he vomit after taking the sulphate of iron in these doses, except in the two last mornings. The last dose which he retained was eighty grains, taken at night, and followed in the morning by some nausea and a feeling of roughness in the œsophagus. The hundred grain dose was thrown up, but without being followed by further vomiting. On the day after this he took twenty grains of calomel in the evening, which procured two motions the next morning. I then began with the sulphate of copper in a dose of half a grain, and continued its use daily for a fortnight, gradually increasing the quantity until it reached five grains. This last dose caused nausea, pain of the head in the night, and on the following morning headache and a feeling of great lassitude. To each of the two last doses, four grains, and five grains, were added twenty-five drops of laudanum. It may be mentioned, that these medicines were all given in the evening, partly on account of their being

better retained on the stomach at that time, and mainly in conformity with the wish of the patient, to whom it was of less moment to be sickened in the night than during the day, in reference to his professional duties.

As to the vermifuge effects of the sulphate of copper, my memorandum of the case shows that, on the very first morning after beginning the medicine, half a grain combined with ten grains of rhubarb, there was a discharge of many lumbrici. After the second dose, as above, a portion of tænia, about a foot and a half long, was discharged, and the bowels were also freely moved as they had been the preceding day. After the fourth dose, still as above, about four feet of tænia were passed at the first stool in the morning. The dose of sulphate was increased to a grain: and on the fourth day, and after the third dose, there were passed about four yards, in three portions, of the tape-worm. From this time the dose was increased until, as already mentioned, it amounted to five grains, but without causing the discharge of more tænia. Commonly the bowels were moved regularly once a-day—sometimes twice or thrice after the sulphate. The reason of my adding the few grains of rhubarb to the salt of copper, was the better to disguise the medicine from the patient. There was no fallacy in the doses throughout the case, for I weighed and gave them myself.

After our arrival at Canton, I prescribed to the captain spirits of turpentine, in a dose of half an ounce, two or three times, with good effect. Once, some of the worm was discharged; after that he felt himself much better, and was for a long time (some years), clear of the symptoms of tænia.

LECTURE L.

DR. STOKES.

DISEASES OF THE BILIARY APPARATUS.

PATHOLOGY OF JAUNDICE—Its coexistence with a flow of bile—Case of aneurism of the hepatic artery—The disease, independent of mechanical obstruction—Colouring of the various parts—Effects on the milk, and humours of the eye—Jaundice with preservation of health—Icterus infantum.

TO-DAY we have to enter upon the consideration of a subject, the nature and extent of which claims for it a more than ordinary share of importance—I allude to that form of disease which is termed jaundice. I have selected this disease for our present lecture, because I think we may look upon it as presenting a series of phenomena, which form a distinct link of connexion between affections of the liver and the digestive tube. In the first place, jaundice, and I wish to impress this upon your attention, is to be regarded as a symptom rather than a disease *sui generis*, and that it is a symptom which occurs in many diseases of a most essentially opposite pathological character. There is nothing, for instance, more different than disease accompanied by acute inflammatory action, and disease without any inflammation at all; yet we may have perfect jaundice as a consequence of the one as well as the other. No diversity can be more

complete than that which exists between the jaundice arising from inflammation and organic lesion of the liver, and that which results from simple mechanical obstruction of the biliary ducts. It is, therefore, to be looked upon not as a disease but as a symptom, and we may define it by saying, that it is a state in which the solids and fluids of the body are tinged more or less deeply with bile. Generally speaking, this presence of bile in fluids and solids where it should not be normally, is accompanied by the absence of that secretion in the place where it is naturally found, the digestive tube. Yet it is an interesting physiological fact, and one of practical importance, also, that we may have plenty of bile in the stools during an attack of jaundice, or *that we may have jaundice coexisting with even a copious flow of bile.* This is a strong proof in favour of the opinion, that some cases of jaundice have no connexion or dependence on the absorption of bile into the system, as, in the instances to which I have alluded, there is no mechanical retention of bile; the biliary ducts and gall-bladder are open, the bile passes freely into the intestines, and yet the whole body is jaundiced.

I have told you that jaundice is a symptom which is produced by a variety of causes—these I shall briefly enumerate. Without entering into the ultimate mode of action of these causes, and their separate effects on the economy, it will be sufficient for my purpose to mention them individually. The first of these causes I take to be mechanical obstruction to the exit of the biliary secretion. Under such circumstances one of these two things is supposed to take place, either that the bile, which is poured into the biliary duct and gall-bladder, and cannot get into the duodenum, is re-absorbed, or, according to another opinion, that the innervation of the liver is injured; in other words, that the liver is paralysed and unable to perform its ordinary functions, and that, consequently, it does not separate the materials of bile from the blood. The latter opinion has been advanced by men of high authority in the medical world, but when we find, on dissection (as is not unfrequently the case in jaundice), the biliary ducts and gall-bladder distended with bile, we cannot infer a paralysis of the liver as the cause of the disease, we must attribute it to the re-absorption of bile. I have taken mechanical obstruction to the flow of bile as one of the causes of jaundice. Now, you will find this to depend, in the first place, upon the presence of gall-stones in the biliary or common ducts. A biliary calculus is formed in one of these ducts, it excites violent irritation, spasmodic pain, and often (but not always) jaundice. At my next lecture I will show some specimens of this obstruction. In the second place, the biliary ducts may, from various causes, become obliterated; they may be closed by adhesion, as the consequence of inflammation, or they may be impervious as the result of congenital malformation. In some cases children have been born without biliary ducts, in others the ducts have terminated in a *cul-de-sac.* A third cause of jaundice by mechanical obstruction is, where the flow of bile has been prevented by the pressure of tumours on the biliary ducts. Of this one of the most familiar instances is disease of the head of the pancreas, or malignant disease of the pylorus or duodenum.

I have, on a former occasion, alluded to a case of jaundice produced by aneurism of the hepatic artery, one of the rarest pathological circumstances on record, and one which has not been hitherto described. So rare is it, that at a late meeting of the *Académie de Médecine*, that eminent

pathologist, Cruveilhier, stated that he had never seen a case of it. I was so fortunate as to meet with an instance of this uncommon form of disease, and will take an early opportunity of exhibiting the preparation of it to the class. You will see by it how an aneurism of the hepatic artery may cause a complete obstruction to the flow of bile, and I shall be able to show you, that not only the trunks, but also the minute ramifications of the biliary ducts, are enormously dilated and filled with retained bile, and that these dilatations are continued up to the peritoneal surface of the liver, forming as it were so many aneurisms by dilatation of the biliary ducts themselves. The last cause of jaundice from mechanical obstruction, is that which depends upon the accumulation of scybalous matter in the bowels, a thing frequently met with in old persons. Dr. Marsh alludes to this form of the disease in his admirable paper on jaundice in the Dublin Hospital Reports, and brings forward cases in which the jaundice disappeared rapidly under treatment calculated to remove accumulations of hard fecal matter from the intestines. So much for the varieties of jaundice which depend upon mechanical obstruction.

Before I quit this part of the subject, it will be necessary to allude to another form of the disease, which bears some analogy to those already mentioned, namely, the spasmodic jaundice. With respect to this variety there exists a great deal of doubt: some persons maintain that the ducts are muscular, and consequently liable to spasm like all other parts of the muscular system; others deny the existence of muscular fibres in the ducts; while a third party are of opinion that the spasm resides in the duodenum, and that the contraction of its muscular fibres is the sole obstacle to the free passage of bile. It is of very little consequence which of these opinions we adopt; the fact is, that this is a form of the disease which we occasionally meet with in persons of an hysterical or hypochondriac habit, but what is its exact seat we cannot ascertain. The probability is, that it is spasm of the duodenum itself.

The next class of causes giving rise to jaundice are those which are connected with acute or chronic disease of the liver, as, for instance, the different varieties of hepatitis and the existence of morbid growths in the substance of the liver. Here, however, it must be recollected that the occurrence of hepatic disease in the acute or chronic form does not necessarily imply the existence of jaundice; in other words, there are some cases of disease of the liver in which bile is freely discharged into the digestive tube, others in which it is not, so that the non-secretion of bile and the consequent production of jaundice are to be looked upon as accidental complications. I have seen a case in which there was enormous destruction of the liver from suppuration, where one of the lobes was almost entirely converted into a bag of purulent matter, and the other extensively diseased, yet the patient had not the slightest tinge of jaundice. We are ignorant, therefore, of the cause which determines the production of jaundice in one case of hepatic disease, and not in another; the question remains to be decided by future investigations. All we know is this, that it may occur or be absent in every form of acute or chronic disease of the liver.

The third great source of this affection is disease of the mucous surface of the stomach and duodenum, the most important, because it is the most frequent, cause of jaundice. We are indebted to the researches of modern pathology for a correct notion of this form of the disease, and for the

invaluable light thrown upon its treatment, which, up to the time of Broussais, had been extremely confused and empirical. Inflammation of the upper part of the digestive tube is an extremely frequent cause of jaundice, and this result is, generally speaking, *independent of any mechanical obstruction of the gall-bladder or biliary ducts*. This phenomenon may be explained by calling to mind the various examples of sympathetic irritation, and by recollecting that disease in one situation frequently produces disease in another; or, in other words, that we have an irritation of the stomach and duodenum, in which the liver sympathetically partakes, and, as a consequence of this, the biliary secretion is arrested. In a former lecture, I alluded to the strong sympathy which is known to exist between mucous membranes and the glands whose ducts open upon their surfaces. It is supposed by some that the irritation existing in the duodenum may be extended to the liver, producing paralysis of the functions of that organ and jaundice. It would appear, also, that the yellow fever of warm climates is only a variety of jaundice, depending upon irritation of the gastro-intestinal surface. On this point the best pathologists seem to have made up their minds.

The last cause of jaundice seems to consist of the sympathetic action of the brain upon the liver, and this is an extremely curious circumstance. There are numerous cases on record of persons who have received an injury of the brain becoming jaundiced, and the same affection has been repeatedly known to supervene on powerful mental emotion. Thus we find that Murat, on learning that his queen had assumed the sovereign power of Naples in his absence, fell into a violent passion, and became almost immediately jaundiced. The close connexion which exists between the brain and the biliary system has been long known; it is unnecessary, therefore, that I should enter upon its consideration, for the purpose of accounting for an occurrence the nature of which must be obvious to all. You will, however, find that jaundice is, in the majority of cases, connected with disease of the gastro-intestinal surface, and that this is one of the most common causes of the sporadic jaundice of this country. I shall return to this subject on a future occasion, when we enter upon the consideration of hysteria.

Before I enter upon a description of the separate forms of jaundice, it will not be amiss to premise a few general remarks. I told you, at the commencement of my lecture, that we define jaundice by saying, it was that state in which the solids and fluids of the body were tinged more or less deeply with bile. Now, is this definition to be received without any exception; and does it embrace all the solids and all the fluids of the body? I have stated, that in some cases you will not be able to detect the slightest trace of bile in the stools. This is, however, but an apparent exception; it is, perhaps, because the bile is too small in quantity to be able to overcome the diluting power of the ingesta, or that the portion of it which finds its way into the digestive tube is too small to be appreciable by our senses under these circumstances. The rule of universal colouring in this disease will not, I believe, hold good, at least there are certain fluids and solids which are tinged only in a very slight degree; but the majority of the textures and fluids have been observed to be more or less distinctly coloured. For instance, we find the jaundiced tint, appearing in bone, cartilage, muscle, in the cellular membrane, in the central portions of the teeth, but not in their enamel. It is doubted

whether the hair is coloured or not, but it is the opinion of many that it is, and a professional friend of mine has assured me that he has had unquestionable proofs of the colouring of the hair. The membranes of the brain are distinctly tinged. I have seen the arachnoid and pia mater decidedly coloured in a case of gastro-duodenitis, to which I shall call your attention on a future occasion. The substance of the brain, however, has not been found to partake in this universal discoloration. Frank, who is a good authority on this point, states that the substance of the brain is never coloured, though the membranes may, and most commonly are. In my experience of jaundice, I have found the membrane distinctly coloured, but never could see any tinge of yellowness in the *substance of the brain.* I have, however, observed that when a horizontal section of the brain had been made in such cases, the orifices of the divided vessels, which are denoted by bloody points in the healthy state, seem to pour out a quantity of yellowish blood, but the substance of the brain appeared white and normal.

With respect to the state of the fluids, you will find the blood distinctly coloured; the saliva also is yellow; the urine is loaded with bile, it stains the linen, and chemical analysis shows that a large proportion of the biliary secretions is blended with it. The perspiration is also tinged with it; and if you apply a blister you find the exuded serum bilious. If a person labouring under phthisis or bronchitis, should happen to get an attack of jaundice, the pulmonary secretions will be often tinged with yellow. The mucous secretions from the vagina and uterus are also discoloured; but it is an interesting and curious fact, that the milk during lactation seems to escape the general impregnation with bile, and is never tinged. This would appear to be a beautiful provision of nature to prevent the child from being injured. Frank, who witnessed two epidemics of jaundice, one at Mayence, in 1754, and another at Ghent, 1742, states that he has never seen the milk tinged with bile. Dr. Marsh, in his paper on jaundice, mentions that, in the case of one unfortunate female, a yellow fluid was squeezed from the breasts after death; but this cannot be considered as a proof of the existence of bile in the milk during life.

In jaundice the eye almost always presents a very distinct yellow tinge, and yet it is a curious and interesting fact, that the patients very seldom complain of yellow vision. Out of several thousand cases of jaundice, Frank only met with five in which this symptom was observed. The occasional recurrence, however, of yellow vision in jaundice, has excited a good deal of interest; and Drs. Graves and Elliotson, who have turned their attention to this subject, have made some ingenious and valuable remarks on this singular phenomenon. Dr. Elliotson's opinion is, that where this symptom is complained of, the cornea is in a state of irritation or inflammation, and that under these circumstances its vessels, which in their physiological condition are too small to allow of the passage of coloured fluids, become dilated, so as to carry bilious blood across the field of vision, and thus cause all objects to wear a yellow hue. To support this opinion, he brings forward the case of a jaundiced patient, who had a considerable degree of inflammation in one eye but none at all in the other, and who saw objects yellow with the inflamed eye, but of their natural colour with that which was free from inflammation. This case is, indeed, as far as it goes, extremely interesting; but I think it does not

prove the point in question, namely, that the cause of jaundiced vision is irritation of the cornea, for it is a fact that even when the cornea is deeply tinged, yellow vision is not of constant occurrence, nor does it affect all persons alike. One person sees objects in their natural colours; to another under the same circumstances every object appears to wear a yellow hue, and what is equally remarkable, this yellowness of vision is frequently intermittent; it is present to-day and disappears to-morrow. These are extremely curious facts.

The object of Dr. Graves on this subject, in the Dublin Medical Journal, is to explain the cause of the absence of yellow vision in certain cases of jaundice. He believes that the humours of the eye frequently escape the jaundiced tinge, and suggests that this may be a beautiful provision of nature for the preservation of sight. From his own observations he states that the aqueous, and perhaps the vitreous, humours escape. But, it may be objected to this, that when all the fluids, the blood, saliva, serum, perspiration, &c., are impregnated with bile, how is it possible that the fluids of the eye should escape?—Does it not seem very extraordinary?—It does, certainly; but that it is possible seems to be established by the following circumstances;—you are not to conclude, because all the fluids which are found to exist in the blood are filled with bile, that the secretions, properly so called, which do not exist in the blood, should be also tinged with bilious discoloration. This is the answer which Dr. Graves makes to this objection—I recollect two cases of malignant cancerous disease of the liver, which were some time ago in the Meath Hospital, and which presented symptoms of universal jaundice before death. In these cases we found fluids deeply impregnated with bile—everything, in fact, seemed bilious and discoloured; and yet, you will hardly credit me when I tell you, that on opening the gall-bladder, *it was found to contain a quantity of beautiful limpid fluid, perfectly transparent, and of a high refractive power.* Here, then, is a fact to prove that we may have intense general jaundice, and yet find in a sac existing in a system so diseased, a quantity of fluid perfectly free from any bilious admixture, proving, at least, that it is possible that the humours of the eye may in a similar manner escape. Dr. Graves further remarks, that, even where the humours of the eye happen to become tinged, the alteration in the colour of objects may still escape the observation of the patient; because the change takes place gradually and insensibly. The patient does not think everything he sees is yellow; he believes still that they are white, because the transition from one colour to the other has been so insensible as to escape his notice. This reasoning may, I think, apply to cases of yellow vision coming on gradually, but will not explain those in which it has been of sudden occurrence. The other cause which Dr. Graves adduces as tending to prevent a patient with a yellow cornea from seeing objects of the same colour, is, the want of some standard of comparison to judge by. He has no means of comparing objects; and, though he sees this piece of paper, for instance (yellow), he thinks it is white, because every standard he looks to, every other piece of paper he examines, presents the same tinge. Dr. Johnson states, that most of the jaundiced patients whom he has interrogated were sensible of the alteration in vision to a greater or less degree, and observes that the power of appreciating varieties of colour is retained, though we look through a yellow medium not deeply dyed, though yellow, of course, is made to enter into this compo-

sition. You will see this observation in the Medico-Chirurgical Review for October, 1833.

I shall conclude this subject with an observation which suggests itself to me, and this is, that the alteration of colour and vision may arise from other causes than the mere jaundiced condition of the eye; and that it may (I believe this has not been taken notice of before) depend upon direct nervous influence. There are cases on record of patients labouring under typhous fever, who, without being in the slightest degree jaundiced, saw everything yellow. There are also numerous instances of various colours, differing from the natural hues of the objects, being seen by patients in consequence of affections of the nervous system; and hence it is extremely probable that many cases of yellow vision in jaundice may depend upon a functional lesion of the optic nerves. I have one fact to bring forward on this subject of great importance. In the case of jaundice from aneurism of the hepatic artery, the patient saw everything intensely yellow, until a few days before death, when all yellow vision subsided, and he saw objects of their natural colour, though the jaundice continued, if possible, more intense than ever. In this case there was no inflammation of the eye. I do not think that Dr. Elliotson's observations apply to all cases of this phenomenon. All that he has said is, that where the cornea is in a state of inflammation, there is a greater probability that there will be yellow vision in the affected eye or eyes; and this can be easily accounted for by the increased size of the vessels which the inflammatory process brings on. We may, however, conclude, that in some cases the alteration of vision may be owing to a yellow state of the humours of the eye, that in some it is the result of inflammation, and that in some it may be fairly attributed to a lesion of innervation. I think that the latter statement is borne out by the facts, that there is a want of constancy in the occurrence of this phenomenon, that it is often of a more or less intermittent character, being one day present and another day absent, and that it has been observed in cases where not the slightest symptom of jaundice existed. We must also bear in mind that some of the most remarkable nervous symptoms commonly occur in jaundice, such as coma, &c.; and we may inquire how far the occurrence of yellow vision may be looked on as an indication of an excited state of the brain, and so lead us to measures calculated to remove impending danger.

Let us now return to the more immediate consideration of *jaundice*. One of the first diseases of children is the *icterus infantum*, or, as it has been termed by nurses, the *yellow gum*. Children, shortly after birth, without any known cause, become suddenly jaundiced, and this, after continuing for some days, goes off, frequently without any treatment. This form of jaundice appears to depend upon some particular irritation of the intestinal canal, which seems to result from the circumstance of the digestive system being called into active exertion for the first time, and receiving a new stimulant from the mother's milk. It is a curious fact, that this form of jaundice generally disappears spontaneously.

Now it is remarkable, in this as well as other cases (when we recollect the nature of jaundice, and that there exists in the fluids of the body an irritating substance like bile), that the effects of an admixture of the biliary secretion with those fluids should not be attended with more striking symptoms. In some instances we shall have intense jaundice without any particular effect upon the economy. There is some itching of the skin, ardor

urinæ, a little depression of spirits, and vertigo, which last for a few days and then disappear. Dr. Gregory mentions many cases of persons affected with jaundice who went about their ordinary business, and performed all the functions as if in a state of perfect health, eating, drinking, and sleeping in their usual manner. I have, myself, seen persons who laboured under this affection for more than a year, and yet had all that time their digestion good, their bowels regular, the flow of urine natural, and the circulatory, nervous, and respiratory systems apparently conformable to the standard of health. Dr. Blundell gives the cases of two children who lived for four months, apparently well fed and healthy; and, on opening their bodies, it was found that the biliary ducts terminated in a cul-de-sac, and that, consequently, not a drop of bile had been discharged into the intestines. Sir Everard Home gives a remarkable case of the total absence of the gall-bladder, and no passage of bile into the intestines, occurring in connexion with a perfect state of health. These are curious facts, and should be borne in memory. I remember two cases of protracted jaundice in the persons of two male servants who were admitted into the Meath Hospital with symptoms of irritation in the upper part of the digestive tube. From this both recovered under an appropriate treatment, but the jaundice continued in one for eighteen, and in the other for sixteen months. One of them, a stout, well-built, and fully developed man, came into the hospital some time afterwards in the apparent enjoyment of perfect health, except that he had still the jaundiced colour. He wished to be taken into the hospital to get cured of his jaundice, stating that, in consequence of the peculiarity of his appearance, he could not get a place anywhere, and was in a very distressed condition. From these facts it seems fair to conclude that the symptoms of other affections, occurring after jaundice, are owing to some other cause than the bilious state of the blood.

I find that my time is nearly expired; I cannot, therefore, enter into the various causes of jaundice to-day: at our next meeting I hope I shall be able to conclude this subject, and then pass on to the consideration of hepatic disease.

LECTURE LI.

DR. STOKES.

JAUNDICE FROM GASTRO-DUODENITIS—Researches of Broussais and Marsh on—Jaundice without hepatic inflammation—Nervous symptoms.—*Treatment*—Yellow fever—its occurrence in this country—Predominance of gastric irritation in warm climates—Typhus icterodes—Jaundice from biliary calculi—Different situations in which biliary calculi may be found.

WE commence to-day with the consideration of that form of jaundice, which, taking *all* its cases into account, appears to be the most common. The pathological expression for this form of the disease is, that it is inflammation of the upper portion of the digestive tube, or, in other words, that it is the result of a gastro-duodenitis. In this case, an inflammatory affection of the stomach and duodenum acts sympathetically on the liver, and we have jaundice occurring independent of hepatic inflammation or me-

chanical obstruction to the flow of bile. This variety of the disease it is important you should be accurately acquainted with, as it is not only exceedingly common in temperate climates, but because I believe it is a great cause of mortality in warm countries, and that the yellow fever of the tropics is reducible, in a great measure, to this form of disease. In other words, that the cause of the yellowness, and many other of the symptoms, is to be referred to an intense irritation or inflammation of the digestive tube, with a predominance of irritation in its upper portion.

The jaundice which depends upon gastro-duodenal inflammation, was first accurately described by Broussais. Dr. Marsh has also made many valuable additions to our knowledge on this subject, in his paper on jaundice, published in the fifth volume of the Dublin Hospital Reports. You will find, too, that in a case of jaundice described by John Hunter, he suggests the possibility of its being preceded by inflammation of the duodenum. But I believe we are chiefly indebted to Broussais for our first correct notions of the pathology of this disease, and for its scientific and successful treatment.

The disease may occur in the acute form, or it may come on in a slow, insidious manner; but in either case, as far as my experience goes, it is always accompanied by symptoms referable to a morbid state of the mucous membrane of the intestines. Dyspeptics, and individuals subject to diarrhœa, are liable to it; but it may also attack strong and healthy persons from the two following causes:— A man is exposed to considerable heat, his body is bathed in perspiration, he experiences some degree of lassitude, and is very thirsty: in this state he takes a large draught of cold water. In a few hours afterwards he begins to feel uneasy, and complains of being unwell; he gets shivering, nausea, thirst, and fever, and this fever and thirst, with bilious symptoms (as they are called), continue for two or three days, when some morning, on awaking, the patient finds himself jaundiced. The same thing may happen as a consequence of error in diet. A person eats at supper a quantity of indigestible food, next day he has vomiting and thirst, and in a day or two more jaundice appears. I may remark here, that this indisposition of two or three days' standing is a very curious and interesting feature in the disease, and would seem to be connected with the progress of disease in the mucous surface of the stomach and duodenum. Jaundice from gastro-duodenitis generally occurs in this country under two varieties. The first is an extremely mild disease; it comes on with very slight and transient symptoms of constitutional or local derangement; it seldom prevents the patient from pursuing his ordinary avocations, and generally disappears without any trouble. The second variety is an extremely severe, and frequently a fatal disease; between this and the former there are numberless shades and gradations.

Let us take a case of the more severe form of jaundice. The cause of this, as I have already mentioned, is often the taking a copious draught of cold water while the body is heated by exercise, or eating a quantity of indigestible food. The patient is indisposed for two or three days before the jaundice appears; he has nausea, vomiting, great thirst, loss of appetite; he complains of burning heat in the epigastrium, and there is some tenderness on pressure over the region of the stomach and duodenum. His tongue is foul, his bowels costive, his urine loaded; he has considerable prostration of strength, complains of vertigo and lowness of

spirits, and is constantly sighing. There is always more or less febrile disturbance; in some cases the fever is ephemeral, and goes off in a day or two; in others it continues for a much longer period. When this fever continues beyond the second or third day, it is to be looked upon as an unfavourable sign, and you may expect that the case will be unmanageable and dangerous. There is another remarkable symptom on which I have had reason generally to found an unfavourable prognosis, *and this is a variation in the intensity of the yellowness.* In some cases, you will find that to-day the countenance and skin are much less yellow, and this is always noticed by the patient, whose spirits are generally raised by the decline of the jaundiced tint, but in a day or two it becomes as deep as ever, and it may go on in this way, alternating from a faint to a deep tinge, and *vice versâ*. This is an unfavourable symptom: it appears to indicate the repetition of inflammatory action in the intestinal tube, because each increase in the depth of the yellow tinge is accompanied by an increase of the epigastric symptoms. In such cases as this, the patient does not, as under other circumstances, shake off the disease and return to his usual habits; he lies in bed, and though he complains of no pain, except when you make firm pressure upon the epigastrium, still he is not at all improving; he tells you he is better, but he is still languid, and his appetite does not return. The stools are generally clay-coloured, but this is not a necessary consequence of jaundice; they are sometimes yellow, and I have seen them of a perfectly healthy appearance. The pulse, in most cases where fever is ephemeral, returns in a few days to its natural standard; in some instances it is remarkably slow, and this state of pulse is to be regarded as an unfavourable symptom. Sometimes there is a slight degree of subsultus tendinum and delirium; and I must observe that you are never to forget that the early supervention of nervous symptoms, in any form of this disease, is always to be looked upon with suspicion. One of the most alarming complications, however, of this gastro-duodenal jaundice, is the occurrence of coma during its progress, a symptom to which the attention of the profession was first strongly directed by Dr. Marsh. He has given several cases of jaundice, characterized by this symptom, the majority of which resisted all the ordinary resources of medicine, and terminated fatally. I must confess, too, that I have never seen a case, in which the coma was distinctly established, terminate favourably. You should, therefore, when called to treat a case of jaundice, be always on the alert, and never allow any bad symptom like this to steal upon you: and it is gratifying to think, that if you take this symptom in time, you will, in all probability, be able to overcome it.

An extremely interesting paper on this coma, occurring in jaundice, will appear in the forthcoming number of the Dublin Medical and Chemical Journal, from the pen of Dr. Griffin, of Limerick. He gives the details of some extraordinary cases, which you will find well worthy of an attentive perusal. Out of four cases *in one family*, which he attended, two died, who had become comatose at an early period; in the other two, the affection of the brain was relieved by bleeding and other active measures. From this it would appear, that the mere supervention of coma is not necessarily followed by death, but that it is an exceedingly dangerous symptom when it comes on at an early period of the disease. It is very difficult to give a satisfactory explanation of this. Some persons think that it is attributable to the action of the bile on the blood which is cir-

culating in the brain. This explanation would answer very well if coma was a symptom of common occurrence; this, however, is not the case, and we must seek for some better reason. It is stated, by some, that coma may be one of the consequences of the close sympathy which exists between the brain and liver. Dr. Griffin draws an analogy between the effects of suppression of bile in jaundice and suppression of urine in diseases of the kidneys, and thinks that the affection of the brain is of common occurrence in one as well as in the other. This analogy, however, is incomplete; for we have no case of complete suppression of urine without fever and other violent symptoms, but we have many cases of complete suppression of bile with very slight and almost inappreciable disturbance of the economy. It is very difficult, in the present state of medical science, to explain the coma of jaundice; all we know is, that it sometimes occurs, that it is a bad symptom, and must be met with great activity. I may mention one fact which seems to be strongly opposed to the analogy of Dr. Griffin. It will be proper to observe here, that Dr. Griffin does not advance this as an opinion, or advocate it as a theory; he merely offers it as a hint or suggestion, leaving it to others to decide the question. We are not, therefore, in examining this analogy, reasoning against any opinion of his. But with respect to this matter, the fact to which I allude is this—one of the worst cases of coma I ever witnessed occurred in a patient who had no suppression or retention of bile; the bile flowed freely into the intestines, the dejections were distinctly tinged with it, and yet this man had deep jaundice and intense coma. We are still in want of a number of facts on this point; it is a subject which affords a large field for interesting inquiry, and Dr. Griffin deserves great credit for the philosophical and impartial manner in which he has brought his cases before the medical public.

When a patient dies of jaundice, accompanied by this comatose affection, you are naturally anxious to ascertain the cause of death. Now, what you will generally find is this: on opening the head you examine the brain accurately, but cannot detect any lesion of its substance or membranes; you then go to the stomach, and discover there marks of vascularity; you open the duodenum, and find it in a state of intense inflammation. I have seen many cases of this disease in which the mucous membrane of the duodenum was highly engorged and almost black. It is said that this inflammation extends from the duodenum along the common biliary duct to the liver. I am not possessed of facts to confirm this assertion, but I have little doubt, that, in the majority of cases, the jaundice is more the result of a mere lesion of innervation of the liver, than proceeding from any spread of inflammation along the ducts into its substance. Unless we can demonstrate this inflammation, it is idle to assume its occurrence. When you examine the liver, gall-bladder, and biliary ducts, you generally find them in the normal state. In a few cases, the ducts have been found impervious from adhesive mucus; you will see in John Hunter's works a case of this kind, which occurred in a consumptive patient. You will find a great number of important facts, relating to the pathology of jaundice, in the commentaries upon his own pathological propositions by M. Broussais. I would also advise you to peruse Dr. Marsh's excellent paper in the Dublin Hospital Reports.

Diagnosis.—We now come to the diagnosis of jaundice depending upon gastro-duodenal inflammation. In the first place, we learn from the

history of the case that the exciting cause has been some excitant of inflammation in the mucous surface, the ingestion of indigestible aliment, or taking cold water into the stomach while the body has been over-heated. The next thing is the supervention of fever with gastric symptoms, and these being followed, in two or three days, by an attack of jaundice, *without any of the ordinary signs of hepatitis.* Here we have a disease excited by taking cold water while the body is heated, or by indigestible food, preceded by febrile disturbance with gastric symptoms, and unaccompanied by the symptoms or signs of hepatitis. When this combination of circumstances occurs, you make your diagnosis with great certainty, and set it down as jaundice depending on inflammation of the stomach and duodenum, and treat it accordingly. There are but two forms of jaundice accompanied by symptomatic fever: the one under consideration, and that which is the consequence of hepatic inflammation, or other disease. It might be supposed that the tenderness of the epigastrium was caused by an affection of the liver, but by making an accurate examination you will be generally able to discriminate with certainty. You will find that the pain is less than that of acute hepatitis, that strong pressure gives pain, not in the region of the liver, but in that of the duodenum; you can ascertain by a manual examination, and by the pleximeter, that there is no enlargement of the liver, that there is no remarkable dulness on percussion at the lower part of the chest on the right side, and when the fever is ephemeral, this will furnish you with much valuable assistance towards forming a correct diagnosis.

With respect to the treatment of this form of jaundice, in mild cases, where there is little or no fever (for fever is to be taken as a test of the severity of the disease), the patient very often gets well without any treatment, and the jaundice, after lasting a few days or weeks, goes off spontaneously. In all such cases, a regulation of diet, keeping the bowels open by mild laxatives, and prohibiting wine, spirits, and other stimulants, will be found, in general, sufficient to remove all the symptoms. I wish, however, to impress upon you that it is of *the utmost importance to cut short this disease as soon as possible.* There is no use in letting it get ahead of you; and in every case where the symptoms are in any degree acute, and there is a degree of fulness and tenderness over the epigastrium, you will be culpable, if you omit to apply leeches over the stomach and duodenum, and prescribe iced water, and every other means calculated to remove inflammation. If you allow it to go on to a certain length, if you allow fever to progress, and coma to supervene, you will not be able to manage the case so easily. Never, then, omit the application of leeches the moment you have ascertained the existence of decided inflammation. Keep your patient's bowels open by enemata, or mild saline laxatives, regulate his diet carefully, prohibit all stimulants, and he will generally do well.*

---

* [In a case of jaundice from gastro-duodenitis, the subject of which was a young and previously healthy lady, of a full frame and lymphatic temperament, the pulse was frequent, full, and vibrating; tongue loaded, and somewhat furred, and bowels costive. She suffered much from pain in the epigastric, and left hypochondriac region, extending to the shoulder.

I found it necessary to practise venesection four different times, the quantity of blood, at each time, varying from twelve to sixteen ounces,

Many persons are in the habit of prescribing mercury in this disease. From my own experience I cannot say whether this is right or wrong; but I can state that I have seen a great many cases get well without it. But in cases where the symptoms are obstinate, and the stools continue white, I think you would be justified in giving mercury, even so far as to produce salivation. I must remark to you, however, that I have seen two cases in which it was found impossible to produce the free action of mercury in patients labouring under this disease. The exhibition of small doses of cream of tartar, two or three times a-day, made into an electuary with some mild confection, I have found to be an excellent remedy in the treatment of this affection. In my lecture on dysentery, I mentioned some facts which go to prove that this remedy seems to have great power in bringing down bilious discharges. In this form of jaundice I found cream of tartar extremely useful, and its exhibition is unattended with danger.

Now, suppose you should meet with a case in which coma appears as an early symptom, what should your line of treatment be? Here you have to deal with a threatening symptom, which, if neglected for any time, will, in all probability, bring on a fatal termination. You should, therefore, on its first appearance, meet it with a corresponding activity; you should immediately have the head shaved, apply leeches behind the ears, blister the nape of the neck, and act smartly on the bowels by laxatives. It was by such treatment as this that Dr. Griffin saved his patients.

I wish here to make some observations on a very remarkable form of gastro-duodenitis, which was almost epidemic in this country some years ago, at least it occurred during the existence of an epidemic fever, and we had at that time a great many cases of it in the hospital. It is a curious fact, that the majority of these seemed to bear a distinct resemblance to the yellow fever of warm climates. This will appear somewhat extraordinary: but, when you have heard a statement of the facts, you will be inclined to think that these cases were nothing more or less than so many instances of the malignant yellow fever of the tropics. I shall read for you an account of the symptoms, as they were observed in numerous cases under the care of my colleague, Dr. Graves, and myself, in the Meath Hospital.

In the great majority of cases this disease was preceded by fever; in fact, all the patients who exhibited this form of jaundice had been admitted as fever patients. After a longer or shorter period without any premonitory indications, symptoms of intense irritation of the digestive tube set in, and advanced with a fatal rapidity. Most of the patients vomited frequently; there was great tenderness of the epigastrium, and over the region of the small intestine; the tongue became black and parched; there was a violent pain in the belly, and a spasmodic affection of the abdominal muscles, which felt hard and knotted, and to which the nurses gave the name of *twisting of the guts*, a name which singularly agreed with the numerous intus-susceptions found along the course of the small

---

and to direct free leeching on the epigastrium—in a period of three weeks. The bowels were generally evacuated by enemata. Calomel purges were occasionally given, and, at times, opium after venesection, to relieve the gastro-enteralgic pain. This effect was often procured by potassio-tartrate of antimony in solution.—B.]

intestine after death. This state of suffering continued from one to four hours, and then the body became all over suddenly jaundiced. Then came another train of symptoms. With intense and universal jaundice, the patients exhibited also extreme restlessness, tossing their arms about, and regarding their attendants with a look at once expressive of nervous suffering and despair. Some raved, had trembling and convulsive fits, and were totally unconscious of everything passing around them; others preserved their intellect to the last, but they had depicted in their countenances an agony and a despair which I shall never forget. General spasms were frequently observed, and many, on attempting to swallow, had spasms like those of hydrophobia. There was great irritability of the stomach; many vomited frequently, and in some cases the matter ejected bore an exact resemblance to coffee-grounds. The pulse became low and fluttering, the extremities cold, the face pale and shrunken, and in some the nose assumed a purple colour, giving to the patient a truly horrible appearance. This change in the colour of the nose was preceded by extreme paleness; the part, at first, appeared as if it had been frost-bitten. Broad patches of a wax-like whiteness, elevated a little above the level of the skin, and somewhat resembling urticaria, having the same temperature as the rest of the body, were found on the following day to assume a reddish colour; and on the third day the redness was converted into dark purple. The toes were affected in a similar way; and in some of these cases the parts so affected sloughed and were thrown off. There is at present in this city a woman who lost the ala of the nose and one of the toes, in this manner.

The phenomena observed on dissection were equally remarkable. Though the tenderness of the epigastrium was very great, there was no trace of peritoneal inflammation; *neither was there, in any case, inflammation of the liver, and the gall-ducts were found to be pervious in every instance.* The mucous surface of the stomach and duodenum, and ileum, was found in every case to present intense marks of inflammation; there were numerous intus-susceptions along the course of the ileum, and the spleen was found to be large, soft, and pultaceous. There was no evidence of inflammation of the brain; but in the ventricles, and at the base of the brain, there was in some cases an effusion of yellowish fluid, and the membranes had a faint tinge of yellowness. In one case I found a remarkably dry state of the arachnoid. In one severe case there was a good deal of a substance resembling coffee-grounds in the stomach, and the mucous membrane was soft and disorganised.

All the phenomena of this disease, the gastro-intestinal inflammation, the yellowness of skin, the enlargement and softening of the spleen, the rapid fatality and excessive prostration, seem to point out a strong analogy between it and the yellow fever of warm climates. In the writings of Rush and Lawrence, you will find that their description of the phenomena, observed on dissection, would in a great degree answer for those of the cases which I have detailed. I may mention here, too, that in our cases the mortality was severe. We lost the first sixteen cases; and it was not until we fully ascertained the nature of the disease by dissection, that we began to save these patients. Then, by free depletions, copious applications of leeches to the abdomen, and the bold use of calomel and opium, we succeeded in a great number of cases. In some cases, death took place in four, in others in six hours; in a few it was more prolonged. There is no

epidemic on record in this city in which the same symptoms, and the same rapid fatality, were observed.

With respect to the analogy between this disease and yellow fever, it appears that in the latter affection the yellow colour depends upon the presence of bile in the blood. This is one point. Again, from the most accurate descriptions which have been given of the morbid appearances of yellow fever, it appears that in the majority of cases the liver has been found healthy; here is another point. In yellow fever, also, inflammation of the stomach, duodenum, and intestines, is a matter of almost universal occurrence, as you will find by examining the works on yellow fever. In our cases we had all these circumstances; we had extreme tenderness of the epigastrium, and inflammation of the stomach, duodenum, and intestines; and in one severe case we had black vomit. All these circumstances, combined with the fatality, seem to prove that the cases which were under treatment in the Meath Hospital, during the epidemic of 1826–27, bore a very striking resemblance to that species of fever which is supposed to exist only in warm climates. It is probable that if yellow fever should appear in temperate countries, it would exhibit itself in the form of gastric fever, with some cases only of yellowness. Indeed, it seems to be now very generally admitted, that yellow fever has nothing peculiar in it; that it is the maximum of bilious or gastric fevers. We find that, in proportion as we approach the warm latitudes, the digestive mucous membrane appears to take on a greater susceptibility of disease. Between the tropics it would seem as if morbid actions were chiefly thrown upon the viscera of the abdomen. Europeans, who have resided there for any length of time, acquire a yellow tinge, and many of them suffer from intestinal and hepatic inflammations. If we go northward, we find the case to be the reverse; as we approach the colder latitudes, we find the mucous membrane of the digestive tube acquires a greater degree of tone and vigour, that it is less susceptible of disease, and can bear much greater stimulation. The inhabitants of warm climates use a large proportion of vegetable food; they seldom indulge in the use of animal food or spirits. The Hindoo lives on rice, the Arab on dates and milk. But, if we go northward, we find the natives habitually using stimulating food and drink with impunity; indeed, it is wonderful to think what vast quantities of flesh, animal oil, and other stimulants, the stomach of an Esquimaux or Kamschatkan will bear without injury. There is no doubt that warm climates predispose to inflammatory affections of the digestive apparatus, and this seems to connect yellow fever with the ordinary form of gastro-duodenitis, accompanied with jaundice, or, in other words, a little more extent, a greater degree of intensity, and we may have the jaundice of this country converted into yellow fever. And it is fair to conclude, that the *typhus icterodes* of temperate countries owes its danger not to the mere circumstance of jaundice existing, but to the greater degree of secondary gastro-enteritis which has produced that jaundice.

Obstruction of the Biliary Ducts.—I shall now draw your attention to some other forms of jaundice. One of the most important of these is, that which arises from the obstruction of the biliary ducts by calculi. It would be foreign to my purpose to enter into any discussion with respect to the formation of gall-stones in a course of lectures like this; I shall therefore refer you, for information as to their history and composition, to the

various treatises an animal chemistry.* What we have to consider at present, are, the symptoms of the disease, the habit of body in which it is found to occur, and its mode of treatment. You see on the table numerous preparations of the various forms of this disease.

Gall-stones are more commonly observed after the age of forty or fifty than before these periods; they are very frequently met with in persons of sedentary habits, and hence women are more subject to them than men. They are also liable to occur in persons who eat highly-seasoned, indigestible meats, aud take little or no exercise. It is stated that in England five-sixths of the cases of gall-stones occur in females. I do not know whether this proportion be exact, but the fact is established that they are more common in females than men. Biliary calculi may be found in three different situations: either in the substance of the liver, or plugging up the biliary ducts, or filling the gall-bladder. Here is a preparation, exhibiting the gall-bladder almost obliterated by the pressure of a number of those calculi within its cavity. Here is another specimen. You see the gall-bladder is contracted, and nearly filled up with biliary calculi; it also appears to be atrophied and reduced in size. Here is a remarkable specimen. You observe the gall-bladder, which is rather large, is completely filled with a vast calculus; its coats are also thickened, probably the result of inflammation. Here is another preparation of the gall-bladder, containing two moderately-sized calculi.

Gall-stones, when lodged in the substance of the liver, or in the gall-bladder, may remain for a long time, and accumulate prodigiously, without producing jaundice. This has been frequently proved by the fact, that on opening the bodies of persons who have not had during life the

* [Gall-stones may be formed in all parts of the hepatic apparatus, but most frequently they are met with in the gall-bladder. "*Hepatic* gall-stones are always very small, of a regular tuberculated form, and of a dark olive, almost black colour; and are composed of solid biliary matter, more or less altered, and mucus." They are often encysted.

Gall-stones, chemically considered, consist of—1. cholesterin, easily recognisable by its rhombic tablets; 2. Bile pigment (cholopyrhium of Berzelius, biliphæen of Simon), which is of a fiery, brownish-red colour; 3. A dark-brown, almost black pigment; 4. Other constituents of bile, as choleic acid, choleate of soda and their modifications, bilifellinic acid, dyslysin, &c; 5. Mucus and epithelium of the gall-bladder and the biliary ducts; 6. Earthy salts, viz., carbonate of lime; 7. Margarine and the margarates.

The two characteristic forms of gall-stones are, first, those consisting of crystallized carbonate of lime, which are pointed and jagged; and those formed of dark pigment, which usually present a nodulated appearance, like mulberry calculi. The colour of gall-stones depends on their chemical constituents, and is by no means constant.

In order that a gall-stone may be produced, it is first necessary that a precipitate should be formed and remain and accumulate into a larger mass. For this purpose, the bile should be in a state of concentration, which occurs when it has been a long time in the biliary ducts or in the gall-bladder. Most probably, also, there is a more abundant proportion of *cholesterin* than in the normal state, and formation of mucus and bile pigment (Vogel, *Pathological Anatomy of the Human Body*).—B.]

slightest symptom of jaundice, the gall-bladder has been found completely filled up with these productions. But when any cause determines the passage of one of these bodies into the ducts, and that it is too large to pass freely, then the symptoms of icterus begin to make their appearance. We do not know what it is that produces the attempt to discharge small biliary calculi through the ducts, but it is during this process that the dreadful symptoms of what has been by some called *hepatic colic* are observed, and supervening on these, the rapid occurrence of jaundice. Under such circumstances, a train of phenomena presents itself, very different from that which characterizes the jaundice depending on inflammation of the stomach and duodenum. The patient is suddenly attacked with violent pain in the epigastrium and right hypochondrium. The stomach sympathises, and we have nausea, cardialgia, and vomiting; the patient's sufferings are dreadful, and he refers his pain to the region of the gall-bladder. The abdominal muscles are thrown into spasmodic contractions, there are often convulsions and fainting fits, the extremities are cold, the body is bathed in perspiration, and the pulse is often hard and contracted, but seldom accelerated. This is a very remarkable symptom. Heberden says, that the pulse not being in quickness above the standard of health, with a sudden attack of pain in the region of the epigastrium, are diagnostics of this affection. "I have seen," says he, "a patient in this disease rolling on the floor in a state of violent agony, which I could not allay with nine grains of opium, and yet the pulse was as tranquil as if he was in a calm sleep." I can confirm the truth of this observation from my own experience. Here are the diagnostics: the pain is more intense than that which attends any form of inflammation, and yet the pulse is perfectly quiet; it occurs in persons not generally subject to spasmodic attacks; it is not preceded by constitutional symptoms; and is rapidly followed by jaundice, and absence of bile in the stools. Under these circumstances, you may make a certain diagnosis.

Sometimes a tumour is formed in the right hypochondrium, which rises above the edge of the liver, and gives a feeling of distinct fluctuation, marking the situation of the distended gall-bladder. In such cases as these, the calculus is in the common duct, and the bile descends into the gall-bladder, from which it cannot escape, thus causing the distention of that organ. This may go on until the distention becomes so great as to increase the size of the gall-bladder to such a degree that, in some cases, it has been known to contain a pint of fluid: and cases have occurred in which it has burst, and effused its contents into the peritoneum, causing violent peritonitis and death. This termination, however, is fortunately of very rare occurrence. I believe that some of the cases in which rupture occurred were those in which an emetic was given; and hence it is that many practitioners are afraid to give an emetic where this state of the gall-bladder has been ascertained, or is strongly suspected.*

* [Jaundice is sometimes caused by enlargement of the glandular bodies in the capsule of Glisson pressing on the common duct, and preventing the passage of bile into the duodenum; a fact pointed out by Twining (*Diseases of the Liver and Spleen*, Philad. Edition). I have seen intense jaundice, which I, as well as an experienced brother practitioner, supposed to be associated with, if not dependent on, an enlarged and cirrhosed liver; but which on dissection was found to be caused by a large

LECTURE LII.

DR. STOKES.

DIAGNOSIS OF JAUNDICE FROM BILIARY CALCULI—Proof of the passage of the calculus—Indications of treatment—Rupture of the gall-bladder after the use of emetics—Spasmodic jaundice.—*Treatment* of spasmodic jaundice—Discharges of fatty matter—Researches of Drs. Bright and Elliotson—Connexion with malignant diseases examined—Source of fatty matter.

WE were occupied, at our last meeting, in considering the symptoms of that disease in which there is a formation of what are termed biliary calculi; the passage of these into the common biliary duct; the possible strangulation of the duct for some time, and the consequent production of jaundice. I described the symptoms of this disease as consisting in a sudden and violent attack of pain in the region of the gall-bladder, succeeded sooner or later by the phenomena of jaundice, and in the generality of cases *occurring without fever*. Between these violent attacks the patient sometimes has intervals of complete ease; at other times a gnawing sensation continues in the original situation of the pain. It is remarkable, however, that a patient may have an interval of perfect ease between the fits, somewhat similar to the calm which occurs during the pains of labour. The occurrence of this cessation of intense suffering has been attributed to the passing of the stone into the duodenum; this, however, is by no means certain. The idea generally entertained upon this matter is, that each attack of pain corresponds with the passage of a stone. How far this notion may be true I cannot decide; but this I shall impress upon your attention, that the mere subsidence of pain is no proof of the removal of the disease, *unless bile is discharged by stool or by vomiting;* but when such a discharge coincides with the cessation of pain, you may be sure that the obstruction has been overcome for the time. I need not remark to you that the smaller the calculus is, the greater the facility with which it will be discharged. You will find in some cases that the efforts which nature makes to remove one of these concretions are quite unavailing; it lies in the gall-bladder or duct, and there remains impacted. Here its

---

encephaloid mass involving the pyloric portion of the stomach, and inclosing the capsule of Glisson, so as entirely to obstruct the passage of bile through the common duct. That which imposed on us for enlarged liver, projecting from under the ribs at the right hypochondrium and the epigastric region, was this encephaloid mass, which was in such close apposition with the lower margin of the liver that no separation was perceptible after the most careful inspection. Even after the abdomen was laid open, and the real diseased structure made manifest,—when the integuments were placed over it *in sitû*, and an examination made externally by the fingers, precisely the same sensations were left, viz., as of a continuous enlargement from beneath the ribs downwards and over the stomach; in fine, the impression which an enlarged liver in this direction so generally produces.—B.]

presence sometimes excites inflammation, lymph is thrown out, and the duct becomes permanently closed: in other cases it has been found to make its way into the duodenum by ulcerative absorption, and is thus discharged.

The size of biliary calculi is various. Generally speaking, their dimensions are similar to those which you see before you; but there are many cases on record of very large ones having been discharged. In the twelfth number of the Medico-Chirurgical Transactions, Dr. Brayne gives an instance of one passed, which was three inches long and three and a quarter in circumference. I may, however, mention, that there is a source of doubt connected with this case. It is possible that the calculus in this instance was nothing more than one of those fatty covered secretions which are found in the intestinal tube, and which have nothing to do with the gall-bladder or its ducts. As it is my intention to return to this subject, I shall here only observe, that fatty matter has been frequently discharged in hard as well as soft masses, that it sometimes cuts like a biliary calculus, and that it may be difficult for a mere physiologist to distinguish concrete masses of this kind from gall-stones.

The passage of a biliary calculus does not of necessity imply the occurrence of jaundice: if it passes without difficulty there is none; if it happens to become impacted, then jaundice is sure to follow. It is a curious fact, that of this form of jaundice cases have occurred in which the flow of bile into the digestive tube has been obstructed for more than a year, and yet a recovery took place.

Permit me now to rehearse the diagnosis of jaundice from biliary calculi. Sudden and violent pain in the region of the gall-ducts, increased by pressure, but generally unaccompanied by acceleration of pulse or fever, coming on in a person not subject to spasmodic attacks, and speedily followed by jaundice. This is the diagnosis. In most of the cases described in books, and, I believe, in the majority of instances, you will find the disease to exist without febrile symptoms; but it is also true that it may be complicated with febrile disturbance, and under such circumstances you should be apprehensive of inflammation in the biliary ducts or duodenum. The importance of this will appear when you come to consider the treatment.

Now, suppose you are called to attend a case of this kind. A person of sedentary habits, who indulges in highly-seasoned food and takes no exercise, gets a sudden attack; he lies, perhaps, on the floor, writhing in agony; he is beginning to exhibit the yellow tinge of jaundice; he refers his pain to the region of the gall-bladder; his pulse, however, is quiet, and he has no evident symptoms of fever. Here the nature of the disease is manifest, and the first thing you have to consider is, what are the indications of treatment. These are obviously three-fold. The first is to guard against inflammation; for you are aware that inflammation may take place, and besides, the higher the irritation and (if I may so term it) the spasm of the gall-ducts are, the greater will be the difficulty in passing the stone. The next thing is to allay spasmodic pain. We know that this pain is principally spasmodic, or nervous, because it is always more sudden and violent than that which attends common inflammatory action, and, moreover, it is commonly uncomplicated with symptoms of inflammation. The third indication is, to adopt measures to favour the passage of the stone. Now, these three indications, but more particularly the second and third,

are, as you may perceive, reducible to one form of treatment. Whatever will relieve pain and spasm, will assist in favouring the passage of the stone. If, then, you happen to meet with a case of this affection in a strong, robust constitution, where the pain is violent and is aggravated by pressure, and particularly where there is any sign of febrile disturbance in the system, I would advise you to bleed such a person immediately. Not that you have to combat actual inflammation, but because you have to prevent the liability to it, and because, in using the lancet, you are employing a most powerful anti-spasmodic. The next thing of importance, in severe cases, is the application of leeches over the region of the gall-bladder, and the same remarks apply to leechingas to venesection. You are not to suppose that the application of leeches will cure the disease; but you may be sure that it will assist materially in allaying spasm, and favouring the passage of the calculus. The bowels should be freely acted on by purgatives and enemata; you may give a brisk purgative by the mouth, and at the same time a purgative enema. After the bowels have been opened, the only thing which you can rely upon for giving relief is opium, and that in full doses. I have seen several patients labouring under this disease who appeared to be maltreated. The different measures for procuring relief were certainly put into practice, but not in a regular or proper manner. They first got a dose of opium, then a purgative, and lastly, were blooded. If you have a case of this kind to treat, bleed first, then leech, next employ purgatives, and when you have emptied the bowels, have recourse to opium. I have never employed the anodyne injection in this disease; but, reasoning from analogy, I am inclined to think that it would prove serviceable, and I am aware that it has been employed with effect in that form of jaundice which depends upon hysteria. The tobacco injection also seems to have strong claims to our notice, and in this disease must prove extremely useful, from its powerful effect in reducing spasm.

There is a difference of opinion with respect to the employment of emetics. The object of their exhibition is to force the calculus through the ducts, by the shock given by the sudden and violent contraction of the abdominal muscles, and also to relieve spasm, by their subsequent relaxing effect. Some practitioners of high authority, however, state that this practice is not unattended with danger, and give cases of rupture of the gall-bladder, after the exhibition of an emetic. Such an accident as this would be very likely to injure forever the character of a professional man. I am sure the practice, in some cases at least, is dangerous. A distinguished medical friend of mine has related to me the particulars of this kind, in which the exhibition of an emetic was followed by rupture of the gall-bladder and fatal peritonitis. In this instance the case was not so deplorable, so far as the patient was concerned; he was labouring under extensive disease of the liver, and only exchanged a lingering for a sudden death; but this furnishes no excuse for a medical practitioner. If I were to hazard a conjecture, I would say *that emetics can be employed with safety only in the early stage of the disease, when there is no obstruction from organic disease;* for the longer the jaundice has lasted, the greater is the chance of obstruction from organic disease. Again, you should never use them *where there is evidence of a distended gall-bladder.* If you can feel the tumour formed by the distended gall-bladder, in the right hypochondrium, you may be sure something has been going on for a long time,

and you should be cautious in giving an emetic. Never use it then where you can feel a tumour in the region of the gall-bladder. If you give it at all, give it in the early stage, and after premising venesection, leeching, and the use of the tobacco injection. I had almost forgot to mention that very signal advantages accrue from the use of the warm hip-bath in this disease. I have seen cases in which the most extraordinary relief was obtained by applying twelve leeches over the region of the gall-bladder, and then placing the patient in a hip-bath.

Sometimes it happens that the symptoms return again and again. Here you cannot repeat the venesection; you must employ leeches, the hip-bath, warm fomentations, opium, and everything calculated to relieve pain and spasm, watch your patient carefully, guard against inflammation, and if any inflammatory symptoms of the duodenum arise (but this is rare) take proper measures to obviate them.

A few words now with respect to what has been termed spasmodic jaundice. This form of the disease occurs independent of inflammation of the stomach or duodenum, and independent of disease of the ileum, brain, or liver. It appears to be an essentially spasmodic disease, but the situation of the spasm has not as yet been accurately determined. It is supposed to exist either in the gall-bladder, or in the biliary ducts, or in the duodenum. If the biliary ducts and gall-bladder do not possess muscular fibres, we must place it in the duodenum; but whatever may be its seat, it presents the characters of a spasmodic disease. It seems to be excited by the same cause, and yields to the same treatment as other spasmodic affections. It generally occurs in hysterical females, and in hypochondriac and nervous persons, and disappears under treatment calculated to allay nervous excitement. Its exciting causes seem to be chiefly sudden and violent mental emotions, or the taking of a quantity of indigestible food; and it frequently terminates by the discharge of flatus upwards and downwards. It resembles, in a certain extent, the last-mentioned form of jaundice, but differs in two particulars; first, the pain is relieved by pressure, which generally increases it in the former species. Dr. Pemberton, in his Treatise on the Diseases of the Abdominal Viscera, dwells strongly on this point. The second peculiarity is, that in this disease the attack is more sudden. In the case of jaundice from gall-stones, the patient has some degree of pain and uneasiness before the violent symptoms appear; but in this form they exhibit themselves in a sudden and unexpected manner. The disease, too, is accompanied with hysterical or convulsive symptoms, and there is sometimes a copious flow of limpid urine. All these circumstances are important in forming a correct diagnosis.

The best treatment for this spasmodic jaundice is, after acting on the bowels by warm purgatives, to use fetid enemata, to prescribe a mixture composed of ether, castor, and ammoniated tincture of valerian and opium, which are of the greatest use when the bowels have been opened. In this form, as well as that which we have been lately considering, the fact is, that if you expect any good from opium, you must not give it until the bowels have been opened. Opium and anti-spasmodics have, I am convinced, often lost their character for utility, from being given at a time when the exciting causes of disease are still present in full energy; and the failure of these powerful auxiliaries is to be attributed to the neglect of proper measures for reducing intense irritation. In the spasmodic jaundice, tobacco injections would be likely to produce beneficial

effects. Generally speaking, however, you will not find it necessary to have recourse to such a vigorous remedy, as the disease is most commonly observed in delicate females, and yields readily to milder treatment. Indeed, it will often disappear spontaneously, and without any apparent cause.

The last form of this disease which we have to consider, is jaundice connected with an affection of the brain; and this is a very interesting and curious subject. I shall not, however, enter upon it at present, as I intend to reserve my observations on this point until we come to treat of diseases of the nervous system. I have alluded to this variety on a former occasion, and referred you to Dr. Marsh's paper on jaundice in the Dublin Hospital Reports, in which you will find several cases of it which came on as the result of disease in the head. Broussais admits that it is dependent on and secondary to cerebral disease; but he thinks there is another link in the chain of connexion, and that this is duodenitis. He believes that we have irritation, first in the brain, next in the duodenum, and then jaundice. Several practitioners of great authority, on the other hand, assert that the cerebral affection produces jaundice at once, without the intervention of duodenal inflammation. In the present state of medical science we cannot determine this point.*

---

* [The occurrence of jaundice from strong mental emotion and other disorders of the nervous system, as after the bites of poisonous reptiles, and its being, occasionally, restricted to one side of the body, or even to a single limb, are not explicable on any merely hepatic pathology; nor indeed in the supposition of bile being the colouring matter in, at least, certain varieties of the disease.

Dr. Horaczek (*Die Gallige Discrasie* &c., or *Bilious Dyscrasy*, &c.) objects to the terms icterus and jaundice, as expressive of a symptom merely; and he proposes to substitute for them the terms "bilious dyscrasy" "cholosis" or "cholonæa," as significant of the peculiar dyscrasy of the blood, and of its saturation with more or fewer of the elements of the bile, that constitute the essence of this group of diseases.

He divides the disease as follows:—1, primary, or idiopathic or protopathic cholosis; 2, secondary, or deuteropathic, or symptomatic cholosis; 3, polycholia. The first of these divisions is the subject of Dr. Horaczek's work. The disease consists, he tells us, of a disordered composition of the blood and a contemporaneous disturbance or total suspension of the secreting functions of the liver, both being a discordance or derangement of the vital relations between the nervous and vascular systems. The chief anatomical change and the most characteristic one, is a diminution in volume and alteration in texture of the liver, which, under the name of *acute yellow atrophy*, Dr. H. has made a part of his nosological definition.

To primary bilious dyscrasy belong, as he alleges, the greater number of rapidly fatal cases distinguished as jaundice, and many known under the name of hepatitis, bilious fever, cephalo-cholosis, &c.

Secondary bilious dyscrasy originates in various structural changes of the liver itself or of the neighbouring organs, in consequence of which bile is again taken up into the circulation after its formation, and the functions of the liver are mechanically impeded.

Polycholia consists in an inordinate formation of the constituent materials

Discharge of Fatty Matter from the Bowels.—A few observations now with respect to the discharge of fatty matter from the bowels. The reason

---

of the bile, and their accumulation in the blood concurrently with undiminished or even increased functional activity of the liver.

The first and chief change characteristic of primary bilious dyscrasy is a deficiency of fibrin, owing to which icteric blood coagulates imperfectly. The blood corpuscles, as far as can be ascertained by microscopic investigations, are diminished in number and swollen. Except the colouring principles of the bile, its other constituents are not found in the blood in cases of purely idiopathic cholosis. The liver itself is so far atrophied as to shrink to a half or even to a fourth of its usual size, with wrinkling of its peritoneal coat. Its parenchyma is soft, flaccid, bloodless, and inelastic, of a greenish or dirty orange colour; and deprived of its peculiar granular structure, so that its different constituents can no longer be distinguished from each other. The gall-bladder is generally found contracted, and contains a colourless, or grey, or greenish slimy bile: its ducts are contracted and empty (*Brit. and For. Med. Rev.*, vol. xxii).

The state of the liver described by Dr. Horaczek corresponds very closely with that mentioned by Drs. Alison, Bright, Griffin, and others, in which there were suppressed secretion of bile, and alarming symptoms of oppressed brain, as coma, &c., in addition to jaundice.

In returning to the work of the German writer, we find enlarged spleen to have occurred in almost every instance; and the detailed narratives of 90 cases are given. In seven fatal cases (there were 30 in all) the brain underwent serous infiltration of a yellow colour, with great softening, especially round the central white parts.

Anemia and relaxation of tissue or softening are found to be conditions common to the muscular, nervous, vascular, and glandular structures. The mucous membrane in general, and the gastric mucous membranes in particular, are frequently softened. The mucous coat of the stomach, especially at its greater curvature, is found reduced to a dirty, grey or greenish pulp. This change sometimes extends to the œsophagus, but more frequently to the duodenum; and is met with in larger proportion in the case of children.

The accompanying febrile action is at first high and associated with determination to the brain and severe pain in the liver, or abdomen, general turgescence, obstinate vomiting, hard and contracted pulse. After a few days, this is succeeded by a general decline of the symptoms and imperfect cutical efforts, manifested by general perspiration, deposits in the urine, bilious stools or hemorrhage. The characteristic and never-failing discoloration which attends cholosis, extends over the surface sometimes in the course of a few hours, and also stains every organ and tissue in the body except the substance of the brain and nerves and the enamel of the teeth.

The characteristic pain of the liver which sets in at the commencement of the disease, and accompanies it throughout, is of a nervous character, and is generally referred to a circumscribed spot over the left lobe. There is also a remarkable pain in the eighth or ninth dorsal vertebra, as well as pains in the limbs and joints of a rheumatic character, which alternate with a feeling of stiffness, and stupor or total loss of sensation in the parts.

The average duration of the disease is from four to six weeks. The

why I introduce the subject here is, because it has been frequently observed in connexion with jaundice and disease of the upper portion of the digestive tube. In the last number of the Medico-Chirurgical Transactions, a great mass of interesting matter has been published on this subject by Dr. Bright, Dr. Elliotson, and Mr. Lloyd. I shall give you a short analysis of these papers; and I wish to impress this upon your recollection, that when you go into practice the study of this affection would form a subject worthy of your investigations; and that any attempts on your part to clear up the difficulties which complicate this singular form of disease will be advantageous to the cause of science.

Dr. Bright gives three interesting cases of this disease. In these the discharge was in the form of oil or semi-concrete matter—it floated on the top of the feces, and had a fetid odour. There was also in these three cases a remarkable similarity in the pathological phenomena. The first case exhibited symptoms of jaundice, diabetes, enlarged liver, and discharge of fatty matter; on dissection, the liver, pancreas and duodenum were found diseased. The second presented symptoms of jaundice and disease of the liver, in addition to the fatty discharge; on dissection the liver was found healthy, but there was a similarly diseased condition of the duodenum and pancreas; there was malignant disease in both. Nearly the same symptoms were observed in the third case, and after death disease was found in the pancreas and small intestine, and the pylorus was in a state of extensive ulceration. In all there was chronic disease of the pancreas and duodenum terminating in jaundice, from obstruction of the gall-duct, and accompanied by discharges of fatty matter from the bowels. Here are three cases in which there is an extraordinary similarity in the symptoms and pathological appearances. Dr. Bright is inclined to think that these discharges may be connected with disease of the pylorus and duodenum, but particularly with malignant affections of the pancreas, and gives the particulars of some cases, in which disease of the pancreas was suspected, and in which, from the absence of this symptom, he was induced to give a contrary opinion, which, on dissection, turned out to be correct.

Mr. Lloyd's case resembles those detailed by Dr. Bright, inasmuch as it presented the phenomena of jaundice with obstruction of the gall-ducts, disease of the head of the pancreas, and contraction of the duodenum. So that you see we have here four cases in which there was disease of the duodenum and disease of the pancreas, together with the occurrence of jaundice. I may, however, mention one fact, which you should be acquainted with; in Mr. Lloyd's case the pancreatic duct was found to be obstructed by calculi.

Dr. Elliotson commences his paper by alluding to that peculiar substance called ambergris, which is frequently washed ashore by the tide in several countries, and which is supposed to be a morbid production from the intestinal canal of the *Physeter macrocephalus*, or spermaceti whale. The

---

prognosis is generally favourable. When death takes place, Dr. Horaczek views it as the result of poisoning and paralysis of the cerebral nervous system, evidenced by the cephalic symptoms before alluded to. Chemical analysis of the blood, and of the various secretions and excretions, is the most suitable, and, with the improvement of chemistry, will be the most certain method of diagnosticating cholosis.

quantity found in the intestinal canal of this animal is said to be enormous, and instances are mentioned, in which this substance was found to amount to 182 lbs. in the body of one of these animals. Dr. Elliotson proceeds to give cases from the records of medicine and from his own experience, in which a fatty discharge took place in the human subject. Of this he quotes cases from Mælenbrochus and Mæbius in the Ephemerides, but one in particular from the works of Fabricius Hildanus, which I shall briefly recount. "A pious matron of Hilden had been for a long time subject to severe pain in the stomach, which became at length much worse, when one day the pain extended all over the abdomen, and after very severe pain and suffering, she discharged about three pounds of fat, which was of a pure quality, had no smell, and was preserved by her for many years." This woman recovered perfectly. Dr. Scott, of Howick, mentions the case of a servant girl who had been treated with purgatives and injections, under the supposition that her disease was colic, and who, after two or three days' suffering, discharged a quantity of fatty substances, about the size of nuts, beans, and peas, which burnt like fat when thrown into the fire; this patient also recovered. Dr. Babbington gives another case, which had been mentioned to him by Sir E. Home, in which we find that a lady who had been suffering, as it was supposed, from gall-stones, happening to take castor oil draughts to open her bowels, passed a quantity of fatty matter. Another case is detailed by Mr. Howship, where a lady who had been attacked with pain, jaundice, and fever, passed a quantity of this substance with the subsidence of those symptoms. The fatty matter in this case was discharged after the lady had taken a pint of olive oil, upon the recommendation of Dr. Simpson of New Malton. Dr. Turner, of St. Thomas's Hospital, mentions the case of a female who laboured under an hysterical distention of the belly, and who passed quantities of this substance, specimens of which are preserved in the Hunterian Museum.

Sometimes these fatty discharges are found in the concrete, sometimes in the semi-fluid form. Dr. Elliotson mentions the case of a patient who had phthisis, diabetes, and discharge of fatty matter; thus he was at the same time passing fatty substance, large quantities of saccharine urine, and spitting up pus and softened tuberculated matter. Between all these, and the agonising pain which he suffered, he became in a short time completely exhausted, and sank rapidly. The fatty matter discharged in this case was shown to Dr. Prout and Mr. Faraday, and Dr. Prout stated he could not distinguish it from human fat when heated. Tulpius is quoted by Dr. Elliotson as relating a case where *fat was discharged from the bowels and bladder*. Here is the quotation:—"But what do we say of Margaret Appelmania, an innkeeper, who, in her seventieth year, passed precisely the same fat, both from the intestines and the bladder, and likewise without fever, emaciation, or colliquative excretion. Towards the close of the disease, however, she did become feverish, and, in consequence, so emaciated, that death found her little else than a juiceless, dried-up corse." A case similar to this was communicated by Mr. Pearson to Dr. Elliotson. The symptoms were suppression of the biliary secretion, and a copious discharge of *oil from the bowels and bladder*, which, it is stated, formed good soap when mixed with alkali. Dr. Prout has observed fatty matter passed with the urine, and considers this symptom as an indication of the probable supervention of malignant disease of the kidneys and bladder.

The last case is from the *Annali Universali*, which is quoted by Dr. Johnson in the Medico-Chirurgical Review for July. In this case the patient, after fasting for a considerable time, took a quantity of indigestible food. On the evening of the same day he had an attack of vomiting: at first blood was thrown up, and then he ejected this fatty substance to the enormous amount of thirty pounds. There was, in this instance, a sudden and extraordinary emaciation; the patient was so reduced in the space of a few hours, that the skin hung in loose folds about him. He recovered in twenty days; but with great loss of bulk.

Let us inquire now what is the nature of this symptom. Is this fatty matter a morbid secretion from the liver, from the pancreas, from the mucous membrane of the stomach, or from the intestines? There are facts to show, that in certain cases this disease cannot be explained by a reference to any of these circumstances. It seems plain, too, that Dr. Bright's suggestion of referring it to malignant disease of the duodenum and pancreas, and the diagnosis which he would seem to found upon it, cannot stand here; for the symptom upon which he attempts to establish a diagnosis—a discharge of fatty matter—occurs in persons who have recovered from the disease. We cannot suppose that they have been labouring under malignant disease of the duodenum and pancreas when they have recovered; and that a recovery may take place is proved by Dr. Elliotson's cases. It is quite probable, however, that if the irritation, or whatever it be that produces this discharge, should continue, it may bring on fungoid and malignant disease; but that the discharge of fatty matter is significant of the actual existence of such a condition, is not borne out by these facts. Well, are we to look upon this discharge as a secretion from the liver? I think we cannot, because we have seen that in Dr. Bright's three cases the biliary duct was obstructed by disease of the duodenum and pancreas. I may mention, too, that in some cases where a dissection was made, the liver was found perfectly healthy, and the gall-bladder in its normal condition, full of pure bile. Taking this and the foregoing fact into consideration, we have proofs that this fatty substance, in some cases at least, cannot come from the liver. Does it proceed from the pancreas? It would more naturally come from the liver than the pancreas, for the liver does actually secrete a certain quantity of fatty matter; but there is no substance of this kind found in the secretion of the pancreas, which is considered to bear a strong analogy to that of the salivary glands. Besides, in the case mentioned by Mr. Lloyd, where the duct of the pancreas was obstructed by calculous secretions, this fatty matter has been discharged: and hence we cannot, I think, refer it to the pancreas. Whence, then, does it come? Is it a secretion from the surface of the intestines? This is a question which it is hard to determine. We do not yet know, nor have we ever met with that state in which lesion of structure in the mucous membrane of the intestinal canal has been followed by a discharge of fatty matter. We have discharges of serum, lymph, blood, and pus, from the surface of the intestines, according to the nature of the disease; but we know of no pathological condition as the result of which fatty matter may be produced. Again: cases of every known form of disease in the liver, pancreas, and intestinal canals, occur without this discharge at all. In the present state of medicine, the probability is that this discharge is the result of a sort of metastasis of the secretion of fat, from the other parts of the body in which it is usually deposited, to the surface of the digestive tube,

where it is poured out somewhat in the same way as in cholera; the fluids of the body are rapidly absorbed and eliminated by the intestinal canal. This supposition, without attempting to bring it forward as the true solution, furnishes us with the best explanation of the case. In the case of the patient who discharged this substance by stool and with the urine, the emaciation came on rapidly, as if all the fat of the body had been absorbed and carried out of the system: here, too, the fat was discharged from another mucous surface. In the other remarkable case, where a vast quantity of this substance was thrown up by vomiting, the emaciation was so great that the patient's skin hung in loose folds about him. When we reflect, too, that there is no recognised disease of the intestines, liver, or pancreas, to which this discharge can be referred, we cannot help believing that it is the result of a metastasis in the secretion of fat.

The next point in this matter which we have to consider is, what is the best mode of treatment? This question, I believe, cannot be answered at present; nor can our practice be anything but empirical until we have more light thrown upon the subject. With a view to increasing our knowledge, I beg of you to make this disease the subject of your practical investigations, and to have a look out for this discharge, because I believe it often occurs unnoticed, from our neglecting to inspect the evacuations.

LECTURE LIII.

DR. STOKES.

ACUTE AND CHRONIC HEPATITIS—Pathological differences—Effects of climate—General and local symptoms—Character of fever—Pain of shoulder—Use of plexímeter—Complication with jaundice—Resolution—Abscess—Various openings of the latter—Cicatrization.

I PROPOSE to-day to draw your attention to the subject of inflammation of the liver. This is the disease which you meet with in books under the general name of hepatitis; but it is of great importance to distinguish between acute and chronic hepatitis for this reason — acute hepatitis implies something specific, an organic change, the nature of which is well known and accurately defined; but chronic hepatitis implies nothing of this certainty of the nature of organic change, inasmuch as there is no single one of the recognised disorganizations of the liver, which may not, and have not occurred, with chronic hepatitis as an existing cause, or a prominent symptom. When we speak of acute hepatic inflammation we speak of a disease, of which the structural lesions are sufficiently understood; but when we treat of chronic hepatitis, we treat of a disease in which there may be a great variety of organic changes. Chronic irritation of the liver may in one patient be followed by the development of hydatids; in another by cancer, or tubercle; in a third, by hypertrophy of one or both of its elementary tissues; in a fourth, by atrophy; and in a fifth, by abscess; so that, under the chronic form of hepatitis, we may have many different lesions comprised. Under the acute form, we have only vascularity, softening, yellow degeneration, and suppuration. These,

which are the ordinary results of acute hepatic inflammation, are the same as the results of active inflammation or other parenchymatous organs.*

It is an interesting fact, and connected with the predisposition to acute diseases of the abdominal viscera in warm climates, that acute hepatitis is much more prevalent in those countries than it is here, and this is particularly true with respect to the East Indies. You recollect, in one of my lectures, I alluded to the greater susceptibility to disease, the extraordinary nervous excitability of the digestive mucous membrane in warm latitudes, and hence that a large proportion of the diseases of those climates was characterized by the predominance of inflammation in the stomach and intestines. The same thing occurs with respect to the organs which are connected with the digestive tube; and hence it is that diseases of the liver and spleen are so frequently met with between the tropics.† A very

---

* [It has been objected to the division of organic diseases into acute and chronic, that it does not indicate a difference in causes, nor is it significant of different structural alterations, from which alone a suitable division can be deduced. By Dr. Budd, the inflammatory diseases of the liver are arranged under the following heads:

"1st. *Suppurative Inflammation*, or that which leads to suppuration and abscess; 2d. *Gangrenous* inflammation; 3d. *Adhesive* inflammation, or inflammation that causes effusion of coagulable lymph; Inflammation of the veins of the liver; Inflammation of the gall-bladder and ducts."—B.]

† [In India, the greatest proportion of hepatic to other diseases is met with in the Madras Presidency. The ratio of admissions and deaths during a period of twelve years, of liver diseases, among the British troops (number not stated), was 116, and 5·62 in a thousand men. Next to the Presidency of Madras, the stations occupied by the British troops, in which liver complaints prevail amongst them most largely and most fatally, appear from the *Statistical Reports* to be those in Western Africa, the Mauritius, and St. Helena; the ratio of deaths from this cause, annually, being, in the first of these colonial commands, 6; and in each of the other two, 4 in a thousand men. In the West Indies, the proportion of admissions in a period of twenty years, was 22; and the deaths 1·8 per thousand of the mean strength. At Gibraltar, the mortality is three times as great as at most of the other islands, and that without any assignable cause. Liver diseases are about thrice as prevalent among the British troops in the West Indies as in those at home. In British America, the prevalence and fatality of this class of diseases appear to be rather under the ratio of Great Britain. In Gibraltar, the Ionian islands, and Malta, the ratio rises successively above that of Great Britain, as respects both frequency and fatality; being in the last 21 and 1·1; which corresponds very closely with the ratio of the Cape of Good Hope. The ratio of Bermudas, 14 and ·5, corresponds nearly with that of Gibraltar.

It has been observed, that although the cases of liver diseases among the native troops in the British service in India is very small, being only 9 in a thousand, and the deaths 1·1; yet that the natives seem less liable to resist these diseases when attacked by them than the Europeans, since of those attacked, 12 *per cent.*, or 1 in 8, died of the former; and only 5 *per cent.*, or 1 in 20, of the latter. The mortality in the West Indies from diseases of the liver, is much less among the black than among the white troops. An exception to the generally less susceptibility of the

remarkable fact, bearing on this point, has been mentioned to me by Staff-Surgeon Blest. He states that, in the East Indies, hepatic disease in animals is no unusual occurrence; that *animals brought to India from more temperate climates are peculiarly subject to it;* and that in them it is a common cause of death. He has seen many cases of hepatic abscess in dromedaries and horses, under these circumstances, a fact of great interest, when considered with the liability to *tubercle* in animals brought from *warm climates* to these countries [Great Britain and Ireland]. In these countries, acute hepatitis in its highest degree is a rare disease; in fact, so rare, that it is only in our own time that anything like a series of cases, by which you would compare the disease in these countries with a similar affection in others, have been published. A series of cases by Louis, and another by Dr. Graves and myself, published some time since, are all that we have on the subject. It is somewhat extraordinary that a sort of epidemic tendency to acute hepatic inflammation, and the formation of abscess, occurred in these countries about the middle of the year 1828. Up to this period, abscess of the liver was looked upon as a very rare disease in Ireland; a case of it was met with in hospital once perhaps in twelve months or two years; but at the period to which I allude, almost every great hospital in Dublin had several cases; and in the Meath alone we had a great number, out of which seven or eight proved fatal.*

We have now to consider this acute inflammation of the liver; and first, with respect to the symptoms. Were I lecturing on pathology merely, I would commence with the organic changes; but as I have chiefly kept in view, during my present course, the practice of medicine, I shall begin by detailing the symptoms. You will get a good idea of the symptoms of acute hepatic inflammation by dividing them into local and general; by doing this, you will simplify the matter, and acquire accurate and defined notions of the disease. Now, the local symptoms are, pain in the region of the liver, tenderness over the affected organ, and a degree of tumefaction perceptible to the touch; pain, tenderness, swelling — here are the local symptoms. What are the general? Inflammatory fever, and lesion of the digestive function; and in addition to this, if the case be

---

blacks to the hepatic disease, is seen in the Mauritius, where, though the black pioneers employed there are accustomed from infancy to a high temperature and constant exposure, they suffer more from this form of disease than the white troops, natives of a northern climate; the mortality being relatively as 5·7 to 4. (*Diseases of the Liver and Biliary Organs, by William Thomson, M.D.*) It is remarkable, says Mr. Twining, how seldom we find any palpable disease of the liver of Asiatics attending the fevers and dysentery of Bengal.

In the United States army, the ratio of cases per 1000 mean strength is 6; and the deaths 2; or, altogether, in the northern division, 98 cases and 3 deaths; and in the southern and middle, 166 cases and 4 deaths. (*Forry, op. cit.*) — B.]

* [Dr. Chisholm speaks of an epidemical affection of the liver which prevailed in some parts of the West Indies in 1785 and 1786. Dr. Cleghorn mentions a slight jaundice, without fever, as an epidemic, which soon yielded to purgatives and saponaceous compounds; and Dr. Wm. Batt has described a jaundice which was epidemic in Genoa and its vicinity in 1792–3. (*Thomson, op. cit.*)—B.]

severe, you have functional derangement of the respiratory and cerebral systems. You have, then, in a case of acute hepatitis, the general symptoms of inflammatory fever, with lesion of the digestive function ; and if the case be severe, of the respiratory and even cerebral systems, the local symptoms being pain, tenderness, and tumefaction.

Now, with respect to the character of the fever which accompanies this disease, it is in all cases nearly the same ; and here we come to an interesting and curious fact. You recollect that, in speaking of gastro-enteric inflammation, I alluded to the nature of the accompanying fever, and stated that it was (commonly) of a low character, and that there was no local inflammation in which the fever was so often typhoid as in the affections of the gastro-intestinal surface. This, I believe, has been one great cause of the ignorance of medical practitioners with respect to gastric and enteric inflammations ; they have been most commonly looked upon as cases of typhus, and treated accordingly. In acute hepatitis, however, we do not observe this typhoid prostration. Though closely connected with the gastro-intestinal symptom, the liver does not, in its acute inflammatory state, produce the same manifest depression of the vital powers. On the contrary, we have, in the early period of the disease in this country, high inflammatory fever, hot skin, and full bounding pulse ; a state in which few would be afraid to employ the lancet with boldness. Patients labouring under acute inflammation of the liver, generally have high sympathetic fever, a full, strong, and accelerated pulse, with the local symptoms above described ; and, in addition to these we frequently observe bilious vomiting, considerable thirst, derangement of the bowels, and scanty, high-coloured urine. The tumefaction is more or less evident, and when this is accompanied by severe pain, there is considerable difficulty of breathing, a circumstance which sometimes occasions this disease to be mistaken for pleurisy. There are two remarks to be made upon this subject. In the first place, it sometimes happens that acute inflammation of the liver and of the lower part of the lung occur at the same time, particularly where inflammation attacks the diaphragmatic surface of the liver. Here you frequently have an extension of the inflammatory process to the corresponding surface of the pleura, or the two diseases coexist from the first. Under such circumstances, disputes, as to which organ is engaged, are often unnecessary. Again, in the early period, and when the attack is acute, the diagnosis of inflammation of the diaphragmatic surfaces of the liver, or pleura, is comparatively of little consequence, as both demand the use of calomel and opium, leeches and the lancet ; and, in the early stages at least, both are amenable to the same treatment. But it is not so in the chronic stage of either. Here the diagnosis is of great importance ; and when I come to treat of pleuritis, I shall draw your attention to some researches of mine on this subject, which, I hope, have set this question at rest.

The pain which accompanies acute hepatitis varies much in situation. Sometimes it is felt in the shoulder, sometimes under the short ribs, sometimes in the loins, and frequently in the epigastrium. You have all heard of pain at the top of the shoulder as a common symptom of liver disease; in fact so common as to be looked upon by some as a pathognomonic symptom. I believe that a great deal too much stress has been laid on this circumstance. It is now discovered that so far from being a constant, or even a common symptom, it is one which is of exceedingly rare occur-

rence. I have seen a case of acute hepatitis with pain in the shoulder; I have sometimes observed it in chronic, but never, to my recollection, in acute cases. Andral states that it is very seldom met with; Dr. Mackintosh says the same, and if I recollect aright, looks upon it as a symptom not worth inquiring about. Now, I have seen some medical men who considered this pain in the shoulder as a diagnostic of such value, that if it happened to be absent they concluded there was no hepatic disease. The fact is, that it is anything but constant. You may have it in some cases, particularly of chronic hepatitis, and not in others; besides, it frequently depends upon other causes—for instance, upon pneumonia of the top of the right lung, or it may be caused by incipient phthisis, aneurism of the arteria innominata, or right subclavian artery, and other diseases. It is of very little consequence whether it be absent or present; and the only reason why I dwell upon it is, to show you its real value as a symptom.*

There is one remarkable circumstance connected with the pain of an acute hepatitis. In one case you will find that the pain is very acute

---

* [Of 38 cases of hepatic disease, carefully observed by M. Piorry, only 4 presented the symptoms of pain in the right shoulder.

As forming part of the symtomatology of liver disease, its exploration, or the physical signs by which its dimensions in its healthy and morbid state are ascertained, deserves our notice at this time. I believe that I cannot do better than repeat the experiments of M. Piorry, the best authority we have on this subject. The mensuration of the liver in health and disease is thus given:—

Number of Cases.	Towards Axilla.	Towards Nipple.	In the Epigastrium.	To left of Median line.
In Health .	4 inches	3 inches	2½ inches	2 inches
In Disease—				
55 Typhus . .	5½	4½	3 —	2
19 Bronchitis .	5 7/12	5	3 —	1⅛
24 Phthisis . .	5⅓	4⅓	2⅔	1½
8 Rheumatism .	5 7/12 +	4 7/12 +	3	2½
24 Hepatitis . .	7 —	5½	4⅛	3⅓
82 Ague . . .	5½ —	4 +	2¼ +	11 lines
22 Pneumonia .	5¼	4⅓	3	1½
9 Heart Disease	6⅔	5⅓	3⅛	1½

"From the above table we may infer—1st. That, in hepatitis, the vertical diameter of the liver is two inches above the normal dimension, and that the transverse diameter is also increased. 2d. That, in disease of the heart, attended with dyspnœa, the liver is augmented in size. 3d. In bronchitis, frequently attended with obliteration of the bronchi and severe dyspnœa, the dimensions are less than in the former diseases. 4th. In pneumonia, the left side is larger than in bronchitis. 5th. That there is hepatic hypertrophy in rheumatism also. 6th. That in ague, the liver is less enlarged than in rheumatism, bronchitis, or heart disease.

"The presence of a hydatid cyst in the liver is detectible by percussion, to which it returns a sound that is compared to that of a repeater-watch, or a metal-spring cushion when struck with the finger, together with a sensation of striking upon a gelatinous matter."—*Brit. and For. Med. Rev.*, vol. vi., p. 140.—B.]

and constant, in another, that little or none is felt; and when you come to investigate the cause of this after death, it generally happens that, in cases where the pain was violent, the inflammation existed on the surface of the liver, and in those where little suffering was experienced, deep in the substance of that organ. This is a curious fact; but it may be looked upon as an illustration of a general law, *that if we consider inflammatory affections of the solid viscera, we shall find that the more superficial the inflammation the more painful it is; and, on the other hand, the more deep-seated it is, the more is it latent, so far as pain is concerned.* Thus: if you take a case of inflammation of the substance or central parts of the brain, you will find that the disease is to be recognised often not by pain, but by the lesions of the sentient and locomotive powers; whereas, in inflammations of the membranes, on the surface of the same organ, one of the most prominent symptoms is agonising headache. In the next place, go to the lung: take a case of deep-seated pneumonia, and contrast its almost painless character with the lancinating torture of an acute pleuro-pneumony. In pneumonia the pain is dull, and scarcely complained of; but pleuritis unaccompanied by acute suffering is extremely rare; in fact, where you have the signs of inflammation of the parenchymatous tissue of the lung, with sharp pains in the chest, you may very safely make the diagnosis of pleuropneumony. The same absence of pain is by no means unusual in inflammatory affections of the mucous membrane of the intestines; but if the inflammation should chance to extend to its peritoneal investment, you will have this state rapidly exchanged for one of intense suffering. So it is with respect to the liver: disease on the surface of that organ is attended with severe pain; but enormous destruction of its deep-seated parts may take place, and your patient complain merely of a sense of uneasiness.

A late author on hepatic affections, Dr. Bell, who has written a treatise on the diseases of India, describes two forms of acute hepatic inflammation, which are different as to their seat and character. In one of these, which he terms *sero-hepatitis*, the disease is on the surface of the liver; in the other, which he terms *puro-hepatitis*, it exists in the centre. In the sero-hepatitis, he states that the patient is attacked with sudden pain in the region of the liver, and this is so severe that even the weight of the bed-clothes is insupportable; the patient cannot bear to turn or lie on his left side, from the pressure exerted in that position on the inflamed organ. But the deep-seated, or puro-hepatitis, may go on in such a latent manner, that the first symptoms you have of the existence of liver disease are those which mark the occurrence of suppuration. Neither the patient nor his medical attendant will have reason to suspect inflammation of the liver, until the constitution and local symptoms of the suppurative process direct attention to that organ. Such are the statements of Dr. Bell, which I believe to be correct, as they are supported by the concurrent testimony of many persons who have practised in India, with whom I have conversed on this subject. Mr. Annesly makes the same assertion; and such was our experience in the succession of cases of hepatic abscess which were under treatment in the Meath Hospital during the year 1828.

The next symptom which we have to consider, is the tumefaction of the liver, and this is one of considerable importance. In order, however, to estimate the extent of this tumefaction with any degree of accuracy, you must take one preliminary step, and that is, to have the bowels fully

evacuated. If the intestines are filled with feculent matter or gas, you cannot do this in a proper manner. A few hours before you make your examination, give the patient a full purgative draught, assisted, if necessary, by a strong purgative enema. In this way, you empty the belly of collections of feculent matter and aëriform fluid, and then you can with certainty and satisfaction ascertain the extent of the swelling. You will then be able (when your patient is laid in bed), perhaps, to see at once the extent of the tumefaction, particularly where the parietes are not thick or loaded with fat; at all events, you will be able to feel it with your hands, and in every case you can ascertain it by mediate percussion with the pleximeter. I do not know any more important adjuvant, in making out the diagnosis of an enlarged liver, than the use of mediate percussion. For instance, suppose you have a patient labouring under acute hepatitis, and that the tenderness of the organ is so great that he cannot allow you to make the requisite degree of pressure to ascertain the extent of the swelling; take the top of your stethoscope, apply it over the region of the liver, make use of light percussion, and you will find, with the greatest accuracy, how far the tumefaction of the liver extends, by the dulness of sound heard over the in lamed organ, and exactly limited to it. In this way, you can make a most satisfactory examination, without giving your patient any pain; and this is a matter of some importance, as you will meet with many cases in which there is exquisite tenderness, and where the patient will not bear the slightest pressure. I would advise you, therefore, to practise this mode; it gives little or no pain, it is exceedingly simple, and I have not the slightest doubt of its accuracy. Now, the value of this tumefaction, as a sign of the existence of hepatic inflammation, depends very much on the recent nature of the attack. If a man, who was in perfect health a few days back, complains of pain in his right side, and has a tumour in that situation, it is to be presumed that this tumour does not depend upon the presence of a collection of fluid in the pleura, and, consequently, that the tumefaction is not produced by an empyema. Then, if, in connexion with fever and pain in the right side, you can ascertain the existence of a tumour in the region of the liver, and that it has occurred within a short space of time, you may be pretty sure that it is not an empyema, but an inflamed and enlarged liver.

Jaundice has also been considered as a symptom of hepatic inflammation, but it is one which is by no means constant. Again, you may have most extensive hepatitis with slight jaundice, and universal and intense jaundice with trifling or no hepatitis; and, what is equally singular, you may have very little perceptible disease of the liver with scanty secretion of bile; and, on the other hand, the liver may be burrowed with abscesses, and at the same time you find bilious stools, and after death the gall-bladder may be found filled with pure healthy bile. I thought, at one time, that I could explain the presence or absence of jaundice in cases of hepatitis, by supposing that, where it occurred, the jaundice was the result of inflammation of the gastro-duodenal mucous membrane; and to prove this, I drew up a table of cases, of which one-half were complicated with jaundice, and the other not. I found, however, that in a great number of cases, where the tube was free from disease, the hepatitis was complicated with jaundice; and in a similar number of cases, where the same circumstances were observed, the tube was in a state of disease. So that we may have, as you perceive, hepatitis and jaundice with and without dis-

ease of the intestinal tube; and whether we look to the cases of hepatic inflammation, unaccompanied or complicated with jaundice, the state of the gastro-intestinal mucous membrane throws, as yet, no light on the subject. It appears, then, that the occurrence or non-occurrence of gastro-duodenitis does not explain why it is, that in one case of hepatic inflammation jaundice is a prominent symptom, and in another is completely absent.

In some cases of acute inflammation of the liver, the natural secretion of that organ seems to be totally annihilated. A curious case of this kind occurred under the care of Dr. Graves, in the Meath Hospital, where the slightest trace of bile did not exist in the gall-bladder, which was filled with a transparent mucus. In some instances you will find plenty of bile discharged, in others none; in some patients the stools are observed to be clay-coloured, or very faintly tinged with bile; in others they are healthy, and natural in colour, as well as consistence. From our own experience, and from studying the series of cases published by Louis, we have come to the conclusion, that neither the presence nor the absence of bile in the stools affords any positive or useful information as to the different stages of this disease, its progress or termination.*

---

* [There is a condition of the liver midway between inflammation and congestion, which is common enough in those who are either exposed to long-continued heat, or to this extreme followed by cold and humidity; as in the case of persons from a northern climate who become inhabitants, temporarily or otherwise, of a torrid one. To the liver thus affected, the term *hyperemia* is applied. It is active or passive; approaching in the first variety to inflammation, in the second to congestion.

Acute hyperemia is represented to be of frequent occurrence among the French soldiers in Africa (Algeria), in the months of June, July, and August. The symptoms are those of deranged liver, as a loaded tongue, constipated bowels, icteric conjunctivæ, pain in the hypochondrium, &c. Sometimes there is only anorexia or difficult digestion complained of, and pain or tenderness in the region of the liver, which is not detected, except by a practitioner alive to the true nature of the case.

Passive or *hypostatic* hyperemia presents itself in persons of weak constitutions, who suffer severely in Africa when the prolonged and burning heats of summer are exchanged for the cold, wet, and variable temperature of autumn, especially if from any cause they may have been the subjects of chronic hyperemia of the liver.

Still more dangerous is the chronic form of passive hyperemia (the *hepatitis occulta sive typhoida* of the ancients), owing to its insidious approach and the irreparable mischief before its existence is detected. The liver is far more enlarged than in the acute form; the blood pouring out on incising the organ, and especially from its right lobe. More or less softening exists, and purulent deposits are frequently found.

The points of distinction are summed up as follows, by Dr. Haspel, French surgeon of the army in Algeria.

Acute Hyperemia.—1. It is speedily developed in the months of June, July, and August. 2. Dry, arid heat is one of the most active causes. 3. It attacks robust and bilious habits in preference. 4. It is often accompanied or preceded by a slight phlegmasia of the superior portion of the intestinal canal. 5. Its causes especially affect the super-diaphrag-

Acute hepatitis terminates in a variety of modes. It may terminate by resolution—here the organ returns to its former healthy state, without any appreciable change of structure or function; it may terminate by the formation of matter—here we have suppuration and abscess; it may terminate in gangrene; and lastly, it may, without the occurrence of suppuration or gangrene, pass into chronic hepatitis, of which the result may be a variety of morbid changes in the organ itself. When the patient is so fortunate as to meet with the first of these terminations, the fever, pain, and tumefaction gradually disappear. On making an examination with the pleximeter, you will find that part of the belly which was rendered dull by the tumefied liver become clear on percussion: you will find, also, that the dulness of the lower part of the chest, on the right side, is removed, the patient can breathe without any difficulty, and lies on the affected side without inconvenience. But when the disease passes into the suppurative stage, the train of phenomena exhibits a marked difference. What we generally observe under such circumstances in this country is, that there is a change in the constitutional symptoms; the fever, which has been hitherto inflammatory, now becomes hectic. The pulse continues quick, but is diminished in strength and volume; the countenance becomes pale and collapsed, the patient feels languid, restless, and disposed to sweat, and his perspiration has a sour smell. He may also have a miliary eruption, and this continues for some time, with an increase or persistence in the size of the hepatic tumour. When these symptoms appear, there is every probability that matter is forming, or has been already formed. The patient then begins to complain of increased weight in the region of the liver, and in some cases the integuments over that organ are swollen, and slightly discoloured. I have observed that, in some instances, the pain concentrated itself in one point, and in this situation it was afterwards found that abscess had formed. These are the ordinary symptoms which usher in, or accompany, the suppurative stage of hepatic inflammation; but there are also cases, even in this climate, where this marked change of symptoms is not seen, and where abscess forms rapidly, and with symptoms which might be supposed to belong to

---

matic organs, producing parotiditis, deafness, epistaxis, &c. 6. It generally terminates by resolution, sometimes by hypertrophy of the organs, rarely by suppuration. 7. The lesions are found indifferently in any part of the liver. 8. Local and general bleeding forms the basis of treatment; purgatives are only sometimes useful, and tonics are contra-indicated.

Passive or hypostatic Hyperemia.—1. Is observed especially in September, October, and November. 2. The common causes are damp, cold weather suddenly following great heats, and repeated paroxysms of intermittent fever. 3. It attacks weak subjects, whose viscera are of uncompact texture, and especially when these persons are debilitated by fatigue, chronic disease, diarrhœa, &c. 4. It most frequently coexists with irritation of the large bowels, so that it is sometimes difficult to say which organ is first attacked. 5. The crises are operated upon the sub-diaphragmatic organs, producing dysentery, hemorrhoids, &c. 6. Suppuration is a common termination, hypertrophy a rare one. 7. The right lobe is especially affected. Bloodletting is rarely proper: mild purges are indicated in the acute, but rarely in the chronic form, when tonics are essential.—B.]

the early period of the disease. This, however, is particularly true with respect to hepatic abscess in the East Indies.*

I believe I mentioned in a former lecture a very curious fact, namely, that it has been often found impossible to salivate persons labouring under hepatic abscess, so that the presence of matter or not, in the liver, may be determined by the circumstance of the patient being susceptible or not of the full effect of mercury. The liver, in this case, seems to illustrate that pathological law which I alluded to in speaking of dysentery: that the more intense an inflammation, the greater is the difficulty of producing ptyalism. My friend, Staff-Surgeon Marshall, and also Mr. Annesly, agree in stating, that it is exceedingly rare to find a case of hepatic abscess in which the salivary glands have been affected by mercury, and our experience of the disease in this country exactly coincides with their opinion. It has been also observed, that hepatic abscess may form in an insidious and latent manner, when it happens to be complicated with disease of other organs. This affords us an illustration of a law already laid down, that the more complicated an affection is, the more obscure is its character. Again, we may, as the result of acute hepatitis, have one or two vast cavities formed in the substance of the liver, or we may have a number of very small abscesses. I recollect a case which occurred some time ago near this city; the patient exhibited the symptoms, and was, in fact, supposed to labour under intermittent fever. After some time, death took place, and, on dissection, a number of small abscesses were found in the liver, of which, during life, there was no symptom, except that which I have just mentioned.

When an hepatic abscess attains a certain magnitude, it has a tendency to burst and discharge its contents. If it escapes externally, it makes its way in a great variety of directions, sometimes in the epigastric, sometimes in the hypochondriac, sometimes in the lumbar region, and there are cases on record, in which the matter has burst in the right axilla, by a sinuous passage, beneath the integuments of the chest. When it bursts internally, it sometimes perforates the diaphragm, and gets into the cavity of the pleura, or, what is more commonly the case, into the substance of the lung. The matter of an hepatic abscess very rarely gets into the pleural

---

* [In the *etiology* of hepatic abscess, the frequent occurrence of dysentery in association with, and even antecedent to it, is worthy of notice. A conclusion has been drawn by Annesly, which is admitted by Dr. Budd (*Diseases of the Liver*), viz., that abscess of the liver is in some cases consequent on dysentery and caused by it.

The abscesses that form in the liver, and also in other organs, after injuries of the head or limbs, and especially inflammation of the gynglinoid articulations, and also after surgical operations, are owing, we may believe, to suppurative inflammation of a vein and the consequent contamination of the blood by pus.

A similar origin is attributed when hepatic abscess occurs from dysentery; the pus from the ulcerated intestine being absorbed and conducted to the liver by some of the veins of the portal branch.

The origin of hepatic abscess from intestinal ulceration in dysentery has been observed by Webb (*Pathologia Indica*); Geddes (*Clinical Observations on the Diseases of India, &c.*); Parkes (*Remarks on the Dysentery and Hepatitis of India*); and Catteloup (*Recueil*, &c.).—B.]

sac, and hence we very seldom have an empyema as the result of this occurrence, because the pleura, being extremely liable to adhesion as a consequence of the inflammatory process, and the passage of matter being always preceded by inflammation, the opposed surfaces of the pleura become glued together by coagulable lymph, which prevents the hepatic pus from getting into the pleura, at the same time that it favours its passage into the lung. The opening into the lungs is one of ordinary occurrence: many cases of it are on record; and serious as the lesion may appear, it is, perhaps, one of the best modes in which hepatic abscess may terminate by internal opening. Many persons have recovered after such a termination; and I have seen myself three cases in which it was certain, and a fourth in which it was probable, that the matter had been expectorated by the mouth, with a favourable issue. We are, then, as far as the records of medicine and our experience in the Meath Hospital go, warranted in looking on this termination as a favourable one. Hepatic abscess may also open into the pericardium; but this is very rare, there being only one case of this kind, which is given by an American author. It may open into various parts of the intestinal canal, the stomach, duodenum, and colon; it may also discharge its contents into the right kidney, into the vena cava, or in the peritoneum, and thus cause violent peritonitis and death.

The diagnosis of these different openings of an hepatic abscess is easy, and founded on the same principle, the occurrence of new and extraordinary symptoms, connected with the adjacent viscera, which were not before diseased—symptoms of a sudden discharge of pus from, or into, these organs. Suppose you have a case of hepatic abscess, and that, during the progress of the disease, the patient has sudden and enormous expectoration of purulent matter, without any preceding signs of inflammation of the lung, it is probable that the abscess has opened into the lung; or suppose that, during an attack of acute hepatic disease, your patient is all at once seized with nausea, and vomits a quantity of purulent matter, and, immediately after this, you perceive that the tumefaction of the liver subsides. Here the matter has been discharged into the stomach; in other cases you have it discharged into the duodenum or colon. Again, you may have instances where the matter gets into the peritoneum; here you may observe the occurrence of rapid peritonitis. So that, in all cases of this kind, the diagnosis is founded on the same principle, *the occurrence of discharge of pus from, or into, organs which previously had been considered to be in a healthy state, and this coinciding with a subsidence of the original tumour.*

In persons who, under such circumstances, recover, it is natural to expect that cicatrizations should exist in the liver. Louis states that he has never seen this: with respect to our cases of hepatitis, we can only say that the fatality of the disease has afforded us no opportunity of investigating this point of morbid anatomy. Mr. Annesly, however, in his work on the diseases of India, has given drawings exhibiting this appearance. I recollect one case of a man in the Meath Hospital, who had been a soldier in the East India Company's service, and had been treated for liver disease; this man died of phthisis, and, on dissection, the surface of the right lobe of the liver was found puckered, forming a hollow with a cartilaginous basis, strongly resembling what we might suppose to be the cicatrix of an abscess.*

* [Many experienced practitioners in India believe that abscesses in the liver may and do remain stationary, in many cases, for years.—B.]

LECTURE LIV.

DR. STOKES.

DIAGNOSIS OF THE RUPTURE OF HEPATIC ABSCESS—Pulmonary openings—Case of double opening—Puncture of the gall-bladder—Gangrene of the liver—Its connexion with hepatic apoplexy—Diagnosis of distended gall-bladder—Its causes—Inflammation of the parietes over the liver—Sympathy of the integuments.

I BROKE off at my last lecture while engaged in considering the phenomena of hepatic abscess, and you will recollect I spoke of the various modes in which these abscesses may open internally, and stated that the diagnosis in all cases was founded on the same principle, which is this—that during the prevalence of symptoms indicating the existence of suppuration of the liver, some new organ becomes *suddenly affected*, the nature of the affection being what would be produced by the sudden rupture of an hepatic abscess and a discharge of pus into some of the neighbouring viscera, and this coinciding with the disappearance, more or less, of the original tumour. Now, when we consider the various internal openings of an hepatic abscess, we find that they admit of being divided into two classes, first, those in which the matter is effused into cavities having a communication with the exterior of the body, as the lung, digestive tube, and kidney. Here, in addition to the symptoms already alluded to, we have a sudden discharge of pus from the stomach or bowels, from the lungs, or by the urinary passages. But we may also have the matter discharged into shut cavities having no external communication, as where the contents of the abscess open into the peritoneum, pleura, or pericardium. You will readily perceive that of these two classes of openings, those in which the matter escapes into cavities having no communication with the exterior are the most unfavourable. The confined pus excites violent and generally fatal inflammation, and we have a dangerous empyema, a rapid peritoneal inflammation, or intense pericarditis.

I stated, that of the internal openings of an hepatic abscess, one of the most favourable is that in which the matter is discharged into the right lung, and I described briefly the mechanism of this curious process. We are warranted, I think, in declaring this to be a fortunate termination, because there are many instances on record of persons having recovered under such circumstances. A very near relative of mine presented an example of this. He was attacked with symptoms of acute hepatitis, for which he was attended by some of the most eminent physicians in Dublin. His treatment was bold and vigorous; he had free bleeding, both general and local, mercury, and every other means calculated to remove inflammation, but all proved ineffectual. His pulse became rapid, he began to sweat; the hepatic tumour increased in size, and presented a distinct sense of fluctuation; there could be no doubt of the existence of suppuration in the substance of the liver. One morning he was suddenly seized with a violent fit of coughing, and during the course of the day expectorated more than a large teacupful of pus; towards evening this increased, and on examination it was found that the tumour was remarkably dimi-

nished. The expectoration continued during the whole night, and in the morning it was observed that there was scarcely any appearance of the hepatic swelling. It was singular, and tends to confirm the idea that the matter had been discharged into the lung, that in the erect position this gentleman had scarcely any expectoration, but in the horizontal it was always extremely copious; a circumstance which you can easily understand by considering, that in the recumbent posture the purulent matter would find a more easy passage into the lung. In this case, it would appear that the communication between the liver and lung was very free, for I remember that on one occasion by making pressure over the liver, he said I was forcing the matter into the chest, and the pressure was followed by an instantaneous and copious expectoration. This frequently occurred. A medical friend of mine residing in Dublin, mentioned to me some time since the case of a large, robust draymen, addicted to whiskey drinking, whom he attended for an attack of acute hepatitis. At a time when the liver was very much increased in size, and well-marked symptoms of suppuration present, he observed that sudden expectoration of pus took place, which continued for several days, with manifest subsidence of the hepatic tumour and complete recovery. Three cases of this kind came under my notice in the Meath Hospital. One of the patients had symptoms such as I have before described as exhibiting a striking similarity to yellow fever, from which he recovered, and was discharged, with no other remarkable symptom but quick pulse. Shortly afterwards he returned, complaining of pain in the right hypochondrium, with rapid pulse, profuse night sweats, and a slight cough. At first his appearance struck me as being characteristic of phthisis, and under this impression I repeatedly examined the chest by the stethoscope and percussion, but could not detect any lesion. The man had only a slight cough, and this was totally insufficient to account for his symptoms. The nature of the case was soon manifest: one morning the patient stated that he felt as if something had given way in his chest during the night, and he was from that time expectorating *large quantities* of purulent matter. On examining the lower portion of the left side, I found that it sounded completely dull on percussion, and that the physical signs of an accumulation of fluid in the bronchial tubes were extremely distinct. That this dulness was the result of the effusion in question is proved by the previously healthy state of the lung. The very day before I had carefully examined this part of the chest, and found it quite healthy. There was not the slightest resonance of voice in this portion after the accident, because the tubes were so completely filled; so that in this case the return to health was accompanied by *increase of bronchophony*, a fact that sets the question of the nature of the accident at rest. It may appear strange that in this case the puriform matter entered the left lung instead of the right; but this is sometimes the case, particularly when the abscess forms in the left lobe of the liver.

I shall now draw your attention to the particulars of a case which I look upon as almost unique, and which derives additional interest from the accuracy of the diagnosis. It is of great importance that you should have clear ideas on the subject of hepatic abscess, for, though the disease is not of common occurrence in this country, still, if called on to pronounce an opinion on a case of this kind, the least difference in the quantity of your information may be of consequence. The patient, who was the subject of this disease, was admitted into the wards of the Meath Hospital in August,

1828. The history of his case was, that he had been labouring, some time previously, under obscure symptoms of an hepatic affection, accompanied by slight fever and jaundice, which had gradually subsided. Three weeks before admission he stated that he had irregular fits of shivering, followed by sweating, and when he came to the hospital he complained of sickness of stomach, but particularly of cough and difficulty of breathing, which were extremely harassing, and said that he came in chiefly to be cured of his cough. He was considerably emaciated, and looked pale and low, but his stools had a natural appearance. On considering the history of his case and the symptoms then present, it struck me that it was either hepatitis with suppuration, or empyema of the right side with irritation of the liver. At that time I had not made my researches on the diagnosis of empyema, and I must confess that I experienced a great deal of difficulty in determining the nature of the case. I found the right side considerably dilated, with dulness on percussion over its inferior half, but the intercostal spaces were not distended, and preserved their natural appearance. The case went on this way for some time. Permit me to draw your attention for a moment to this point. Dilatation of the right side may result from the pressure exercised upon it by a solid or by a fluid mass. If the mass be solid it will push the ribs outwards, but the intercostal spaces will still preserve their natural appearance. But if the protrusion of the side be the result of pressure by a fluid mass, the intercostal spaces will be acted on even more than the ribs, and the sulci, which mark their situation, will be effaced. Now, in this case the intercostal spaces were evident, and from this circumstance I determined that it was a liver disease. The patient continued for a fortnight without exhibiting signs of any material change, and then the tumour increased very much in size, but there was no appearance of pointing. At this time the patient was visited and examined by a number of medical men, and all agreed that it was a case of deep-seated suppuration of the liver. Under these circumstances it was thought advisable to make an incision through the integuments down to the peritoneum, as recommended by Dr. Graves, and to keep the wound open by filling it with lint. This operation was performed, and the wound kept open for several days, but no matter came. On the sixth day the patient began to sink, his face became hippocratic, his extremities cold, and every one thought he was dying. During the course of the day it was observed that there was a circumscribed tumour, with a distinct sense of fluctuation, situated close to the wound, and towards the right side of the mesial line. Here is an important stage of the case ;—a man presenting evidence of suppuration in the liver has an operation performed on him to favour the exit of pus externally, and some time after this we find a circumscribed fluctuating tumour, nearly in the situation of the wound. We concluded that the hepatic abscess was pointing in that situation, and it was determined to pass a lancet cautiously into the tumour. This was done, but, to our astonishment, instead of pus, pure bile escaped through the incision. It was clear that we had mistaken a distended gall-bladder for an abscess, and this I need not tell you was a serious error. It is singular, however, that the accident was not followed by any bad consequences. About two hours after the operation the patient went to stool, and passed two large evacuations, consisting chiefly of a vast quantity of purulent matter. Next morning he was surprisingly well, *and the hepatic tumour had considerably diminished.* His

countenance recovered its natural expression, his spirits were quite elated, his pulse had become tranquil, and the liver was manifestly returning to its ordinary dimensions. He began to sit up, was put upon generous diet, could walk about the ward, and was talking of leaving the hospital. From the period, however, at which the discharge of pus took place he had an obstinate diarrhœa, and though he took a great deal of nourishment he was still pale and emaciated. Twenty-two days after the subsidence of the tumour, another swelling began to make its appearance in the epigastrium, which increased daily, and it was obvious that another abscess was forming in the left lobe. About a fortnight after this he was suddenly seized with excruciating pain in the epigastrium, followed by symptoms of peritonitis. The tumour in the epigastrium subsided, but the patient sank in a few days of the peritoneal inflammation. Let me recall the circumstances of this case. First, we have obscure signs of the existence of abscess, then the sudden escape of matter from the bowels, accompanied with subsidence of the hepatic tumour; in the next place a persistence of diarrhœa and emaciation; and, lastly, we have a new tumour in the epigastric region, disappearing on the supervention of symptoms of acute peritonitis. From a consideration of all these circumstances I stated to the class that I should expect to find evidences of the abscess in the right lobe, which was the first affection, and I ventured to say, that the opening between it and the intestinal tube was still pervious. I was led to form this opinion from observing the persistence of the diarrhœa, to check which all the ordinary remedial means had failed. This was the first part of the diagnosis. In the next place I stated my belief that the gall-bladder had been punctured, but could not explain why the bile had not escaped into the peritoneum. Thirdly, I said that an abscess had formed in the left lobe, which had discharged its contents into the peritoneal cavity. All this was stated publicly, and on consideration you will find that there was no great difficulty in making the diagnosis. On dissection, we found a cavity in the right lobe with a small quantity of matter in it, and having a free communication with the duodenum. The fundus of the gall-bladder was found adhering to the parietal layer of the peritoneum, and the mark of a lancet wound in it was evident. A recent abscess was discovered in the substance of the left lobe of the liver, from which the matter had escaped into the peritoneum by a passage capable of admitting a small quill. Every part, therefore, of the diagnosis of this case was perfect, and borne out by the necroscopic appearances. You will see the details of this very interesting case in a paper published by Dr. Graves and myself, in the fifth volume of the Dublin Hospital Reports.

This case is exceedingly interesting, because it illustrates two remarkable terminations of hepatic abscess: in one instance, by opening into a cavity which had an external communication, in the other into a shut sac. The patient recovered from the first abscess, and would have done so effectually if the fistula had closed (no uncommon event); but he could scarcely have recovered from the second, because, where the matter escapes into the peritoneum or pleura, the patient almost invariably dies of acute inflammation of these cavities. This case derives additional interest from the circumstance of the gall-bladder having been opened. I believe this is the only case on record in which an opening made into the gall-bladder has not been followed by fatal consequences. I might detail many other cases of hepatic abscess, but I must at present refer you to the

paper already alluded to, in which we have published the results of our experience on the subject.*

Some authors have mentioned gangrene, or mortification of the liver, as one of the modes in which acute hepatic inflammation may terminate. It is now, however, agreed, that this is one of the rarest terminations we can meet with: in fact, that there is hardly any organic disease which so seldom occurs. Mr. Annesly states, that in all his dissections (and these were very numerous) he never met with a case of gangrene of the liver. Andral, who has examined some thousands of bodies, has only met with a single case: this, with another which was under the care of Dr. Graves, and appears to have been a genuine example of mortification of the liver, are almost the only cases of which I have any distinct recollection. The case under Dr. Graves was that of a patient in Sir Patrick Dun's Hospital, who laboured under chronic inflammation of the liver, with ascites, jaundice, swelling of the lower extremities, and an incapability of lying on the left side. After this man had been about eleven days in the hospital he began to complain of tenderness and pain of the belly; he was next seized with vomiting, and threw up a large quantity of fetid matter. Soon after this he sank, and, on dissection, numerous marks of chronic disease

* [One of the most extraordinary instances of the termination of hepatic abscess is recorded in the *Eclectic Journal of Medicine* for January, 1839. It was a discharge through the colon downwards and the lungs upwards. The subject of the case was, at the time, under the care of Dr. Colledge, at Macao, China. He had suffered from hepatitis from the 6th of August, 1836, in Canton, to the last of the month, for which he had been bled, leeched, and blistered, and had taken calomel freely. From the 1st to the 13th of September, he was occasionally leeched, took small doses of calomel, with rhubarb and castor oil, and enemata, and was subjected to counter-irritation from blisters and tartar emetic ointment. On the 13th, the patient felt himself all on a sudden relieved—was sensible of something having given way within him. On examining his intestinal discharges the next day, a very considerable quantity of purulent matter was seen in them and in those which he passed for some days after—warranting the opinion that had been held of an abscess having formed in the liver. For ten or twelve days from this time he improved considerably, when another return of the symptoms took place. The same remedies were applied as before, together with anodyne fomentations, but with the same want of success. He got daily worse, and serious apprehensions were entertained regarding his recovery, when, on the 4th of October, he experienced another sudden change for the better. But this time the abscess burst into the thorax instead of the colon, and the matter was discharged by expectoration. He soon became convalescent, and sailed for England. In a letter from St. Helena, on his way home, dated February 7th, 1837, he says that "he was gaining strength and flesh, and enjoyed the cool weather at sea amazingly."

At Berhampore (Hindostan), Dr. W. O'Shaugnessey opened the body of a soldier, in 1831, who died of phthisis. In this subject there was found adhesion by cicatrix, evidently caused by an old abscess, to the diaphragm and lungs, and another to the colon. Dr. O'S. was not able to obtain the previous history of the case, but he had never suspected liver disease—in fact, there was none at the time of his last illness.—B.]

were found in various parts of the substance of the liver: but in the left lobe there was a cavity which was distinctly gangrenous, and had in the centre of it a large mass of slough. I think that there can be no doubt that in this case the disease was actual gangrene of the liver. I think, too, it may be very fairly doubted whether gangrene of the liver is the result of inflammation, properly so called, in any case; and I believe it would be a very interesting subject for inquiry, to consider how far this disease may be the result of hepatic apoplexy, or effusion of blood into the substance of the liver. This is an accident to which the liver, as well as any other parenchymatous organ, is subject; and though effusions of blood into its substance are by no means so common as similar occurrences in the brain and lungs, still it does not enjoy anything like immunity from such lesions. We have good reason to believe, that in many cases blood effused into the substance of parenchymatous organs may, under certain circumstances, either undergo putrefactive decomposition, and form a gangrenous abscess, or that, although no longer circulating in its vessels, and effused into the parenchyma of an organ, it may still retain its vitality to a certain extent, and, being modified by the powers of life, may give rise to the formation of various morbid products. In this way it is thought that various tumours—cancerous, steatomatous, melanotic, and encephaloid—may originate. I am inclined to think that this sometimes occurs in the brain and lungs, and it is probable that it may happen in the case of the liver also. Further researches, however, are necessary, with respect to the elucidation of this matter, before our opinions on it can possess a higher character than that of veri-similitude.

Distended Gall-Bladder.—While on the subject of hepatic abscess, it will be necessary to allude to one of its occasional complications—distended gall-bladder,—because this may be mistaken for the pointing of an abscess, and an operation be performed, and that this has happened more than once is a positive fact. A distended gall-bladder has been mistaken for the tumour formed by the pointing of an hepatic abscess, an opening has been made into it under this supposition, bile has escaped instead of pus, and this, getting into the cavity of the peritoneum, has given rise to rapid and fatal peritonitis. A remarkable case of this kind has been detailed with great candour by the late Mr. Todd, in one of the early numbers of the Dublin Hospital Reports. He was called suddenly to visit a girl, whom on his arrival he found to be in a dying state, labouring under great distention of the belly, almost insensible, moaning constantly with her jaw fixed, and presenting a distinct tumour in the hypochondriac region, which, from the history of her case, he was led to consider as an hepatic abscess pointing externally. He divided the integuments and muscles down to the peritoneum, and having introduced a trocar drew off nearly three pints of *bile*, with apparent relief. Shortly afterwards violent peritonitis came on, and the patient sank rapidly. After death the liver was found to be healthy, and the tumour to have been formed by a distended gall-bladder of enormous size. From this, after the operation, the bile had escaped into the peritoneum, causing intense and universal peritonitis. In making a diagnosis in such a case as this, everything will depend upon your knowledge of the history and previous symptoms. The circumstances which produce distention of the gall-bladder, you will find, upon examination, do not bear any distinct resemblance to those which precede or accompany inflammation of the

substance of the liver. We may have it from the obstruction caused by biliary calculi, and here you can make a tolerably sure diagnosis. We may have it from disease of the duodenum, or of the head of the pancreas, or from the pressure of aneurismal tumours in the vicinity. Abscess of the liver is generally accompanied by symptoms of inflammation of that organ, but distention of the gall-bladder does not present any corresponding train of phenomena. There may be some exceptions to this rule, but in making the diagnosis we must strike a balance of probabilities. The first part of our diagnosis, then, is this—the occurrence of a tumour in the hypochondriac region, not preceded or accompanied by any of the symptoms which characterize hepatic inflammation. Another important diagnostic, and which I think will apply in several cases, is this. In a case where abscess was formed in the liver, the fluctuation, which is a sign of the existence of fluid, is often preceded by a condition of the part in which there is no sign of the presence of fluid; we have first induration and swelling, and *then the signs of fluctuation;* but this is not the order of succession in the phenomena which characterize distention of the gall-bladder. In abscess we have a hard tumour which gradually softens; in case of distended gall-bladder, we have the tumour soft and fluctuating from the commencement. If, then, we have a tumour in the hypochondriac region, not preceded or accompanied by symptoms of hepatic inflammation, accompanied by jaundice, with a sense of fluctuation from the beginning, and unattended by hectic, the chances are indeed very great that it is not an hepatic abscess, but a distended gall-bladder.

You will perhaps be surprised, that, in treating of the diagnosis of distended gall-bladder, I do not lay any particular stress upon position. The reason of this is, that the situations in which a distended gall-bladder may be felt are extremely various. First, we may have it appearing in different parts of the hypochondrium, under the cartilages of the ribs. In the next place, we may have it between the cartilages of the ribs and the spine of the ileum. It has been observed by Andral in the iliac fossa, and he has seen it in the epigastric region. In a case which occurred in the Meath Hospital, it presented itself in the epigastrium, a little to the right of the mesial line. Again, in severe cases, you may have the whole of the liver filled with bile, *and having a distinct fluctuating feel, not produced by the existence of pus in that organ, but from the enlargement of its ducts, which are gorged with bile.* In one case mentioned in the Medico-Chirurgical Transactions, this curious circumstance occurred. So far, then, as diagnosis is concerned, position appears to be of very little consequence; but when we have this, in addition to the other circumstances mentioned, it will tend to give additional certainty to our diagnosis. In all cases on record where there was distended gall-bladder, the patient laboured under jaundice, except in that which I have detailed in the early part of this lecture; but perhaps if our patient had lived longer, he would also have had jaundice.*

---

* [Inflammation of the gall-bladder and ducts, although we may believe it to be of frequent occurrence, is not ascertainable by a clear diagnosis, nor are we, as yet, aware of its causes.

The mucous or lining membrane of the gall-bladder and ducts, is susceptible of the same varieties of inflammation as are other parts of the mucous system. These are catarrhal, suppurative, croupal or plastic, and ulcerative. To the first or catarrhal kind may be attributed many of the

There is one disease more which may be, and I believe has been, confounded with acute hepatitis and abscess of the liver. This affection, which has not been sufficiently noticed by authors, is inflammation and abscess of the abdominal parietes over the hepatic region; and this is a very singular disease. It is sometimes trifling, but I have seen a patient die of it. With the original nature of this disease I confess that I am not at all well acquainted; nor can I say whether the inflammation first attacks merely external parts, or whether it is a primary affection of the liver, and that the external parts take on diseased action from sympathetic irritation. In such cases we frequently observe many of the symptoms of inflammation of the liver, as pain, tenderness, biliary derangement, foul tongue, and morbid stools, with a tumefied state of the integuments. After these

---

cases of simple jaundice coming on in healthy persons, and attended with very little pain and fever.

Suppurative inflammation of the gall-bladder is most liable to occur, when, owing to any cause, the cystic duct is permanently closed. It now and then occurs in the course of typhoid fever.

Ulcerative inflammation of the gall-bladder is more common than the other forms: it occurs in various circumstances, and it has been noticed by more than one writer, among the morbid appearances of remittent fever. One of its causes is the induration of gall-stones.

Among the effects of inflammation of the cystic duct are thickening of its coats and narrowness and sometimes closure of the duct itself. The consequences of this last are not so grave as might have been anticipated; the bile finding its way directly to the duodenum, by the hepatic and common duct. Closure of the latter produces more serious effects, among which are mentioned deep jaundice, dilatation of the gall-bladder and hepatic ducts, and retention of bile in the lobular substance of the liver, which acquires in consequence a deep olive colour. After a time, the increase in size of the liver is followed by its diminution and atrophy and destruction of the proper cells of the organ.

The symptoms of inflammation of the gall-bladder and ducts are nearly identical with those of distended gall-bladder from biliary calculi and the passage of these latter through the ducts. A gnawing pain in the epigastrium and right hypochondrium, increased by pressure, nausea and vomiting followed by profuse diarrhœa and jaundice with difficult digestion, when occurring in a case, should excite our suspicion of phlogosis of the parts now under notice. But we must not look for symptoms of such violence in all cases. In some these are quite moderate, but they must not on that account be neglected.

In the treatment of inflammation of the gall-bladder and ducts, recourse should be early had to depletion and especially to that procured by leeches, or, wanting them, cups over the epigastrium and right hypochondrium. Following these, blisters are of decided benefit. Mercury, judiciously administered, is attended with excellent effects. The same remark is applicable to soda, which operates in an analogous manner to that when it is used in pulmonary catarrh and in bronchitis (Budd, *op. cit.*).

Rupture of the gall-bladder has occurred in some cases, as a consequence of external injury. Strange as it may seem, there are not wanting instances of recovery, although bile had escaped to a considerable amount into the cavity of the abdomen. Wounds of the gall-bladder are almost necessarily fatal. (Thomson, *op. cit.*)—B.]

symptoms have continued for some time, the tumour increases in size, becomes softer, and matter forms. You give exit to the pus by opening the abscess with a lancet, and the patient gets well. This occurrence I have frequently witnessed. From a consideration of all the circumstances, it strikes me that in this disease the first morbid action in all probability commences in the liver itself, and that the external inflammation is an example of the strong sympathy which subsists between disease of deep-seated parts and integuments which cover them. Of this fact you have several illustrative instances. In pleuritis, we frequently find the integuments of the chest remarkably tender on pressure; and in cases of inflammation of the brain, the integuments of the scalp have their sensibility much increased. The same thing occurs in hepatitis; and in this disease one of the first distinct symptoms is this tenderness of the superincumbent skin. Now, you can conceive that, if this morbid sensibility of the investing parts should increase, in place of having some pain and tenderness accompanied by swelling, we may have suppurative inflammation set up in these parts; and that, under such circumstances, the inflammation may leave the internal organ where it first existed, and be thrown upon the external parts in its vicinity. It strikes me that this is not unfrequently the case in this curious affection. In the case of this disease which I have seen prove fatal, the following circumstances were observed:—Evident symptoms of inflammatory fever; pain and tenderness in the region of the liver, followed by the appearance of a tumour; which became fluctuating, was opened, and a quantity of matter discharged with considerable relief to the patient. She left the hospital, but returned again in about a fortnight or three weeks, with an enormous tumour in the same place, which was again opened and a vast quantity of purulent matter evacuated. Though the matter continued to flow freely, she did not recover strength; and on inquiry it was found that before her second admission she had spit up some blood. One day while dressing the abscess, the gentleman who attended her observed that when she coughed air passed out through the wound, proving the existence of a fistulous communication with the lung. On examination after death we found an abscess, the base of which rested upon the peritoneal surface of the liver, without engaging its substance. From this the matter had made for itself a double passage, one externally, the other through the diaphragm and pleura into the substance of the lung. This was the only case in which I have seen this disease prove fatal; and in it death appears to have been caused by the extent of the disease, and by the abscess opening into the pleura and lung.

LECTURE LV.

DR. STOKES.

ANEURISM OF THE HEPATIC ARTERY—Distention of the liver with bile.—*Treatment of hepatitis*—Employment of mercury.—SYMPTOMS OF SUPPURATION—Dr. Graves's operation for giving exit to matter in hepatic abscess—Rupture into the peritoneum—Chronic hepatitis—Complication with disease of the heart—Embryonary state of the liver.

You may remember, in one of my past lectures, I alluded to a case of aneurism of the hepatic artery, of which I had procured a preparation:

to-day I shall be able to exhibit to you the morbid appearances in this very remarkable case. It would appear that aneurism of the hepatic artery is an exceedingly rare circumstance. At a late meeting of the Academy of Medicine of Paris, a specimen of aneurism of the hepatic artery was presented to the society; and that celebrated pathologist, Cruveilhier, stated that it was the first of the kind he had ever seen. I wish to bring this preparation before you, not merely from the interest which its rarity excites, but also because the disease, in this instance, produced that distended condition of the gall-bladder to which I drew your attention on a former occasion, and which in this case was recognised before death. The gall-bladder formed a distinct pyriform tumour, situated a little above the iliac fossa, and the patient was deeply jaundiced. I shall state, from recollection, what I know of the details of this case. The patient was brought into the Meath Hospital, labouring under jaundice, which he stated to be of some days' standing. He was thin and weak, and when questioned respecting his age, he said he was thirty-five, but he appeared to be upwards of fifty. His habits he described as being uniformly temperate and regular. Some years before he had suffered from an attack of apoplexy, but this had enjoyed good health, until the occurrence of the present illness, which began with vomiting of blood, and which continued for some days, and then yielded to medical treatment. He now experienced a loss of appetite, became quite dyspeptic and constipated; he also began to lose flesh, and under these circumstances applied at a dispensary, where he got various remedies without any benefit. Some time after this he observed, on getting up one morning, that his arms and legs looked rather yellow; on the following day he had a decidedly bilious tinge with yellow vision, and in this state he entered the Meath Hospital. On admission he presented symptoms of general jaundice; the urinary secretion was deeply coloured; the skin, eyes, and nails yellow: the stools white and without any trace of bile. On examining the abdomen, the liver was apparently greatly increased in size; in the epigastric region there was a tumour of considerable dimensions; and in the iliac fossa we observed a separate pyriform tumour, which could be traced up to the edge of the enlarged liver. I mentioned at that time to the class, that there was something about the case which I could not understand. The disease was of inconsiderable standing; the patient had, a short time previously, been in a state of good health, and yet, reasoning from analogy, this hepatic tumour could only have occurred as the result of chronic disease. It must have been the consequence of disease more or less chronic, and yet the history of the case was at variance with the idea of its chronicity. After some time the patient got miliary eruption, then petechial spots; he continued in a low and weak state, and nothing did him any good. On the morning of the day of his death he did not appear worse than usual; he answered our inquiries respecting his health in the ordinary manner; in the evening he sat up in bed, gasping for breath, with a look of extreme distress; he then leaned back on his pillow and expired.

On opening the peritoneum we found a vast quantity of blood effused into its cavity, and my first impression was that it was aneurism of the abdominal aorta. On closer inspection, the aorta proved healthy, and the aneurismal tumour was found to be connected with the hepatic artery; this had ruptured close to the gall-bladder, and its contents had been

effused into the cavity of the peritoneum. We now found that the cause of the jaundice had been the pressure which this tumour had exercised on the biliary ducts. In consequence of the obstruction to the flow of bile, the ducts of the liver were dilated to an enormous extent; some of them were capable of admitting the largest-sized finger. This dilatation affected not only the largest trunks, but even extended to their most minute ramifications, even up to the surface of the liver; and here we found that the biliary tubes were dilated into sacs, some of which were as large as a hazel-nut. When these pouches were punctured the bile gushed out freely. A similar condition of the ducts has been noticed by Mr. Lloyd as existing in connexion with obstruction of the biliary duct, from disease of the head of the pancreas, in his paper on Discharges of Fatty Matter from the Bowels. (See *Med. Chir. Trans.*) I have got the preparation of this singular disease before me, and I regret that in one respect it is defective, inasmuch as it does not show satisfactorily the condition of the biliary ducts. A portion of the preparation which exhibits this appearance I gave to Dr. Houston, the curator of the Museum at the College of Surgeons, and I am sure that he will give admission to any gentleman who is anxious to examine it. This preparation, gentlemen, is too large to send round. It exhibits the hepatic artery with its aneurismal tumour, and the opening by which the artery communicates with the aneurismal sac. Here is the place in which the rupture took place, and here is the gall-bladder greatly extended and thickened in its coats.

Here, then, we have a new cause of jaundice, where the disease is the result of the pressure of an aneurismal tumour of the hepatic artery—a cause which has hitherto been unnoticed by writers on jaundice. The great interest of this case consists in this, that dissection explained the difficulty which I felt in making the diagnosis at first, for it showed that the hepatic tumour was formed, not by a hypertrophied, but by a distended and displaced liver. It proved that it was formed, not by a process of chronic growth, but by the rapid formation of an aneurismal swelling and the consequent obstruction of the gall-bladder, accompanied by distention of the liver itself. With recent symptoms, then, we had, in this case, *an enormously large liver, not the product of inflammation, but of distention of all the biliary ducts up to their most minute ramifications, and arising from mechanical obstructions.* As far as it goes, this case appears to me to be perfectly unique.

Treatment of Acute Hepatitis.—Let us turn now to the treatment of acute hepatitis. It is unnecessary for me to say, that in all cases of acute visceral inflammation, in the healthy subject, the first consideration is bloodletting, either general or local. In the early period of acute hepatitis, all authors have agreed in strongly recommending the use of the lancet; and there can be no doubt that when the disease is in its early stage, and the patient robust, the practitioner who omits employing these measures must be culpably negligent. It should always be borne in mind that the liver is an organ of paramount importance to life. There are two circumstances, also, which are in favour of bleeding in the case of an acute hepatitis,—there is less chance of its being complicated with typhous fever, and general bleeding exercises a powerful influence over the acute inflammations of parenchymatous organs. Hence, we bleed with greater advantage in a case of acute hepatitis than in the inflammation of the mucous membranes. Our first bleeding should be large, and such as will make

a decided impression; and it will frequently be necessary to bleed a second and even a third time if the disease be very acute and the constitution strong, taking care to diminish the quantity at each successive bleeding, and to watch its effects. I have here to make one remark—that general bleeding is not the same heroic remedy, nor has it the same decided influence in arresting acute hepatic inflammation, as in checking pneumonia. A copious detraction of blood has, under favourable circumstances, often succeeded in completely removing an attack of pneumonia, and the patient has recovered without the employment of any other remedial measure; but acute hepatitis is seldom or never cut short in this way. Still, venesection is of the greatest importance; and if it were performed merely with a view of preparing the patient for leeching and other depletive measures, its advantages would be unquestionable. I would recommend you, therefore, when you meet with a case of hepatitis in the early period, first to bleed freely, or in such a manner as to make a decided impression on the symptoms; next, to empty the bowels by prescribing a purgative draught, assisted by an enema; and, lastly, to cover the region of the liver with leeches.* You will find great advantage in employing your therapeutic means in this order; for if you begin with leeches before you have had recourse to venesection, or the use of purgatives, your practice will not be so scientific, nor will your success be so complete. Bleeding, purgation, leeches, and the application of cupping-glasses over the leech-bites (if necessary) will give you breathing time; and after the lapse of twelve or fourteen hours, you will find that all symptoms of urgent danger will have passed away. During the progress of the case, the remedy which I should principally rely upon is local bleeding, frequently repeated. If you apply thirty leeches to-day, I would not have you repeat them to the same amount to-morrow; but you might, perhaps, apply fifteen or eighteen, and the next day ten or twelve. By proceeding in this way you will find a great abatement in your patient's symptoms; and I know of no circumstance which, taken singly, proves the value and benefit of your treatment so well as the diminution of the hepatic tumour, which you can accurately and satisfactorily ascertain by means of the pleximeter. When you find a gradual subsidence of swelling, I think you may be pretty sure that, even though the other symptoms exhibit little or no improvement, the hepatitis is on the decline, and will soon be removed entirely.

You have all, I am convinced, heard a great deal of the use of mercury in hepatitis; and there appears to be in the minds of most medical men a strong connexion between mercury and all diseases of the liver. So far has this impression gone abroad, that to some practitioners it would appear perfectly heterodoxical to think of attempting to cure an hepatic inflammation without this accredited panacea. I must, however, confess, that it is my belief that several cases of hepatic inflammation may be cured

* [The East India practitioners (army surgeons especially) insist on the paramount necessity of early and free bleeding, carried to syncope, in acute hepatitis, and repeated at intervals not exceeding twelve hours, till the acute symptoms yield. "The effect of bleeding to fifty or sixty ounces at once, in the commencement, is most satisfactory in subduing alarmingly dangerous symptoms, and I never," says Dr. Murray, Deputy Inspector of H. M. Hospitals, "saw any unfavourable consequences from it."—B.]

without it; and, if this be true, as I am convinced you will find by experience, it is so much the better for the patient. I do not mean to deprecate the value of this powerful remedy in making this assertion;—it is undoubtedly a useful adjuvant, but it is only an adjuvant. It is decidedly secondary and inferior to general and local antiphlogistics, followed by counter-irritation; and you should always bear in mind, that if you wish to bring about the full action of mercury on the system, you must precede its employment by means calculated to reduce the intensity of local inflammation. By premising general bleeding, leeching, and purgatives, you give the mercury an opportunity of exerting a decided influence on the salivary glands; and in such cases it is that the most unequivocal advantage is derived from it; for, as I have observed in a former lecture, salivation appears often to be the *result* of the reduction of inflammation to a certain degree, and not its cause.

In all cases of hepatitis occurring in delicate females, but particularly in persons of low, scrofulous constitutions, endeavour to dispense with the use of mercury if possible.* You will have considerable difficulty in divesting yourselves of early prejudices, and combating those of others; but when you have an opportunity of acting for yourselves, I would have you make trial; and you will find that many cases are curable without mercury. If, after having regularly and carefully employed the means recommended, you perceive that two or three days pass without any improvement in your patient's symptoms, and that the hepatic tumour remains undiminished, then indeed you may have recourse to mercury. But if you have been so fortunate as to have struck a decided blow in the commencement, and that the case is going on well, I should ask, why should you expose your patient to the misery and danger of salivation? I am not by any means opposed to the employment of mercury in cases of liver disease; on the contrary, if we compare inflammation of the lungs, brain, and liver, with respect to the power which it has over each, I believe that it is much more applicable to cases of hepatic inflammation than it is either to pneumonia or cerebritis.

There is nothing more common than a complication of disease of the liver with disease of the upper part of the digestive tube; and here you will find that calomel will frequently cause great irritation of the bowels, vomiting, and increase of fever. Under such circumstances, you must omit the internal use of mercury, and have recourse to frictions, directing your patient to rub in a drachm of camphorated mercurial ointment every six or eight hours until the gums are affected. A very good auxiliary means is to place a drachm of the mercurial ointment in the patient's axilla, and leave it there; the action of the arm will, to a certain extent, answer all the purposes of friction. Dr. Graves is much attached to this mode. Where you have employed blisters, you may cut off the cuticle, and dress the raw surface with mercurial ointment. This also will contribute materially to produce the intended effect on the system. With respect to blisters, the same rules are to regulate their application as I have mentioned before, when speaking of the treatment of gastro-enteritis,

* [In cases of this description, which will include scrofulous enlargement of the liver, to be hereafter noticed, I have directed the iodine (Lugol's solution and the iodide of potassium in solution) with excellent effect. The iodide of iron is also a remedy of approved virtue.—B.]

namely—that they are not to be used until active antiphlogistic treatment has been employed; for it is then, and then only, that the stimulus of a blister can be useful. I believe it is seldom necessary, or even safe, to apply a blister before the third or fourth day in cases of acute inflammation of the liver. The physician who purges to-day, and blisters to-morrow, and bleeds next day, is a very injudicious practitioner indeed; he should bleed first, then purge; and having by these means reduced the symptoms of active inflammation, he may proceed to the use of blisters with advantage.

It is unnecessary for me to remind you that you must enjoin a strict antiphlogistic diet in all cases of acute hepatitis. Recollect the powerful influence which all dietetic stimulants exercise, not only over the digestive canal and general system, but also over the liver; bearing this in mind, you will, for the first few days, keep your patient on a water and slop diet, and then on a mild farinaceous food and chicken-broth.

Suppuration of the Liver.—But suppose that after all this, after having employed all the resources of the science and art of medicine, your patient becomes gradually weaker, his face pale and expressive of much constitutional suffering, his skin flaccid and bedewed with perspiration, his pulse small, rapid, and compressible, that the hepatic tumour increases in size, and when you throw aside his bed-clothes the whole of the right side appears manifestly enlarged; and, if the bowels are empty, you see the hepatic tumour extending far downwards into the abdomen; in addition to these symptoms, suppose the patient has had shivering fits, not only once but repeatedly; that his perspirations are profuse, and have a sour smell; that his tongue is dry and glazed; that his cheeks are hollow, and sometimes present a circumscribed flush; and that he is low, weak, and restless. Under these circumstances you may be sure that suppuration is commencing, or has been already established; and the question is, what are you to do? You must change your hand, you must give up antiphlogistics, you must omit the employment of all measures which have a tendency to reduce strength, you must prescribe a light nutritious diet and anodynes to relieve irritation. When suppuration is fully established, the next consideration is, in what direction the contents of the abscess may escape; and here I need not remind you that it is much better that the abscess should open externally, through the integuments of the abdomen, or into some cavity having an external communication, rather than into a shut sac, as in the latter case it is almost certain and often immediate death. At this period of the case it will be proper to support your patient's strength by allowing him wine, increasing the quantity if the hectic symptoms threaten to run him down, and taking care that his diet be nutritious and of easy digestion. You will also take care to relieve his sufferings, and irritation attendant on the disease, by the judicious employment of opiates.

When after some time the tumour becomes more elevated and distinct, the pain concentrated in one particular part of the liver, and the abscess is evidently pointing towards the surface, the question then is, whether we shall open it and give exit to the matter, and how this may be best accomplished. That the contents of the abscess should be evacuated as speedily as possible is true, but the consideration is, how far it can be done with safety. Now, I beg your attention to this point, as it has not been sufficiently attended to in works on the practice of medicine. Re-

collect what the anatomical condition of the parts is under such circumstances, and that, in order to get at the matter, you have to pass through a serous cavity. It is obvious that if you make an incision into the tumour through the peritoneum, and if this be in a state of health, and without any adhesions between its layers in the situation of your incision, you run the risk of having the contents of the abscess effused into the peritoneal sac, and you know that this is almost of necessity fatal. The condition, then, for success is, *the circumstance of adhesion taking place so as to prevent the matter from getting into the peritoneum.*

Well, it seems to be a very simple thing to give exit to the matter of an hepatic abscess which presents a distinct pointing. Persons will say, adhesion has formed long since, the integuments are swollen and painful, the matter has crossed the peritoneum and lies close under the skin. Here, however, is a curious fact: of all the serous membranes in the body the peritoneum is that which is least liable to general or partial adhesions, and it is well known, with respect to hepatitis with suppuration, that you may often have abscess so large as to form a distinct tumour on the surface, which shall be fluctuating, discoloured, and painful, and with all these conditions, so favourable to the notion of matter being actually under the skin, the patient dies, and on dissection we find not the slightest trace of adhesion. If you plunge a trocar or abscess-lancet into the tumour, what would be the consequence?—death by peritonitis. Dr. Graves and I, in our report of the cases of hepatic abscess which occurred in the Meath Hospital, were the first who drew the attention of the profession to this interesting pathological fact, and subsequently to this, Mr. Annesly, who has vast experience in hepatic abscess, states that in his practice he found that the existence of adhesion between the layers of the peritoneum in the vicinity of the abscess, even after swelling, tenderness, and discoloration of the integuments, is by no means a necessary consequence.

It appears, then, to be quite certain, that the opening of an hepatic abscess is a matter of considerable nicety, and requiring a great deal of caution. The best mode of proceeding which can be adopted is, in my opinion, that which has been recommended by Dr. Graves, and which is founded on the most accurate pathological views. He makes an incision through the integuments, over the most prominent part of the tumour, and carries it through the cellular substance, fat, and muscular tissue, until the peritoneum is nearly laid bare, and there he stops. The wound is then kept open by plugging it up with lint, and after some time the abscess bursts in this situation with perfect safety to the patient. This operation was performed, under his direction, for the first time, in a case of abscess where there was no distinct pointing. It was the first operation of the kind, and every one who witnessed it waited with anxiety for the result. Five or six days passed away without any appearance of matter; but about this period the abscess began to point, shortly afterwards there was a large gush of matter through the wound, and the patient recovered perfectly in three weeks. Since that time the operation has been performed on two patients with success and safety. In the case of one patient it was performed twice at no very considerable interval.

Now, I believe you are all aware that in cases of deep-seated collections of pus, it is of the greatest importance to remove the obstruction to its exit externally, and that matter will always point towards the place

where there is the least resistance. The performance of this operation not only tends to remove the resistance, but also has this advantage, that the existence of irritation in the neighbourhood of the abscess, and immediately over the peritoneum, has a strong tendency to produce adhesion at this point; a circumstance which I was able to verify in a fatal case, in which the abscess had pointed, but never burst. In this case we found on dissection six or seven small tumours near the surface of the liver, without any traces of adhesive inflammation in the peritoneum over them, but over the situation of the tumour, in the direction of which the incision had been made, there was a considerable quantity of organised lymph, and the two layers of the peritoneum were closely adherent. That this effusion of lymph had not been accidental, is rendered probable by the rarity of its occurrence, from not being observed in other cases in which an operation had not been performed, and lastly, from the success of the operation in those cases in which it had been employed. I would advise you, therefore, in all cases of hepatic abscess showing a tendency to point, but particularly if this pointing be distinctly towards the surface, to make an incision down to the peritoneum, fill up the wound with lint, and you will often succeed in causing the abscess to break externally, and without any danger to your patient.

With respect to the bursting of an hepatic abscess into the cavity of the peritoneum, I have stated before to you, that it is almost necessarily fatal. I say almost, because I have seen two cases of this termination, of which one recovered completely from the peritonitis, and the other lived eight or nine days after the discharge of matter into the peritoneum, and on dissection it was found that a process of cure had been going on. The first of these cases was that of a young woman who had a vast chronic abscess. An attempt was made to make this opening externally, by destroying the soft parts over it with caustic, but this not succeeding, a lancet was introduced through the eschar made by the caustic. The patient was immediately afterwards attacked with severe pain in the abdomen, and distinct symptoms of peritonitis. As she was very weak and emaciated, Dr. Graves, under whose care she was, gave her opium in full and repeated doses, allowing her the free use of wine and porter; no blood was drawn, no depleting measures of any kind used, but everything done to support strength and relieve irritation. Under these circumstances (wonderful to relate) she recovered from the peritonitis. She afterwards sank from the abscess, and on dissection we found that the peritoneal cavity was obliterated, just as the serous investment of the testicle has its opposed surfaces glued together after an operation for the radical cure of hydrocele. In the other case, the patient lived eight or nine days after the occurrence of symptoms of peritoneal inflammation. On dissection, we found a large quantity of transparent lymph effused on the surface of the peritoneum, in the substance of which several large bloodvessels had been developed.

The principle of treatment in a case of this dreadful accident is to support strength and remove irritation, laying aside all antiphlogistics. I am sure that, under such circumstances, the ordinary modes of treating peritonitis are inapplicable and useless. As I shall return to this subject when I come to speak of peritonitis, I shall here merely state that the treatment of such a case as this is to be conducted upon the same principles as peritonitis, produced by rupture of the intestine, or a perforating ulcer.

Chronic Hepatitis.—Gentlemen, I shall occupy your minds briefly in treating of chronic hepatitis. You will find a full description of the symptoms of this disease in almost every book on the practice of medicine, and it is unnecessary for me to detain you with details of this kind. If we are to judge from British practice, chronic hepatitis is a very common disease, and, if we look to the practice, it is an affection under which half the community labour. I believe, indeed, that the chronic form of this disease is much more frequently observed in this country than the acute, but still I think it is anything but a disease of universal prevalence.

I shall not, as I said before, take up your time in stating what you will find in any medical work; I shall merely mention that in chronic hepatitis we have generally derangement of the bowels, chiefly affecting the stomach and upper part of the digestive tube, and in addition to this we have more or less pain, tenderness, and swelling in the region of the liver, and often dulness of sound over the lower part of the right side. When we meet with this train of phenomena, we say that the patient has the symptoms of chronic hepatitis. But no one under such circumstances could undertake to say whether the patient will die of hypertrophy or atrophy, of cancer or hydatids, of tubercles, or of fatty discharge, or of any peculiar disease of the liver. There is another point, too, of which I am anxious you should be aware. Chronic hepatitis is a disease which has been, and is, frequently confounded with various other affections;—with scirrhus of the pylorus, with chronic disease of the duodenum, with chronic disease of the pleura, and empyema of the right side. There is one circumstance which you should bear in mind when you are in doubt with respect to a chronic hepatitis, that one, two, or three of these affections may occur in connexion with chronic inflammation of the liver. For instance, a patient labouring under chronic hepatitis may have also at the same time empyema and disease of the duodenum. I believe the subject of disease produced, as it is said, by contiguity in separate organs, has not as yet been sufficiently investigated, and that our knowledge on this important point is extremely scanty.

There are two circumstances connected with this part of the subject on which I shall say a few words. One common error is that of confounding affections of the heart with those of the liver; and this I regret to say is an error of very serious consequence, and one which is frequently observed in the consultations of medical practitioners. A patient complains of palpitations, a physician is called in, and pronounces the disease to be hypertrophy of the heart; another is called in, and gives it as his opinion that the liver is affected; a third is summoned, and says that both the liver and heart are diseased. In such cases you should always make a careful examination, and weigh well the circumstances of the case in your mind before you venture to pronounce an opinion. In the first place, you are to recollect that organic disease of the heart may produce disease of the liver. Secondly, that disease of the liver (though not so often) frequently brings on morbid affections of the heart and nervous palpitations. Thirdly, that these affections act to one another reciprocally as cause and effect. If a person has disease of the heart, the current of the circulation through that organ is obstructed, and you may have disease of the liver, not as the result of any original affection of that organ, but as the effect of chronic obstruction to the passage of blood through the heart.

The consequent congestion and disease of the liver may, in such a case, be reflected on the digestive tube, and this in turn may react on the heart. The heart sympathises then with the irritation of the digestive tube; we have nervous palpitations, and if these continue for a length of time, we have the disease of the heart increased. Again, suppose a patient has chronic disease of the liver, causing more or less obstruction to the circulation; the heart begins to sympathise, palpitations commence, go on increasing, and finally terminate in hypertrophy of the heart. The mischief does not stop here: the effects of obstruction extend to the vena cava hepatica, this in turn reacts on the liver, and we have in this way a curious train of phenomena; first liver disease, then heart disease, and lastly, liver disease again. Let me once more impress upon you that, under such circumstances, you cannot be too diligent in making an examination, or too cautious in pronouncing an opinion.

There is another thing connected with hepatic disease which you should be aware. A patient labouring under the following train of symptoms, comes to consult you:—he has pain in the right hypochondrium, loss of appetite, deranged bowels, morbid stools, a dirty, bilious hue of countenance, and, in fact, all the symptoms of diseased liver. You examine the liver and find it very much tumefied; in fact, its size is so much increased that you would at once be inclined to say that it was extensively diseased. Now, there are some cases of great tumefaction of the liver accompanied with more or less of the symptoms of hepatic derangement, and yet in such cases you may have no disease of the liver at all, at least none of the ordinary forms of hepatitis: these are cases in which there exists, in adults, a persistence of the embryonary condition of the liver. If we compare the condition of this organ in the infant and in the adult, we find many essential points of difference. In the infant it is comparatively large, and, as it were, hypertrophied; it descends far below the margin of the ribs, and occupies a large portion of the abdominal cavity. On the other hand, if we examine its state in the adult, we find that it has shrunk beneath the short ribs, and that its size and dimensions are comparatively much reduced. Now, this physiological atrophy of the liver is a natural and healthy process. There are *certain individuals, however, in whom this change does not take place, and who grow up with the liver bearing the same proportion to the other organs as it did in the fœcal condition.* This curious condition is one of the varieties of arrest of development, and is, in almost every instance, observed in those persons whose constitutions present that train of phenomena to which the term scrofula has been applied, and which (if I have time) I shall show you is explained, or at least great light is thrown upon it, by the theory of arrest of development. *In such subjects the tumefaction of the liver is by no means a measure of actually existing disease.* If you were to suppose this tumefaction of the liver to be the product of actual recent disease, and proceed to treat the patient in the same way as you would treat a case of hepatitis in the healthy subject, you would not only do no good, but, in all probability, a great deal of mischief. I know the case of a gentleman, in the enjoyment of good health, who has this tumefaction of the liver to a very great degree. He is of a thin, spare habit of body, with a full, round, and prominent belly; he is pursuing the avocations of an active profession, and yet you will hardly credit me when I say that his liver extends below the umbilicus, and close to the anterior superior spine of

the ileum; yet he is very active, and to all appearance a healthy man. You will often meet with this condition of the liver in children who are attacked at an early age with symptoms of tabes mesenterica.

At the next lecture I hope I shall be able to finish diseases of the liver, and proceed to the consideration of other affections of the system.

LECTURE LVI.

DR. STOKES.

TREATMENT OF CHRONIC HEPATITIS—Neuralgia of the liver succeeding hepatitis—Connexion of hepatic with gastro-intestinal disease—Modes of transmission of disease from the mucous surface of the liver—Phlebitis of the vena porta—Obstruction of this vein—Case of pulmonary, hepatic, and intestinal fistulæ—Hepatic neuralgia.

WE now come to the consideration of the treatment of chronic hepatitis. It is of great importance, in a case of this kind, to place your patient under such circumstances as will insure the full and favourable action of the remedies employed. The use of wine, spirits, and all kinds of exciting food, must be laid aside; the patient must not use anything capable of producing fever during the process of digestion. So long as any kind of food or drink produces uneasiness and sensations of heat and fulness, you may be sure that it will do more harm than good. Give him what will support his strength without exciting the vascular or nervous systems during the process of digestion.

You must next prevail on your patient to give up the use of active purgatives by the mouth. This is a point which you should strongly and firmly insist upon, as in consequence of the ordinary costive state of the bowels which accompanies chronic inflammation of the liver, the patient is generally in the habit of having recourse to those temporary and hurtful remedies. It is the same thing in cases of chronic hepatitis as it is in chronic gastritis; you will find the subjects of these diseases taking different purgatives every day. Break your patient of this practice, if possible: you will have some difficulty in doing so, for he has been long habituated to it, and you must exercise all your authority in putting a stop to the pernicious habit. Instead of purgatives by the mouth, make him use every day an emollient injection. You may, if necessary, give occasionally mild laxatives by the mouth, as Rochelle salts, manna, castor oil, or something equally mild; and in this way you will be able to secure a regular alvine discharge, once in the twenty-four hours at least. But where there is considerable pain and tenderness in the region of the liver, this plan alone will not be sufficient; you must apply relays of leeches, a practice which has a most admirable effect in chronic hepatitis. I would advise you to apply cupping-glasses over the leech-bites; by doing this, you get as much blood as you wish, and you will generally save your patient from the annoyance of an oozing hemorrhage. When piles exist, it will be useful to apply leeches to the anus, followed by the hip-bath. But I have no hesitation in saying, that, as a general mode of relieving hepatic disease, the application of leeches to the right hypochondrium is far preferable in every point of view. You may, in the next place, have

recourse to blisters; and I have frequently employed blisters, alternately with leeches, with the best results. Tartar emetic ointment, in the form which I have already mentioned, croton oil frictions, and other modes of counter-irritation, will assist materially in bringing about a successful termination. But these must be continued long, and used over an extensive surface.

In this way, by regulating your patient's diet, keeping his bowels open by enemata, or the mildest laxatives, by small and repeated local bleeding, with counter-irritation, you will frequently succeed in removing all the symptoms of chronic hepatitis without the use of mercury. But if, after having carefully employed all these measures, the symptoms manifest a degree of persistence, if your patient has not already taken a large quantity of mercury (which is not likely to be the case in this country), and if he be not of a scrofulous habit, I see no reason why you should not have recourse to mild doses of mercury. For this purpose, nothing answers better than to prescribe, once or twice a-day, a pill composed of hydrarg. c. creta, blue pill, or a small quantity of calomel, combined with rhubarb, extract of hyosciamus, and taraxacum. It will be seldom necessary to bring on actual salivation; but if the pain continues to be severe, the swelling undiminished, the symptoms obstinate, and no contra-indication existing, you may bring him under the influence of mercury, and keep him so for a short time. The best mode of doing this is to direct him to rub in a drachm of the camphorated mercurial ointment every day; and if you have employed blisters, you can assist the frictions by dressing the blistered surface with mercurial ointment.

Some practitioners are in the habit of substituting the nitro-muriatic acid for the mercurial treatment; and there appears to be evidence that it is an advantageous mode of practice in these cases. The best mode of using this remedy seems to be the endermic; and hence, bathing the feet, or sponging the right hypochondrium with the acid, are most recommended in chronic affections of the liver. As it is convenient to have a formula for making the nitro-muriatic solution, I shall give you the following:— Take of strong nitric and muriatic acids of each four ounces, and add to these eight ounces of pure water. Here you have a sixteen-ounce mixture; of this combination you may take from two to five ounces, and mix them with three gallons of warm water. This, I believe, is the form recommended by Mr. Annesly. Having placed this solution in a foot-bath or tub, you should direct your patient to keep his feet in it for twenty minutes or half an hour. If the bath be of proper strength, it will communicate to the skin a prickling sensation; if not, you may increase its strength by adding an ounce or two more of your mixture. The same solution will answer for sponging over the liver.

There is no doubt that, in certain cases of chronic hepatitis, this remedy has been found decidedly useful, and as its employment is unattended with any dangerous or disagreeable consequences, it has strong claims to our notice. The cases of chronic hepatitis to which it seems to be peculiarly adapted, are, first, those where mercury has been used irregularly, or for a long time without any benefit; and, secondly, where the patient is of a broken-down constitution, and where you are anxious to dispense with the use of mercury, if possible. Here the nitro-muriatic treatment is of decided value. I need scarcely remark to you, that this acid frequently acts upon the system somewhat like mercury, producing tenderness of the

gums and ptyalism. Such an effect as this furnishes us with an example of these cases, in which we find other remedies, as well as mercury, producing a decided effect on the salivary glands, and exercising a very powerful influence over hepatic and syphilitic affections. An interesting fact, bearing on this point, is related by Mr. Cox, in his account of his residence on the Columbia river. Several of his party, who used a strong decoction of the fresh sarsaparilla, were salivated.

There is one circumstance connected with the treatment of chronic hepatitis, which I believe has not been sufficiently dwelt on. You may have a case in which there was distinct evidence of chronic inflammation, and where, under the influence of judicious treatment, the signs of inflammation and organic derangements subsided, but where severe pain still continues to be felt in the region of the liver. The nature of this pain is often mistaken; *it is supposed to depend upon a continuance of inflammation, while it is, in reality, nothing more than a mere neuralgic affection — a remnant or successor of the former disease, to which the antiphlogistic treatment is totally inapplicable.* Under such circumstances, the patient goes from one practitioner to another, taking different medicines, and submitting to repetitions of the usual modes of treatment, but with little or no benefit. Now, I have seen, in several cases, this symptom yield completely to treatment calculated to remove purely neuralgic affections. In a case lately under my care, of a gentleman who had been attacked with enteritis and hepatitis in India, and who had taken enormous doses of calomel "for the liver," and of croton oil "for the bowels," this circumstance occurred. When first I saw him, he was emaciated, the skin yellow, the urine high-coloured, with thirst, costive bowels, and great tumefaction in the region of the liver. These symptoms completely subsided under treatment, but a violent pain, running at intervals, continued obstinate. This was rapidly removed by a course of the carbonate of iron, and the use of the belladonna plaster. [See concluding part of this lecture.]

It is of great importance, in the treatment of chronic hepatitis, to bear in mind the state of the gastro-intestinal mucous membrane. You are aware that the disciples of Broussais are of opinion that almost all cases of hepatic inflammation are secondary to a gastro-enteritis; that the first morbid action is on the surface of the intestinal tube, and that it is transmitted from this to the liver. I have taken a considerable share of pains in investigating this subject, and have examined very carefully the question as to the complication of hepatic inflammation with disease of the gastro-intestinal surface, and the conclusions to which I have come, are the following:— In the first place, that most cases, whether of acute or chronic inflammation of the liver, present the complication, more or less, with disease of the intestinal mucous surface, and that in the majority of instances there is some degree of actual disease of the digestive tube. It would appear, also, from observation of different cases of hepatitis, that in a great many the affection of the liver has been secondary, and that symptoms of disease of the digestive tube have preceded those of hepatic irritation. But, on the other hand, we must admit that the hepatic affection may be primary; that the liver has the initiative, and that disease has been subsequently propagated to the gastro-intestinal mucous surface. Lastly, we may have hepatitis, both acute and chronic, quite independent of any disease of the mucous coat of the stomach and bowels. This, I believe, is the rarest case; still it does occur. You observe, therefore,

that the doctrine of the physiological school, that all hepatic inflammations are secondary to a gastro-enteritis, is not supported by the authority of facts. It is therefore wrong to say, that every case of acute or chronic hepatitis is preceded by gastro-intestinal inflammation. Facts have been brought forward to show that not only has inflammation of the liver been observed in the simple state, and independent of any complication with intestinal disease, but that the affection of the liver has distinctly preceded the symptom of gastro-enteric disease. On the other hand, however, I am free to admit that these are the exceptions rather than the rule, and that, in the majority of cases, hepatitis is either secondary or complicated with disease of the gastro-intestinal surface.

Now, a very interesting question comes to be considered, and this is, how does the disease come from the gastro-intestinal surface to the liver? Pathology informs us that irritation may be transmitted from one organ to another in three different modes. First, sympathetically, as through the medium of the nerves. Thus, long-continued stimulation of the stomach is reflected upon the liver, the liver sympathises with the suffering organ in its vicinity, and finally becomes diseased itself. It is in this way that many chronic affections of the liver and stomach terminate in affections of the neighbouring viscera and dropsy. The first mode, then, in which disease may come to affect the liver from the gastro-intestinal surface, is by sympathetic irritation. The next mode is supposed to be the actual transmission of disease along the biliary duct from the duodenum to the liver. Inflammation commences in the duodenum; this creeps along the ducts until it reaches the liver, which takes on the inflammatory action in its turn. Several persons of high authority have supported this view of the question, and assert that they can actually demonstrate the passage of inflammation along the ducts. Without denying the possibility of this, yet I feel convinced that it is rare. I have never been able to discover this mode of propagation of inflammation from the duodenum to the liver; and it must be remembered that, in the great majority of cases of duodenitis, we cannot detect inflammation in the liver or its appendages.

Phlebitis of the Portal Veins.—The last mode by which disease may be transmitted, is the propagation of inflammation along the course of the veins belonging to the portal system, that is to say, there is phlebitis of the portal system, and the inflammation travels along the veins until it arrives and attacks the liver. That this has occurred, is proved. But we may suppose that, in certain cases, disease of the liver may result from a phlebitis of the minute mesenteric veins, without a continuous spread of inflammation to the larger trunks; just as the lung is affected in cases of phlebitis of the extremities, not by actual spread of inflammation, but rather, as Mr. Arnott has shown, by the transmission of the products of that inflammation.

Inflammation of the portal veins is a circumstance which possesses great interest in a pathological and practical point of view; it is a curious process, and there are some singularities connected with it which have a claim on our attention. In the *Clinique Médicale* of Andral, there is a case given of a patient who, after labouring for some time under symptoms of fever and gastro-enteritis, was attacked with pain and tension in the region of the liver, followed by jaundice. On dissection, marks of inflammation were found in the stomach and ileum; there was also some disease in the colon, and the liver was found to be enlarged, and pre-

senting the ordinary marks of inflammatory action. On a more minute examination, nearly all the mesenteric veins, and the trunk of the porta, were discovered to be in a state of intense inflammation; while, on the other hand, the lining membrane of the vena cava was found to be in its normal and healthy condition. Here we have a very remarkable coincidence between disease of the liver and of the portal system. First, the patient had fever, with gastro-enteric inflammation, and then pain and tension in the region of the liver, followed by jaundice. On dissection, the mesenteric veins and the trunk of the porta are found inflamed; this condition extends to the liver, the substance of which is found tumefied, red, and friable. I believe there can be no doubt that disease of the liver may be brought on by disease of the abdominal veins, particularly those of the portal system. It is a very curious fact, that with symptoms such as many practitioners would not hesitate to call chronic hepatitis, we may have phlebitis, terminating in obliteration of the porta, and even of the vena cava. In such cases, nature generally makes an effort to keep up the venous circulation; in consequence of the obliteration of the internal abdominal veins, the external ones become enlarged, and produce a supplementary circulation to a certain extent, and in this way life is prolonged. This drawing, which represents the appearance of a patient labouring under this form of disease, will give you some idea of the matter. You observe the patient's belly is enlarged and prominent, his extremities œdematous; and here you see those enormous veins passing along the surface of the belly, and keeping up a collateral venous circulation. In the patient, from whom this drawing was taken, the porta and cava were obliterated. These are the epigastric and other superficial abdominal veins which ascend to anastomose with the thoracic, intercostal, and axillary veins.

I shall now relate, as briefly as possible, the particulars of this very remarkable case. The patient, who was the subject of it, laboured for more than twelve months under jaundice, accompanied by wasting of flesh, and prostration of strength, but for the first eight months he had not been confined to bed. He suffered, however, very considerably, even at this period, from constant pain in the epigastrium, and swelling of his feet. Now, in this country, we would be very apt, under such circumstances, to say that he was labouring under chronic hepatitis. At the end of the eight months he became bedridden, and the large veins, which you here see, began to make their appearance. Although he was wasting in flesh, still he had a canine appetite, and was always complaining that he had not enough to eat. This is an interesting fact. It has been observed in other cases, and tends to throw some light on the share the mesenteric and other abdominal veins have in the process of absorption. In *tabes mesenterica* it has been often remarked, that the little patients have generally enormous appetites; and, as it would appear from the same cause, a deficiency of nutritious absorption, with this difference merely, that in the disease before us it is the veins that are diseased, whereas in *tabes mesenterica* it is supposed to be the lymphatics. But to return to our case. This patient had, as I remarked, a very voracious appetite, by indulging which, he brought on repeated attacks of constipation and colic. He then got diarrhœa and dropsy, for which he was tapped twice without any benefit. From observing that there was in this case an extraordinary supplemental circulation, leading to the inference that there was obstruc-

tion of the deep-seated veins; from remembering that the appearance of the patient, and the more prominent symptoms, coincided with those of a former case, in which obliteration of the porta had been discovered after death; from these circumstances, and the remarkable voracious appetite, M. Reynaud, under whose care the patient was, came to the diagnosis of phlebitis of the portal system, extending to and affecting the liver; and this diagnosis was subsequently confirmed by dissection. He was, however, unable before death to explain one symptom which was present, namely, infiltration of the lower extremities. You are aware, that when the general venous circulation is obstructed either in the chest or belly, we have anasarca of the lower extremities, but when the obstruction affects only the portal system, then we have ascites as the first phenomena. If you had two cases of dropsical effusion, in one of which there was, *first*, œdema of the lower extremities, in the other, *first*, ascites, you could thus determine where the primary obstruction existed. M. Reynaud was at a loss to account for this symptom in the present case, as he had not observed it before in the other case, and as the swelling of the feet had preceded that of the belly. On dissection, it was found that the right branch of the porta had been obliterated by the growth of a yellow substance, somewhat like the middle coat of arteries; the same was found to exist in the corresponding hepatic veins, and the inferior cava was found obliterated to the distance of three inches from the left auricle. The left branch of the porta was pervious, the corresponding hepatic veins much enlarged, and the superficial epigastric veins inosculated freely with the intercostal and axillary veins.

The vena azygos was very much dilated; and, what is extremely curious, a large vein was seen to arise from the union of the sub-peritoneal branches on the convex surface of the liver; this passed through the diaphragm, and emptied itself into the cava close to its termination. Here we have an entirely new vein. It was also observed, that the sub-diaphragmatic veins were much increased in size, and apparently varicose; these passed through the diaphragm, and inosculated with the pericardial and superficial thoracic veins. Some of them ran up and opened into the great coronary vein of the heart, which was as large as the crural vein. The remaining peculiarities of this curious case were inflammation of the duodenum and gall-bladder. The cavity of the latter was half-filled with purulent fluid.

I am fully convinced that I have seen instances of this disease, although I was not so fortunate as to have an opportunity of verifying the diagnosis by dissection. I have seen patients who had wasting of flesh, pain and tension in the region of the liver, and jaundice, with this singularly varicose state of the external abdominal veins; some of them had ascites; and I recollect distinctly that in one case the appetite was very great, and the patient had a tendency to diarrhœa. I am satisfied that in such cases you would be fully justified in making the diagnosis of obstruction of the portal system; and if, in addition, there was infiltration of the lower extremities, there would be a probability that the disease had extended to the cava itself.*

---

* [Inflammation of the veins of the liver, as Dr. Budd justly remarks, may be *suppurative*, that is, may lead to the formation of pus; or it may be *adhesive*, and lead only to the effusion of coagulable lymph, which blocks up and obliterates the vein.

Before I proceed to the consideration of a subject to which I have already alluded—hepatic neuralgia—it may not be amiss to exhibit some specimens of organic lesions of the liver. Here is an example of abscess of the liver:—you perceive the softened yellow degeneration of the substance of the organ; and here is the cavity of the abscess, in which you may observe a loose slough suspended. This portion which surrounds the abscess may be looked upon as a fair specimen of the yellow softening of the liver, before its substance breaks down into a purulent mass. Here is another specimen exhibiting the same phenomena. Here is a very curious example of hepatic abscess, which perforated the diaphragm, and made its way into the substance of the lung. I regret that the whole of this preparation has not been preserved. The rest of the preparations before me illustrate chronic disease of the liver. Here is an example of the disease which has been called cancer of the liver. Time will not permit me to enter into a detail of the pathological circumstances of this case. The patient was a female, who had cancer of the breast, scirrhus of the pylorus, and aneurism of the aorta, with this disease disseminated through the substance of the liver. Here is another preparation of what would be called by many persons pure cancer; the patient, a female, had cancer of the mamma. This, and the preparation on the other side, exhibiting a mass of white, firm, semi-cartilaginous substance, are examples of what has been called tubercle of the liver. Here is an example of the disease which has been termed whiskey liver, a disease which is said to be ordinarily found in persons who indulge in the use of ardent spirits. This, however, is a term which has been often abused and misapplied; for persons indulging in the use of whiskey may have every form of disease of the liver, and the appearance before you may be detected in the livers of persons of the most temperate habits. On the label of this preparation is written—"A Specimen of Whiskey Liver," but this you will not mind. There is a very remarkable fact, however, respecting this kind of liver,

---

Inflammation of the trunk of the vena portæ is of rare occurrence. Dr. Budd describes two cases of this disease. Two are detailed in Schœnlein's Clinical Lectures. Among the symptoms which are not as yet clearly defined may be mentioned a heavy oppressive pain about midway between the point of the ensiform cartilage and the umbilicus, and often, it may be, extending backwards in the direction of the spine: it is always increased by firm pressure. To this we may add the usual signs of the absence of the biliary secretion. Occasionally blood is vomited or passed with the stools. Dr. Schœnlein is of opinion that the disease of Melœna is not unfrequently connected with the phlogosis under consideration. Organic change of the liver is not observed to accompany portal phlebitis even when this latter is acute.

Inflammation of a branch of the portal vein may be caused by an abscess of the liver consequent on phlebitis of some distant part. Mere adhesive inflammation of the branches of this vein does not prove fatal, like suppurative inflammation; and on this account, says Dr. Budd, and from the difficulty of distinguishing the different inflammatory diseases of the liver during life, we cannot yet give its clinical history. Obliteration of branches of the portal vein causes atrophy of those parts of the liver which the obstructed branches supplied, and consequent diminution of the size of the organ.—B.]

verified by Professor Carswell, namely, that this condition of the liver is always accompanied with more or less ascites. I may add, that I have never met with this disease without ascites.*

[To the variety of adhesive inflammation of the substance of the liver referred to in the text, as "whiskey liver," and marked by greater paleness than natural of the organ, increased quantity of adventitious fibrous tissue, often contraction of the lobular substance into round nodules of a deep yellow colour, from the accumulation of biliary matter, the term *cirrhosis* has been applied by the French pathologists. It is sometimes called *hob-nailed* liver, and *granular degeneration* of the liver. The changes of the organ, at this time, seem to be the consequence of adhesive inflammation in the areolar tissue about the small twigs of the portal vein, by which serum and coagulable lymph are poured out.

Although at first somewhat enlarged, yet in the course of the disease, the cirrhosed liver becomes smaller than natural. Ascites is one of the consequences of this disease; and the entire surface of the peritoneum, investing the liver and intestines, has been found, in some cases, covered by a dense false membrane.

Fatty Liver or *fatty degeneration of the liver*, is a morbid condition of the organ depending on the interstitial deposit of uncombined fatty matter in its substance. The fat exists in the firm oil-globules in the hepatic cells. Sometimes nearly half of the liver in weight consists of uncombined oil. With increase of size the organ is, also, somewhat altered in shape; it being thicker than natural, and having its edges blunted or more rounded. The capsule of the liver is stretched and smooth, and when divided its edges recede. The tissue is pale and generally throughout of a soft buff colour, dotted with brown or red. The brown or red dots mark the centres of the lobules, which are usually large and distinct, and are buff-coloured near their margins. The liver is very soft, and greases the handle of the scalpel, like common fat.

It is easier to indicate the circumstances in which fatty liver is met with than to tell its precise cause. Thus, it occurs in indolent persons who are gross feeders and use malt liquors largely; but it is, also, most common in those labouring under phthisis. There does not seem to be a faulty secretion of bile at this time, but rather a withdrawal by the liver of the fatty matter from the blood into which it had been brought from different parts of the body by the absorbent veins.

Waxy liver seems to be a modification of the fatty one, and like the latter is most frequently met with in women affected with phthisis.

A knowledge of the frequency of fatty liver in phthisis and of its frequent enlargement at this time, in connexion with a careful examination of the state of the lungs, will prevent the error of mistaking phthisis for liver disease, or of believing that the latter is the cause of consumption.

Scrofulous enlargement of the liver, though analogous to fatty liver, differs from the latter in the matter deposited in the organ. Rokitansky calls it *lardaceous* liver. He describes its anatomical characters to be, considerable increase of volume, with striking development in breadth and accompanying flattening; very considerable gain in weight; a smooth, tight-stretched peritoneal coat; a doughy consistence, combined with a certain degree of resistance and elasticity; anemia; watery, pale-red appearance of the portal blood; greyish-white or greyish-red (mingled

I remember a most remarkable case of disease of the liver, which occurred during my stay in Edinburgh. My lamented friend and instructor,

---

with yellow or brown) colour of the organ; smooth, homogeneous, lardaceous-looking section; scarce any fat on the knife-blade. The morbid appearances, he adds, depend on infiltration of the liver, with a compact, greyish, often transparent, albuminous, lardaceous, or lardaceous-gelatinous substance.

Scrofulous enlargement of the liver, like the enlargement from deposit of fat, comes on without pain of the liver or even tenderness; but the passage of blood is much more impeded than with fatty liver. Œdema and ascites are not of unfrequent occurrence in this disease.

Dr. Graves mentions an enlargement of the liver, allied to the scrofulous enlargement which sometimes occurs on persons whose health has been broken from the combined effects of mercury and syphilis. By Rokitansky it is stated, that enlargement of the liver of this kind is sometimes produced by protracted fits of ague.

Cancer of the liver is more frequent, Dr. Budd assures us, than cancer of any other organ. In some instances the foreign growth affects the liver alone, but far oftener the formation of cancerous tumours in the latter is consequent on cancer of some other part, especially the stomach and the breast.

One effect of the pressure of cancerous tumours on the texture of the liver is partial biliary congestion. These morbid growths, when they originate near the surface of the liver, project above it so as to render it knotty or uneven. When containing numerous masses of cancer, the liver is generally much enlarged, extending far below the false ribs, and sometimes even to the brim of the pelvis. Every variety of cancer, viz., the encephaloid, fungus hematodes, and melanotic, except the gelatiniform or calloid cancer, has been met with in this organ.

Adhesive inflammation of the peritoneum, but limited in extent, is the variety excited by cancer.

The diagnostic symptoms of cancer of the liver are not easily ascertained. The enlargement, pain and tenderness of the organ do not belong exclusively to this form of disease, although we are allowed to lay some stress on the great and rapid increase of size, and often irregularity in the form of the prominent part, and the greater tenderness in some points than in others. The derangements in the digestive system, and particularly the stomach, are nearly similar to those that occur in gastritis, and above all in encephaloid growth of this organ. Nor can we receive as distinctive the appearance of jaundice, which is generally the result of compression of the gall-duct by the cancerous tumours.

The *treatment* of cancerous disease of the liver ought not to be otherwise than palliative; and the best remedies, with this view, especially in the more advanced stages of the disease, are the different preparations of opium and conium.

Of *encysted knotty tumours* of the liver, it will be sufficient at this time merely to mention their existence, and that their structure is of a firm, whitish, fibrous character, of a cheese-like appearance.

Hydatid tumours, like cancerous ones, are more common in the liver than in any other organ. They consist, says Dr. Budd (from whose work I have mainly derived these short notices of organic changes and morbid growth of the liver), of a sac of a peculiar character, which is closely lined

the late Dr. William Cullen, whose loss to pathological medicine was irreparable, and whose splendid attainments and high character justly and rapidly raised him to an elevated rank in his profession, brought me to see a patient. One of the most curious circumstances connected with this case was, that when the patient sat up in bed, a fluid of a serous character was poured out in considerable quantity from the anus; but while he remained in the horizontal posture this did not occur. The patient died shortly afterwards; and, on dissection, it was found that he had a gangrenous abscess of the right lung, communicating with the pleural cavity, which contained a quantity of sero-purulent fluid, and a mass of hydatids, some broken down, others perfect and entire. On continuing the dissection, it was found that the cavity of the pleura communicated with the right lobe of the liver through the diaphragm. In the right lobe of the liver the same kind of sero-purulent fluid, and a quantity of hydatids, were discovered; and, what was still more extraordinary, the cavity of the liver was found to communicate with the colon of a distinct opening. There was, then, in this very remarkable case, a direct communication between the bronchial tubes and the colon, through the pleura and liver. We can thus see that, when the patient assumed the erect position, the fluid would immediately pour into the colon.

Hepatic Neuralgia.—As I am anxious to finish the subject of hepatic disease to-day, I shall now draw your attention to one of the last points connected with this subject, namely—neuralgia of the liver. It is a singular fact, that a patient may labour under severe and harassing pain in the region of the liver; that this pain may last for months and years; that he may die of some other affection; and that, on examination, after death, we may find the liver without the slightest trace of disorganization; and, also, that the organs in its vicinity present no appearance of any organic disease. Many cases of this kind have been observed; and it is the opinion of the best pathologists that they are examples of neuralgia, the seat of pain being the hepatic plexus. It is a disease of no very unusual occurrence, and is often found in females of a nervous and hysteric habit. It is constantly mistaken for hepatitis, and there is no greater mistake than this, or one which is likely to entail more misery on the patient. The persons who are subject to this affection are, as I remarked before, generally of a nervous and hysteric habit; they complain of pain in the right side, of more or less constant occurrence; and this pain, during its exacerbations, is often most excruciating. Now, this circumstance furnishes us with a sort of key to diagnosis; for with this dreadful pain, and, in some cases, exquisite tenderness in the region of the liver, we have the skin cool, the pulse tranquil, no fever, no permanent derangement of the bowels, no tumefaction of the liver. If this were the pain of acute inflammatory disease, a fatal result would be produced; or if it belonged to a chronic affection, it would terminate in organic derangement; and yet we find it existing with a clear colour of the skin and eye, healthy feces, calm pulse, and absence of swelling in the region of the liver. Add to this, that the disease may have lasted for a considerable time, and that it occurs in a person of hysteric and nervous habit. Moreover, if the patient has been treated for hepatitis unsuccessfully, you may make up your mind to the diagnosis of hepatic neuralgia. Here is the

---

by a thin membranous bladder or cyst, and filled with a fluid which is usually colourless and limpid as the purest water.—B.]

diagnosis: pain in the region of the liver, with occasional violent exacerbations, and accompanied by tenderness of the integuments, but without swelling, symptoms of fever, or abdominal derangement; the disease being of long standing in a person of nervous habit, and having resisted bleeding, mercury, and even counter-irritation, or being made worse by those measures.

Now, it is no uncommon thing to see this disease mistaken for acute hepatitis; and I need not tell you how ruinous to the patient's health such an error must be. When you are in practice, you will meet instances of females labouring under this affection, who have gone through a variety of treatment. When you recollect that the disease occurs generally in hysteric females, and that such persons are injured by depletion, you can conceive how much mischief may be done by repeated bleedings and courses of mercury. Some of the most deplorable cases I have witnessed, were those in which neuralgia of the liver had been mistaken for hepatic inflammation, by a number of practitioners, and the patient subjected to such modes of treatment as gave her constitution a shock from which it never recovered.*

The treatment of this disease must be both general and local, but by no means what you would call antiphlogistic. You will have some difficulty in preventing the patient from getting herself blooded; for though the lancet is inadmissible, yet its employment gives a temporary relief, and this encourages the patient to have recourse to it again. What I would advise you to do in this disease is, first to pay attention to the general condition of the patient. You must pursue a general anti-hysterical plan of treatment, remove every source of irritation and excitement, and take measures to improve the general health by exercise, regimen, moral improvement, and the judicious employment of tonic medicines. With respect to the pain, one of the most powerful means of arresting and removing it appears to be the use of the carbonate of iron in full doses; and this is an interesting circumstance, when we recollect the power which it possesses in removing pain in other nervous diseases. I would

* [The pain being limited to one side, and its being increased by pressure, may strengthen the suspicion of the liver being the organ affected; but we shall generally discover, with a little care, that the tenderness is more muscular and cutaneous than hepatic—the patient often shrinking from the first application of the physician's hand to the side. We can, also, commonly trace the pain and tenderness from one or two of the vertebræ over the muscles on to the hypochondriac region, but *more above the margin of the ribs and external to them than below and inwardly.* The practice which I find most useful in this variety of simulated hepatitis, or hepatalgia, is, to apply about twenty or thirty leeches near the sensitive vertebræ, and afterwards to produce counter-irritation with a small blister, or the tartar emetic ointment or croton oil; to act on the bowels by the blue mass and aloes, and then to administer from three to five grains of sulphate of quinia daily for a week or a fortnight, as the symptoms, and the occurrence of damp and rainy weather, may seem to require. Afterwards, if the neuralgic symptoms return, the carbonate of iron should be given, as directed in the text, combined with extract of hyosciamus. Occasionally benefit is procured by the use of colchicum and alkalies with vegetable bitters.—B.]

advise you to try this after having premised the use of purgatives, and continue it for some time, for you will often find that it will not only cure the pain, but also improve your patient's strength and appetite. While you are giving it, order your patient to take some mild purgative, as compound rhubarb pill, to prevent constipation. When you are about to prescribe a course of carbonate of iron, you should prepare your patient to find the stools coloured. I have known this circumstance taken hold of and turned to their own advantage by quacks. The patient is told that his complaints arise from the existence of morbid and dark-coloured matters in his bowels. Preparations of iron are given, and the black matter begins to come away, greatly to the credit of the empiric. After a time the medicine is omitted, and some purgative substituted; the stools become natural, and the trick is complete. During the paroxysms of pain, a mustard plaster, or anodyne stupes, and anodyne enemata, will give relief; and, in the intervals, I would advise you to use the belladonna plaster, after the following formula:—Take of extract of belladonna three parts, of gum ammoniac and soap plaster each one part; spread these on a piece of leather with an adhesive margin, and make the patient wear it over the region of the liver. If there be any tenderness over the lower dorsal vertebræ, you may apply a few leeches, followed by narcotic stupes, or counter-irritation.

I have seen this hepatic neuralgia without any hysteric complication. I remember the case of a lady who had three or four healthy children, and had never been subject to hysteria. This lady came up to Dublin to be treated for liver disease — in fact, to be salivated; but happening to fall into the hands of a judicious friend of mine, who recognised the true nature of her complaint, she was treated with carbonate of iron, and cured effectually. I knew another case of a young gentleman, in whom (after being treated for symptoms of chronic hepatitis) this pain continued for a considerable time, and was at length removed by carbonate of iron, and the use of the belladonna plaster.

LECTURE LVII.

DR. BELL.

DISEASES OF THE PANCREAS AND SPLEEN.

PANCREAS—Its pathological states not well appreciated—Symptoms of inflammation of the pancreas—Few positively diagnostic ones—*Post-mortem* appearances of the organ—Its morbid secretions—Connexion of these with pyrosis—*Diagnosis*—*Treatment*—Moderately depleting remedies, with opiates and narcotics, and counter-irritants.—DISEASES OF THE SPLEEN—Connexion between the spleen and the liver, and stomach, and bowels—Community of affection with these organs in paludal fevers—Organic lesions of the spleen and their sympathetic disturbances—Exploration of the spleen—Its situation and size.—SPLENITIS—Obscurity of its symptoms—Enlargement—Characters of the tumour—Structural changes.—*Chronic Splenitis*—Symptoms equivocal—Terminations of inflamed spleen—suppuration—softening—congestion—Sympathetic disorders from splenitis.

THE size, vascular supply, and secretory function of the pancreas, and the part which its fluid performs in the assimilation of food, entitle this gland

to the notice of the physiologist; and, reasoning from all the analogies of other organs, they would lead us to suppose that its pathological changes must be of some importance, certainly not unattended by various sympathetic disturbances. As yet, however, little can be said in the way of accurate diagnosis of the diseases of the pancreas, and, of a consequence, of their treatment.

The symptoms which, according to M. Mondiere and a few other writers who have made the subject their special study, characterize inflammation of the pancreas, are, diarrhœa, the discharges in which, at first bilious and watery, soon resemble saliva; epigastric pain, at first obtuse, afterwards pungent, and accompanied by cough and dyspnœa. The pain is fixed and deep-seated, increased by fulness of the stomach and strong inspiration, and by pressure on the stomach, particularly the pyloric region; sometimes it prevents the patient from sleeping on the back or on the left side. A febrile state of more or less distinctness accompanies these symptoms. There is, often, also present at the same time, with thirst, a sense of heat in the throat, pyrosis, and gastralgia, nausea, and occasionally vomiting of ropy and saline fluids. Constipation alternates with diarrhœa at first, and subsequently predominates. Sometimes, when the pain in the epigastrium is very acute, there is an enlargement of the pancreas; and on pressure a circumscribed and nearly circular tumour may be felt; distinguishable from scirrhus of the organ by its yielding under continued pressure.

In some few cases, carefully recorded, and the precise nature of which was well ascertained by *post-mortem* examination, the leading, if not pathognomonic, symptoms were salivation, vomiting, and diarrhœa, and afterwards constipation, and tumefaction in the epigastric region, with sometimes jaundice and emaciation. Dr. Pemberton expresses his belief, that deep-seated pain in the stomach, of varying intensity, with sickness and emaciation, are symptoms of diseased pancreas, which are never wanting. Dr. Abercrombie finds recorded twenty-seven cases of chronic disease of the pancreas; six of which were fatal, after gradual wasting and obscure dyspeptic complaints, without any urgent symptom. Frequent vomiting and more or less pain in the epigastric region accompanied the disease in eight other cases: and in thirteen death was preceded by long-continued pain without vomiting. In some of these the pain extended to the back; and in others it was much increased by taking food. In several, there were dropsical symptoms: and in three or four there was jaundice, from the tumour compressing the biliary ducts. In the morbid appearances, also, there was very great variety: the pancreas being in some of the cases much enlarged, in others in a state of scirrhous hardness, with very little enlargement. It does not appear, continues Dr. Abercrombie, that any distinct relation can be traced betwixt the urgency of the symptoms and the degree of enlargement; for this existed in a great degree in some of the cases in which the symptoms were slight and obscure; and there was hardness with little or no enlargement in others, in which the symptoms were defined and violent (*Pathological and Practical Researches on Diseases of the Stomach*, &c., &c.).

In subjects examined after death, who had suffered from inflamed pancreas, the gland exhibited some one or more of the following appearances: redness, enlargement, hypertrophy, induration, softening, more vascularity than natural; and, when cut into, drops of blood oozed out

from its substance. I shall not occupy your time by a detail of the organic alterations following inflammation, such as suppuration and gangrene, or those other slower changes of cartilaginous, fatty, steatomatous, and scirrho-cancerous transformations,—any more than cysts, hydatids, and melanosis.

The morbid secretions of the pancreas constitute a more interesting topic of investigation. To its excess in this way, Portal was inclined to attribute most diarrhœas; and Wedeking the cœliac flux; while Dupuytren thought that the pancreas might supply the fluid discharges in cholera. Inordinate serous discharges occurring in a very short time, as recorded by some authors, are referable, M. Andral thinks, to this cause. Passing over the facts related of the cure of dropsy following excessive salivation, without any irritation or inflammatory action of the salivary glands, we find, as more to the point, a description of others in which this disease (one of anasarca and another of ascites) was entirely removed by abundant and repeated vomiting of clear watery fluid, unctuous to the touch, and of a saline and disagreeable taste. The vomiting was commonly preceded by uneasiness and a feeling of fulness and swelling at the epigastrium. There are some plausible evidences in favour of our regarding pyrosis as depending on diseased function of the pancreas, the secretion of which at the time is increased, and also morbidly changed. M. Guersent believes that, in all cases in which the teeth are destroyed by corrosion, there is a perverted secretion of the salivary glands; and, by analogy, it is inferred that the pancreatic secretion may be modified in a similar manner, and give rise to those sensations of extreme acidity and burning of stomach and œsophagus experienced by some patients suffering under pyrosis. The symptoms of this disease would seem to point to the pancreas as its organic origin. Thus, we have eructations with the discharge of a limpid fluid, which some patients have themselves compared to saliva, but which is acrid and almost caustic; forward flexion of the body to allay the pain; retraction of the abdominal parietes inwards to the spinal column; constipation and salivation.

In attempting to specify the *causes* of pancreatic inflammation, we reason more from analogy than from positive observation; as, for example, what will interfere with the healthy function of the salivary glands and the liver; with the former of which the pancreas is classed, and with the latter by a common duct somewhat structurally connected.

The *diagnosis* of diseased pancreas is only to be reached by what our French friends term the way of exclusion; that is, by ascertaining that the complaints and pain of the patient are not referable to original disease of the stomach or concave surface of the liver or gall-bladder, or duodenum, or even of the kidneys. Absence of any of these, or of tumid hypochondrium, may induce a reasonable belief of the disease before us depending on some organic lesion of the pancreas.

The same remark applies to the *treatment* of disease of the pancreas. When we have reason to believe, after minute investigation and inquiry, that our diagnosis points to inflammation of this gland, we shall not hesitate to have recourse to antiphlogistic measures; among which venesection, cupping on the back, and leeches over the epigastrium, and mild purgatives, preceded occasionally by a dose of calomel, will have a preference. Various antacids, such as magnesia, lime-water, and the alkalies, have been occasionally used to palliate the painful symptoms referred to a morbid secretion of the pancreas, as in pyrosis; but unless with these

we associate opium or other narcotics, and preferably hyosciamus, belladonna, or stramonium, we shall acquire little control over the disease. The moderate use of the blue mass with one or other of these narcotics will be serviceable in chronic pancreatitis. In this stage of disease, counter-irritation might, I think, be advantageously established through the means of moxa, or a seton, or a small blister kept discharging on one side of the spine corresponding with the region of the pancreas. More benefit may be anticipated from such applications made to this region than to the epigastrium.

Dr. H. W. Carter (*Cyclop. Pract. Med.*) sensibly observes:—"The plan of old practitioners is not to be despised. When they met with cases in which pain of the stomach or of some neighbouring viscus was chiefly complained of, yet no good evidence existed of actual disease of any particular part, they gave an opiate draught at bed-time, and a common laxative in the morning."

Diseases of the Spleen.—In taking up the subject of diseases of the spleen at this time, I abandon the natural order which would require my treating, next, in succession, of the diseases of the secretory organs, or at any rate of those of the glandular ones. But it is extremely difficult to follow out any natural order under the guidance either of physiology or general anatomy. The latter would indicate the propriety of treating uninterruptedly of an organic system or tissue in whatever region found; as the mucous, for example. To a certain extent I have done this in the case of the digestive mucous membranes; but even here it seemed proper, instead of passing to another division of the mucous membranes, as the respiratory, first to inquire into the morbid states of the glands, which contribute to the function of digestion, viz., the liver and pancreas; the salivary ones having been a subject of observation in connexion with the mucous membranes of the mouth.

For a while I shall now deviate from the line both of general anatomy and of physiology, and, in acknowledging the force of propinquity and some community of general though not of special function between the spleen and the stomach and liver, direct your attention to the diseases of this first-mentioned organ. The connexion between the liver and spleen is obvious, in the union of the splenic veins with the vena porta; and hence, whatever disturbing causes may prevent the free passage of the blood of the vena porta through the liver, must, to a certain extent, operate on the circulation in the spleen. This organ suffers also in those diseases in which the liver and stomach and bowels are so much and so often implicated, as in paludal fevers; and although we cannot tell its functions, we are pretty well assured that they are in close relation with those of the chylopoietic viscera proper; and hence the propriety of describing its diseases at the same time with those of the latter rather than under the head of disorders of the circulation, as M. Andral has done, in his *Pathologie Interne*.

A knowledge of the organic lesions of the spleen and of the sympathetic disturbances to which these give rise, is the extent to which our investigations lead us. Of functional disorders of the spleen we can say little, for we know very little of its proper or special functions. The organ has been extirpated in animals without their health seeming to be changed, after recovery from the operation. Hence it is the more important for us to have clear and precise ideas of the physical character, as far, at least,

as size is concerned, and of its physical relations; that is, its contiguity with other organs. Thanks to M. Piorry, this task is made easier by his work on *Diagnosis and Semeiology*, in which exploration of the spleen is treated in considerable detail. At present, I shall content myself with the well-digested summary of his directions and details on this point, in the *British and Foreign Medical Review*, vol. vi., pp. 140–1.

"The spleen can only be examined by the touch when it is so much enlarged as to extend beyond the edge of the ribs; so that, of 500 cases in which it was hypertrophied, in only one-fifth was M. P. able to detect its extension into the hypochondriac region. Neither is the absolute size of the organ to be ascertained by this means; for, in some subjects, it forms a considerable projection beyond the ribs when only slightly enlarged, in consequence of not rising high under the diaphragm in the normal state. In other cases, on the contrary, it hardly advances beyond the bounds of the chest when its diameter vertically is 6½ inches. In this uncertainty of the normal extent of the spleen, percussion offers itself as the only mode of examination that admits of accurate results; and M. P. somewhat exultingly points to his discoveries respecting the state of this organ in ague, as a touchstone of the superiority of percussion by the pleximeter over that by the fingers, which fails in giving such accurate results. As his discoveries on this point of pathology are quite original, we think the following sketch of his mode of proceeding to detect the state of the spleen will be acceptable to our readers.

"First, the extent of the left lung is traced downwards in a direct line from the axilla, till powerful percussion indicates, by a dull sound in place of the clear pulmonary resonance, the presence of the spleen deeply seated beneath the ribs; next, by the same means, is found the point where the spleen is in contact with the abdominal parietes; lastly, these two points being determined, and also the limits of the heart, lung, liver, and kidney, it becomes easy to circumscribe the extent of the spleen in the other directions, except backwards towards the spine: but the difficulty of tracing the organ in that direction may be considerably lessened if the distention of the stomach and colon by solid, fluid, or gaseous matter is removed previous to the examination.

"The healthy proportions of the spleen are as follows:—In its vertical diameter it is from 3½ inches to 3¾ inches, and, in the transverse, 3 inches. It is situated some inches to the left of the median line, and rarely ever in health projects beyond the edge of the ribs. Its increase of size in disease is usually proportionate in all its dimensions: hence, in the subjoined account, its vertical diameter alone is given. In fifteen cases of pneumonia, it was 4 inches; in thirty-eight of phthisis, 3½ inches; in thirty-three of gastro-enteritis, 4½ inches; several of these cases were attended with rigors, and the spleen was contracted by the use of quinine. In twenty-three cases of hepatitis, it was 3¾ inches; in 130 agues, 5¾ inches. In most of these cases, its breadth and thickness were equal to the height. These results, and the observation of above 500 cases of ague, have convinced M. Piorry that the spleen is invariably enlarged (hypertrophied) or painful in ague; but that, in other diseases, a great increase in its size is only observed where periodic febrile attacks have occurred; and this has been confirmed by various observers both in France and Algiers."

I the more readily introduce these particulars to guide you in the exploration of the spleen, because its morbid enlargement is quite common in

those parts of our extensive country in which paludal fevers prevail; and hence, also, it is very desirable to be able to ascertain the extent of such morbid change, so that you may appreciate more accurately the probable sympathetic disturbances which accompany its disorders, and institute a treatment accordingly.

The anatomical relations of the spleen to the contiguous viscera, are as follows. It is situated deep in the left hypochondrium below the diaphragm, above the descending colon, between the great curvature of the stomach and the cartilages of the false ribs, before the supra-renal capsule and upper part of the kidney of the left side. The upper and external surface of the spleen which commonly corresponds with the ninth, tenth, and eleventh ribs, is separated above by the diaphragm from a thin lamina of lung. It is not unfrequently covered almost entirely by a tongue-like projection of the liver.

M. Maillot, who, in his *Traité Pratique de Percussion*, gives a good summary, in a small compass, of M. Piorry's views and practice, describes the position of the patient who is to be subjected to splenic percussion. He is to be placed on the right side, the left arm withdrawn from the trunk, or better still, he is to lie recumbent on his back, inclining a little over the side of the bed, so as to allow of the more convenient application of the pleximeter.

The principal organic changes to which our attention is generally directed in the treatment of diseased spleen, are congestion and inflammation; but even these, although of undoubted and indeed quite frequent occurrence, are not easily ascertained by diagnostic symptoms. Acute splenitis, or inflammation of the spleen, is most commonly brought on by external injuries, and is rarely an idiopathic disease. It may supervene on congestion of the organ, and when this latter state of predisposition exists, a slight bruise, or other violence, will suffice to develop it. Rupture of the spleen is generally the result of external, and, at times, inconsiderable violence; but it is met with also in congestive fevers of a malignant grade.

Splenitis of an acute character would, we might suppose, furnish us with an order of symptoms similar to those of other inflamed viscera; one of the most distinctive of which is pain in the part affected; but this is not always present in every case of unquestionable phlogosis, of either the abdominal or thoracic viscera, and in the case of that of the spleen it is rarely met with. I speak now of pain apart from tenderness on motion or pressure, which last is considerable in splenitis. Most of the cases alleged to be splenitis, are more probably inflammation of the peritoneum investing the organ, or of its proper sheath or fibrous coat. The symptoms laid down by Grotanelli (*Animadversiones in Acutæ et Chronicæ Splenitidis Historiam*) are scarcely any one of them strictly diagnostic of acute inflammation of the spleen, since every one is met with in the disease of some other organ or another. Still they are worth recording. They are—after a sensation of cold and partial rigor, a feeling of weight, fulness, and pain in the left side, extending to the left shoulder, increased on pressure and coughing; thirst, some degree of nausea, dry cough, with the usual symptoms of pyrexia. Hematemesis, faintings, or pain on respiration, are occasionally observed, but not frequently in the simple form of this disorder. This author states that a natural cr sis is frequently observed after hemorrhage from the nose or stomach; after a copious deposit from the

urine; after the disappearance of the headache; when the hemorrhoidal or menstrual flux supervenes, and after a profuse discharge of the lochiæ. In violent examples of this disease, those which rapidly terminate in a general dissolution of the splenic tissue, incessant vomiting is a prominent symptom, which is often attended by a discharge of grumous or clotted blood from the stomach and intestines.—(Dr. Bigsby, *Cyclop. Pract. Med.*)

When the peritoneal coat of the spleen is affected, the pain becomes more acute; but then the physician is embarrassed in deciding as to the organ actually inflamed, owing to the proximity of so many other parts, as the stomach, the liver, the diaphragm, the colon, the kidney, and even the lungs and the heart itself. His only resource is, to abstract, as recommended by Dr. Bright (*Observations on Abdominal Tumours and Intumescence*), one of these organs, in proof of the lesion of which certain other symptoms are wanting, and he may then come to the conclusion that the pain belongs to the spleen. The most decisive indication of inflamed spleen, as it is, however, of congestion of this organ, is its enlargement, constituting a tumour, which, in connexion with the tenderness on pressure, enables us to assert with some confidence, the organ affected, and the nature of its lesion. The tumour is smooth, oblong, and solid, felt immediately beneath the integuments, proceeding from under the ribs on the left side, a little behind the origin of the cartilages; often advancing to the mesial line in one direction, and descending to the crest of the ileum in the other; often filling the lumbar space at its upper part. This tumour is very generally moveable, feels rounded at its posterior part, and presents an edge more or less sharp in front, where it is often notched and divided by fissures. If effusion takes place into the peritoneal cavity, a thin layer of fluid is early felt between the integuments and the tumour, but the intestines are not at any time found passing behind the tumour. The chief tumours, continues Dr. Bright, which may be mistaken for an enlarged spleen, are, chronic abscesses of the integuments; scirrhous thickening of the stomach; enlargement of the left lobe of the liver; diseased omentum; feculent accumulation in the colon; diseased kidney; ovarian dropsy; hydatids.

The structural changes in the spleen brought on by acute inflammation are, in the first degree, a brownish-red colour of the splenic parenchyma, which is gorged with blood, and denser than natural, though easily torn. At a more advanced stage, the spleen becomes of a greyish-brown, and still more friable, and when cut into presents a close, sponge-like tissue, filled with blackish blood. In the third degree of intensity (following now the stages laid down by M. Gendrin), the spleen is resolved into a pulp, like the lees of red wine. This last is a common appearance in the spleen of those who are carried off by malignant intermittents. The peritoneal coat is often inflamed, and adherent to the surrounding parts.

Aware of the close connexion between the spleen and other organs, we are prepared to see considerable functional disturbances following an extension of its inflammation to any of them. Thus, when the diaphragm becomes inflamed, the breathing is hurried, laborious, and painful; with frequent, dry cough, and at times palpitation.

Chronic splenitis is described by Grotanelli (*op. cit.*) to be attended by a sensation of weight and pressure in the left hypochondrium, and fulness and swelling in that region; an obtuse pain or sense of uneasiness, especially when turning in bed; indigestion; disturbed sleep, and unpleasant

dreams; sometimes dyspnœa, with a dry cough; defective nutrition; a sallow complexion; and sometimes scurvy. The enlarged spleen may occasionally be felt early, and always late, in the disease, quite distinctly. The want of diagnostic symptoms, in any number at least, is as obvious here as in acute inflammation of the organ. Still less distinctive are the occasional disorders of remote parts associated with chronic splenitis; of these are, wandering pains in the limbs, sometimes ending in collections of pus under the integuments of the thigh, arm, &c. Much but undue stress has been laid by systematic writers on the implication of the liver in chronic splenitis. Out of fourteen cases of this disease ending in abscess, the liver was only deranged in some degree in two. Any of the contiguous organs may become diseased as well as the liver, and accordingly the left kidney is occasionally the part chiefly affected in a secondary manner.

Suppuration, one of the modes in which chronic splenitis terminates, is not defined by symptoms of uniform occurrence, or of a distinctive character. Dr. Abercrombie (*op. cit.*) relates the case, which terminated fatally, of a gentleman to whom he gave, occasionally, his attention and advice, without either he or his colleague, Dr. Thomson, being able to detect a symptom from which they could infer what was the seat of the disease. Autopsic examination showed that the spleen was somewhat enlarged, and had a cavity which contained several ounces of purulent matter. "The liver was pale, but otherwise healthy; the kidneys were pale, with a peculiar degeneration of some parts of them into a firm, white matter. After the most careful examination, no appearance of disease could be detected in any other part of the body." When the investing membranes are affected, the sufferings are varied and acute; the pain being frequently accompanied with a sense of heat in the left hypochondrium, and striking to the spine, clavicle, or shoulder. Coagulable lymph invests the membranes together with the adjoining viscera. The filamentous tissue of the organ, though bathed in pus, is sometimes quite uninjured; but generally it is pulpy and diffluent. The sac may be fibrous, cartilaginous, or even bony. Cases are on record of the abscesses having burst into, respectively, the colon, the stomach, peritoneal cavity, the left side of the chest, or into the lungs, inducing symptoms of phthisis; or it may burst outwards through the abdominal walls, finding issue by the umbilicus. In some instances the abscess of the spleen has acquired a remarkable size. One case is mentioned in the Memoirs of the Academy of Sciences, in which it contained 30 lbs of matter. In some of the soldiers who suffered from the Walcheren fever (congestive, remittent and intermittent), Mr. Wardrop found the spleen entirely reduced to a cyst, full of puriform fluid.

Softening is another of the terminations of chronic splenitis. The chief change in the organ is its conversion into a soft, black, broken-down mass like grumous blood; in some cases being of a pultaceous consistence, or nearly fluid — the membranes at the same time being often inflamed and ulcerated.

A modification of this softening, characterized by the destruction of a part, or even the whole of the spleen, and its conversion into a simple sac containing a substance which varies from the state of clotted or grumous blood to that of tar. It is unattended by any of the characteristics of inflammation. Neither the peritoneal coat nor the tissue proper of the spleen are affected. Both MM. Andral and Louis point out the frequency of alterations of the spleen, of this nature, in typhoid fever. In 46 cases

of dissection of persons dead of this fever, Louis found this organ natural only in four; in three-fourths of the cases it was softened. A change of this kind seems to be in some way connected with or dependent on a change in the blood, which has less fibrin in its composition than usual. In general, says Andral, the spleen is prone to be softened when there is disorder in the circulation and innervation at the same time, which, in fact, I may add, is the state of the body in fevers, and particularly those of a congestive kind.

Congestion of the spleen generally shows itself with *enlargement*, by which latter name Mr. Twining designates it. This change may be coexistent with chronic inflammation; or it may appear, as it so often does, as one of the symptoms of cachexia,—its increase or subsidence generally corresponding with the unfavourable or favourable changes which are taking place in the constitution. Mr. Twining, in describing the structural changes of the spleen in those who had, when living, suffered from enlargement of the organ, mentions: 1, a soft, rounded enlargement, with a softened texture of the organ, to such a degree that "it resembles a great clot of blood, wrapped in a thin membrane." Coagula were sometimes found in the splenic vein as far as its junction with the vena porta, and entrance into the liver; 2, greater firmness of texture, the enlargement of the spleen being oblong, and the edges of the organ thin and notched; 3, opaque patches of various sizes, which he deems to be the result of albuminous depositions during superficial inflammation.

Mr. Twining's description of the functional disturbances following enlargement of the spleen, are strictly applicable to a similar disease of the organ so common in the eastern parts of the Atlantic states, and in the low, alluvial soil of the Mississippi and many of its tributary streams. Most patients with enlargement of the spleen are, he tells us, affected with a short and imperfect respiration; and any attempt to take active exercise excites panting and distress at the chest. "Among the usual attendants on vascular engorgement of the spleen, we may observe impaired appetite, difficult digestion, and imperfect assimilation of the food. There is generally despondency and depression of spirits; inactivity of body and torpor of mind, with much muscular debility; and this latter symptom is remarkable, although the patient be not much emaciated. When active pyrexia is not present, the urine is pale, often copious. In the latter stages of the disease, œdema of the feet is present, and sometimes the face and eyelids are swollen. The majority of protracted cases that terminate fatally, suffer from dysentery or dropsy of the belly; and when the abdomen is much distended from the latter cause, the superficial veins on the side of the chest and belly appear large and numerous, showing the extent and degree to which the circulation in internal organs becomes ultimately obstructed.

"Diseases of the spleen often occur in conjunction with dysentery, intermittent and remittent fevers, scorbutic affections, and sometimes with diseases of the liver."—(*Diseases of the Liver and Spleen*, Drs. Thomson and Twining — Phil. Edit.) Enlargements of the spleen are sometimes connected with hematemesis, an attack of which is at times followed by a marked diminution of the tumour.

The suddenness of the coming on of enlargement of the spleen is a matter of observation with most physicians who have enjoyed an opportunity of witnessing the disease. Mr. Twining points out its occurrence in the course of the remittent fevers of Bengal. Its sudden disappearance

is also mentioned, in the case related by Dr. Abercrombie, of a sailor, whom he visited, in conjunction with Dr. Combe, for ague. In the course of a week, the fever being cured, the enlarged spleen, arising from the margin of the ribs and projecting downwards several inches, had entirely disappeared. Sometimes considerable and painful tumefaction of the spleen, coming on with the fit, entirely subsides with the disappearance of this latter.

Idiopathic enlargement of the spleen occurs in children, and in persons of a delicate and feeble constitution, in Bengal; as the product, according to Mr. Twining, of the combined influence of a damp climate, variable temperature, want of exercise, unsuitable clothing, and insufficient nourishment.

I shall not detail the appearances of the other structural alterations of the spleen, such as *induration*, *ossification*, *gangrene*, *atrophy*, *hydatids*, and *cysts*. *Hemorrhage or apoplexy* of the spleen, so distinctly pointed out by M. Cruveilhier, is of more frequent occurrence than we might at first suppose. The apoplectic deposits are not to be confounded with softening of the spleen, although they are met with under, sometimes, similar circumstances; as in those who have suffered from intermittent fevers. Rupture of the spleen may be regarded as analogous to, if not identical with, this hemorrhagic condition. Some of M. Bailly's cases of malignant intermittent observed at Rome, and to be described hereafter, were of this nature.

LECTURE LVIII.

DR. BELL.

TREATMENT OF DISEASES OF THE SPLEEN.—Remedies for acute splenitis the same as for other phlegmasiæ—Mercury in general inadmissible—Avoidance of extreme views and practice—Sedative narcotics useful—Free purging in enlargements of the spleen, or chronic splenitis; to be followed or alternated with chalybeates—Mr. Twining's plan of treatment—Spleen mixture—Addition of sulphate of quinia—Venesection and cupping, or leeches, occasionally directed before the use of chalybeates—Salutary crisis by hemorrhages—Native (Bengalese) remedies for diseased spleen; chiefly aloes and iron, with occasionally castor oil—Acupuncture—Enlarged spleen with intermittent and remittent fevers, requires sulphate of quinia—Great utility of this medicine—Iron in other varieties of tumid spleen—Connexion between *spleen cachexia* and chlorosis, scurvy, and anemia.

TREATMENT OF DISEASES OF THE SPLEEN.—Acute splenitis is treated like other phlegmasiæ, by venesection, cups over the left hypochondrium and lumbar region, or leeches on the same place followed by blisters and purgatives. But by far the most common forms of spleen disease which you will be called upon to treat, are hyperemia and chronic splenitis, with more or less enlargement of the organ, blended or alternating with congestion, in varying degree. Chronic may be the consequence of acute inflammation; but it is generally primary, and coexists with derangement of some important function, either that of digestion or of circulation. The primary means for reducing swelled spleen, and with it of removing any associated inflammation, is free purging; and secondly, and indeed alternating with it, sedatives and tonics. Mercury, at one time freely used on the strength of analogy, was found to be decidedly prejudicial. But, as has been so often the case, have we not gone from one extreme

to the other? It is true, that Mr. Annesly still recommends mercury in this disease. Mercurial ptyalism is undoubtedly injurious, and in enlarged spleen in cachectic habits and persons who have suffered long from intermittent fevers, mercury, which tends to diminish still further the plasticity of the blood, is contra-indicated. Where, on the other hand, there is positive phlogosis with excess of innervation, mercury may be used with advantage. In the early period of splenitis, with enlargement, in subjects not reduced by prior disease or excesses of kind, and especially when it comes on in females suffering under suspended or imperfect menstruation, we need not fear to administer calomel or blue mass, in doses of four or five grains twice a-day, for two or three days; taking care that the bowels are regularly acted on during this period. Failing to procure any relief from mercury, it would be unwise to continue its use.

Free purging is most relied on for removal of enlargements of the spleen; and in this case we are not excluded from those of the mercurial class, which unquestionably have a power of unloading the portal system of accumulated or congested blood, possessed by few other purgatives. The drastic purgatives are preferred by Dr. Bree; but he does not trust to them exclusively, if symptoms of inflammation have originally presented, or supervened in the course of the disease. In this state of things, venesection or cupping will be had recourse to. The nervous irritability, which is no uncommon accompaniment of spleen disease, is soothed by conium, belladonna, and the like, administered sometimes alone, sometimes combined with diuretics. From three to six stools every day are procured by Dr. Bree's treatment, under which the strength is increased, while the enlargement of the spleen is diminished. This gentleman at first used antimonials in conjunction with neutral salts; but afterwards substituted drastic purgatives for them. Unquestionably, however, in every case in which we desire to procure free purging, we shall find that the process is made much easier and complete by the intervention, occasionally, of minute doses of tartar emetic. Thus, after having given different purgatives without much result, it will be a milder and far more efficacious plan to suspend their use; and if the state of the suffering organ, or the excitement of the general system, do not authorise bloodletting, to give a neutral mixture, in a dose of half an ounce, with a twelfth to the eighth of a grain of tartar emetic, every two hours for a day or two. The capillaries will then soon become relaxed, the biliary ducts emulged, and the whole digestive apparatus predisposed to be acted on with great readiness by a purgative prescription of even less power than that which had been tried before without effect.

The treatment found most useful by Mr. Twining, in that modification of enlarged spleen which consists in vascular engorgement of the organ (hyperemia), was perseverance in a course of purgative medicines, combined with bitters and some preparations of iron; of which small doses of the *sulphas ferri* seem to be the most efficacious. His usual formula, for cases in which there was not much pyrexia, was:—

℞. Pulv. jalap.
—— rhei,
—— columbæ,
—— zingiberis,
Potassæ bitart, āā ʒi.
Ferri sulphatis, ϑiss.
Tinct. sennæ, ℥ss.
Aquæ menthæ sativæ, ℥x. Misce.

This prescription is called the *spleen mixture.* The dose is an ounce and a half for an adult, at 6 A.M. and repeated at 11 A.M., daily. For children the doses are regulated so as to produce not less than three, and not more than four stools daily. Mr. Twining used to introduce three times the quantity of the salts of iron in this prescription ; but on dissection of some young subjects, who died in the advanced and desperate stage of diseased spleen, and who had been under his care whilst using the mixture with the larger proportion of iron, he found the stomach quite white and exceedingly contracted; more resembling a man's thumb than a young child's stomach ; and hence he was induced to diminish the dose of the chalybeate. For patients who are very costive and require stronger purgatives, he added ʒi. Pulv. scam. comp. to the above mixture. On the other hand, in very delicate and emaciated subjects, who are easily purged, it is requisite to substitute compound tincture of cardamoms for the tincture of senna ; and if there was any disposition to paroxysms of intermittent fever, he directed the addition of the same quantity of the sulphate of quinia as there was of sulphate of iron.

Alternating with this spleen mixture, after an interval of ten days, Mr. Twining used to prescribe, for an adult, eight grains of compound extract of colocynth with two grains of gamboge in pills at bed-time; and twenty drops of muriated tincture of iron in a wine-glassful of water, with ʒi. of tinct. gent. comp. at 7 and repeated at 11 A.M. These medicines were continued for five days; and then, after using the spleen mixture for ten days more, the patient is ordered to take ʒss. of the powder of black myrobalan, with ℈ss. of black salt every morning; and eight grains of compound extract of colocynth, with two grains of sulphate of iron and two grains of aloes in pills, at bed-time.

There is, it seems to me, needless complexity in the above course. You will be able to meet all the indications which it was intended to answer by a simpler plan, as, for example, a combination of rhubarb and aloes, with sub-carbonate of iron and ginger.

℞. Pulv. aloe. gr. v.
—— rhei. gr. x.
Ferri carb., ℈i.
Pulv. zingib., gr. x. M.

Taken daily, or on alternate days, according to its effects on the bowels, it will exert both the purgative and tonic effects desired ; or the following will answer in alternation :—

℞. Sulphat. potass., ʒi.
Pulv. rhei, ʒss.
Sulphat. ferri, gr. iij.
Pulv. cinnam., ℈i. M.

Pills of aloes and sulphate of iron, taken night and morning, will procure the requisite free action on the bowels, and the more direct one on the spleen by means of the iron ; or the sulphate of quinine can be added, if the complication with intermittent fever or other considerations require it. The double indication in these cases is well met by the citrate of iron and quinine.

The occurrence at any time of febrile exacerbation of sub-acute splenitis will require a suspension of these remedies, and recourse to venesection

or leeches over the part, followed by simple purgatives and antimonials, as already advised. When cough and the febrile stage of catarrh attends enlarged spleen, a similar treatment will be demanded. The entire and speedy relief that follows hemorrhage, as in a case related by Mr. Twining, suggests recourse to sanguineous depletion, especially by cups or leeches, even when the general debility is extreme. The case just referred to was that of a child, aged three years and a half, who had been treated by Mr. Twining with the usual "spleen remedies for two months, but without any good effect. On its arrival in England it had the best professional assistance, but all was of no avail; and it seemed to be fast verging to the grave, until a spontaneous bleeding at the nose took place, and returned for several days to such a degree that life was considered in great danger from the loss of blood." Soon, however, a beneficial change was observed; the respiration became easier; there was playfulness and improved appetite, and in the course of four months the little patient was quite well; he having taken no medicine in the interim but an occasional aperient.

Mr. Twining makes the same remark as Grotanelli on the subject of hemorrhages being often followed by a salutary crisis. In young females, who are affected with tumid spleen, just before puberty, the solution of this disease is frequently preceded by bleeding from the nose. The occurrence of that from the stomach, and the relief afforded, in consequence, to the diseased spleen, can be more readily understood from our knowledge of the vascular connexion between the two organs. Facts of this nature most probably suggested the practice which was so commonly pursued by Mr. Twining in enlargement of the spleen, and which is worthy of imitation, viz., to apply a few leeches over the tumour every other day, for a fortnight, in conjunction with the purgative and tonic plan.

In the more chronic enlargements of the spleen, that is to say, of some months' duration, the tumour becomes more indurated, and less liable to the mutations of size already adverted to, and less readily affected by remedies. In the adult, the spleen thus chronically enlarged often weighs five pounds. In children it not unfrequently fills the space from the left hypochondrium quite up to the umbilicus, and sometimes extends to the right of the navel, reaching in length down half-way, or even the whole distance, to the pelvis. In Bengal, the tumour is of a globular shape; it may generally be cured by perseverance in careful treatment; but if the enlarged spleen be of an oblong shape, with a thin, sharp edge, deeply indented by notches, which can be felt through the abdominal parietes, a cure is much more difficult, and cannot generally be expected.

While so freely referring to the practice of Mr. Twining in Bengal, as affording a better guide to us here at home than the refined speculations derived from a few hospital cases in Europe, I may as well mention, after this gentleman, the *native remedies* for diseases of the spleen, some of which he has seen administered with decidedly beneficial results. The natives of Bengal rarely suffer from liver diseases; but, on the other hand, diseases of the spleen are exceedingly frequent, tedious, and dangerous among them. The first prescription mentioned by Mr. Twining is—sulphate of iron, 4 grains; garlic, 20 grains; aloes, 6 grains. These ingredients are made into a bolus, which is repeated early every morning. Half the dose is given to a debilitated man or to a woman; and a quarter to a child under 12 years of age. Another is—garlic, 32 cloves (about

℥vii.); aloes 1 ounce; brandy, 2 pints. To be mixed and macerated in the sun for fifteen days. Dose, ℥ij. to ℥iv. twice a-day for an adult, mixed with an equal quantity of water. This generally acts as a diuretic and mild aperient, and is best adapted to spleen cases attended with emaciation and diarrhœa. Again, the same quantities of garlic and aloes, as above described, are mixed in two pints of vinegar, and used after fifteen days, in the same manner as the last prescription. The next is—iron filings, ℈ij.; common oil of mustard, ℥i. These articles are mixed, and swallowed early in the morning; immediately after which, a dessert-spoonful of the tincture of aloes and garlic is taken undiluted; and the patient lies down on the left side for half an hour after taking the medicine. Before commencing with these medicines, the patient is purged with castor oil. In some districts the sulphate of copper is employed, in doses short of producing an emetic effect. Mr. Twining has given it in doses of two and four grains, in pills, with equal quantity of pill. rhei comp. He attributes its efficacy to its tonic and astringent properties.

Acupuncture is a favourite remedy with the Bengalese practitioners. Mr. Twining had recourse to it on different occasions with apparent good effects; but he used other treatment at the same time. The actual cautery is another native remedy for enlarged spleen. Mr. Twining is inclined, if he could forget the pain and cruel appearance caused by the application, to recommend the moxa to form an issue.

In the enlargement of the spleen associated with intermittent fevers of every grade, there is no remedy of equal efficacy to the sulphate of quinia, in full doses. The fears, at one time so general, of this morbid condition of the organ being the consequence of the too early administration of bark or its preparations, is now shown to be groundless. In most cases of congestion and inflammation of the spleen, occurring in or associated with malignant intermittent or congestive fever, you must not hesitate to give it at once in large doses, even though the lancet or topical depletion be practised immediately afterwards, and purgative and analogous remedies be indicated at the same time. The experience of French, English, and our own practitioners, is ample and conclusive on two points in the treatment of spleen diseases: — 1. The imperative call for bark or quinia, in enlargement of the organ connected with periodical and congestive fever. 2. The efficacy of the preparations of iron in tumours of the spleen after fever, or when associated with a cachectic state of the system. By M. Cruveilhier, iron is regarded as almost a specific in enlarged spleen, whether idiopathic or connected with fevers.

The control which the sulphate of quinia is found to exert over enlarged and congested spleen, would of itself, even if direct testimony were wanting in favour of the practice, prompt to the free use of this medicine in congestive fever, although the spleen be not specially implicated. The whole portal circulation, in this form of fever, is in a state closely analogous to that of the spleen, viz., accumulation and obstruction of blood in the immense venous meshes of the stomach, the intestines, and the liver. The kind of medication successful in one chain of this great circle can hardly fail of good effect in the others. The more soluble the salt of quinia, the more prompt is its action; and hence we should prefer the neutral or the acid to the bisulphate, and the solution to the pill. The combination of iron and quinia, as in the citrate of iron and quinia, is worthy of confidence in splenic congestion with anemia. This same

remark will apply to the combination of iron and iodine, as in the liquor of the iodide of iron. Dr. Williams thinks highly of the bromide of potassium in enlarged spleen.

Mr. Twining, in closing his clinical remarks on the diseases of the spleen, points out the affinity between splenic cachexia on the one side, and chlorosis, scurvy, and some species of anemia on the other. In all, the blood is deteriorated; there is the same trouble in the circulation and respiration, similar local inflammations, and the like tendency to hemorrhage.

LECTURE LIX.

DR. BELL.

DISEASES OF THE URINARY APPARATUS.

Accumulation of knowledge of urinary diseases of late years—Importance of the function of the kidneys—Their office as depurators—Immediate seat of urinary secretion—Influence of the nerves on this function—Normal ingredients of human urine—The chief ones noticed—Water—Urea—Lithic or uric acid: its combinations—Difference in quantity of uric acid in different ages and sexes—Fixed salts—Effects of exercise and diet—*Pathological states* of the urine—Works to be consulted—Morbid products—Albumen—fibrin—blood-corpuscles—fat—casein—biliphœin—bilin—sugar and carbonate of ammonia—Salts—oxalate of lime, carbonate of lime, and cystic oxide—Bile—*Semeiological relations of the urine*—Secretion of the prostate gland—Pus.—*Diseased structure of the kidney*—Healthy size and weight of the organ—Exploration.

The period is not long beyond which the strictly medical consideration of diseases of the urinary apparatus could be easily discussed within narrow limits. Inflammation of the kidneys and bladder, and obstructions, by calculi, of the ureters, were the chief appreciable morbid conditions of the organs; the passage of calculi, the deposit of gravel and sand, and some obvious deviations from the healthy appearance of this fluid, were the chief external symptoms, in addition to the common rational ones of functional disturbance, indicating disease of this apparatus, — to make up our symptomatology. To the organological part was then added an inquiry into nervous irritation, or *nephralgia* of the kidney, as distinct from inflammation and *nephritis;* and a mixed condition of the bladder, or neuralgia, with disease of the mucous coat, constituting *catarrhus vesicæ*, or *cystirrhœa*, separated from *cystitis*, or decided inflammation of this organ. Chemistry also came in aid of the observation of the simple physical states and changes in the urine, as marked by its colour, its transparency or turbidness, and deposits of various consistence and hue. Blackall and Wells first, then Cruikshank, Marcet, and Bostock, showed by chemical tests that the urine was modified in its composition by various morbid states of the economy, as in dropsy, diabetes, &c. Afterwards appeared the more extended and connected researches of Prout and Berzelius; and more recently, or about twenty years ago, the first observation of Bright, suggesting the connexion between diseased kidney and concomitant disorders of other organs, and a particular condition of the urine. In the road thus opened, have followed Gregory and Christison, Osborne, Willis and Venables, Rayer, Solon, Williams, Corrigan, Fourcault, and others; while the chemical department of the subject has been greatly enriched

by Liebig and Simon; so that now, whilst grateful for the vast accumulation of positive facts, and an incipient arrangement into a system, setting forth the extended and various diseases of the urinary apparatus, we look with hesitation, not unmixed with dread, at the number of volumes, so intrinsically rich too, before us, when we think of condensing from them a brief yet connected and consistent sketch of the whole subject. The most that I can hope to do, under present restrictions, is to indicate the important points which will help you in your own more extended and detailed inquiries hereafter.

First, then, I propose, after noticing the composition and peculiarities of ordinary renal secretion, or the urine and its morbid peculiarities, to speak of the acute and chronic inflammations of the renal apparatus and its structural changes; and then endeavour to indicate how far these morbid changes are causes of, or associated with, various important functional derangement in other organs.

The anatomist must have been struck with the large proportion of arterial blood which the kidneys receive from the descending aorta by the renals; nor could the physiologist be slow in inferring from this arrangement, and still more from the amount of secretion, and its changes in appearances and quantity, with the several periods of digestion and cycle of other functions, their important role in the animal economy. Still more positive conclusions of this nature were drawn, from observing the possession of a renal apparatus in animals even of a low grade of organization. Insects have been found to secrete uric acid through their long Malpighic canals; which latter have even contained calculi of this acid; and the same substance has been discovered in the *saccus calcareus* of the *Mollusca*. The kidneys are among the chief depurators of the economy; being, in this respect, only second to the lungs, and taking precedence of the skin and bowels. If we regard the exclusive function of depuration, or of excretion following secretion, the renal is without parallel;—all the other organs have absorbent together with secretory function, and the first of these is in them all connected with the wants of assimilation and growth. The kidneys have a secretory function alone; their absorbing power is purely interstitial; or if exercised on their secreted fluid, it is only so in extreme and pathological conditions of the organ. They discharge azote, as the lungs do carbon, and these are the elementary basis of the chief excretions from the living body. The quantity of solid renal secretion is in strict proportion to the quantity and kind of food taken as aliment; and by M. Chossat (*Journ. de Physiolog.*, t. v., 1825), was found to be, in reference to farinaceous, albuminous, and fibrinous aliment, in the ratio of 5·7·9. It would hence appear, that the quantity of azote contained in the food is the principal element determining the amount of solid excrementitious urinary matter. M. Chossat found, in fact, that ten-elevenths of all the azote ingested with the food were discharged by the kidney. (Willis — *Urinary Diseases and their Treatment*, Philadelphia Edition.)

The immediate seat of the secretion of urine is the convoluted *tubuli* of the cortical, and most probably, also, of the medullary substance of the kidney: this fluid is poured out, as we are told by Müller, from the whole internal surface, and not their extremities only. The influence of the nerves over renal secretion is manifested in the result of experiments, which consisted in a destruction of the renal nerves; and which was followed by an

entire suspension of the secretion, although the blood still circulated nearly as before.

The Urine and its Ingredients.—Healthy human urine, when recently voided and still warm, is a transparent fluid, of a light amber colour. At this time it reddens litmus paper, manifesting an acid reaction, owing to free lactic, hippuric and uric acids, and acid phosphate of soda. Its odour is slightly aromatic, and somewhat resembles that of violets; but the taste is bitter and disagreeable. As it cools, the aromatic odour leaves it, and gradually gives place to another which is peculiar, and well known by the name of *urinous*. In a few days the urinous odour is succeeded by another, which has been compared to sour milk. At length, this also disappears, and is finally succeeded by a fetid alkaline odour. The sensible qualities of the urine, however, as well as the changes it undergoes, are subject to great varieties from many causes; such as different articles of food, different diseases, &c., as will be subsequently shown.

The quantity of urine secreted varies with the climate, the season, and temperament, and also the sex, being generally less in women in the better classes of society than in men, owing to the more abstemious habits of the former. In Great Britain, from 30 to 40 ounces is estimated to be the average quantity in the twenty-four hours. The specific gravity of urine is from 1005 to 1030, the average being about 1012·5.

Azote has just now been represented to you as the chief element of renal secretion, or of urine; and I may add, that its two principal forms of combination are *urea* and *uric* or *lithic acid*. But, before proceeding to speak of these substances, it is proper to apprise you of the composition of healthy urine, which, according to Berzelius, consists of the following ingredients, the proportions being to a thousand parts of urine:—

Animal and destructible principles.	*a.*	Water	933·00
	b.	Urea	30·10
	c.	Lithic acid	1·00
	d.	Free lactic acid, lactate of ammonia, and animal matters not separable from them	17·14
	e.	Mucus of the bladder	0·32
Alkaline and earthy salts.	*f.*	Sulphate of potash	3·71
		——— of soda	3·16
	g.	Phosphate of soda	2·94
		——— of ammonia	1·65
	h.	Muriate of soda	4·45
		——— of ammonia	1·50
	i.	Earthy phosphates with a trace of fluate of lime	1·00
		Silex	0·03
			1000·00

I cannot follow Berzelius, Prout, Willis and Simon, in detailing the properties of all the ingredients, but must be satisfied with a few observations on the chief ones. *Water*, the base of the urine as it is of all the animal fluids, may vary considerably in its proportions compatibly with health; but in some diseases its increase is accompanied by an increase of a natural ingredient, as of urea; or of unnatural ingredients, as of albumen or sugar. On the other hand, the proportion of water to the urine is not unfrequently

very much below the natural standard, as in the various forms of urinary suppression. *Urea* was long believed to be peculiar to the urine, and of course to be a result of secretion from the kidney; but it is now ascertained, that it may be formed from the constituents of the blood, without the agency of that organ. It has been detected in various secreted fluids. Urea is transparent and colourless, and without remarkable smell or taste; of course it does not impart to urine either the colour or other properties characteristic of this fluid. Urea is neither sensibly acid nor alkaline. At a high temperature it is converted into ammonia, cyanate of ammonia, and dry, solid, cyanuric acid. It is soluble in its own weight of cold water, and in every proportion in hot water. Urea combines with several acids, but does not neutralise them. Alkalies scarcely affect urea at low temperatures, but when it is assailed by heat, they rapidly convert it (together with water) into the carbonate of ammonia.

Uric or *lithic acid*, supposed once to be a product of morbid secretion, is now known to be an invariable ingredient of healthy urine; and present in solution at all ordinary temperatures. If it exists in the blood at all, it is in very small quantity only. The now highly-prized manure, *Guano* or Huano, imported from South America and Africa, consists chiefly of lithic acid in the form of a very impure lithate of ammonia. This is the residue of the ordure of sea-birds. The chief compounds of the uric acid with the alkalies and alkaline earths are, *urate of potass*, *urate of soda*, *urate of ammonia*, *urate of magnesia*, and *urate of lime*.

Hippuric acid is regarded by Liebig as a constituent of healthy urine, and in the same proportion with uric acid. *Urate* or *litrate of ammonia*, according to Prout, always occurs in healthy urine. *Urate of soda*, regarded by some to exist in healthy urine, is, by others, believed to be only found in a pathological state of this fluid. *Lactic acid*, commonly spoken of as a constituent of the urine in health, both in its free state and in combination forming lactates, is denied to exist by Liebig under these circumstances. The mean amount of free lactic acid in 1000 parts of urine is 1·525; and of combined 1·160.

To the ingredients in healthy urine already indicated we may add *hæmaphrein*, which gives to that secretion its dark or brownish-yellow colour. *Uroerythrin* (*purparin* of Bird), is the red colouring matter, always associated with uric acid, and as such increasing and decreasing in the same proportion as that constituent. *Carbonic acid* probably enters into the composition of healthy urine.

In order to be able to appreciate the nature and extent of the pathological conditions of the urine, we ought to be aware of its physiological ones, and of the circumstances under which the latter are modified. To those of you who have the requisite leisure, and who, from the nature of the cases under your direction, may find it necessary to acquire a more intimate knowledge of the means of analysis of the urine, and of its morbid changes in contrast with its healthy state, I would refer you to that portion of the great work of Berzelius on Animal Chemistry, translated by Drs. Boyé and Leaming, with the title "*The Kidneys and Urine;*" and the extended treatises of Simon and Prout; the first entitled "*Animal Chemistry with Reference to the Physiology and Pathology of Man;*" the second "*On the Nature and Treatment of Stomach and Renal Diseases.*"

As respects the proportion of the ingredients of the urine in health, we learn that analysis shows nearly uniform results in the same person at

different times; and that in persons of similar ages and sexes, the variations are very trifling. On the other hand, the urine of persons of different ages and sexes exhibits deviations both in the relative and absolute proportions of its constituents. The proportion of the solid contents to the water will depend not only on the quantity of fluid taken into the system, but, also, the vicarious action of the skin and lungs.

The proportionate quantity of urea in the urine is dependent on the nature of the food, and, also, on the powers of assimilation. The quantity excreted by the same individual in twenty-four hours is always nearly the same. It is greater in men in the prime of life; and in women than in old men, or children.

The quantity of uric acid excreted in twenty-four hours by persons of different age and sex, and living under different circumstances, is as variable as the quantity of urea. It fluctuated between 1·38 and 24·25 grains. But we find that the quantity of uric acid excreted by the same person during the same period, of some days for instance, is always nearly constant.

"The amount of fixed salts (earthy phosphates, chloride of sodium, alkaline sulphates and phosphates), excreted in twenty-four hours, varies considerably with age and sex. It fluctuated (in Lecanu's analysis) between 378 grains and 75 grains. There was apparently no uniformity in the amount of these salts in the urine of the same person during different equal periods. For instance, in a man aged 20, the amount of fixed salts in the urine of twenty-four hours, was determined four times. It varied from 348 to 224 grains.

"In men, in the prime of life, the amount of fixed salts is higher, than in aged persons, children, or women." (*Simon.*)

The variation in the quantity of earthy phosphates, excreted by the same person in equal periods of twenty-four hours, is considerable; amounting to 30·3 grains maximum, and rather less than half a grain minimum. The quantity excreted appears to have no direct connexion with age or sex.

There is a great difference in the amount of chloride of sodium excreted by different persons, and by the same person at different times—as may be well supposed from the variable quantity of this salt consumed. The quantity is very small in the urine of women and old men. The deficiency of salts in disease is, usually, of the chloride of sodium: the sulphates and phosphates being little altered in their proportions.

It is probable that a connexion exists between the quantity of urea and of the sulphates, and possibly of the phosphates likewise; that is to say, the phosphates always increase with the urea, and *vice versâ*.

Both Lehmann and Simon have made an observation of physiological importance; viz., that the amount of the urea, as well as of the sulphates, is increased by strong bodily exercise.

Interesting experiments have been made by Lehmann, on himself, to ascertain the effects of diet on the composition of the urine.

The solid matters discharged by the urine during an animal diet amount to about one-fourth of the quantity of dry nutriment.

The following are the principal changes induced by the use of a strictly animal diet. It becomes pale, of a straw colour, limpid, and similar in appearance to the urine of the carnivora. On the addition of nitric acid, crystals of nitrate of urea were immediately produced. Uric acid was immediately deposited in large crystals. The reaction of the urine was always decidedly acid.

During a purely animal diet there was a mean daily increase of 320 grains in the amount of urea.

The increase of uric acid was too slight to authorise an inference that its formation was favoured by a purely animal diet.

The quantity of lactic acid and of the earthy phosphates in the urine was increased under an animal diet.

Under the use of a strictly vegetable diet, Lehmann observed the urine to be of a yellowish-brown, rather than a yellow colour: it had a faint odour, and a decidedly acid reaction, which did not disappear for six or eight days. The morning urine was of a dark-brown colour, and rapidly deposited a mucous sediment, after which there was a gradual separation of bright red crystals of uric acid.

During a vegetable diet there was both an absolute and a relative diminution of urea; while the uric acid was scarcely affected by this diet. This latter remark applies, also, to the lactic acid, and to the phosphates and sulphates.

The influence of an entirely non-nitrogenous diet, as of starch, sugar, gum, and almond oil, was manifested in a diminution of the solid contents of the urine, and, likewise, in that of the urea and uric acid, and an augmentation of lactic acid and the lactates and of extractive matter.

Pathological States of the Urine.—The chemical changes which the urine undergoes in disease are reduced, as Simon describes them, to one of the following forms:—

"1. One or more of the normal constituents of the urine existing in larger quantity than in healthy urine.

"2. One or more of the normal constituents existing in less quantity than in healthy urine.

"3. A normal constituent absent.

"4. The presence of substances that do not exist in normal urine."

Passing over a consideration of the first three forms, I shall, at present, only notice the substances that are not met with in healthy urine. They are, *albumen*, and other constituents of the blood and chyle, viz.: *fibrin* and *blood-corpuscles*, also, *fat*, giving rise to what is called *fatty urine*. There are other morbid conditions, designated by the terms *chylous urine* and *milky urine*, depending on fat and albumen in the first, and fat and *casein* in the second variety. Among hepatic secretions mixed with the urine, are *biliphœin*, or brown pigment of the bile, *bilin and bilifellinic acid*. Sugar and carbonate of ammonia and pus, are also severally ingredients in diseased urine.

The salts which do not exist in healthy urine, and which give rise to certain urinary deposits and calculi are *oxalite of lime*, and *carbonate of lime*, the first two a common, the third a rare ingredient; also *cystin* (cystic oxide). *Kyestein*, first announced by Nauche as a peculiar substance, found in the urine of pregnant women, has been described since by Lehmann as a mixture of butyraceous fat, phosphate of magnesia and a protein compound similar to casein.

The lateritious and pink sediment were supposed by Prevost to constitute a peculiar acid, which he named *rosaceous*; but these have been found to consist essentially of an urate of ammonia, and sometimes of the urates of soda and lime in small proportions. They owe their colouring matter partly to the colouring matter of the urine, and partly to the purpurate of ammonia.

Bile, in certain diseases, and particularly jaundice, makes its way not

only into the blood but into the urine. Urine containing bile is generally of a deep brownish-red colour, when in considerable quantity and viewed by a transmitted light. But when contained in small quantity, it has sometimes a yellowish-green appearance. A piece of white linen, it is well known, will be stained yellow by bilious urine; and the addition of muriatic acid renders it green. In organic affections of the kidney and liver, Prout has occasionally seen in the urine a crystallized fatty substance, similar to that frequently met with in encysted tumours and various malignant affections, and which has been considered as cholesterine.

The *secretion from the prostate gland* sometimes appears in the urine. In general it may be distinguished from mucus by its albuminous properties, and by its peculiar appearance. *Pus* occasionally appears in the urine in great abundance, so as to render its presence unequivocal. Most generally it is accompanied by mucus; and between the two there seems to be a close relation. "Pus, when well marked, may be distinguished from mucus by being essentially composed of particles. Hence, when diffused through the urine, which it readily may be, pus, after a time, again subsides to the bottom of the vessel, in the form of a pale, greenish-yellow, pulverulent deposit, and the urine assumes its transparent character. Urine containing pus is almost always invariably albuminous. Pus may be detected if it and mucus both are present in the urine, by this fluid becoming alkalescent; the ammonia evolved converts the pus into a peculiar glairy substance, which imparts to the urine a ropy consistence."

Semeiological Relations of the Urine.—Both in the diagnosis and the prognosis of a variety of diseases, the indications furnished by the appearance and composition of the urine are of considerable value. For a long time, at least during the predominance of the humoral pathology, the greatest attention was paid to this part of semeiology. Afterwards, however, and until recently, it was in a great measure neglected. For the future, resting on the basis of a better knowledge of chemistry, and of organic lesions of the kidneys and of other organs consentaneously affected in disease, there is every reason to believe that it will take the place to which it is entitled in pathology, and be exempt from the fluctuations of theory and fashion in medicine.

The first and most noticeable change of the urine, in disease, is in the proportion of the water to its solid constituents. We commonly take the entire quantity excreted as the measure, overlooking the saline and extractive matters; and, to a certain extent, this may be done to give us a general idea of the state of the renal secretion.

We cannot draw any diagnostic conclusion, Becquerel thinks, from the increase or diminution of the quantity of the watery constituent of the urine, or, with the reservation just made, of the urine itself, unless it be more than fifty-two ounces, or less than twenty-seven ounces, in twenty-four hours; the average quantity in health being about forty-four ounces in that period.

In hysterical and other nervous disorders, and in diabetes, the quantity of water separated by the kidneys is absolutely or relatively increased. Becquerel relates the case of a young chlorotic girl, who ordinarily secreted daily about thirty-seven ounces of urine, but in whom the amount rose to ninety ounces upon the accession of a severe hysterical attack.

In inflammatory affections, on the other hand, the quantity of fluid secreted by the kidneys is diminished. The author just quoted has seen it fall as low as twelve ounces in twenty-four hours. In these cases the

urine is of a dark colour, of a high specific gravity, and possesses a strong acid reaction. As the quantity of water increases, the solid contents relatively, but not always absolutely, diminish, as may be found by comparing them with the amount secreted in twenty-four hours in a state of health.

The quantity of urea is increased in inflammatory affections; and, as Simon justly remarks, if we remember that in these acute diseases only very small quantities of nitrogenous food are taken, and that the quantity of urea must naturally decrease under such a diet, we may regard it as increased even if it falls below the physiological average.

In diseases in which there is an absolute deficiency of blood, or the blood is poor in corpuscles, as in chlorosis and typhus, the quantity of urea is diminished.

The uric acid is increased, according to Becquerel, in fever, great general functional disturbances, such as arise from oppressive dyspnœa in pulmonary emphysema or cardiac disease, acute pain, convulsion, and delirium, especially when attended with fever; and diseases of the liver, as hepatitis, cancer, or cirrhosis.

Where the blood is deficient or poor in corpuscles, the amount of uric acid is diminished.

In most febrile disturbances, and in organic diseases of an acute or sub-acute character, the urine commonly contains albumen, manifested by the addition of bichloride of mercury, alum, and nitric acid. This remark applies to fever in general, also anasarca, itself the result of diseased kidneys or heart. In this state of disease, precipitation of albumen occurs on the addition of bichloride of mercury even when the urine has an acid reaction. Albuminous urine with deficiency of urea is met with in chronic affections of the liver, complicated with dyspepsia; also towards the termination of all diseases that are accompanied by hectic fever and cause emaciation.

Diseased Structure of the Kidneys.—In order the better to appreciate the extent of the morbid changes in the kidney, we ought to know its standard or healthy appearance. As regards weight, we learn from Rayer, that the mean weight in thirty males, from 16 years to 76 years of age, was four ounces three drachms, to four ounces and a half. The density of the organ is variable; its weight not being always proportionate to its use. Its dimensions, according to Cruveilhier, are $3\frac{1}{2}$ to 4 inches in length, 2 inches broad, and 1 inch in thickness.

Multifarious experiments, at first by M. Comhaire, in 1803, and subsequently by M. Rayer and his pupils, demonstrate the little sensibility possessed by the kidney. Hence we are bound to regard with attention any apparent trifling pain or tenderness on pressure in the region of this organ, and to endeavour to ascertain its cause. We also learn from this fact, that nephritis may make considerable progress without the patient being apprised of it by pain. As regards injection of the renal tissue evincing disease, M. Rayer assures us that, whenever their anterior is more injected than their posterior portion, in subjects who have laid, as usual, on their back, this condition is to be ascribed to morbid action. He insists on this, because the phenomena of hypostatic engorgement of the cadaveric species is of regular occurrence in kidneys. The assimilation of both substances, medullary and cortical, of the organ to the same colour, by imbibition of blood, when considerable, is very frequently mistaken for an effect of disease. When abdominal putrefaction advances with rapidity,

the separation of the fibrous capsule is a common phenomenon, and is produced by the softening of the cellular membrane interspersed between the capsule and the substance of the organ. The alterations of colour of the kidneys are often very rapid, so that an artist intent on copying them, is sometimes greatly puzzled to catch the original one.

Maceration, although it obscures some morbid states of the kidney, renders others more evident; and of these latter are the granulations observed in Bright's disease. The impregnation of the surrounding cortical substance with water renders it semi-transparent, and so throws out the dull, milky hue of the granulations. M. Rayer describes these bodies as more distinctly visible at the anterior part of the right kidney than elsewhere; an appearance which he attributes to putrefaction commencing earliest in this portion of the organ.

Exploration.—The examination of a patient in whom we suspect disease of the urinary organs cannot be conducted with too much care. Manual examination and percussion will be found important aids. By the former, the degree of sensibility of the kidneys, the extent, form, direction, mobility, and resistance of visible enlargements, may be ascertained. Percussion will aid us in making out the origin of tumours in the lumbar regions; but it is to be borne in mind that the dull sound elicited may be due to the enlargement of other solid organs. The examination should be extended to the ureters, bladder, prostate, and urethra. Important aid to diagnosis will be found in the characters of the urine, as determined by certain chemical tests and experiments. Nor must we stop here, but, as M. Rayer has very wisely pointed out, we ought to inquire into the state of the constitution before we can safely determine the causes of the disease, or the mode of treatment advisable.

LECTURE LX.

DR. STOKES.

NEPHRITIS—Its species—Hyperemia common to them all in the beginning.—*Symptoms:* organic and functional; remote or sympathetic—May be confounded with organic disease of stomach and bowels—Attention to state of the urine—*Causes:* traumatic and constitutional.—*Anatomical lesions.*—Chronic nephritis; its symptoms, lesions, and causes.—*Nephralgia.*—*Treatment of nephritis* in general—The acute form requires active antiphlogistics—Nephritis, in fevers.—*Suppuration of the Kidney*—Directions taken by the abscess—Most frequent cause, formation of calculi—Not incompatible with even long life.—*Pyelitis*, its varieties, its tendency to end in suppuration and in nephritis.—Its *anatomical lesions.*—*Treatment.*

NEPHRITIS.—A new and, we must needs regard it, improved classification of the inflammatory diseases of the kidneys, is made by M. Rayer, the summary of whose views and descriptions, as given in the British and Foreign Review, I shall make use of on the present occasion. He divides them into three groups, as follows:—I. *Nephritis:* Inflammation of the cortical or tubular substance; being either—1. Simple. 2. Produced by morbid poisons. 3. Arthritic, that is, gouty and rheumatic. 4. Albuminous. II. *Pyelitis:* Inflammation of the pelvis and calyces; being—1. Simple. 2. Blenorrhagic. 3. Calculous. 4. Verminous. III.

Peri-nephritis: Inflammation of the external cellular tissue and fibrous membranes of the kidneys, or of their investing adipose cellular tissue. IV. *Pyelo-nephritis:* A combination of I. and II.

All the four species of the first group, nephritis proper, agree in commencing with partial or general hyperemia; but they differ in respect to their symptoms and anatomical characters. A deposition of pus is a frequent termination of the *simple* species; accumulation of plastic lymph or lithic acid, in the cortical substance or mammillæ, is very often seen in the arthritic species; gangrene, more particularly, characterizes the form of the disease produced by infection; whilst the most ordinary appearances in the albuminous variety are anemia, consecutive to hyperemia, increase in size and weight of the affected organ, and milky spots or granulations. Induration and discolorations are common to all the species except the third.

Symptoms.—Acute nephritis is generally ushered in by a chill and rigors, followed by febrile reaction. Soon there is felt pain, which is obtuse, dragging, and deep-seated, in the lumbar region. The pain may be superficial or deep-seated; restricted to a small space, or extended over a large surface; commonly increased by pressure, but sometimes so obscure as to require forcible alternate pressure on both kidneys for its development. It is increased by motion, especially when the patient is erect; by coughing, sneezing, laughing, and deep inspiration; by the efforts of defecation; and, in fine, by any strong movement communicated to the trunk; also by decubitus on the affected side, and by the heat of the bed. It is remittent, rarely pulsatile (an ordinary symptom this in peri-nephritis), and irradiates upwards to the diaphragm, or downwards to the bladder, groin, and testicle, or uterus and broad ligament in the female; and sometimes to the thigh; and always on the side of the inflamed kidney, if the disease be limited to one. The bladder is, unexpectedly enough, sometimes the principal if not the sole seat of the pain, in cases wherein that viscus is found to be in an almost perfectly healthy state after death, while the kidneys are seen to be profoundly disordered. This is a part of the symptomatology of nephritis worthy of distinct remembrance; as also the fact that sometimes, without pain in either organ, there is suppression of urine. After various diuretics have been given in vain, the catheter is introduced, but no urine is found in the bladder; and the patient, if a female, is supposed to be nervous. If, on general grounds, or from some suspicion of the true renal origin and seat of the complaint, venesection is ordered, or cups to draw blood over the lumbar region, and purgative medicine afterwards given, relief is soon procured. The suppression of urine may, however, as I have seen it within my own observation and practice, return before long, and without febrile action or pain. But the same treatment as before is followed by the same beneficial results.

Among the sympathetic phenomena of nephritis we notice retraction of the testicle, and numbness of the thigh on the same side with the kidney; nausea, vomiting, borborygmus, constriction at the epigastrium, wandering pains of the abdomen, tumefaction of this region, diarrhœa with tenesmus, dryness of the tongue, thirst; a pulse hard and full, sometimes small and intermittent. The skin is dry and burning; but occasionally covered with sweat, which, if there be suppression of urine, is often of an ammoniacal odour. At times, nephritis gives rise to hiccup, laboured

respiration, headache, and sleeplessness. The predominance of gastro-intestinal disorder is such, in some cases of nephritis, that it may impose on us as the chief and primary disease, without a minute attention to the organic derangement of the kidneys themselves. We are not always to expect to find retraction of the testicle, although it is generally present. I had a case of acute nephritis, supervening on chronic disease accompanied by calculous attacks, in which the testicle (of the left side) was entirely drawn into the abdominal ring, and could not be felt at all externally.

The pain in nephritis is distinguished from that caused by calculi, in the latter being acute, pungent, and lancinating; in its coming on suddenly, and disappearing in the same way; in its following the course of the ureter; being lessened in some positions and increased in others. The diagnosis will be still more certain when the urine is suddenly suppressed by the pain, and as suddenly flows with its disappearance; and especially if small, gravelly particles are seen at the bottom or on the sides of the chamber utensil. In puerperal women, nephritis has a marked tendency to terminate in suppuration; and hence the necessity, in their case, of early recourse to the lancet, even though the pain be not violent. The lumbar pain which the disease induces may naturally be mistaken for labour.

The *symptomatology* of nephritis is incomplete unless careful observation be made of the secretion from the kidneys,—as to its quantity, appearance, and composition. The secretion of urine is always diminished in quantity in this disease, and sometimes it is wholly suspended,—where both kidneys are inflamed. The urine may be excreted rarely, as twice or thrice in the twenty-four hours, or there may be distressing micturition. Its colour is of a deep-red, approaching to that of blood and water. The chief changes, in point of composition, are caused by impregnation with blood, or hœmatin, or albumen, by diminished acidity, neutral reaction or alkalescence, and occasionally by admixture with pus. Becquerel, in his analysis of five cases, did not find blood in any of them. A white and homogeneous compound is sometimes deposited, consisting of phosphate of lime with crystals of ammoniaco-magnesian phosphate; and in all cases of calculi, there are also deposited small, irregular-shaped, gravelly, or sabulous particles. We must receive with some mistrust the assertion that albumen is found not only in the traumatic variety of nephritis, but that it may also occur when the attack proceeds from general causes, or diseases of neighbouring parts. Its appearance is, however, accidental and temporary, and may be completely put a stop to—unless when depending in part on a coexisting affection of the bladder or urethra—by venesection. In the true albuminous nephritis (Bright's disease), the presence of albumen in the urine is a constant condition at all periods, and not to be removed by bloodletting

Anatomical Lesions.—General or partial increase of size; the kidney is also red and injected, both superficially and deep-seated: red induration, coexisting with increased weight and size; giving, when both kinds of coloration exist, a maculated appearance; collections of pus, especially in the cortical substance, and of coagulable lymph in the rheumatic; infiltration with the same fluid; ulceration of the mammillæ; gangrene, but this is extremely rare An anemic state of the organ is at times met with in albuminous nephritis. Deposition of discoloured fibrin instead of pus is seen in the traumatic variety.

Causes.—Age has a modifying influence in the occurrence of nephritis; for although it has been seen in every period of life, yet it is more commonly met with in the maturity of adult age, than in old men and children. It is rare to find it in this last class under seven years of age. It is, also, more common in men than in women, and in those of a sanguine temperament than others. Children of gouty or rheumatic parents are liable to nephritis. Its greater frequency in cold and damp climates than in warm ones, is a fact of familiar remark; but in this estimate we must take account of the much larger use of distilled and fermented liquors by the inhabitants of the former than of the latter; which alone is a common, perhaps the most common cause of renal disease in general, when not of a traumatic nature.

The most direct and the most frequent causes of acute nephritis are contusions and wounds of the kidneys, and the irritation of foreign bodies, such as calculi, worms, or urine unduly retained in the excretory passages, and more particularly in the pelves of the kidney. All morbid states inducing retention are indirect causes of renal inflammation; whether they be inflammation of the ureter, prostate, urethra, and bladder, or displacements and diseases of the uterus, ovaries, rectum, &c. Paralysis induced by cerebro-spinal effusion or compression will, also, give rise to nephritis. Violent movements or shock, by running, leaping, riding on rough roads, are occasional causes of the disease. Various irritants, the operation of which is more particularly directed to the urinary apparatus, are commonly mentioned as often causing nephritis: such are cantharides, oil of turpentine, narcotico-acrids, &c., but their power in this respect is no doubt overrated, and by some (*Christison*) is entirely denied. Under circumstances of predisposition, gouty or rheumatic, a sudden stoppage of perspiration, or a debauch, will bring it on; as will also the irritation of calculi: the sudden disappearance of arthritic gout or rheumatism may be followed by nephritis.

The disease may exist in very different degrees in the two kidneys, even where the cause has been common to both, such as exposure to cold and dampness, the action of cantharides, &c. Inflammation of one kidney caused by topical cause, as a bruise, will produce an evident effect on the other, manifested by a material diminution if not suspension of the urinary secretion.

Chronic nephritis is not marked by many diagnostic symptoms. M. Rayer assures us that habitual pain in one or both renal regions, coexisting with diminished acidity, neutral reaction, or more especially alkalescence of the urine, and a sensation of weakness and numbness in the lower extremities, constitute the principal characters of chronic nephritis. But this opinion must be largely qualified when we learn, that, in a great number of cases, we can hardly suspect the existence of the disease, unless on the evidence of a most minute examination of the urine. Chronic nephritis is most intimately connected with the generation of phosphatic calculi. "The urinary sediment in chronic nephritis, when the fluid itself is alkaline, is either amorphous, and composed almost wholly of phosphate of lime, or chiefly constituted by crystals of ammoniaco-phosphate of magnesia; or, as most commonly happens, both these salts are held in suspension, together with globules of mucus and a small quantity of lithates. The contents of the bladder are, in ordinary cases, excreted frequently, and in small quantities at a time. Impregnation with blood or albumen

is rare in the uncomplicated disease, with mucus frequent, and with pus indicative of inflammation of the mucous membrane of the passages." (*Brit. and For. Med. Rev.*, vol. viii.)

The diagnosis of this affection is occasionally confirmed by the good effects of local depletion; as when, after cupping on the loins, the renal pain and the turbidity and alkalinity of the urine not unfrequently disappear altogether. Fever is generally absent, but the disease is attended with progressive marasmus and a general cachectic habit, which M. Rayer believes to favour the development of pulmonary tubercles.

The *anatomical lesions* in chronic nephritis are often not materially variant from those in the acute disease. More commonly, however, we meet with diminished size of the kidney; but sometimes hypertrophy with increased weight and hardness of tissue; granulated, rough, or tuberculated exterior: red injection, but this we may suppose to be present as a result of an acute attack just before death; anemia, partial or general, ordinarily attended with augmented density and in many cases with hyperemia; a peculiar species of atrophy, of which one of the most remarkable characters consists in the appearance of cicatrises on the outer surface of the organ; and finally, ulceration of, or purulent collections in, the mammillæ. Their investing membranes frequently participate in the inflammation affecting the organs themselves, — their vessels rarely.

The *causes* of chronic nephritis are the same as those of the acute; but the chief influential ones are irregularity and excesses in food and the free use of alcoholic drinks, which are rendered doubly pernicious by interruption of the cutaneous function through cold and moisture.

Treatment of Nephritis. — Acute nephritis requires the antiphlogistic treatment to be carried out to its full extent. Venesection in the quantity of twenty-four or even thirty-six ounces ought to be practised at once, and in a short period repeated, to an amount required by the violence of the inflammation. In aid of this means, leeches ought to be applied to the lumbar regions, over the kidneys, or cupping practised in the same place, in order to abstract blood to the extent of at least twelve ounces. Laxatives should always be preferred to purgatives; and castor oil, or rhubarb and magnesia, are to be given to the exclusion of saline medicines; and, after all irritating matters are removed from the intestinal canal, enemata will suffice for evacuating the lower bowels. Warm water as an internal fomentation of the colon, acting sympathetically on the kidney, and afterwards some preparation of opium, may advantageously follow as enemata. Immersion in a warm bath for half an hour at a time, and the administration of mild diaphoretics, of which Dover's powder is the best, are exceedingly useful adjuvants to the evacuating plan. Among the direct reducers of inflammation, calomel and tartar emetic are entitled to a place after general and local bloodletting. Opium may be combined with both of them, in order to aid their sedative effect, and to prevent the nausea which is apt to ensue immediately after the use of tartar emetic, and more remotely after calomel. So long as the renal inflammation is high, both these medicines will be tolerated in large doses without inconvenience. The probability of ptyalism from the free use of the calomel will be abated by encouraging the peristaltic motion of the bowels, by simply watery or mucilaginous enemata.

Counter-irritation will be usefully induced by warm pediluvium, or even the warm hip-bath, and by frictions of the feet and lower extremities

generally with stimulating liniments. Difference of opinion prevails on the subject of the quantity of drink to be allowed to a patient labouring under nephritis. Some would withhold it altogether, or give it in very small quantity, on the plea that the kidney ought to be tasked to as little secretory effort as possible when it is inflamed ; and if possible its function suspended when the ureter is obstructed with calculus. But, on the other hand, it is generally admitted, that the smaller the quantity of urine, the more concentrated it is, and more abounding in saline and other stimulating ingredients; and hence the advantage of free dilution to obtund, as it were, the acrimony of the urine, and, in fact, to render the task of the kidneys themselves easier by increasing the proportion of water in the blood brought to them.

There is scarcely any of the phlegmasiæ in which opium in full and repeated doses is so much relied on as in nephritis. Its use may follow directly venesection, especially if this latter be carried so far as to cause faintness, or it may be given at intervals throughout the whole period of the complaint, in conjunction with the other remedies already mentioned.

In *nephralgia*, the symptoms of which are chiefly measured by pain, unaccompanied by fever, but with greater sympathetic disturbance of the bowels, opium is the chief remedy, and more particularly when the pain is kept up by the retention of a calculus in the pelvis, or in the ureter.

The *treatment of chronic nephritis* is not materially different from that demanded in the acute form. Depletion is not required to the same extent, but its repetition is somewhat more called for ; and the use of purgatives is not only admissible but decidedly efficacious. Narcotic diuretics, such as digitalis and colchicum, with the alkalies, and particularly the liquor potassæ, by some recommended in the acute form of the disease, are also called for in the chronic. Mineral acids often prescribed in chronic nephritis with alkaline urine are strongly protested against by M. Rayer. Greater reliance, however, is placed on counter-irritation by tartar emetic plaster on the loins, or by caustic or seton to the same part. Blisters are generally objected to ; but unless the patient be constitutionally prone to be irritated by them, their use need not be withheld.

The *diet*, which in acute nephritis is of the simplest kind, consisting indeed almost wholly of diluent and demulcent drinks, may be more nutritious in the chronic variety. M. Rayer counsels the moderate use of animal food at this time. Attention to the cutaneous function, and preserving an equable temperature of the skin, is of the very last importance for the entire recovery from acute nephritis and the prevention of a relapse.

When nephritis occurs as a consequence of the retention of urine, produced either by urinary or cerebral disease, it will be necessary to evacuate the bladder regularly. This is best done by introducing the catheter at proper intervals, instead of allowing it to remain in the bladder ; a not uncommon but a hurtful practice. One of the most troublesome and dangerous forms of nephritis is that occurring after other diseases, and, according to the classification of M. Rayer, the product of animal poisons. The most marked, or perhaps I should say, the most common instance, is nephritis occurring in typhous and typhoid fever, owing, as we are told, to retention of urine. Without denying that this is a contributing cause, I am inclined to believe that the kidneys become affected in the progress of the fever, as the lungs, or the brain, or spleen are known to be, viz., deeply congested, and to a certain extent inflamed ; and hence a suspension of their secretory function.

Suppuration of the Kidney.—I must now say a few words on the termination of renal inflammation by suppuration. Were the pus discharged with the urine the product of phlogosis of the body of the kidney alone, it ought to have engaged our notice under the head of acute nephritis; one, but happily not usual, termination of which is by suppuration. But, in the first place, we have reason for believing that pus may be discharged from the kidneys without any affection of their parenchymatous and secreting structure,—the disease being confined to the pelves and calyces; and, in the second place, pus may be secreted from the kidneys and found in the urine, without any special lesion of the urinary apparatus. Hence, the appearance of pus in the urine is not necessarily diagnostic of disease of any part of the renal organs, nor of the bladder or urethra; although it ought properly to give rise to what in a court of justice would be called violent suspicion of such an occurrence. Some curious but at the same time well-authenticated cases of purulent, or purulent-looking deposits in the urine, in diseases other than renal, and in cases of abscess in other and remote parts, are given by Dr. Willis in his valuable work already cited; and to which, I am glad to add, you can have ready access, as I have had an American edition of it published in my *Select Medical Library*. Burdach regards pus as a secretion intermediate between hemorrhage and secretion; an opinion corroborated by Mr. Gulliver, who has discovered globules of pus in the blood; not merely in every case in which pus was actually formed in some particular part, but in which there was inflammation and the phenomena precursory to its formation. But although in the blood, pus is foreign to it, and must be discharged. This is sometimes done, at random as it were, in the viscera, cavities of the joints, &c.; and in a more favourable manner by the channel of the kidneys. Professor Chelus of Heidelberg observed the urine of a patient labouring under a purulent deposit within the pleura, from a penetrating wound of the chest, to deposit pus which could not be distinguished from that which flowed out of the chest by the wound.

When acute nephritis is about to end in suppuration, we see the customary, but in the present case not distinctly morbid signs of rigor and hectic fever; and sometimes, if the enlargement of the kidney has been considerable, a prominence and fluctuation noticed externally. But this last is more common in that variety of the disease which M. Rayer calls *peri-nephritis*, — agreeably to his division, with which I have made you acquainted. This eminent pathologist believes pus to be a frequent termination of the simple variety, as contrasted with the arthritic one, of nephritis. If it be so, we must receive it in the same light in which Burdach speaks of its occasional occurrence, viz., a modified secretion; a termination and means of relief of inflammation of the secreting portion of the kidneys. At other times, a distinctly-formed renal abscess may burst suddenly into the cavity of the kidney, and large quantities of pus, occasionally mixed with blood, and also with gravel, if the inflammation have been caused by renal calculi, appear in the urine. It should be mentioned, however, in this place, that the most frequent cause of suppuration of the kidney is inflammation from calculi. Suppuration sometimes leads to fistulous passages and openings, as in the lumbar muscles, pointing outwardly or communicating with the liver and giving rise to hepatic abscess; or with the peritoneum, causing acute peritonitis; or with the colon or duodenum, through which the contents of the renal abscess are discharged by the rectum.

Life may be protracted for a long time under the existence of considerable disorganization of a kidney, as in the instance mentioned by Dr. Prout (*op. cit.*, p. 169), of a gentleman who, before the age of twenty, laboured under distinct symptoms of an abscess in the kidney, but who, notwithstanding, lived to the age of seventy; and who almost daily, throughout that long period, passed more or less of purulent matter in the urine. "His appearance and state of health were never robust; yet he enjoyed tolerable health and comfort; and only felt greater annoyance than usual when the purulent matter, as it would occasionally do, almost disappeared from the urine. On such occasions the stomach became deranged; and he had an attack of feverish excitement, which usually terminated, after a short time, in the sudden discharge of an enormous quantity of pus with the urine; after which he speedily recovered his former state of health. Such attacks were usually brought on by exposure to cold, or by inattention to the state of the bowels, diet, &c., and he finally sank under an unusually severe attack of this kind." Dr. Prout adds in a note: it is remarkable that dropsy rarely appears under this form of disease; the gentleman alluded to, in the text, even to the last, never suffered from œdema. But the phenomena connected with the formation of pus have been placed in a much clearer light by M. Rayer, who shows that this product is by far more common in his second division of renal inflammation, or in pyelitis, than in nephritis proper. A few words now on this disease.

Pyelitis, already defined to be inflammation of the pelves and calyces, may be, as before stated, simple, blenorrhagic, calculous, or verminous; varieties, the three last of which express very well its occasional origin. Pyelitis is, also, acute and chronic. The symptoms are nearly the same with those of nephritis; the pain is represented to extend more frequently to the testicle, and to be accompanied by retraction of this organ, than in inflammation of the substance of the kidney. It has great tendency to terminate in suppuration; and hence in the properties of the urine, we find the best diagnostic symptoms of pyelitis. A frequent termination, ought we not rather to say extension and complication also, is nephritis. The accumulation of matter is sometimes so great as to distend the pelvis and calyces, and at length the kidney is stretched out, in a measure, and at the same time loses its healthy organization by atrophy; and, occasionally, an enormous pouch is formed, which points and discharges in a manner similar to that just now described, when speaking of abscess of the substance of the kidney. We can readily believe and understand the fact, that pyelitis seldom exists without being complicated with nephritis; and considering its common origin from the diseases of the lower part of the urinary apparatus and retained calculi, that it should precede this latter in point of time. A frequent complication, and, it may be added, origin of pyelitis, is inflammation of the mucous membrane, or catarrh of the bladder.

The *anatomical lesions* in *acute* pyelitis are, vascularity of the mucous membrane of the pelvis and calyces, with red spots and ecchymoses, and occasional extravasation of blood upon its inner surface, and sometimes lymph thrown out in patches so as to obstruct the ureter. Dilatation of the pelvis, where retention of urine was the exciting cause, is frequently met with; and occasionally we find softening, ulceration, or even perforation of the membrane, where calculus was the cause of the disease. The urine contained in the pelves and calyces commonly contains blood and

pus, not always discoverable by the naked eye, but visible enough with the help of the microscope. It also contains amorphous sediments of lithate of ammonia, crystallized lithic acid, crystalline phosphate of magnesia and ammonia, and likewise albumen.

In chronic pyelitis, the membrane is dull white, its vessels large and varicose, but not reticulated; the external veins on the kidney are large; the pelvis and calyces are distended in many cases, and then the membrane is thickened, without visible vessels, and the ureter much contracted and sometimes reduced to a mere fibrous cord. Sometimes the inner surface of the membrane is of a reddish-brown tint or mottled; at other times it exhibits transparent vesicles like sudamina; and occasionally ulcerations are seen: these last corresponding with the pressure made by the edges and points of calculi.

The *treatment* of pyelitis will not differ from that of nephritis; with the addition of those measures obviously called for on a removal of the exciting causes, such as of calculi, if possible, and at any rate of phlogosis of the bladder or urethra, as in cystitis and suppressed or aggravated gonorrhœa. A fact, connected both with diagnosis and treatment, is the change which pus undergoes by the action of ammonia and other alkalies, should be known. The ropy and slimy matter resembling mucus detected in the urine, in pyelitis as well as in chronic cystitis, is pus thus modified, either by the ammonia originally in the urine, or by alkaline remedies administered for the disease.

LECTURE LXI.

DR. BELL.

BRIGHT'S DISEASE, or *Granular Degeneration of the Kidney.—Renal dropsy*—Its organic seat, common accompaniments and constant symptoms—*History*—*Symptoms* of the disease—Acute form of the disease; is short, and not often seen—Anasarca soon appears—Acute affection a sequence of scarlatina—Albuminous urine, how far a characteristic symptom—Properties of the urine in this disease—Its inflammatory type—Morbid urine under the microscope.—*Tests of albuminous urine*—The blood; its appearance and composition.—*Anatomical lesions* of the kidneys in the several stages of albuminuria—In the other organs—Congested condition of the kidneys.—*Secondary diseases*—Anasarca most common; next, ascites—Morbid state of the heart—Albuminous urine from diseased heart alone—Phthisis—Diarrhœa very common—Cerebral disease and meningeal inflammation with effusion—Pregnancy developing Bright's disease—Exanthemata—particularly scarlatina giving origin to it.

TO-DAY I have to direct your attention to one of the achievements of modern pathology, in its revealing to us, with great precision, the organic cause of a number and variety of disorders which have hitherto been regarded as separate or merely functional ones. The discovery is of a peculiar structural alteration of the kidney and accompanying constitutional disorders. The disease was first made known by Dr. Bright; and since farther explained by other distinguished pathological physicians; but by no one with so much fulness and detail, and with the introduction of so large a body of original and collected matter, as by M. Rayer. It has various names, viz., BRIGHT'S DISEASE—*Albuminous Nephritis* (Rayer); *Granular Degeneration of the Kidney* (Christison); *Albuminuria* (Martin Solon—Forget); *Mottling—White Degeneration—Contraction—Granulation.*

The most obvious anatomical lesion of the kidneys in this disease consists in a granulated appearance of the cortical part; the most obvious and most common morbid accompaniment in the system at large is anasarca, or some form of dropsy, and the almost invariable symptom is albuminous urine. If a principal and almost constant symptom, after the old fashion, as that of anasarca, were to justify a name, we should call it *renal dropsy*. By its dropsical symptoms, indeed, the disease will, for the most part, first arrest your attention. I cannot give you a better idea of the general and frequently also anomalous features of this disease, than in the very words of Dr. Bright himself. (*Guy's Hospital Reports*, vol. i.)

History and Symptoms.—"The history of this disease and its symptoms are nearly as follows:—

"A child, or an adult, is affected with scarlatina or some other acute disease; or has indulged in the intemperate use of ardent spirits for a series of months or years: he is exposed to some casual cause or habitual source of suppressed perspiration: he finds the secretion of his urine greatly increased, or he discovers that it is tinged with blood; or, without having made any such observation, he awakes in the morning with his face swollen, or his ankles puffy, or his hands œdematous. If he happen in this condition to fall under the care of a practitioner who suspects the nature of his disease, it is found that already his urine contains a notable quantity of albumen: his pulse is full and hard, his skin dry, he often has headache, and sometimes a sense of weight or pain across the loins. Under treatment more or less active, or sometimes without any treatment, the more obvious and distressing of these symptoms disappear; the swelling, whether casual or constant, is no longer observed; the urine ceases to evince any admixture of red particles; and, according to the degree of importance which has been attached to these symptoms, they are gradually lost sight of, or are absolutely forgotten. Nevertheless, from time to time the countenance becomes bloated; the skin is dry; headaches occur with unusual frequency; or the calls to micturition disturb the night's repose. After a time the healthy colour of the countenance fades; a sense of weakness or pain in the loins increases; headaches, often accompanied by vomiting, add greatly to the general want of comfort; and a sense of lassitude, of weariness, and of depression, gradually steals over the bodily and mental frame. Again the assistance of medicine is sought. If the nature of the disease is suspected, the urine is carefully tested; and found, in almost every trial, to contain albumen, while the quantity of urea is gradually diminishing. If, in the attempt to give relief to the oppression of the system, blood is drawn, it is often buffed, or the serum is milky and opaque; and nice analysis will frequently detect a great deficiency of albumen, and sometimes manifest indications of the presence of urea. If the disease is not suspected, the liver, the stomach, or the brain divides the care of the practitioner, sometimes drawing him away entirely from the more important seat of disease. The swelling increases and decreases; the mind grows cheerful or is sad; the secretions of the kidney or the skin are augmented or diminished, sometimes in alternate ratio, sometimes without apparent relation. Again the patient is restored to tolerable health; again he enters on his active duties: or he is perhaps less fortunate;—the swelling increases, the urine becomes scanty, the powers of life seem to yield, the lungs become œdematous, and, in a state of asphyxia or coma, he sinks into the grave; or a sudden effusion of serum into the

glottis closes the passages of the air, and brings on a more sudden dissolution. Should he, however, have resumed the avocations of life, he is usually subject to constant recurrence of his symptoms; or again, almost dismissing the recollection of his ailment, he is suddenly seized with an acute attack of pericarditis, or with a still more acute attack of peritonitis, which, without any renewed warning, deprives him in eight-and-forty hours of his life. Should he escape this danger likewise, other perils await him; his headaches have been observed to become more frequent; his stomach more deranged; his vision indistinct; his hearing depraved; he is suddenly seized with a convulsive fit, and becomes blind. He struggles through the attack; but again and again it returns; and before a day or a week has elapsed, worn out by convulsions, or overwhelmed by coma, the painful history of his disease is closed."

Granular disease of the kidneys, in its acute form, often eludes observation, or rather it is mistaken for simple nephritis, to which its symptoms have a close resemblance; and it is not until it has passed into its sub-acute or chronic state, that it more pointedly fixes the attention of the physician. Even at this time it is referred to some other morbid derangement than that of the kidneys; as may be inferred from the preceding description of it by Dr. Bright, who himself only recognised it, at first, in this state. It is seldom that the lumbar pain or uneasiness, fever, and albuminous and scanty urine are long present before anasarca is formed. Frequently, this affection appears in the course of the first or second day, and it commonly puts on the character of inflammatory dropsy, one external feature being an absence of pitting of the swelling on pressure. Most generally, as Dr. Christison observes, the acute symptoms give place to those of the chronic form of the disease, which runs its own proper course. The only invariable character of the acute form which he admits, is scanty, highly-coagulable urine, with more or less fever. More especially is its value evinced in the clear light which it throws on the most common form of dropsy, and on the nature of dropsies in general. These symptoms may prevail alone for a few days, till coma and convulsions suddenly occur, and prove quickly fatal.

The acute affection has most frequently been witnessed in children as a sequence of scarlatina, especially, according to M. Rayer, in certain epidemics of this disease; but it also occurs in adults independently of any exanthematous disorder, and notably in various diseases of the kidney (not granular), and of the bladder. Dr. Christison on this point, as to the indications derived from the presence of albumen, says: "It appears unquestionable that certain kinds of food may occasion its appearance in the urine of some people; that it may be produced there by certain poisons that act on the kidneys; occasionally by true nephritis, always more or less by pyelitis; rarely by tubercles; often by carcinoma; often by scurvy and by purpura; seldom during the crisis of acute inflammatory diseases or continued fever. Simply and abstractedly, therefore, it is not a proof of granular disease being present in the kidney; but it is far more frequently produced by granular disease than by all other causes put together; and no other cause yet ever known occasions so large a proportion in the urine as is generally seen in the early stage, and sometimes, too, in the chronic form of the disorder; so that urine, at least *moderately coagulable*, according to the definitions given above, probably always indicates granular derangement."

Albumen has been met with in the urine of an apparently quite healthy and florid-looking young man, whose sole disease, to which the idea of sequelæ could be attached, had been intermittent fever six years previously. In a catarrho-rheumatic affection, Simon has observed a little albumen in the morning urine, but not a trace could be found in that secreted in the middle of the same day. In a case of pneumonia, he detected albumen with urate of ammonia on the seventh day of the disease, and the urine continued to be albuminous until convalescence was established, the albumen gradually disappearing as the health improved. Albumen has been found in the urine of a man attacked with articular rheumatism, after the subsidence of the pain and swelling.

Common as albuminous urine is in dropsy, we must not expect to see it in all the forms of disease of which serous effusion, called dropsy, is a symptom and an effect. In hydrothorax and in dropsy dependent on disease of the heart or liver, there is generally no albumen, whereas if dropsy arise from disease of the kidney, albumen is generally present. "In Bright's disease," continues Simon, whose language I am now using, "as far as my personal observations extend, it is always found, although the opposite opinion is held by Graves.*

The urine in the acute stage has mostly an acid, sometimes a neutral reaction, and is voided in small quantity: its colour is variable; sometimes of a reddish or deep-brown, depending on the presence of more or less blood; but more frequently, as the disease advances, it is of a yellowish or greenish-straw colour, like whey not strained, and in all cases it is more or less turbid (Tissot—*Dissertation*, 1833). This opaline turbidity, as it has been aptly termed by Christison, is not removable by repose; and arises from modified mucus, in the microscopic scales of the epithelium of the urinary mucous membrane; in rare cases strings of viscid mucus are seen. This turbidness may also proceed from globules of fatty matter being suspended in the urine.

In those cases in which albuminuria is accompanied by other inflammatory affections, as cardiac attacks, cirrhoses of the liver, pulmonary emphysema, Becquerel found the urine to exhibit the inflammatory type: it was of a dark colour, high specific gravity, an acid reaction, and not unfrequently deposited a sediment. In two out of twenty-two cases observed by him, the urine was alkaline throughout the whole course of the disease, and deposited sediments composed of the phosphates of lime and magnesia and carbonate of lime. The urine, in these cases, contained a very large quantity of carbonic acid which was combined with various bases, but chiefly with ammonia; it was at the same time considerably diminished, having yielded the elements for the formation of carbonate of ammonia.

If, says Simon, *op. cit.*, we compare the analyses of morbid urine (seven in number) with that of the healthy renal secretion, the composition of which is, water, 971·9, solid constituents, 28, viz., urea, 12·1, uric acid, 0·4, fixed salts, 6·9, extractive matters, 8·6, we shall find that, with the exception of analysis, the solid constituents are less than in healthy urine; that the urea, with a single exception, only amounts to one-third or less of the solid constituents, whereas, according to Becquerel, it constitutes nearly one-half in healthy urine; that the quantities of fixed salts,

* Dublin Journal, No. 60.

and also of extractive matters, are, likewise, less than in the normal secretion; and finally, that, on the other hand, the morbid urine contains albumen, which is altogether absent in a state of health.

Albumen is in such quantity as often to occupy when coagulated and allowed to rest, between a fourth and an eighth of the volume of the urine. The quantity decreases generally with the advance of the disease, unless an occasional acute attack supervene on the chronic stage.

Examined under the microscope, the urine, in the first or acute stage of the disease, is seen to contain mucous and blood corpuscles, pavement epithelium, and in a case recorded by Simon, round dark vesicles apparently filled with granular matter, strongly resembling Gluge's inflammatory globules; also, tubes composed of an amorphous matter, resembling coagulated albumen. These tubes are derived from the epithelium investing the tubes of Bellini. By Schoenlein this kind of sediment is considered to be diagnostic of Bright's disease. The more correct view would be to regard it as a symptom of congested or irritated kidneys.

The density of the urine is affirmed by M. Rayer to be above the healthy standard, or 1·028, while Dr. Christison tells us that it is much below or between 1·007 and 1·011, and in a few cases as low as 1·004, rarely above 1·014. But there must be differences in this respect according to the period of the disease at which the examination is made.

The calls to urinate are more frequent than in health, and the quantity of urine discharged is at first nearly natural; but as the disease advances, and especially if it approach a fatal termination, it falls far below the common standard; and in some cases, only one or two ounces are passed daily for many days consecutively.

Tests of Albuminous Urine.—The tests of albumen in the urine have been stated before to be, first, heat alone, and then nitric acid: either causes a curdiness, a coagulum, and then precipitation. A strong precipitate is also yielded by the addition to the urine of infusion of galls and bichloride of mercury. To these tests we should add non-precipitation by acetic acid. Tissot attaches much importance to physical signs, viz., a number of bubbles, which remain on the surface of the urine and on the sides of the vessel in which it was received, so much longer than those casually made in common urine. By stirring the urine, or better still, by blowing in it through a tube or common reed, a great quantity of these bubbles, like soap bubbles blown by children in their sports, is developed, if the urine be diseased. In healthy urine, the bubbles thus made are smaller and soon disappear.

When the quantity of albumen is very small, the application of heat is, Simon assures us, the most efficient test, and the most minute quantity of albumen may be readily detected, by observing the uppermost part of the column of the fluid as it is being gently treated in a test tube. When the temperature is sufficiently elevated, the coagulation begins to occur in the form of small white nebulæ, which are dispersed by the rising of large bubbles, and the general turbidity of the whole fluid is often so slight that, unless the development of these nebulæ has been observed at the commencement of the process, it becomes a matter of difficulty to decide upon the presence of albumen.

If the urine be alkaline, heat will not produce a deposit of albumen, which remains combined with the alkali. On the other hand, a turbidity may occur on the application of heat, owing to the precipitation of earthy

phosphates, or possibly of carbonate of lime when no albumen is present. In the first case, if there be albumen in the fluid, its presence will be evinced by the addition of a few drops of nitric acid, which will combine with the alkali, forming a soluble salt; and in its excess precipitating the albumen.

Nitric acid may, however, throw down a deposit of uric acid, which may be mistaken for albumen, and it will also render the urine turbid in the urine of persons who, as has been remarked by Dr. Rees, have used balsam copaiba. In both these cases, heat produces no precipitate.

The examination of the suspected urine should be made repeatedly, because sometimes the albumen disappears for a time. It is necessary, as Dr. Christison very properly remarks, to attend to the proportion of the albumen, both with a view to the prognosis and the treatment. "For this end, it should be coagulated in a tube, and left at rest for twenty-four hours; upon which the following degrees of coagulability may be noted: gelatinous by heat; very strongly coagulable, where a distinct precipitate separates, occupying the whole fluid; strongly coagulable where it occupies half the volume of the fluid; moderately coagulable, where it occupies a fourth of the fluid; slightly coagulable, where it occupies an eighth; feebly coagulable, where it occupies less than an eighth; and hazy by heat, where a turbidity is occasioned without visible flakes."

The appearance and composition of the *blood* in granular disease of the kidney, are points of considerable interest; although we must regret that they are not as fully ascertained by the different writers on the subject as we could wish. The frequency of the buffiness of the blood in the first stage of the disease is noticed with considerable unanimity. The serum is diminished in its specific gravity owing to the loss of its albumen, and it may fall from 1030, the average healthy standard, to 1022, or even 1019. After venesection, if the urine is rendered thereby less albuminous, the natural state of the blood may return. Sometimes the latter is lactescent from admixture with fatty matters, removable by sulphuric ether. The quantity of urea is increased, and also that of fibrin, according to Dr. Christison. With the progress of the disease the blood undergoes farther alteration, but the quantity of crassamentum is diminished, and that of serum increased: the specific gravity of this latter is also larger, and even may exceed the common standard. The proportion of blood globules is greatly diminished, and the reduction increases as the morbid change of the kidney advances. "Probably," says Dr. Christison, "no other disease except hemorrhage occasions so great an impoverishment of the colouring matter of the blood. The healthy proportion in a stout male being about 1340 grains in 10,000; it has been found reduced in granular disease of the kidney, according to its stage, to 1110, 955, 720, 564, and even 427.

The observations of Christison are coincident with those of Simon, as far as regards the decreased quantity of solid constituents, the small amount of blood corpuscles, as the disease advances, and the presence of urea in the blood. This last is not confined to Bright's disease, since it occurs also in cholera, and ischuria where there is a deficient secretion of urine.

Anatomical Lesions. — The lesions of structure observed in the kidneys of those who have died from albuminuria, are referable, Dr. Bright thinks, to three forms or degrees, whilst by M. Rayer these are extended to six, and by M. Martin-Solon, again, reduced to three. I shall content myself with the more simple division. In the first degree, the kidneys are more

voluminous, and their weight is greatly increased even to double or triple that of the ordinary standard; consistence firm but without hardness; and their surface is red and dotted with numerous small points still redder than the rest — an appearance this last, believed by M. Rayer to depend on injection of the glands of Malpighi. On making an incision of the kidney from the convex border to the sulcus, the cortical portion is exhibited in a state of tumefaction, thickening, and injection, with red points similar to those just described. The tubular substance is compressed, — less red and with fewer striæ than common; and on the internal surface of the calyces and pelves, fine arborizations are met with.

It is not common, however, for the disease to be thus suddenly terminated at the first stage; for even in acute cases we meet with more decided organic alterations. In the second stage or form, accordingly, there is, as in the first, increase of bulk and injection of tissue; but this latter, so far from being general and uniform, alternates with a light-yellow colour of the cortical substance, equally visible on the surface as in its interior, and which runs into the lively brownish-red of the tubular portion.

In the third stage of albuminuria, the volume and weight of the kidneys are considerably increased; but the cortical portion, now quite anemic, exhibits a uniform pale yellow hue, whilst the tubular still retains its bright red. The latter is compressed, turned back, as it were, towards the sulcus by the increase in thickness of the cortical substance, especially at the projections into the tubular cones.

At this stage of organic change, which belongs to the chronic disease, we meet with an appearance which some would designate as the fourth stage. It is that which Bright has so carefully described as the *granulated texture* of the kidney. The whole cortical part is converted into this texture with copious deposit of an opaque white substance. In a more advanced degree the kidney is quite rough and scabrous to the touch externally, and is seen to rise in numerous projections of about the size of a large pin's head, of yellow-red and purplish colour. The form often inclined to be lobulated, the feel hard, texture of semi-cartilaginous firmness; tubular portions appear to be drawn near to the surface of the body.

There is a great tendency to inflammatory excitement of the cellular tissue, and of the serous membranes, with effusion, in albuminuria. Softening of the mucous membrane of the small and large intestines, pneumonia, and meningitis, are frequent lesions consecutive on this disease.

As regards the precise state of the kidney giving rise to albuminuria or Bright's disease, the probability is, Dr. Christison thinks, that congestion, or even reaction in the kidney, precedes, in the acute stage, a peculiar morbid deposit; but that this last, or the chronic form, is made without any such precursor; that as the deposit increases, the healthy texture of the kidney begins to be absorbed; that after a time, although the absorption of the healthy structure goes on, the formation of the morbid deposit often ceases; and that possibly this deposit is sometimes absorbed in its turn. The microscopic elements of the granulations are, molecular granules, and aggregated globules, and sometimes fat globules. They are situated sometimes in the Malpighian corpuscle, sometimes in the uriniferous canals; and sometimes on the interstitial substance, between the vessels and secretory apparatus.

Within these few years past, different writers (and we may specify Mr. Robinson and Dr. Burbredge, in London Medical Gazette) have pointed

out, what they believed to be, the inflammatory and congestive nature of albuminuria. Mr. Robinson believes that the acute stage of this disease is simply acute nephritis, and that all the varieties of morbid appearances occurring in the febrile stage may be considered as the results from so many different degrees in intensity and duration of chronic inflammation of the kidney. This gentleman confirms his view of the presence of albumen in the urine being the consequence of congestion of the organ, by experiments on rabbits, in the urine of which he detected albumen after he had tied their emulgent veins.

Dr. Burbredge, after adverting to the opinions of Drs. Elliotson and Darwall, and of Drs. Abercrombie and Alison, that the secretion of albuminous urine was either dependent on or associated with renal congestion, mentions his having been himself often struck with the close resemblance which certain of the kidneys altered by granular disease bore to the gin-liver or nutmeg-liver of some authors. Quite recently, Dr. Corrigan advances his distinct belief in the pathological condition of the kidney in Bright's disease, being analogous to that which is known as it occurs in the liver, by the term cirrhosis.

Secondary Diseases. — *Anasarca* is an almost invariable attendant on granular disease of the kidney; so much so that it is regarded as a characteristic symptom. But there are instances in which the renal affection lasts for a long time without dropsy. It was this latter, however, which first drew the attention of Dr. Bright to the disease of the kidneys. He found it to prevail in twenty-three out of twenty-four cases of this latter; Rayer, in 16 out of 17. The form it most generally assumes is anasarca, attended with more or less effusion into the great serous sacs, and into the pulmonary cellular tissue. M. Rayer's experience, confirmed by M. Tissot, leads him to believe that *ascites* is the most common. Most cases of what are called inflammatory dropsies, as well as those following scarlatina, depend on disease of the kidneys. So, too, are most, if not all, cases attended with diuresis, provided the urine be not saccharine. A writer, to whom I have been so largely indebted in my summary of opinions, particularly those of M. Rayer, on all the diseases of the kidneys of which I have hitherto spoken, asserts that anasarca is scarcely a less frequent attendant on the renal lesion now before us, than, for example, cough in phthisis. (*Brit. and For. Med. Rev.*, vol. x.) But, as Dr. G. O. Rees has observed, anasarca is frequently wanting, as a symptom, in chronic albuminuria; or at most in this class, there is only a slight swelling of the under eyelid.

Diseases of the bladder, prostate, and urethra, have, in M. Rayer's opinion, little or no influence over 'albuminous nephritis' — granular disease of the kidney; and he has found that the latter rarely induces inflammation in the pelvis and ureters, and still more rarely in the bladder. Diabetes may, he thinks, have some influence in its production.

A very frequent accompaniment of Bright's disease is a *morbid state of the heart;* Dr. Bright having found sixty-seven cases of cardiac affection — hypertrophy with or without valvular lesion — in one hundred of renal degeneration. This gentleman drew a hasty inference, that the latter always preceded and acted as a cause of the former. M. Rayer, on the contrary, believes that the disease of the kidney is very frequently produced by that of the heart, and he has seen slight albuminuria in subjects affected with hypertrophy or valvular lesions, gradually becoming intensely

marked, and attended with the most distinct evidence of the special renal affection. But it must be added, that there is albuminous urine in cases of disease of the heart or large vessels without renal or Bright's disease; and hence we are assured also of another fact, that this character of urine is not always the sign of disease in the kidneys. M. Forget, of Strasburg, in the *Gazette Médicale de Paris*, Sept. 1837, relates the case of a middle-aged woman, who died from disease of the heart (this organ was hypertrophied, and the mitral valve particularly was ossified and contracted), but the kidneys were perfectly sound. The most obvious disorders during life were anasarca and ascites, and the passage of albuminous urine. This writer gives several cases showing the coexistence of disease of the heart with that of the kidneys and with dropsy. Dr. Darwell had before this time pointed out the fact, that the urine of patients labouring under heart disease might have albuminous urine with sound kidneys, or with simple hyperemia of these organs.

Catarrh or *bronchitis* is noticed by the writers on the present subject, to whom I have chiefly referred, as an extremely frequent secondary disease to that of Bright's. Dr. Osborne (*On the Nature and Treatment of Dropsical Diseases*) found that bronchitis prevailed in eighteen cases of thirty-six, whose histories he was acquainted with. It is often associated with emphysema, and leads to pulmonary œdema, or, as some allege, lobular pneumonia. "It is occasionally acute, much more frequently chronic. It is often enough cured, yet it is frequently obstinate, and in many instances it is the immediate cause of death. Few survive long if it be obstinate, more especially where extensive anasarca concurs, and the primary disease has made some progress." (*Christison, op. cit.*)

There would seem to be an occasional connexion between *phthisis* and granular disease of the kidney; the latter sometimes occurring as secondary to the former; and at other times pulmonary consumption seems to have arisen from the deterioration of the constitution by Bright's disease. Various affections of the stomach may attend the disease; such as dyspepsia and chronic vomiting. Diarrhœa is a very common secondary disorder. M. Rayer saw it in upwards of half his patients; it was remarkable for its intractability, and for its never lessening, no matter how profuse it is, the amount of dropsical effusion. On the contrary, and the observation is not new to those conversant with dropsical diseases, although they may have been ignorant of their organic origin, the effusion seemed to increase with the aggravation of the diarrhœa. Between *liver* and kidney disease there has been occasionally noted a connexion, but it is not well defined.

Cerebral disease, in various forms, is of occasional occurrence in granular kidney. Sometimes an apoplectic attack supervenes suddenly, and proves quickly fatal; but this is far from being a frequent result. In general, the head affection comes on in the insidious form of increased drowsiness, and perhaps some bluntness of the mind and obliteration of the senses; but it must at the same time be borne in mind, that coma is not necessarily connected with the extent or increase of dropsical effusions. Dr. Osborne speaks of arachnitis as a common disease under these circumstances; and Rayer, of sub-arachnoid serous infiltration as the lesion most commonly discovered, along with occasional superabundance of fluid in the ventricles. Dr. Barlow has obtained urea from this fluid. Hemorrhages into the substance of the brain, into the ventricles, or the

cavity of the arachnoid, have been noted by Dr. Bright; but, after all, M. Rayer thinks them so rare, that he doubts there being any real dependence between the two states of cerebral hemorrhage and renal lesion.

Several examples of Bright's disease have been observed by M. Rayer, among the apparent effects of pregnancy. "Some of these cases were remarkable for the facility with which the disease yielded, after delivery, to very simple treatment. In certain instances where the disease preceded, or was developed at an early period of pregnancy, it evidently interfered with the evolution of the ovum, and in cases published both by M. Martin-Solon and himself, led to fatal abortion."

The occasional dependence of granular disease of the kidney on the exanthemata, and particularly scarlatina, has been dwelt on both by Bright and Rayer. Dr. Bright considers scarlatina "as often laying the foundation for the future disease, or as an evidence of the strong tendency existing in the constitution, even when the cure has been apparently complete." At a subsequent date (*Reports, &c.*) he remarks:—

"During the autumn and winter which have just passed (1839–40), we have experienced an almost epidemic prevalence, in London and its neighbourhood, of that anasarca with albuminous urine which has been long known to accompany or follow scarlatina. The attack of the original disease has often been slight; the rash sometimes scarcely perceived; the sore throat often mild; and the affection of the urine has frequently shown itself while the rash or sore throat has still existed. Hematuria has occasionally occurred during the severity of the attack; but more commonly this symptom, with or without anasarca, has followed on the subsidence of the fever, or during the early convalescence. The number who have offered themselves as out-patients, or have been admitted into the wards of Guy's Hospital, under such circumstances, as well as the cases which have occurred in private practice in other parts of London, have been quite unprecedented, within the limits of my experience."

LECTURE LXII.

DR. BELL.

CAUSES AND TREATMENT OF BRIGHT'S DISEASE, OR RENAL DROPSY.—Predisposition by particular constitution, and especially intemperance—Exciting causes—cold and dampness—Origin of dropsies—Antiphlogistic remedies—Appearance of the blood—After venesection, free purging—Mercurials not inadmissible in all cases—Salivation to be especially avoided—Diaphoretics of great value, and, also, all the aids for securing their effects—Warm bath—Diuretics to be sparingly used—Complication of renal dropsy with bronchitis—Treatment of—Other secondary disorders to be relieved—Employment of tartar emetic—Contributions to the treatment of dropsy, which is but a symptom of some organic disease—Dr. Osborne's practice in ascites—Measures useful in the more advanced stages of renal dropsy—Alteratives—Great importance of equable temperature of the skin and of regular diet.

CAUSES.—It is not easy to assign a common cause, or, in a particular case, the specific cause of Bright's disease. As in many other organic degenerations with functional disturbance, the operation of causes is often of long duration, and constitutes a state of predisposition, on which any ordinary exciting cause ingrafts the open disease. It is well remarked

by Dr. Bright, that there is great reason to suppose that the seeds of this disease are often sown at an early period; and that intervals of apparent health produce a false security in the patient, his friends, and his medical attendants, even when apprehension has been early excited. Intemperance is the most usual predisposing cause, that which deteriorates the blood, overtasks for a long time the kidneys in their functional exercise, and prevents their organic actions. Exposure to cold, or cold and moisture, is the most common exciting cause, or, at any rate, that which developes and aggravates the disease. Warning and monition are conveyed very impressively in the following language of Dr. Bright: "Where intemperance has laid the foundation, the mischief will generally be so deeply rooted before the discovery is made, that, even could we remove the exciting cause, little could be hoped from remedies; but, at the same time, a more impressive warning against the intemperate use of ardent spirits cannot be derived from any other form of disease with which we are acquainted; since, most assuredly, by no other do so many individuals fall victims to this vice." Constitutional circumstances are stated by Dr. Christison to clearly predispose to it. These are, the constitution of intemperance, the scrofulous habit, and that state of the system which succeeds to scarlatina. Suppressed perspiration was a most conspicuous cause in Dr. Osborne's cases (*op. cit.*). On his reviewing the causes of the disease (dropsy with albuminous urine) in thirty-six cases, it could be directly referred to suppressed perspiration in twenty-two of these.

A still more conspicuous part is allotted to the skin in the etiology of albuminuria, by a late writer (M. Fourcault, *Causes Générales des Maladies Chroniques, &c.*). He had long observed, as many had done before, the coincidence of marked derangement of the cutaneous functions with the presence of albumen in the urine; and he determined to ascertain, by experiment, whether the former bore a causative relation to the latter. He ascertained, that, by stopping up, as it were, the pores of the skin and obstructing cutaneous transpiration entirely, he could give rise to albuminous urine, which was also of an acid or neutral reaction. This result was obtained in dogs and rabbits, whose skins had been carefully coated with an agglutinative material. But, strange as it may seem, the entire removal of the skin of any of these animals did not produce albuminous urine, nor other morbid phenomena, such as the diminution and loss of animal heat, caused by merely coating the skin in the manner described. The effects of this latter process are due to a suspension of exhalations in which the function of the skin seems to be merely excretory.

M. Fourcault explains the formation of albuminous urine in his experiments by saying that the excess of lactic acid in the blood, owing to the suspended or deficient cutaneous transpiration, abstracts the soda by which the albumen is kept in a fluid state, and this latter is precipitated in the urinary excretions. The salts which ought to find exit by the skin, are also retained in the circulation; and by the predominance of alkaline bases, the urine becomes, if not alkaline, at least but slightly acid. The alkalescence of both the sweat and urine is remarked in diseases in which the skin is inactive, as in scrofula, phthisis, and especially albuminuria.

Farther confirmation is given to this theory by M. Fourcault's injecting lactic acid into the veins of dogs, with the effect of causing albuminous urine.

If these views be received, they would seem to be subversive, and they

have been accordingly so announced, of the pathology of albuminuria, which supposes the immediate cause to be an inflammatory or congested state of the kidneys. But it remains yet to be seen, whether these organs are not thus affected even in the short period which elapses between the interruption to the functions of the skin and the appearance of albumen in the urine.

Continuing the enumeration of causes of albuminuria, we find that the habitual use of articles of heavy digestion, such as cheese, pastry, smoked meat, &c., may so irritate the kidneys in persons predisposed to the disease as to bring it on. The constitutional, by which he seems to understand the sialagogue, action of mercury, is represented by Dr. Christison to be an occasional cause. Diuretic medicines, taken to excess, have appeared to Dr. Osborne to bring on the disease.

Age, sex, and profession, have an indirect influence only. In 74 fatal cases, Dr. Bright found 19 under thirty years of age, 50 under the fiftieth year, 13 above fifty, and 4 above sixty. The early and the latter periods of life are comparatively exempt from the disease. As respects sex, it has been asserted that the proportion of men to women affected is as 3 to 1.

Treatment.—With the prevalent opinions at this time of the origin of dropsy, in visceral engorgement and chronic inflammation, or in membranous irritation and phlogosis, and the condition of the circulation induced in consequence, the appearance of anasarca would prompt the physician, especially the American one, who derives his impressions from the teaching of Rush and his successors, to a correct treatment in the incipient stage of granular disease of the kidney. In this early or acute stage, recourse is had without hesitation to free bloodletting, as we would have in acute nephritis; and its repetition will be governed by the same circumstances as in the treatment of this latter complaint. Nor must we withhold the lancet even after the disease has lasted for some time and has assumed a chronic character, particularly if there be symptoms of oppressed lungs or hypertrophy of the heart. Bloodletting will sometimes give more relief than all our other best-devised remedies; and what is also to the point, it will greatly favour the beneficial operation of these. The blood, it has been said, is buffy in a remarkable degree in this disease; and hence we must not rely on this appearance alone as a test of the propriety of fresh bloodletting, so much as on the relief of the renal distress and disorder, and a diminution of the quantity of albumen in the urine. Cupping or leeching over the loins is a useful succedaneum, and in some subjects, of excessively broken-down constitutions, a substitute for venesection. A proper caution is enjoined by Dr. Christison, against pushing sanguineous evacuations too far, in the impoverished state of the blood which is so common in this disease; and as a rule to guide us on this point, we are required to examine the blood analytically, and to ascertain the proportion of its colouring globules. By this we can measure, in a degree at least, the advancement of the structural changes in the kidneys; and either press a continuance of or withhold sanguineous depletion.

After bloodletting, purgatives stand foremost in this kidney disease. Amongst these, we may use elaterium and jalap with bitartrate of potassa as recommended by Dr. Bright, or bitartrate of potassa alone in an ounce dose with half a grain of elaterium. Dr. Osborne restricts himself to senna mixture, castor-oil, or rhubarb and magnesia. He refrained from all purgatives which also act often as diuretics. Mercury is not thought well of

by Dr. Bright, except in combination with opium and antimony, in the very early stages of the acute renal disease. Dr. Osborne administered large doses of calomel when affections of the head came on; and although he admits their use in rescuing the patient from a state of approaching coma, yet, he adds, they were not followed by any benefit to the secretions of the skin or of the kidneys. In this restricted view of the operation and effects of calomel, I cannot join. As a purgative, either alone, and followed by castor oil, or rhubarb and magnesia, or combined with jalap or rhubarb, it is entitled to a preference over most of the class. In the first of these fashions it is particularly useful where diarrhœa is present, a complication contra-indicating resinous or irritating purgatives. In smaller dose, as of one or two grains, or an equivalent proportion of blue mass, I know of no medicine, next to antimony, which acts generally so well on the skin, by rendering it soft and moist; certainly, none which acts so kindly on an inflamed or irritated kidney. One of the peculiar advantages of these mercurial preparations is their ready and tranquillising operation on inflamed secretory glands and surfaces. My own experience makes me as confident of the propriety of administering calomel or blue mass after venesection for an excited kidney, whose secretory function is impeded, as I would be of its use in a similar condition of the liver. I know well, indeed, that we cannot so easily insure a continuance of its salutary action, either on the skin or kidneys; but this need not deter from its use in the early stage of the disease, to which it is more especially applicable. In dropsy with hypertrophy or disease of the valves of the heart, Dr. Osborne, in unison with most practitioners of experience, thinks highly of calomel in combination with squill and digitalis, as a diuretic. Must it not act kindly on the kidneys in these cases? I have found it equally efficacious in the granular disease of the kidney; and where bronchitis is associated with the latter, I know of no adequate substitute for calomel.

In administering mercurial preparations as purgatives, and sedative diuretics or diaphoretics, we must continually bear in mind their more than usual tendency to salivate in the cases of Bright's disease; and the injurious effects of such an operation. Certain constitutional states, such as of anemia, chlorosis, or scrofula, will induce still farther caution, respecting recourse to mercury.

After bloodletting and purging, mild and sustained diaphoresis is entitled to especial favour. Nor must we wait for the effects of the former, before we have our patient put to bed, and his skin brought into a state of moderate excitement by external warmth; and if the extremities be cold, by warm pediluvia, and the customary adjuncts for quickening the circulation of the lower extremities. Amidst many discouraging circumstances in our prognosis of this disease, it is pleasant for us to know, as Dr. Bright assures us, that the most recent cases are often capable of cure by depletion, either by bleeding or purging, according to the acuteness of the attack, or by promoting gentle diaphoresis, both by internal remedies and by strict confinement to bed. It has happened frequently, within Dr. Osborne's experience, that by external heat alone, an improvement, both in the quantity and quality of the urine, and a material subsidence of the œdema, have taken place; and he even goes so far as to assert that, "*whenever general perspiration came on, either spontaneously or in consequence of medicine, then the cases always terminated favourably.*" The diaphoretic remedies are, antimonial powders, Dover's powder, *liquor ammo-*

niæ acetatis; and if more stimulating preparations are required, the ammoniated tincture of guaiacum, to which sulphur may be advantageously added; or carbonate of ammonia with camphorated mixture—four grains of the former to an ounce of the latter every two hours. In aid of these remedies, and itself an agent of no small activity in the disease before us, is the warm bath, of a temperature of 96° F., in which the patient should be immersed for half an hour at a time, twice in the day, until free perspiration is brought on.

Dr. Barlow ranks tartar emetic among our chief remedies in the acute form of dropsy with renal disease, whether it follow scarlatina in children, or come on without any such precursor, in adults (*Guy's Hospital Reports*, April, 1840). He regards it as eminently calculated to equalise the circulation, subdue the inflammatory action, and restore the functions of the skin. By "its local effects upon the capillaries, when it reaches them through the circulation," it diminishes the inflammation in the superficial capillaries of the lining membrane of the *tubuli uriniferi*. As regards the dose, it may be given, in the first instance, where the pulse is hard and full, in such quantity as to produce nausea; but in low states of the system he prefers small doses frequently repeated, so as to reach the capillaries without producing depression. He has never found it necessary to give more than half a grain at once to an adult. Doctor Barlow does not recommend the use of the antimony in this disease to the exclusion of other means calculated to aid in fulfilling the same indications; and among the most valuable of these adjuncts should be reckoned moderate local depletion, hydragogue cathartics, the warm bath, or, what is perhaps of equal value when this cannot be procured, the investing of the loins in a large linseed-meal poultice.

No little difference of opinion prevails respecting the advantages and even propriety of prescribing diuretics in granular disease of the kidney. Where hypothesis may be enlisted on either side, we are fain to look to experience for settling the question; but even here the contrariety of practice is great. Diuretics, entirely proscribed by Osborne, are regarded by Christison as valuable and almost indispensable remedies. Bright, whilst objecting to their use in general, gives a qualified assent to the use of them, and particularly of digitalis on certain conditions; and Rayer reports cases in which they have been the chief means of cure. By conforming to the rules which ought to govern us in the employment of diuretics generally, we shall probably find less difficulty in determining the propriety of their use in the present disease. Before bloodletting, and in the acute stage, they can hardly fail to excite the kidney and aggravate the complaint. At a later period, when phlogosis is abated, certain diuretics, such as the tincture of digitalis and wine of colchicum seeds, with a solution of the bitartrate of potassa, will exert a good effect, more, perhaps, by their sedative and cooling operation on the system at large, than by any special action on the kidneys. After all, the objections against diuretics are overrated; as both jalap and rhubarb, which are so warmly recommended for their purgative powers, are decided stimulants to the kidney at the same time. Tissot tells us, that the favourite diuretics of Rayer are acetate of potassa, and more especially a decoction of the root of the wild horseradish; which last he prescribes in the proportion of from two drachms to an ounce and a half, in a pint of water. Two cures are reported from using this remedy, in subjects who had not derived relief from any other

means. Upon the whole, however, diuretics are entitled to be ranked on a secondary line after diaphoretics. The dose of digitalis, when it is employed as a diuretic, is from one to two grains in powder, or ten to fifteen drops of the tincture three times a-day: and of the bitartrate of potassa, a drachm or two drachms as frequently, in large dilution.

In renal dropsy, complicated with bronchitis, Dr. Osborne has derived much benefit from balsam copaiba in camphor-mixture and cinnamon-water with gum arabic. He directs ʒi. in four ounces of the mixture, of which an ounce is to be taken three times a-day. In dry bronchitis the following mixture caused free expectoration:—

℞. Gum. ammon.,
Gum. arabic.,
Sacch. alb., singul. dr. ij;
Balsam. copaib., dr. ss.
Aqua cinnamomi, oz. iv.

A teaspoonful to be taken every hour and a half. In some instances, in which the copaiba produced nausea, it was superseded by the tincture of cubebs. Copious expectoration, on the other hand, which oppresses by its quantity without affording relief from the disease, is abated by the administration, in conjunction with the diaphoretic course, of sub-acetate of lead one grain, and watery extract of opium a quarter of a grain, four times daily. The application of leeches externally to the larynx, is truly represented by Dr. Osborne to be a most important part of the treatment of bronchitis. The good effects of it are not confined to the larynx, but are apparent also in the unloading of the mucous membrane of the bronchial tubes through their entire extent. In addition, blisters should be applied to the upper part of the sternum and under the axilla. To these Dr. O. generally adds frictions to the back and sides of the chest.

When disorders of the stomach or bowels occur, they are met by nearly the same treatment as when they are of primary occurrence. A tendency to dysentery, which is one of the most frequent forms of this complication, was obviated most speedily, in Dr. Osborne's practice, by an enema of four grains of nitrate of silver, followed in three hours after by the starch enema with tincture of opium. The first is retained only a few minutes, but the last generally remains several hours, and the irritation is then at an end.

When pericarditis was present, the internal use of tartar emetic, in addition to topical and general bloodletting, produced a great increase of urine with amendment of all the symptoms; while a decrease occurred on two several occasions in which it was for a time superseded by squills.

In the advanced and chronic stages of renal disease, particularly where any change may have slowly taken place in the structure of the kidneys, we must be content with a less active treatment than that which has just been detailed. We can seldom promise our patient an entire recovery under these circumstances; but with care on his part, and judicious advice on ours, we may prolong his life for years. "Most of the secondary disorders are obstinate when they concur with diseased kidneys. Dyspepsia may be much mitigated, but is apt to recur. Chronic vomiting, once fairly established, is seldom effectually checked, and may be considered an unfavourable sign. Diarrhœa is difficult to stop, and apt to return, and therefore must be viewed as unfavourable. Catarrh is often

removable: but where it resists treatment, the complication is of evil import. Coma is very rarely arrested, and is one of the most unpropitious prognostics among secondary affections. Diseased liver and diseased heart are also unpropitious; being themselves incurable, besides aggravating the effect of renal disorder. The acute inflammations are generally severe, but commonly yield to remedies." (*Christison, op. cit.*)

Among the medicines of the alterative class, and in the use of which the patient must persevere for a length of time, may be mentioned the alkalies, particularly potassa, small doses of antimonials and certain astringents, such as uva ursi, pyrola umbellata, diosma crenata (buchu); and if there be irritability of the kidney and urinary passages, conium, or still better, Dover's powder. The mineral acids are, Dr. Bright thinks, best adapted to the decline of the acute attacks, and are best given conjoined with sedatives. The prohibition of mineral acids by M. Rayer in chronic nephritis, will hardly be revoked on the present occasion. In the alkalies, Dr. Bright has been much disappointed; and they have even at times seemed to aggravate the disease. "The very careful exhibition of the vinum ferri, the tinct. ferri muriatis, or some other chalybeate preparation, has sometimes appeared to do good for a time, but has not generally been admissible for a continuance." Deserved stress is still laid on purgatives, even when the disease has become perhaps organic. M. Rayer has derived much benefit from the use of tincture of cantharides, ten or twelve drops for a dose in almond emulsion. By Dr. Wells the dose is increased to 30 or 40 drops.

Mercury still has hold of the affections of some to that degree as to induce them to hope for benefit, if not cure, from its absorbent action, and consequent removal of the deposits which take place in the *tubuli uriniferi*, in the more advanced stages of the disease. Better founded expectations are entertained of the alterative powers of iodine, and in the more atonic cases, in cachectic habits, of the iodide of iron, and particularly of the iodide of potassium (hydriodate of potassa), under these circumstances. Issues to the loins, after cupping, is a remedy of prime importance in chronic albuminuria.

On all the means of preserving an equable temperature of the skin, the precautions and pains can scarcely be too great, and must never be suspended. Flannel is to be constantly worn next the skin, and the rest of the clothing, including protection for the feet, correspondingly warm. In the house, the apartments should be kept of a mild and uniform warmth, with as much care as would be deemed necessary for a consumptive patient. To the same effect is the recommendation of Dr. Bright, that a person suffering under renal disease should seek a warm climate for restoration, at any rate relief and suspension of his malady. The exercise should be gentle and sufficient, enough to moderately excite the skin without causing much sweating and the danger of subsequent chill,—and to quicken the circulation without giving rise to fatigue. In harmony with this outline of cutaneous and external treatment, would be the use of the warm salt bath, and still better, the dry vapour bath.

A great deal depends upon diet. Milk, when it agrees, ought to be the preferred article. Light animal food frequently agrees; pastry fruits, and all badly-cooked vegetables are injurious. Fermented and distilled liquors, and tea and coffee, should be abstained from.

LECTURE LXIII.

DR. BELL.

FUNCTIONAL DISEASES OF THE KIDNEY.—Suppression of urine—*Ischuria* or *Anuria*,—an effect rather than a primary disease—Sudden in its attacks—Sympathetic disturbances—Coma—Pyretic ischuria.—*Anatomical lesions*, not constant—*Prognosis* is unfavourable—*Treatment*—Antiphlogistic.—*Excessive diuresis* or *hydruria*—Not always productive of disease—Most troublesome in old persons.—*Treatment*—dietetic and medicinal—*Diabetes insipidus*, or *anazoturia*—*Symptoms*—*Treatment*—Diabetes insipidus with *azoturia*, or excess of urea—Symptoms and treatment—*Diabetes mellitus*, or *mellituria*—Its definition,—qualities of the urine, symptoms, terminations, causes, *post-mortem* appearances—Confervoid sporules in the stomach—*Treatment*—Diet and regimen of most importance—*Diabetes chylosus*.

FUNCTIONAL DISEASES.—Hitherto I have spoken of obvious and admitted organic lesions of the kidneys, as giving rise to and measured by functional disorders, either of these organs themselves or of other organs. In next directing your attention to a number of renal diseases, which depend on, or rather are chiefly manifested by, functional disturbances of the kidneys, I would not be understood to deny the presence of accompanying lesions of structure; but merely to say, that the connexion between the two series of phenomena—functional disturbances and structural changes—is not so manifest, nor are they in number and distinctness so proportionate to each other as in the diseases which I have already described. But I can hardly, at this time, promise to give you more than a syllabus of this part of our subject, which, as it presents less novelty, and at the same time is more fully treated of in many works of ready reference, will leave a less sensible deficiency than you might otherwise experience.

Suppression of Urine,—*Ischuria renalis* of most writers,—the *Anuria* of Dr. Willis. You must distinguish suppression of urine, that is, a stoppage of the renal secretion, from retention of urine, or a stoppage of its vesical excretion,—as where it accumulates in the bladder and cannot be discharged. Whether ischuria occurs from organic disease of the kidneys or is symptomatic of other diseases, as of fevers, cerebral affections, &c., it is always serious, and often fatal. Properly considered, it is a symptom more than a disease; since it can hardly be said to acknowledge any one anatomical or physiological cause, either primary or secondary. Diminution in the quantity of urine is quite common in nearly all acute febrile and inflammatory diseases. Ischuria is most met with in infants and in old persons. In degree short of this, a disorder manifested by secretion of a very small quantity, which is excreted with great pain and sense of burning, is seen in these persons. They also suffer at the same time from cutaneous eruptions and sores wherever two surfaces come in contact, as that of the axilla, folds of the neck, &c.

Complete ischuria, or anuria, makes its attacks generally in the midst of perfect health; sometimes in gouty subjects it represents or supplies a paroxysm of the disease. The most notable symptoms, after those of general uneasiness and anxiety, are nausea followed by vomiting, which continues to be one of the chief, as it is one of the most troublesome,

symptoms through the whole course of the disease. There is at the same time a singular torpor, both of mind and body. The pulse in general is not much accelerated; sometimes it is slower and feebler than natural; the patient scarcely complains, and gradually lapses into a state of drowsiness and incoherent rambling; the drowsiness increases, and at length terminates in complete coma; in which state, sometimes after repeated attacks of convulsions, the patient expires. It is only after minute inquiry that the practitioner called in to the case ascertains that some time has elapsed since the patient made water. Examination of the pubic region shows no fulness nor pain: a request that he should make water is so far complied with that he passes, after some delay, a spoonful or two; probably he cannot pass a drop. To give the requisite certainty on the subject, a catheter is now introduced into the bladder, and half an ounce or only a few drops of urine is discharged.

In the generality of cases coma occurs about the fourth or fifth day from the time when the secretion of urine is totally suspended; and death usually takes place after the lapse of a few days more. Every now and then, young women subject to hysteria take a fancy to impose upon their medical attendants, by simulating ischuria renalis. Mr. Laycock, in his treatise on the *Nervous Diseases of Females* (Philadelphia Edition), relates some curious instances of this kind. We read and hear much of vicarious discharges of urine by other organs; some of the accounts of which are well authenticated, but most of them are greatly exaggerated, if not positively untrue. The subjects of most of these cases are hysterical women too, or *malingerers* in the army or navy, or loiterers about hospitals.

Anuria (ischuria) in children, is chiefly of a febrile nature; and as Dr. Willis justly observes, is connected with derangement of the alimentary canal and nervous centres.

The *anatomical lesions* in those who have died of anuria, are, some appearance of inflammation of the kidneys, especially after the disease has followed poisoning; sometimes their substance is much drier than natural. In some cases, one kidney has been observed to be much enlarged, and the other reduced in size, and of cartilaginous hardness, or very vascular; or these organs are darker, flabbier, more brittle and congested than in health. The bladder is empty and contracted: the blood impregnated with urea. The organic disease of the kidneys most frequently found in connexion with ischuria is granular degeneration of the organ.

Before undertaking the *treatment* of ischuria, our *prognosis* should be announced as unfavourable, since in most cases it is a fatal disease. When the urine is merely much diminished, diuretics, among which digitalis and bitartrate of potassa are preferred by Dr. Christison, will sometimes restore the natural quantity of urine for a time. But when this fluid is reduced to a few drachms in the twenty-four hours, or is altogether suspended, recovery is exceedingly rare. This opinion admits of exceptions, in the case of young and apparently well-constituted and otherwise healthy persons. In such, as I have found, cupping on the loins and the free drinking of a sweetened solution of the bicarbonate of soda restores the discharge. Active purging with salts and senna, or a large dose of calomel, has had the same effect. In cases of sudden occurrence without apparently previous organic disease, full bloodletting, and anodynes combined with diaphoretics, purgative and terebinthinate injections, and

the warm bath, are worthy of some confidence. The recommendation of blisters to the loins and diuretics is of less questionable propriety ; but as a means of unloading the congested kidney, they are worthy of trial, after suitable venesection. To these we may add, if the disease should still persist, but in a somewhat mitigated shape, digitalis and colchicum, with blue pill, and the free use of diluents. Enemata of oil of turpentine and gruel or mucilage constitute, within my own experience, one of the speediest and surest means of removing ischuria which depends on a torpid state of the bladder. I have seen saline enemata sometimes followed by copious diuresis. Cold douches on the lumbar region or over the pubes has sometimes removed the suppression.

Excessive Diuresis—Hydruria—Anazoturia.—Both to morbidly increased quantity of urine as well as to an alteration in its quality in composition, by the addition of sugar, the name of diabetes has been given. The first is called *diabetes insipidus*, the second *diabetes mellitus*. But opposite functional states of the kidney are in this way inopportunely included under the same head ; for, what analogy can there be in a simply increased secretion of urine, even in enormous quantities, which may be perfectly consistent with health, to that peculiarly morbid and so often incurable secretion, in which sugar is formed and prevails to such an extent in the urine ?

These different states are very properly separated by Dr. Willis, who describes, under the title of *hydruria*, simply excessive discharge of urine, which is characterized by deficiency of solid matters generally. This writer introduces an account of some remarkable cases of hydruria ; the subject of one of which, a Parisian artisan, aged fifty-five, in tolerable health, and of the ordinary strength of persons of his age and small stature, had from the age of five years a constant thirst upon him, and had been affected with diuresis commensurate with his thirst. From the age of sixteen, he had not drank less, on an average, than two bucketfuls of water every day, often swallowing upwards of two quarts at a draught. His evacuations daily were about thirty-four pounds of urine, and at the most one pound of feces. The urine scarcely exceeded pure water in specific gravity: it had no saccharine matter in its composition, and was quite healthy. A woman, aged 40, and the mother of many children, had suffered from continual thirst and the discharge of a profusion of fetid urine since her childhood. She was in the habit, when a servant, before her marriage, to drink two or three pailfuls of water daily. This woman enjoyed very good general health.

The diuresis of old persons comes under the present head. There is not merely a frequent call to empty the bladder, but, likewise, an augmented flow of urine, often compatible with health, until the calls are so frequent in the night as to prevent regular sleep, and thus disturb the nervous system. Generally, however, there is associated some organic disease, either of the kidney or neck of the bladder, or both. As respects *causes*, Dr. Willis admits the difficulty of telling on what peculiar morbid condition of the system generally, or of the kidney particularly, the elaboration of a large quantity of watery urine depends. It is found to be intimately connected with the nervous temperament.

The *treatment* of hydruria is mixed, or dietetical and medicinal. A nice adjustment should be made of the quantity of food and of the fluid drank, to the necessary wants of the economy. The kidneys are to be

relieved, also, by an active state of the cutaneous circulation and secretion, maintained by suitably warm clothing, frictions, moderately active exercise, and the warm bath. Opium is found to diminish very considerably the activity and amount of renal secretion; and in the disease now under consideration, it may be beneficially had recourse to. I have found it most useful combined with carbonated magnesia, which latter medicine in small doses, ten grains to a scruple, two or three times a-day, has exerted, in my own experience, no small controlling power over the disease. Vegetable astringents, and some of the mineral tonics, such as iron and sulphate of copper, may be given with similar intent. The state of digestion should be carefully watched, and the bowels regulated by aloes and blue mass, or, for more frequent use, rhubarb and magnesia.

The next variety of increased secretion of urine is that in which there is not only a relative, but, also, an absolute deficiency of urea. This is the *anazoturia* of Dr. Willis; the *diabetes insipidus* of some writers. The most marked examples of this state of the urine, in the nearly entire absence of urea, is seen in hysteric females, during the paroxysm of their disorder, according to Dr. Prout; but Dr. Willis refers this condition to the head of hydruria. Hysteric urine has often a specific gravity scarcely exceeding that of spring water. It has sometimes a disagreeable odour when passed; and in almost all instances soon acquires a putrid smell, like that of cabbage-water; it becomes more or less opaque, and deposits crystals of the triple phosphate of magnesia and ammonia; especially in warm weather. Hysteric urine is not exclusively passed by females; but is occasionally voided by individuals of the other sex This form of morbid urine, Dr. Willis believes to occur frequently among the indifferently tended children of the poor: it is more common in the middle period of life, and occurs equally in both sexes. Almost all the cases of *diabetes* reported as cured, he believes to have belonged to this head.

The leading *symptoms* of the disease are, great thirst, a dry state of the skin, and usually a constipated state of the bowels. In most cases there is an uneasy sensation referable to the stomach, accompanied by a morbid craving for food; at other times nausea, and a perfect indifference to all solid matters, which are almost immediately ejected by vomiting. There are also more or less emaciation, depression of spirits, and great muscular debility, with all their consequences.

The *treatment* of this variety of excessive renal secretion is the same as that laid down in hydruria. No specific treatment can be indicated. Slops should be avoided. The diet is to be light and nourishing, and to consist principally of farinaceous articles and animal food.

Azoturia, or discharge of urine, which is characterized by a superabundance of urea. This is another of the morbid states that has been described under the name of *diabetes* or *diabetes insipidus*. "In this form of malady, the quantity of urine secreted is usually large, the fluid is transparent and commonly high-coloured, although it has been seen so dark as to resemble a mixture of porter and water. It exhibits a faint but proper urinous odour; and shows acid reaction with litmus paper: its specific gravity is commonly high, varying at different times of the day between 1·008 and 1·035: the specimens of the highest density yield crystals of nitrate of urea on the addition of nitric acid."

The calls to relieve the bladder are unusually frequent and singularly

urgent when they supervene — a circumstance, as Dr. Willis remarks, obviously connected with a general irritable state of the system.

The symptoms of constitutional disturbance which accompany the secretion of ureous urine, are those that commonly attend upon an excessive drain from the system—loss of strength, feelings of languor, a greater or less degree of emaciation, &c., some degree of thirst and uneasy gnawing pain at the pit of the stomach. Patients labouring under this disease exhibit with their sunken eyes an anxiety of expression, which is common to most of the diseases characterized by a too copious secretion of urine variously altered in its qualities.

The subjects of azoturia are, commonly, men of spare habit and nervous temperament, who had lived too freely in early life, either in the indulgence of fermented and distilled liquors, or in the abuse of venereal pleasures. In some instances, cold is the chief cause.

Ureous urine has been observed to alternate with other morbid states of the same fluid, the albuminous and saccharine particularly, and, also, with that in which the phosphatic salts are copiously eliminated. It may be regarded as the general attendant of the mellitic diabetes, as well as the state in which that formidable disease comes under the influence of treatment of a certain kind. A ureous state of the urine has, also, been observed to accompany several forms of acute disease, as peritonitis, and continued fevers of a bad type.

The *treatment* of azoturia should consist of cupping the loins, and even of venesection when symptoms of inflammation or of much irritation are present; blisters, bitter tonics, chalybeates and opiates, in connexion with a regulated diet and attention to the state of the bowels and skin. Magnesia and the alkalies in small and repeated doses are serviceable in abating the frequent calls to urinate.

Diabetes Mellitus—Melituria.—Great has been the confusion caused by writers affixing the term diabetes to a variety of diseases, the only common feature of which is excessive diuresis. Could we restrict it, as Dr. Prout does, to a disease in which a *saccharine state of the urine* is the characteristic symptom, the objection to this nomenclature would disappear; but as there is still a fear that a physician, who has a patient with excessive diuresis, labouring under either anazoturia, or a deficiency or excess, respectively, of urea, will report his case as one of diabetes, it is desirable that the nomenclature of Dr. Willis, in this particular at least, should prevail; and that the disease designated as diabetes mellitus, the only true diabetes, should be called *melituria.*

The peculiarity of melituria, and its difference from simple excessive diuresis, was first pointed out by Dr. Thomas Willis, in the reign of Charles II. (1684.) It is fortunately, in this country at least, a rare disease, and is so regarded in England; although cases every now and then occur there, both in private and hospital practice. Few practitioners could collect, as Dr. Babington of London did for his son, Dr. B. G. Babington, who was engaged in writing an essay on the subject, *twenty-three cases* of the disease at one time.

Symptoms.—A saccharine condition of the urine, tendency to emaciation and suppressed perspiration, are the leading, one might say, characteristic symptoms of melituria; but still we cannot deny that each one may be, is in fact present, in other diseases. Sugar is found in the urine of dyspeptic and gouty persons; and as to the other two symptoms, I need

not say that they are common to a great many diseases. Diabetes mellitus makes its approaches very insidiously; and the first symptom which more particularly attracts the patient's attention, is the frequent evacuation of his bladder, both day and night. If he attends to the appearance of the urine, he finds it to be pale, with a diminution of its proper colour, and somewhat turbid on cooling. Soon after, if not at this time, are associated, a morbid state of the digestive function, manifested by inordinate appetite and dyspeptic symptoms; excessive thirst, dryness and hardness of the skin; loss of virility; and rapid loss of flesh and muscular strength. Schoenlein asserts that there is no sugar in the urine in the first stage of the disease, but there is albumen which subsequently disappears as the sugar begins to be formed.

"Diabetic urine (says Dr. Prout) is almost always transparent, and of a pale-straw or greenish colour. Its smell is commonly faint and peculiar; somewhat resembling sweet hay or milk; and its taste is usually saccharine in a greater or less degree. The specific gravity of diabetic urine has been stated to vary from 1020 to 1050; but I have once or twice seen the specific gravity of saccharine urine as low as 1015; and many times as high as 1055, or even higher. The quantity of urea is sometimes much diminished; though I have never met with a specimen in which this principle was entirely absent; and, in some instances, urea is said to exist in diabetic urine in greater proportion than natural. Lithic acid also is usually found in saccharine urine in greater or less quantity; and in favourable cases of the disease, the quantity of this acid is often very considerable. The usual saline matters existing in the urine are met with in diabetic urine in nearly the same *relative* proportions as in health; but the *absolute* quantity of saline matters, viewed in relation to the quantity of urine passed, is much diminished. Sometimes diabetic urine contains a little blood (*Watt on Diabetes*, pp. 47, 74); and not unfrequently albuminous matter, analogous to that of chyle. I have seen it also contain a white, milky-like fluid, precisely similar to chyle, which slowly subsided to the bottom of the vessel. In this case the vinous fermentative process was induced very rapidly in the urine; the chylous matter apparently acting like yeast.

"The annexed table, constructed by Dr. Henry, shows the quantity of solid extract in sixteen ounces of urine of different specific gravities, from 1020 to 1050. In the experiments which furnished the data of this table, the urine was evaporated by a steam heat till it ceased to lose weight; and till it left an extract which became solid on cooling. (*Annals of Philosophy*, Old Series, vol. i., p. 27.)

"This table enables us to ascertain with considerable precision the quantity of solid matter voided by a diabetic patient in a given time. Thus, suppose ten pints (old wine measure) are passed in twenty-four hours, of the average specific gravity of 1·040; it appears from the table that this quantity will contain 10×1 oz. 4 dr. 2 scr. 6 grs. = 15 oz. 7 dr. 2 scr.; or upwards of a pound and a quarter of solid extract."

Rees and Simon are, both of them, satisfied with this table. Dr. Day (*Lancet*, 1844), from the result of 200 observations of the urine in health and disease, gives the preference to Christison's formula $< \times 2{\cdot}33$.

Diabetic (melituric) urine, when allowed to stand in a moderate temperature, generally becomes sour, and smells like turned milk. Sometimes it ferments briskly in the first instance. "The addition of a little yeast,

TABLE.

Specific gravity compared with one thousand parts of water at 60 degrees	Quantity of solid extract in a wine pint.	Quantity of solid extract in a wine pint, in			
	grs.	*oz.*	*dr.*	*scr.*	*grs.*
1020	382·4	0	6	1	2
1021	401·6	0	6	2	1
1022	420·8	0	7	0	0
1023	440·0	0	7	1	0
1024	459·2	0	7	1	19
1025	478·4	0	7	2	18
1026	497·6	1	0	0	17
1027	516·8	1	0	1	16
1028	536·0	1	0	2	16
1029	555·2	1	1	0	15
1030	574·4	1	1	1	14
1031	593·6	1	1	2	13
1032	612·8	1	2	0	12
1033	632·0	1	2	1	12
1034	651·2	1	2	2	11
1035	670·4	1	3	0	10
1036	689·6	1	3	1	9
1037	708·8	1	3	2	8
1038	728·0	1	4	0	8
1039	747·2	1	4	1	7
1040	766·4	1	4	2	6
1041	785 6	1	5	0	5
1042	804·8	1	5	1	4
1043	824·0	1	5	2	3
1044	843·2	1	6	0	3
1045	862·4	1	6	1	2
1046	881·6	1	6	2	1
1047	900·8	1	7	0	0
1048	920·0	1	7	1	0
1049	939·2	1	7	1	19
1050	958·4	1	7	2	18

especially if the urine have been previously somewhat concentrated by evaporation, always causes it to undergo the vinous fermentation, after which it yields alcohol by distillation; and this, freed from water and weighed, is one of the most certain modes of estimating the quantity of sugar contained in any given measure of the fluid. Reduced by gentle evaporation to the consistence of syrup, and suitably treated with animal charcoal, acetate of lead, &c., in the manner generally known to chemists, melituric urine affords a crop of crystals of a sweet substance, which differs in nothing from that obtained from the must of the grape, or from fecula by the action of dilute sulphuric acid. There also remains a considerable quantity of sweet uncrystallizable syrup, analogous in its nature to molasses." (*Willis.*)

Together with saccharine urine, another most striking a[ccom]pa[ni]ment symptom is diuresis in every possible degree. Cases [occur] in which thirty pints and upwards have been discharged, [in] hours, for weeks, and even for months together. The a[verage] is from ten to seventeen pounds in twenty-four hours. Frank mentions a case in which fifty-two pounds were passed in this period. But still, diuresis is not a necessary part of the disease. The irritation in the stomach, mouth, and fauces, manifested so generally by a red tongue, and a sense of heat at the epigastrium, is present also in the urinary passages; and the external orifice of the urethra is often red in consequence; and there is sometimes phymosis. These symptoms are occasionally among the first that have been noticed in diabetic individuals; while in others they never appear at all. The disease is not confined to spare and feeble habits; Dr. Prout has repeatedly met with it in individuals of a fat and powerful frame.

The composition of the urine varies, independently of its saccharine ingredients, from that in health. It is denser than natural, both in the actual and relative proportion of its solid contents; being sometimes as high as 1050, or even 1055. Its quantity has been already mentioned to be excessive, far beyond, indeed, that of fluid drink. An interesting fact is related by Dr. Bardsley, which serves to show that the excess is made up by absorption of moisture from without, rather than always from the component fluids of the body. It is, that the liquid discharged may exceed the alimentary fluids, even when the patient is gaining weight. The difference, however, between the ingesta and the renal excreta, is sometimes enormous. In a case in Dr. Christison's practice, it was ascertained that, for at least four days, the ingested liquids from all sources amounted to 48 ounces daily, while the urine was no less than 240 ounces. The proportion of solids, instead of being, as in health, between 30 and 68 parts in a thousand, often rises in saccharine diabetes, to 90, 100, or 120; and even as high, in Dr. Christison's experience, as 136. The actual discharge of solid matter in the urine, as first noticed by Cruickshank, is far beyond what it is in health. The daily discharge of solids, in common, by the urine, seldom exceeds two ounces and a half avoirdupois, in the highest health. But in diabetes it is not uncommon to find the discharge of solid matters so great as 22 or even 32 ounces. By the table and formula of Dr. Henry, the quantity thus excreted is easily found; and it ought to be accurately ascertained, as an aid to the study and treatment of a case of saccharine diabetes. The remark of excess of urine over the fluids drank, applies also to the disproportion between the quantity of solids ingested, and that of the excreted solids in the urine; the latter being more than the solid food taken.

Urea was thought, on the authority of Bostock and others, to be wanting in the urine, in melituria; but succeeding experimenters have shown, first, that it was actually present, in a certain proportion; then, that it was in as large a proportion as in health; and finally, by Mr. McGrigor, that it was in considerably larger proportion than in health. (*London Med. Gaz.*, vol. xx.) He found that one diabetic patient was passing 1013 grains of urea daily; a second, 945 grains; a third, 810 grains; and a fourth, 512·5; the quantity discharged by a person in health amounting to from 362 to 428·5 grains. None of these patients had undergone any treatment, and the specific gravity of the urine in each, in succession, was

1·040, 1·045, 1·034, and 1·050; the quantity of urine discharged being, in the same order, 38½lbs., 30lbs., 40lbs., and 25lbs. Simon, on the other hand, believes that the ratio of urea to the solid residue is always much less than in health.

Hippuric acid, obtained from the etherial solution of the dried residue of diabetic urine, was first shown to be present in this fluid by Lehmann, and subsequently by other experimenters, including Simon. In two minute analyses of diabetic urine, made by Lehmann, he found neither albumen, urea, nor uric acid in it, but a considerable amount of hippuric acid.

An interesting case of this disease is related by Cantin. It was of a girl aged eight years, who discharged urine of a blue colour impregnated with sugar. The colouring matter seemed to possess the properties of Prussian blue.

The breath and perspiration of those labouring under confirmed melituria have been observed to exhibit something of a musty, sweetish, hay-like smell. As the disease makes further advances the gums frequently become affected, apparently as in scurvy, and then the breath is very offensive. The feces, in this disease, have commonly the dryness and hardness of those of the rodent and ruminating animals — sheep, goats, hares: they are without the distinctive fetor. The saliva is sweetish, and the sweat has been represented to be, as in fact the furfuraceous cuticular exfoliation of the legs is, distinctly sweet to the taste.

The progress of diabetes mellitus is slow; its most frequent *termination* is in phthisis pulmonalis. It may, also, end in fatal disease of the liver and jaundice; also pneumonia and apoplexy. Occasionally it is said to terminate in incurable dropsy.

The *prognosis* in diabetes is generally unfavourable. In sixty cases treated in the Edinburgh Infirmary, during a period of twenty-one years, by Dr. Christison or his colleagues, this gentleman has not known an instance of a complete cure. Some patients did indeed gain weight considerably, and had the urine reduced to the density of 1030, and to its natural colour, odour, and urinous taste, without any sweetness; but the final result was a return of the disease and death. Seldom it is in the power of the practitioner to report such returns as those of Dr. Bardsley, junior, who states, that out of twenty-nine cases of diabetes under his care, no fewer than eight recovered entirely.

The *post-mortem* appearances in subjects dead of diabetes mellitus are not distinctive enough to elucidate the organic seat or origin of the disease. The kidneys are commonly found larger than in health, more flabby, more gorged with blood; and they present more numerous and larger vessels, and enlargement of the uriniferous *tubuli*. The renal arteries and veins are, also, at times, found enlarged. Sometimes there is an extensive deposition of greyish-yellow, granular matter, invading their cortical and even also their tubular structure. In a few instances the kidneys instead of being enlarged are contracted. Pulmonary tubercles are not uncommon; sometimes they are found softened, and even extensive cavities have been observed. Pulmonary phthisis is said by Willis to be the immediate cause of death, in two-thirds of the cases of diabetes. The stomach is sometimes red, and its inner membrane rough and thickened; but often it is quite healthy. Of late the microscope has been used in the inspection of the stomach, in two fatal cases of diabetes. Mr. Busk

observed in the viscid mucus adherent to the internal surface of the stomach, numerous minute sporules of a confervoid character, together with several portions of a confervoid mycelium, apparently produced from similar sporules. In the mucus of a healthy specimen examined, for the sake of comparison, by Mr. Busk, there was not a single confervoid sporule or filament; but it contained an immense number of actively moving vibriones, the latter of which did not exist in the diabetic stomach.

In the mucous membrane itself and its epithelium cells, no difference could be observed between the diabetic stomach and the healthy one. The liver, spleen, and pancreas are usually healthy; nor do the intestines exhibit unusual appearances in the generality of cases, if we except an over-loaded and congested state of the mesenteric veins, and of the veins generally, which form the portal system. The bile is far from being in a normal condition; it is of a pale-yellow colour, very fluid, and, instead of being alkaline, it has usually an acid reaction.

The blood of diabetic patients contains sugar, but in an extremely minute quantity: it is most evident after dinner; being in fact, in these cases, barely perceptible before this meal.

The inference from the autopsic examinations is merely, that the pathological origin of diabetes is functional, and not essentially an organic derangement. The disease is mainly one of morbid assimilation; but in what this consists we cannot tell.

The *special pathology* of diabetes mellitus cannot yet be satisfactorily determined, either in its etiology or in the precise character of the functional derangements which give rise to the production of sugar. The disease shows itself at all ages and in both sexes; but not equally in all or in both. It is sometimes periodical, as in the case mentioned by Simon, of a citizen of Berlin, who has periodical attacks at certain seasons of the year, which, after continuing some time, and the patient having been subjected to a suitable diet, would disappear. Although the amount of sugar which was excreted was by no means inconsiderable, the patient did not exhibit any of the attenuation of frame common under such circumstances; but, on the contrary, he became corpulent, and did not complain of any derangement of his general health.

McGregor (*Med. Gaz.*, 1837) has inferred from experiments, that the sugar is formed in the stomach alone. Bouchardat regards the presence of diastasis in the stomach as peculiar to diabetic cases; this is, he thinks, the agent by which the fecula is converted into diabetic sugar. Its presence in the blood suggests the opinion of its formation in the chylopoetic viscera alone; or, it may be, simultaneously in them and in the blood. We shall, perhaps, after all, be forced to the conclusion, that the sugar in diabetes mellitus is not formed in any single organ, but that it is produced by a diseased condition of the whole system. Sugar has been found in the feces of diabetic patients. Although it has not been detected in the sweat, a case is mentioned by Willis in which the furfuraceous exfoliation of the cuticle had a decidedly sweet taste. It is well known that persons in this disease do not readily perspire; but, on the contrary, that the skin becomes dry and rough, and peels off.

In conclusion, I would direct your attention to the following remarks and suggestions of Simon, when speaking of the impossibility of determining the part of the system in which the sugar is elaborated: "It is either directly formed in the chylopoetic viscera, or it is produced in the

peripheral vascular system, or it is generated by a morbid action of the cells of the kidney, or finally, its origin may be due to a combination of these agencies.

"To decide this point satisfactorily (and for the science of medicine it is most important that it should be decided), the following points should first be established by experiments on a sound and certain basis:—

"(1.) Is the correspondence of the absolute diminution of the urea with the absolute increase of the sugar, an invariable rule?

"(2.) May not the nitrogen be removed from the system in some other way, probably in the form of ammonia compounds?

"(3.) Do other secretions undergo a change, especially the bile?

"(4.) Does the air which is exhaled from the lungs differ in its composition from that which is expired by healthy persons?

"(5.) Do the kidneys, liver, or lungs undergo any change, and if so, what is their nature?"

Causes.—A *predisposition* to diabetes is, in Dr. Prout's opinion, more frequently inherited than acquired. When the latter is the case, it is from a variety of causes, such as residence in a cold and damp situation, particularly if at the same time conjoined with a poor and unwholesome diet, or the too free use of sugar, &c.; also venereal excesses; the abuse of mercury; and, in short, any cause tending to derange the assimilating processes. The most frequent *exciting* causes are, according to Dr. Prout, exposure to cold; attacks of rheumatism and gout; drinking of cold fluids when heated; mental anxiety or distress; also contusions or other injuries of the back from falls, strains, &c. The writer just referred to has seen diabetes follow cutaneous affections. It seldom accompanies these; but it generally, Dr. Prout says, in his own personal experience, always, is associated with carbuncles and malignant boils, or abscesses allied to carbuncles.

Treatment.—However they may differ about the relative value of particular remedies, physicians are generally agreed about the practical indications in diabetes mellitus. The treatment consists mainly in the employment of bloodletting, animal diet, opium, astringents, and the diaphoretic regimen. To be at all successful, it must be conducted on general principles; and in reference to the true light in which the disease is to be regarded, viz., as a simple saccharine condition of the urine, without any increase in its quantity; and as complicated with a preternatural flow of that secretion. Diabetes is properly regarded by Dr. Prout as nothing more nor less than a form of dyspepsia: principally consisting in a difficulty of assimilating the saccharine alimentary principle; and like all other forms of dyspepsia, whether it be an inherited, or an induced affection, diabetes is liable to be much modified or aggravated by concomitant circumstances.

The first and chief point to be attended to in the treatment of this disease is *diet;* under which head are included, of course, both solid and liquid aliments. A diet exclusively animal is required: but of farinaceous matters, the high or the strong, as Dr. Prout terms it, such as the farina of wheat in the shape of bread, &c., seem to be most easily assimilated. The low kinds, reduceable to a species of sugar, are, if we except rice, inadmissible; as is strictly every variety of saccharine principle in its *crystallizable* form. This rule excludes, therefore, at once, all fruit, whether sub-acid or sweet; as well as every compound, natural or artifi-

cial, into which sugar enters. Every infringement of this rule retards the cure or endangers a return of all the worst symptoms of diabetes. Thus, Dr. Prout has known the eating of a few saccharine pears undo, in a few hours, all that he had been labouring for months to accomplish. Quantity is almost if not quite as important as quality. Four to five or six hours is an average period to elapse between the meals; and at the time of taking solid food, and for an hour or two afterwards, all fluids should be abstained from. Generally speaking, mutton or beef, plainly cooked, and particularly mutton-chops or beef-steaks, rarely done, should be taken twice in twenty-four hours; the other meals to consist of any simple article prepared from farinaceous matters, with milk, eggs, &c., only. Fat meats often suit the case, and are taken for some time with a certain degree of relish by the patient. To animal food exclusively, without the slightest deviation, Dr. Bardsley would confine a diabetic subject, as an indispensable condition for his cure. But, as before observed, such a restriction is not necessary. Gluten bread, and even spinach, celery and cabbage are among the articles which may be used with animal food.

On the score of drinks, great reserve and selection are requisite. The quantity must be very limited. Distilled water is thought well of by Dr. Prout; and large experience is in favour of carbonated lime or magnesia waters, or lime-water with milk, for the quenching of the thirst. All the stronger saline waters should be carefully avoided. With very few exceptions, Dr. Prout has seen more relief from thirst, and more support given by sound porter in diabetic cases, than by any other means whatever. Bouchardat prefers, among the alcoholic beverages, old claret or Burgundy; a bottle of which may be taken by an adult.

Of the strictly medicinal means mentioned, as curative of diabetes, bloodletting is restricted to the young and more robust, and to recent cases. Preference, in the more advanced stages, should be given to topical abstraction of blood by means of leeches applied from time to time over the epigastrium. Stress is laid by some on repeated purgation; but laxatives, to keep up a soluble state of the bowels, are, in general, preferable. As we should readily believe, *à priori*, much good is derived from the regular use of diaphoretics; not so much to cause exhausting discharges from the skin as to keep up a moderately excited state of its secreting function. In aid of this class, and as permanently beneficial agents, all the means already recommended for hydruria should be had recourse to here, for maintaining a permanently equable temperature of the skin and activity of its capillary circulation. In confirmation and illustration, at the same time, of the efficacy of cutaneous excitement, I may mention the success which has attended the employment of the vapour bath of a high temperature. Some have gone so far as to attribute the alleged exemption of the Russians from the disease to the use, by all classes, of the vapour bath.

Of the sedative remedies, opium claims the first place; and alone, or in combination, as in Dover's powder, it is certainly one of the most useful we possess. The dose of opium is a grain twice or thrice a-day, gradually increased so as to keep up a gently hypnotic and soothing action. Astringents are often usefully combined with opium. Those of the mineral kind, and especially the sulphate of zinc and acetate of lead, are preferred. A cure is alleged to have been obtained by the use of Peruvian balsam, in half-drachm doses three times a-day, progressively increased.

Among topical applications, after leeches to the epigastrium, cups to the loins, and blisters on the same part and on the stomach, more permanent counter-irritation by means of tartar emetic ointment, and secretory derivation by issues or seton, are entitled to some confidence.

Diabetes Chylosus.—Chylo-serous urine of Prout is another morbid secretion from the kidneys, with certain associated functional derangements of other organs. Chylo-serous urine is distinguished by its white appearance, and by undergoing, in greater or less degree, spontaneous coagulation. Its specific gravity varies from 1·010 to 1·020 or upwards: it always contains urea, and the saline matters found in healthy urine. The disease occurs in both sexes, before and after puberty; of the thirteen cases with which Dr. Prout had cognisance, five were males and eight were females. The constitutional disorder is less than might be expected; two of the females, for instance, while labouring under the affection in a marked degree, became pregnant, and brought forth healthy children. Of the thirteen cases, seven occurred either in natives of hot climates, or in individuals who had resided many years in them. Dr. Prout thinks this a predisposing cause. M. Rayer says that the disease occurs frequently in Brazil. It is endemic in the Isle of France. It is not necessarily connected with organic lesion of the kidney. In one of the three fatal cases out of the thirteen that reached the knowledge of Dr. Prout, the kidney was found to be perfectly healthy. The subject of this case was a young girl, of about fifteen years of age, and the immediate cause of her death was inflammation of the bowels. In one case, in which the urine was examined twice a-day, this fluid was found to be perfectly free from albuminous matter.

The urine, after it has been discharged for a short time, sometimes coagulates into a gelatinous body like *blanc-manger*, and afterwards gradually separates into a clean, yellowish fluid, and a white clot; at other times, a white, flaky matter is deposited without general coagulation of the mass; and in other cases, again, a white, homogeneous substance is thrown up to the surface like cream. The matter which separates in all these shapes appears to differ somewhat from albumen, to approach to fibrin or casein in its characters, and to contain some oleaginous or fatty matter, which may be easily removed by sulphuric ether (*Christison*). In a case described by Dr. Graves the coagulable matter was casein. I have, in a previous lecture, spoken of this morbid variety of urine, and the nature of its foreign constitution.

The *treatment* has not been well defined in this disease. The only case that I remember to have seen was that of a student of medicine, many years ago, who was plagued with dyspepsia to a great degree; undergoing frequent attacks of gastrodynia, and generally suffering from disordered bowels. With him this morbid state of urine was chiefly manifest during the winter, while attending medical lectures in this city. He sat up very late, and took little or no exercise, ate with good appetite and without special restriction. He found that, at any time, he could for a day or two remove or prevent the chylous appearance of the urine by even a small dose of magnesia. On his return to the country in the spring, after his first winter course of lectures, the disease left him, or recurred but a few times for a short period. The chief if not sole change in his life at this time, was in his taking a good deal of exercise both on foot and on horseback; his habits of study and diet being nearly as before. During

the next winter in the city he had the disease again; but on the approach of spring it disappeared. He went abroad, and was for a time first in a warm and afterwards in a tropical climate, during which period he was exempt from the disease, nor did it ever again recur, except during one winter of close study and restricted exercise in Paris.

The chief measures required are those adapted to dyspepsia, viz., the use of plain, nourishing food, a regulated state of the bowels, moderate exercise, the warm bath, and regular hours; and regular habits in every particular. Magnesia alone, or magnesia and rhubarb, or some of the alkalies, are among the best immediate palliatives. A cure has been obtained by the use of the Rhizoposa racemosa.

The morbid renal secretion of serous or albuminous urine has already engaged our attention to an adequate extent, under the head of Bright's disease, or renal dropsy, &c.

LECTURE LXIV.

DR. BELL.

VARIOUS OTHER DIATHESES OF RENAL SECRETION—Renal calculi,—Lithic or uric acid, or *lithuria*—amorphous and crystallized—Red gravel—Uric acid—appearance and tests of—*Urate of ammonia*—*Causes of uric acid formations and deposits.*—*Causes.*—*Treatment*—Solvents of uric acid—Phosphatic salts and deposits—Triple phosphates—White gravel—Phosphate of lime—Mixed phosphates.—*Treatment*—Cystine in cystic oxide—Its microscopic characters—Oxalic acid or *oxaluria*—tests of in the urine—Lactic acid—Calculi—renal and vesical.—DISEASES OF THE BLADDER—*Vesical calculi*—Hematuria—*Cystitis*, its varieties—The most important is inflammation of the mucous coat—*Cystirrhœa*, or *catarrhus vesicæ*—*Symptoms and treatment.*—*Ischuria vesicalis.*—Proportion of cases of urinary disease.

RENAL DEPOSITS AND CALCULI.—The next diathesis connected with morbid secretion from the kidney, is that of the *lithic* or *uric acid*, and its various compounds, constituting the most common form of renal calculi. The acid assumes two distinct general forms in the urine, viz., that of *amorphous* and impalpable sediment; and that of *crystallized* and massive concretions. The amorphous and impalpable sediments consist in general of lithic acid in combination with ammonia. The colour, *yellow*, and *red*, or *lateritious*, is caused by the yellow colouring matter in the first case, and this same matter tinged with purpurate of ammonia in the second, added to the lithate of ammonia. Urine depositing red sediment is generally more acid than common; and while the quantity is less, the specific gravity is greater. It is sometimes serous or albuminous. As regards constitutional *symptoms* and *causes*, it is observed that the yellow sediments may be called those of health, or rather those which occur in healthy persons who are slightly dyspeptic, or temporarily disordered by atmospherical changes and other circumstances. The presence of red sediments generally indicates a feverish or inflammatory state of the constitution: they most commonly are regarded as signs of chronic visceral affections, and particularly of the liver.

Crystallized sediments, or *red gravel*, consist of uric acid nearly pure. The deposition in this way is not so much an evidence of the excess of lithic acid as of its precipitation by the evolution of other substances in the

urine—a process easily imitated artificially by the addition of a few drops of any acid to healthy urine.

When uric acid occurs in a urinary deposit, uncombined with a base, it is invariably in a crystalline form. It never occurs quite colourless; and except when mixed with urate of ammonia, which is frequently the case, it is so strongly coloured as not even to present an approach to whiteness. Every shade of intensity of tint, from the palest fawn-colour to the deepest amber or orange-red is observed in their deposits; and hence the term yellow or red sand is applied to them. In general, the deeper the colour of the urine, the darker the sediments.

When heated in the urine, the uric acid deposit is not dissolved; the crystals merely become opaque. It is separated from the urate of ammonia, which sometimes completely conceals it from view, by warming the urine in a watch-glass, the uric acid becoming visible in the centre of the glass as soon as the urate is dissolved. Heated with liquor potassæ, the uric acid deposit is dissolved owing to the formation of a urate of potash of sparing solubility. Hydrochloric and acetic acids are without any action, but the nitric acid readily dissolves it, and by careful evaporation a residue of a beautiful pink colour, becoming of a rich purple on being held over the vapour of ammonia, is left. Exposed to heat in a platinum spoon, the uric acid deposits evolve an odour of bitter almonds.

All the varieties of uric acid in its crystalline form may be traced to some modification of the rhombic form (Bird on *Urinary Deposits*).

Urate of Ammonia Deposits vary in colour from absolute whiteness to a pale fawn-colour, which is the most frequent tint, brick-red, pink or purple. They never appear in the urine until after it has cooled, and disappear with the greatest readiness on the application of heat. The purple deposits require rather a higher temperature for solution than the other. The addition of liquor ammoniæ or liquor potassæ, immediately dissolves deposits of urate of ammonia.

If a drop of turbid urine be examined under the microscope between two plates of glass, an amorphous powder composed of excessively minute globules, adhering together, will be alone visible unless uric acid be present. Let now a drop of hydrochloric acid be added, the turbidity will disappear, and in a short time crystals of uric acid will be seen growing in the fluid, the ammonia having deserted this substance to unite with the acid which had been added.

Causes of Uric Acid Formations and Deposits.—The formation of uric acid may be traced to two great sources, viz., the disintegration of tissues, and its nitrogenised food. In all acute inflammatory diseases, in most organic affections, and even functional ones of the heart, liver and spleen, a considerable increase of uric acid will occur; and deposits of this substance, either free or uncombined, will take place in the urine. In the two allied affections, gout and rheumatism, exclusive of the many neuralgic diseases popularly referred to the latter, there is a remarkable tendency to the formation of an excess of uric acid, both pure and combined, especially with soda.

On the other hand, in all diseases attended with excessive debility, independently of acute diseases, especially where an anemic or chlorotic state exists, a deficiency of uric acid occurs.

Among the most frequent causes of excess of uric acid in the urine, is suppression of cutaneous perspiration or impediment to the healthy func-

tions of the skin. An excess of nitrogen is thus retained in the blood, which is ultimately separated by the kidney in the form of urate of ammonia and sometimes urea.

"Excluding all abstract theories," says Dr. Bird, whom we have been closely following, in these remarks on uric acid and its combinations, "whenever an excess of uric acid or its combinations with bases occurs in the urine, a normal quantity of water being present (30 to 40 ounces in twenty-four hours), it may safely be inferred that one or other of the following states exist:—

A. Waste of tissue more rapid than the supply of nitrogenised nourishment, as in	Fever, acute inflammation, rheumatic inflammation, phthisis.
B. Supply of nitrogen in the food greater than is required for the reparation and supply of tissue, as in	Excessive indulgence in animal food, or the quantity of food remaining the same, with too little bodily exercise.
C. Supply of nitrogenised food not being in excess, but the digestive functions unable to assimilate it.	All the grades of dyspepsia.
D. The cutaneous outlet for nitrogenised excreta being obstructed, the kidney is called upon to compensate for this deficient function.	All or most stages of diseases attended with arrest of perspiration.
E. Congestions of the kidneys, produced by local causes.	Blows and strains of the loins, diseases of genital apparatus.

"It is quite possible for an excess of uric acid to exist in the urine without forming a deposit, and *vice versâ*, the presence of a deposit does not necessarily indicate the existence of an abnormal proportion. It is, however, easy to discriminate between these cases, for if a deposit of urate of ammonia be present whilst the bulk of the urine in twenty-four hours is not much below the average, it is certain that an excess of uric acid exists. But if the bulk of the urine be much below the natural quantity, a deposit may occur simply from there not being sufficient water to hold it in solution. To determine whether an excess exists, let all the urine passed in twenty-four hours be collected, well shaken, and a given quantity, as about two ounces, mixed in a conical glass vessel with about half a drachm of hydrochloric acid. In six or eight hours crystals of uric acid will be copiously deposited on the sides of the glass; the urine should be decanted and replaced by cold water. By means of a thin spatula or feather, the acid can be detached and collected at the bottom of the vessel. All the water except the last few drops can be readily poured off without losing the precipitate, which can then be removed into a watch-glass, dried and weighed. This little operation is so easily performed, that it can scarcely be deemed troublesome; and by a simple multiplication sum, the whole amount of uric acid secreted in twenty-four hours can thus be readily ascertained."

Amorphous uratic concretions are generally deposited in the kidneys, and, perhaps more frequently than any other cause, give occasion to that peculiar train of symptoms constituting a nephritic attack. They are of two kinds, coloured and white. The *puriform* lithic concretions have their nucleus generally formed in the kidney, though, for the most part, the concretion descends into the bladder before it has acquired such a

magnitude as to give uneasiness, either in the kidney, or during its passage down the ureter. A remarkable feature attending the formation of this variety of concretions, is the *great number* in which they are usually generated,—a circumstance which may be said to be characteristic of them. They vary in size from that of a pin's head to that of a pea or marble. The urine, in this form of concretion, approaches in its properties to the state which deposits the lithic acid gravel; that is to say, usually transparent, of a light-yellow colour, distinctly acid, rather copious, and of a moderately specific gravity.

Children, especially those of dyspeptic and gouty individuals, are exceedingly liable to crystallized uric deposits in the urine. There is less disposition to form them between the age of puberty and forty years, than at other times.

The *causes* of uric acid sediments are of two kinds, predisposing and exciting. The first is sometimes inherited, and is sometimes manifested by a strumous and also scorbutic habit. The exciting causes are, errors in diet, exercise, and atmospheric influences. In some persons, any acescent food, vegetables, or fruit, will bring on an attack. Potatoes I have seen to be a very decided cause of the fine or sandy uric acid deposit in a person of most abstemious habits of living. Writers enter into refined speculations respecting the kind of wines that are least hurtful in this disease. The best protection is an abstinence from all. Exercise soon after a meal, or on horseback, will bring on an attack; but, on the other hand, hardly anything can be more pernicious than bodily inactivity conjoined with a full or improper diet.

The *treatment* of lithic acid deposits, whether of the crystalline, pulverulent, or massive kinds, consists, first and chiefly, of regimen in the large sense, including both diet and exercise, and of the use of suitable medicinal substances. I shall not repeat details here, already fully given when treating of dyspepsia, and subsequently of the morbid states of the kidneys, for the regulations of diet, in which both quality and quantity are to be rigidly considered. Milk, useful in some forms of dyspepsia, is injurious in the present case. In some cases a mere reduction of the amount of animal food will suffice. I have seen excessive lithic acid deposits in a young man, whose diet was, at the time, exclusively bread and potatoes with milk. Of the common beverages, weak black tea is the least injurious. Coffee and chocolate should be shunned altogether. Hard waters, such as pump and well, should be avoided; those from Artesian wells, or from a great depth, containing a little carbonated alkali, and pure river water, are least objectionable. Regular muscular exercise and the use of the warm bath are important, and aid in producing a healthy skin.

As regards medicinal means, alkalies are long-established favourites in this disease. They exert, however, as Dr. Prout remarks, no curative influence of a permanent kind on lithic acid deposits. To be useful they must counteract acidity at the moment of its development; and their use must be constantly and daily repeated for a long period. The best time is between two and six hours after eating. From ten to twenty grains of the carbonate of potash will, in almost every case, be found amply sufficient to counteract the acid residuum of the meal. Dr. Prout generally prefers potash, on account of the greater solubility of the potash lithates; but soda is more grateful to a few stomachs, while others prefer magnesia. This last article is not regarded with so much favour by Dr. Prout as by

many other writers, except in acidity of the cæcum and colon. In almost all instances he associates the potassa with a few grains of nitre. By giving alkalies with tonics, the good effects of both are often lost; but their separate use is highly beneficial. Thus, he often gives tonics, even mineral acids, before a meal, and the alkalies after a meal; and with the best effects.

As exerting a kindly effect, both in the digestive and the renal apparatus, blue mass, or mercury and chalk, and extract of hyosciamus or of conium, in a dose of two grains of either of the mercurial preparations, and three grains of either of the narcotic extracts, twice a-day, may be given with advantage. In cases of gastrodynia with or without pyrosis, the use of half a grain of nitrate of silver or a grain of the oxide of silver, in union with two or three grains of a narcotic extract, such as those just mentioned, immediately after a meal, will often check both the gastric and renal symptoms.

The milder salts of iron, such as the citrate, the ammonio-tartrate and the union of iron and quinine, as in the citrate of iron and quinine, will often exert a salutary effect in dyspeptic subjects of a nervous temperament, whose strength has been much reduced.

To recur to those remedies which act more directly as solvents of uric acid, you ought to be aware that in addition to the alkalies already mentioned, certain salts have this effect. Of these the phosphate of soda exerts the greatest power in this respect, as pointed out by Liebig. It is administered in a dose of ℈i. to ʒss., adequately diluted in any vehicle, as broth or gruel; and it possesses the additional recommendation of affecting the palate very much like common salt. The bitartrate of soda, in virtue of the boracic acid, readily finds its way to the kidneys, and acts as a solvent of the uric acid gravel. Its use is contra-indicated in pregnant females, from its tendency to produce abortion.

Benzoic acid is also active on combining with nitrogenous elements which would otherwise have formed urea or uric acid. It is in this way converted into hippuric acid. Benzoic acid may, as stated by Dr. Bird, be administered in doses of eight or ten grains in syrup, or dissolved in a weak solution of carbonate or phosphate of soda, thrice a-day. "Cinnamon-water forms a good vehicle, as cinnamic acid exerts a similar action to the benzoic, becoming converted into hippuric acid. I have found," continues Dr. Bird, "the following formula of great service in several cases of chronic uric acid gravel:—

℞. Sodæ Carbonatis, ʒiss.
Acidi Benzoici, ℈ij.
Sodæ Phosphatis, ʒiij.
Aquæ Faventis, f. ʒiv. Solve et adde
Aquæ Cinnamomi, f. ʒviss.
Tincturæ Hyosciami, f. ʒiv.
Fiat mistura, cujus sumat æger, coch. ij. amp. ter in die.

In addition to its chemical action, benzoic acid acts beneficially by exciting diaphoresis, and thus fulfils an important indication in the treatment of calculous affections."

You must, however, continually bear in mind the fact stated in another part of this lecture, when I was speaking of alkalies, that the effect of all these solvents is mainly palliative; and that the utmost we can hope for from their use, is the alleviation of troublesome symptoms, until we can

remove the pathological condition on which the formation of uric acid and its combinations depends.

Phosphatic Salts.—Among the secretions from the kidneys of an eminently morbid nature, we rank those of phosphatic salts, and their deposition in the urine. These are the insoluble salts,—the triple phosphate of magnesia, and ammonia, or ammonio-phosphate of magnesia, and the phosphate of lime. The triple phosphate is usually deposited from the urine in the form of perfectly white, shining crystals, and constitutes what is termed *white gravel*, in contradistinction to the lithic acid crystals, which, from their colour, are termed *red gravel*. It is rare for renal calculus to be composed of these salts.

The *ammonio-phosphate of soda* or microcoscomic salt is readily soluble in water; it is probably the solvent of uric acid, and the common cause of the acidity of the urine.

The *diagnosis* of the earthy phosphates consists in the deposits of these salts being always white unless coloured with blood, and their solubility in ammonia or liquor potassæ. On heating the urine, the deposit undergoes no farther change, except agglomerating into little masses. Mucus, pus and blood are often present in the urine, and mark the chemical characters of the deposits.

The urine depositing the triple phosphate of magnesia and ammonia is generally pale-coloured, and very slightly acescent when passed. For the most part, it is abundant in quantity, and of moderate or low specific gravity. Exposed to the air for a short time, it gradually becomes alkalescent at the surface, even in some instances before it is cold; and on such occasions an iridescent pellicle is usually formed on the surface, which, on examination, proves to be crystallized, and to consist of the triple phosphatic salt in question. About the same time, also, minute crystals of the salt begin to attach themselves to the sides of the vessel in which the urine has stood for a short time; and this fluid speedily becomes alkaline and putrescent.

Excess of ammonia added to urine will give rise to another triple phosphate, differing from the former salt in containing an excess of base, and hence it is called basic salt. The crystals are invariably stellic or foliaceous.

The phosphates are occasionally found mixed in a deposit with urate of ammonia, in which case the latter is always of the pale variety and nearly white.

The microscopical characters of the pure neutral phosphates are shown in the angles and edges of their crystals, being remarkably sharp and perfect, and in the prism being most frequently triangular, but presenting also every variety in its termination. When preserved in balsam, the crystals depolarise light.

The constitutional *symptoms* in well-marked instances of the triple phosphate deposit, are characterized by what, for want of a better term, Dr. Prout designates nervous irritability; the manifestations of which are various, and accompanied with more or less debility; a sense of sinking and exhaustion, with fatigue and pain in the back on the slightest exertion.

In describing the *causes* of this disease, we find the delicate and feeble to be its chief subjects. All the causes depressing and enfeebling the system, whether physical or moral, will, in the predisposed, bring on a deposition of the triple phosphate in the urine. Abuse in food or medicines,

particularly of saline and other diuretics and alkaline remedies, and mercury, will have the same effect.

In persons of a nervous temperament, who have been exposed to a great strain of either mind or body, or who are dyspeptic, the triple salts are frequently present in the urine. These deposits also occur in very old people, and in cases of acute diseases.

Diseases of the bladder alone will give rise to alkaline urine and excess of the phosphates,—as in cases of old strictures, chronic cystitis, and many affections included under the generic name of irritable bladder.

The *phosphate of lime* is deposited in an impalpable amorphous powder, which is generally white, though occasionally it is slightly tinged with the colouring matter of the urine. Often it is so abundant as to be deposited on exposing the urine to heat. The constitutional symptoms are nearly the same as those accompanying the deposition of the triple phosphate.

The phosphate of lime is not part of the renal secretion merely; "the mucous membrane lining the bladder, the cavities of the kidney, prostate, &c., often throws off immense quantities of the phosphate and carbonate of lime; and from the mucous membrane of the bladder in particular, much of the phosphate of lime usually found in urinary deposits is derived. The remainder is separated by the mucous membrane lining the cavities of the kidneys, or perhaps by the kidneys themselves."

It has been stated by Dr. Bird, that there are cases occasionally met with, in which enormous quantities of phosphate of lime have come away for a long time in the urine without apparently doing much mischief.

Mixed Phosphates.—It should be known, however, that, although the triple phosphate of magnesia and ammonia, and the phosphate of lime, are each of them formed separately, and give rise to the constitutional symptoms mentioned, yet, that in by far the greater number of cases, the earthy deposits consist of a mixture of the triple phosphate of magnesia and ammonia, and the phosphate of lime, and are by Dr. Prout described under the head of the *mixed phosphates*. In this last-mentioned state of things, when proceeding from constitutional, and not connected with local causes, as disease of the bladder, the urine is generally pale-coloured, and on the whole voided in greater quantity than natural. The constitutional disorders are of a mixed nature; deranged digestion and innervation giving rise to all the chief symptoms: the expression of the countenance is haggard, the complexion sallow. Diarrhœa alternating with constipation, and black, or, what is more common, clay-coloured and yeasty dejections, are also met with.

As an excess of the mixed phosphates in the urine is seldom of common occurrence, the appearance of these salts in any quantity must be regarded as much more frequently signs of accompanying local diseases of the urinary organs. Hence, a deposition of the phosphates usually accompanies protracted bladder and prostate affections; and thus superadds, too frequently, the miseries of stone to the other sufferings of the patient.

The *causes* of a predisposing nature of the formation of the mixed phosphates, are the same as those of the separate salts; viz., the triple phosphate, and the phosphate of lime. Injuries of the back, by concussions, blows, or other accidents, are exceedingly liable to bring on depositions of the phosphates in the urine; particularly if there have been predisposition in the sufferer to this state of disease. Among the general exciting causes may also be mentioned severe and protracted debilitating passions, excessive fatigue, &c., but the most frequent causes are local irritations

affecting for a considerable time the bladder and urethra; as, for instance, any foreign substance introduced into the bladder, — all sorts of calculi, the retention of a catheter or bougie in the urethra, strictures of the urethra.

Treatment.—After a correct diagnosis of the disease connected with the deposition of the mixed phosphates, which is reached chiefly by chemical tests, we proceed to the treatment, which, as in all the diseases of the urinary apparatus, even still more than in most other diseases, consists of the dietetical and the medicinal. Were we to be influenced entirely by the alkalescent, and still more ammoniacal condition of the urine, we should recommend a diet as far removed as possible from the azotic, consisting of a vegetable and acescent nature. But this purely chemical view is not sustained by experience; and Prout very judiciously recommends, when the constitution is deeply involved and much enfeebled, a generous animal diet, consisting principally of solids: fluid aliments, such as soups, should be sparingly used. All causes of exhaustion, either bodily or mental, must be avoided; and hence a change of air and scene, from the town to the country, produces a double good effect, by its operation both on body and mind. Of medicines, we select — 1, sedatives, of which henbane and camphor are preferred by Prout, but in the severe cases, opium must be employed, and morphia preferably; 2, tonics, including *Pareira brava*, acidulated infusion of roses, with sulphate of quinia, some preparation of iron, &c., and under this head the mineral acids, as far as they can with safety be used, in order to check and remove the alkalescence of the urine. Dr. Bird prefers the nitric acid, and in one case found the phosphoric to succeed. General languor and debility will be obviated by the shower-bath, tepid or cold, according to circumstances of prior habit, or present frame of body; and local, as uneasiness or pain in the back, by various plasters or liniments applied to this part. In severe idiopathic cases, opium is almost the only means of present relief or comfort, — in doses of from one grain to five grains, twice or thrice a-day. While we are attentive to procure a regular state of the bowels, we must shun active purgatives, and especially all those of the saline class, even Seidlitz powders, and the common effervescing or saline draught.

When the irritation is chiefly restricted to the bladder, and the disease is in its earlier stage, before the constitution has yet suffered, leeches to the perineum or cups to the sacrum, and purgatives, will be of service, and may often advantageously precede or accompany the use of sedatives. These last, instead of being associated with tonics, &c., as in severe cases, may be much more beneficially combined with the citrate or acetate of ammonia.

Cystine, a substance in *cystic oxide calculus*, is of rare occurrence. It was first described by Dr. Wollaston, its discoverer, in a calculus taken from a boy five years old. Since then it has been found and described by Drs. Henry, Marcet, Venables and Bird, and Mr. Brande.

The microscopic characters of cystine are well-marked and easily recognised. When an ammoniacal solution of cystine is allowed to evaporate spontaneously on a piece of glass, it leaves crystals in the form of six-sided laminæ. When cystine occurs as a sediment, it is always crystallized: never under any circumstances being amorphous.

When present in the urine, a deposit of cystine forms a nearly white or pale fawn-coloured pulverulent substance, much resembling the pale variety of urate of ammonia. It appears to be merely diffused through the urine

when this fluid is in the bladder, as at the moment of emission the secretion is always turbid, and soon deposits a very copious sediment. Its chemical composition is quite remarkable, in its containing no less than 28 per cent. of sulphur.

A deposit of cystine may be distinguished from one of white urate of ammonia by not disappearing on the urine being warmed, and from the earthy phosphates by its being insoluble in very dilute hydrochloric or strong acetic acid. The best character of cystine, is its ready solubility in ammonia; mere agitation of some of the deposit with liquor ammoniæ being sufficient to dissolve it; and, as already remarked, a few drops of the fluid, when allowed to evaporate spontaneously on a slip of glass, leaves six-sided tables of cystine.

This substance is, Dr. Bird thinks, in all probability a derivative of albumen; and, also, that its formation is part of a scrofulous constitution, and is of an hereditary character.

The *treatment* of cystine is not well determined. The general health should be renovated as much as possible, by the means already pointed out, in the treatment of dyspepsia, and of albuminuria and uric acid deposits. Of the tonics, iron, and especially the iodide of iron, would seem to be entitled to a full trial. As a solvent, the persistent use of nitro-hydrochloric acid has, on the recommendation of Dr. Prout, been attended in some cases with success.

Oxalate of Lime.—The *oxalic acid diathesis* is sometimes associated with serous urine and with organic disease of the kidney.

In a great majority of cases, the urine containing oxalate of lime is of a fine amber hue, often darker than in health, but never, in Dr. Bird's experience, presenting the greenish tint, described as characteristic by Dr. Prout. In many instances, a deposit of urate of ammonia, occasionally tinted pink by purpurine, fell during cooling. As a general rule, the heaviest specimens of urine, examined by Dr. Bird, contained most of the oxalate.

It is a remarkable and interesting fact, observes this writer, that this salt, although he has examined a very large number of specimens containing it, has never subsided to form a distinct deposit; remaining for days diffused through the fluid, even when present in so large a quantity that each drop of the urine, when placed under the microscope, was found loaded with the crystals. Any substance, however, capable of constituting a nucleus, will cause a deposit of the oxalate around it.

The oxalate of lime is tested in urine, by heating in a watch-glass a portion of this fluid that remains in the vessel after the greater part had been strained off. There will then be formed a deposition of oxalate of lime at the bottom of the capsule. After a minute or two repose for the urine to cool, remove the greater proportion with a pipette, and replace it by distilled water. A white powder, often of a glistening appearance, will now become visible; and this under a low magnifying power, as by placing the capsule under a microscope furnished with a half-inch object-glass, will be found to consist of crystals of oxalate of lime in beautifully formed transparent octohedra, with sharply-defined edges and angles. The crystals are unaltered by boiling, either in acetic acid or solution of potassa.

One very constant phenomenon was observed in the microscopic examination of oxalic urine, viz.: the presence of a very large quantity of nucleated epithelial scales. "So constantly was it found, that repeatedly a white deposit of epithelium has often attracted my attention," says Dr.

Bird, "and led to the suspicion of the probable presence of oxalate of lime."

Among the *symptoms*, which are sometimes very slight, at other times evincing bodily suffering and mental excitement bordering on insanity, hemorrhage from the kidneys is perhaps more frequently produced by the oxalate of lime, than by any other form of concretion. The subjects of this disorder are generally much emaciated, and are both irritable and indisposed to exertion. Fortunately, however, of the hundreds of individuals in whom the oxalic acid diathesis prevails, a few only suffer from calculus. The formation of a renal calculus of oxalate of lime, or mulberry calculus, seems to be generally an accidental circumstance; and, in almost every instance, the formation of such concretion depends either on the presence of some foreign body, or some local inflammatory action on the kidney. Among the exciting causes of this diathesis is, in Dr. Prout's opinion, a residence in a damp and malarious district. The influence of diet is very strong. Repeated instances have been seen in which the too free use, or rather abuse, of sugar has given occasion to the oxalic acid form of dyspepsia; and sooner or later, under favourable circumstances, to the formation of an oxalate of lime calculus.

Connected with, and almost forming a part of, the symptomatology of the disease, is the complication of the oxalic acid diathesis and deposit with other deposits. On this point and the alleged common presence of free sugar with the oxalate, Dr. Bird has arrived at the following conclusions:—

"1. That in the urine under consideration oxalate of lime is present, diffused through the fluid, and in a crystalline form.

"2. That in rather more than one-third of the cases, uric acid or urates existed in large excess, forming the greater bulk of the existing deposit.

"3. That in all, there exists a greater proportion of urea than in natural and healthy urine of the same density; and in nearly 30 per cent. of the cases, so large a quantity of urea was present, that the fluid crystallized into a nearly solid mass on the addition of nitric acid.

"4. That the urate of ammonia found in the deposits of oxalic urine is occasionally tinted of a pink hue.

"5. That an excess of phosphates frequently accompanies the oxalate.

"6. That no evidence of free sugar has occurred in the specimens I have examined."

Dr. Prout lays great stress on the saccharine origin of oxalate of lime in the urine, and is disposed to locate the origin of the oxalic acid diathesis in the digestive system. Dr. Bird, while differing from him on the first point, assents, as indeed all must who have watched the disease, to the latter. It is true that in nearly all cases there has been a chronic and persistent derangement of the general health, of which dyspepsia is both the cause and the evidence. Among the causes that have been mentioned, are, injury to the constitution by syphilis and mercury, childbearing, over-lactation, venereal excesses, and intemperance.

The dietetic part of the *treatment* of the oxalic acid diathesis is nearly the same as that applicable to diabetes, but with a greater proportion of vegetable food. Fermented drinks should be abstained from. The quality of the water is of the utmost importance. The medical treatment is chiefly analogous to that of diabetes. "The mineral acids, either alone or combined, are usually grateful to the stomach, and may be taken with advan-

tage; indeed, generally speaking (says Dr. Prout), I have seen more benefit derived from this class of remedies than from any other. The effects of the mineral acids must be watched; and when they begin to produce a deposition of the lithate of ammonia, or of lithic acid, their use must be suspended." The distressing flatulence and irregular action of the heart, so often present in this affection, are relieved by hydrocyanic acid, or infusion of the wild-cherry tree bark.

The administration of colchicum is often productive of a deposit of uric acid, which replaces entirely the oxalate of lime.

Lactic acid, by some distinguished chemists believed to be merely a modification of acetic acid, is developed both in the primary as well as secondary assimilating processes. In the first, giving rise to dyspepsia, especially heartburn, &c., and unpleasant sensations and derangements of the lower bowels; and in the second, deranging more or less the renal secretion. The remedy for these disorders will be not so much a specific treatment, as the exhibition of alkalies, but an adoption of a suitable regimen by which all the assimilating organs will be rendered fitter for the rhythmical discharge of these functions.

Symptoms and Treatment of Renal and Vesical Calculi.—After an account of the various states of the urine, evincing morbid secretory action in the kidneys, and which gives rise to solid deposits from this fluid, constituting calculi in the cavities of the kidney and in the bladder, or *renal calculi*, and *vesical calculi*, it would be in order to describe these latter in detail. But I must be content with having directed your attention to the various diathesis and the evidence of morbid concretions going on, and the outlines of treatment demanded on these occasions, and leave to yourselves the application of this knowledge to the treatment of the more confirmed stages of the disease. The symptoms of renal concretions, in general, are not distinctive from those of nephritis and nephthralgia, and their real value can only be ascertained by a close attention to all the concomitant circumstances of the case. The formation and passage of lithic acid concretions are often attended with little or no pain; those of the oxalate of lime produce pain of a more acute character; and though principally referred to a particular spot over the region of the kidney, it is often discursive, and shoots in the direction of the ureter, epigastrium, or shoulder.

The presence of renal concretions being ascertained, as well by the physiological symptoms as by the chemical tests of their presence in part of similar matters in the urine, means should be taken for their expulsion. These consist, in the case of the uric acid concretions, of the means to remove the so commonly associated congestions of the abdominal viscera; such as by cupping freely over the loins at the outset; and afterwards by active purgatives, including calomel and henbane, or colchicum if gout be suspected, conjoined with alkaline and diuretic remedies; among which, the tartrate of potassa or tartarised soda is perhaps the most efficient. When congestion is removed, the patient should be put on a plan of treatment adapted to the uric acid diathesis formerly described; and be directed to take simple diluents in conjunction with foot or horse exercise. Under this plan of treatment, sometimes alternated with the cautious use of diuretics of the terebinthinate kind, almost incredible quantities of sand and numerous lithic acid concretions, of various magnitudes, have been brought away. If the concretions are presumed to be of the oxalate

of lime variety, the same general treatment is useful, including diuretic purgatives and diuretics, but with the substitution of dilute nitric acid with nitrous ether for the alkalies. Sedatives will be proper in all the cases, as also the warm bath. Concretions of the cystic oxide or of the phosphates will be met by the same general principles of cure. Nor do these differ during the actual descent of the concretions from the kidney. In plethoric subjects thus affected we cup the loins more freely, and give calomel and opium followed by fomentations and the warm bath.

On *vesical calculi* my remarks will be very brief. The substances which are met with, either constituting entirely or making up the greater part of calculi of the bladder, are, uric acid and urates, oxalate of lime, triple phosphate of ammonia and magnesia, phosphate of lime, cystic oxide, carbonate of lime, xanthic oxide, fibrinous calculus. The centre or nucleus of a calculus is generally either acid or oxalate of lime. Children, especially among the poorer classes, are more liable to calculi than adult persons. The larger proportion of hospital patients admitted for lithotomy are children. On the other hand, continues Sir Benjamin Brodie, who makes the remark, "in private practice, that is, among the upper classes of society, very few of our patients are children, and the great majority are persons above fifty years of age." Patients with enlarged prostate gland are particularly liable to suffer from calculi of the bladder; the cause of which may be readily understood from the circumstance of the bladder not being emptied without the aid of a catheter, and of course retaining any small calculus from the kidney, or lithic acid sand or particles of phosphate of lime, which thus become, severally, the nucleus of a stone in the bladder. Associated with this disease of the prostate is, also, quite commonly, inflammation of the mucous membrane of the bladder. The symptoms of the presence of calculi in the bladder are detailed in every work on the practice of medicine, as well as of surgery: their precise composition can only be ascertained by an analysis of the gravel or smaller calculi passed with the urine and of this fluid itself. Guided by this knowledge, we may sometimes with good effect prescribe a course of medicine, in which large dilution counts for a great deal, for the relief of the pain and more urgent symptoms, sometimes for a diminution of the size of the calculi, rarely for their solution and entire removal. The means of cure adapted to the indications furnished by the different kinds of calculi are the same as when the principles of which they are composed are secreted from the kidneys and deposited in the urine. The chief remedies are the alkaline class, persevered in for a length of time,—months and years,—in such doses as not to distress the stomach or interfere with digestion. The alkalies, in whatever shape exhibited, have an unquestionable and very remarkable influence upon the calculi of the bladder themselves, and upon the symptoms to which they usually give rise. A stone in the bladder, ascertained by sounding, and which caused its possessor torment hardly endurable, has been so far rendered innocuous by the protracted use of Castile soap and lime-water, as scarcely to give any inconvenience. On this point refer to Willis, pp. 184–190. The value of the alkaline bicarbonates especially, has been placed in a more conspicuous light of late years, by the experiments of Dr. Ch. Petit and M. A. Chevalier.

Hematuria, commonly defined to be a discharge of blood from the bladder, is in fact hemorrhage from the urinary organs, without specification

of part. Sometimes the blood comes from the kidneys themselves, sometimes from the pelves or ureters, and often from the bladder. It is symptomatic of or caused by some other affection more frequently than it is idiopathic; and hence we meet with it in certain epidemics, as remittent and typhoid fevers; affections of the spleen and liver, and in scurvy. It occurs as an endemical disease in some countries. In the Isle of France, children from their earliest infancy are liable to this complaint, without suffering any pain, or its appearing to prejudice their general health. One of the physicians of that island says, that three-fourths of the children are affected at one time or another with hematuria. In these cases the bloody urine is generally observed to alternate with that which is chylous or sero-albuminous. The blood globules may be detected by the microscope.

The most common cause of hematuria is the presence of some foreign body in the pelvis of the kidney, in the course of the ureter, or in the urinary bladder. The *treatment* will be modified by a knowledge of cause; and commonly consist of a mild antiphlogistic course, viz., cups to the loins or sacrum, or leeches to the perineum; cold cloths to these parts, and on the hypogastric region; cold water enemata; the administration of sub-acetate of lead; or, if the patient have been subject to hemorrhoids, a few leeches to the anus will be of service. Prior constipation or any fulness of habit will require purging, at first with calomel and rhubarb, and afterwards with salines. More formidable cases are treated by injections of cold water, or of alum, in the proportion of forty grains to a pint of water, thrown into the bladder. Revulsives by warmth to the feet, and warm pediluvia, will be serviceable. When hematuria recurs often, without being caused by the irritation of calculi, and the subject is weakened by the discharge, or his system otherwise debilitated, some preparation of iron is of service. The chloride tincture has been given with good effect in such cases. The same remark applies to mineral acids and to tannin; the latter in five grain doses. When the hemorrhage is from the kidney, it sometimes lasts unchecked for weeks together, and then ceases without farther injury.

Cystitis.—The chief diseases of the bladder are, inflammation or *cystitis*, and catarrh or *cystirrhœa*, with their modifications of irritability and spasm. Inflammation of the bladder may appear in one or more of its component tissues; but it seldom fails, except we call rheumatic or neuralgic attacks of the muscular tissue inflammatory, to involve them all. If the mucous coat be the first attacked, we have, besides the common symptoms of inflammation, those of irritable bladder. In the serous coat the symptoms will be those of partial peritonitis. In all these cases the sub-mucous cellular tissue is soon implicated, and then we have the symptoms of acute phlogosis of the bladder. These are, after rigors, acute burning and throbbing pain behind the pubes, and extending to the perineum, with heat and pain at the anus and rectum, tenesmus, and frequent desire, with difficulty of discharging the urine. To these succeed symptoms of general reaction or fever. The urine is at first scanty, dense, high-coloured, and turbid on cooling. It has a great tendency to alkalinity, and contains a large amount of mucus or of muco-pus. Frequently it contains hematoglobolin. When the inflammation was caused by vesical calculi, the urine, according to the observation of Schoenlein, had a pale greenish colour.

When the disease is about to terminate in convalescence, copious sedi-

ments are deposited, or, if a sediment had been formed during the height of the disease, it is now more abundant. In arthritic cases the sediment is represented to be of a crystalline, micaceous appearance. If the disease is allowed to go on unchecked, the pain extends upwards through the abdomen generally, which becomes tense and tender; there are then nausea and vomiting, with great prostration, anxiety, and restlessness.

Cystitis may be caused by external injuries, by injudicious irritation of the bladder in certain operations, or by acrid diuretics; metastasis of gout, and the like; and in females, by difficult and protracted labours, from the long pressure of the head of the child.

The *treatment* of cystitis will be pretty obvious from the symptoms. Venesection, followed by topical bloodletting from the sacrum, perineum, and anus, as may be deemed most advisable in consideration of any prior affection or concomitants of the case; in fine, the same measures may be advantageously adopted as were recommended for hematuria. Recourse will be had more readily than in the latter case, to tartar emetic, which will take the place of sugar of lead in the early period of the attack, as calomel will that of any tonics towards its close. Depletion having been properly practised, including adequate evacuation of the bowels by castor oil and mild mucilaginous enemata, a blister to the sacrum will do good service.

Cystirrhœa.—The chronic form of cystitis is often confounded with cystirrhœa, and, in fact, it at times terminates in this latter; and, conversely, cystirrhœa may be hurried into cystitis by injudicious treatment or accidental irritation. But true *cystirrhœa, catarrhus vesicæ*, is of primary origin, like analogous irritation in all other parts of the mucous system; running through its several stages, from that of irritation bordering on slight inflammation to increase of mucous secretion and solution of the disease. Like other forms of catarrh, it may originate from exposure to cold and moisture, and its effect, suppressed perspiration. More commonly it is caused by irritation and inflammation of the urethra, either from the violence of gonorrhœa, or other sudden stoppage of the discharge; and in either case there is an extension of the inflammation of the urethra to the mucous membrane of the bladder. But, it has been well said, that idiopathic catarrh of the bladder is just as rare in acute as it is common in a chronic form. Its advance is insidious, so that it attracts little attention for a length of time. Finally, however, the uneasiness felt about the region of the bladder, the frequent calls to pass urine, and the mucus mixed with this fluid, together with sympathetic disturbances of the digestive canal, are clear indications of a developed and troublesome disease. The nervous system soon participates largely in these disorders, and the irritability, alternating with sadness and depression, and apathy, are great.

The urine, when examined, shows a large addition of flocculent mucous matter, which subsides from the general mass of the fluid, collects at the bottom, as in the acute disease, and forms a tenacious substance that will bear drawing out into ropes a foot and more in length without breaking. As the disease advances, the urine undergoes further changes; its urea suffers decomposition, and it is rendered both acrid and intolerably offensive. The continued irritation of diseased bladder produces hectic and marasmus, which, if not arrested, ultimately prove fatal.

Cystirrhœa is described to be, as it is truly, a disease, for the most

part, of aged people. I have seen it, however, in young subjects; and one of the worst cases which I ever met with was that of a young man, about twenty-five years of age, who finally sank under the disease.

The *treatment* must vary with the constitution and age of the patient, particularly as regards preliminary depletion, which, in some instances, gives great relief. In the case just referred to, I found the sufferings of my patient, up to the last few months of his life, relieved for a longer period by cupping over the sacrum, or leeches to the perineum, than by opium, or any combination of sedatives that I could devise; even, too, when his general circulation and other organic systems manifested very feeble action. Laxatives and demulcent drinks constitute an important part of the treatment. After these opium with small doses of magnesia, which last is preferable to any of the alkalies, enemata of laudanum if the pain be great and persistent, or the irritability of the bladder prevent sleep, will be put in requisition. I have found, on some occasions, nothing soothe so much the sufferings of the patient as cold water enemata. After the subsidence of inflammation recourse is had to some medicines of the balsamic tribe, of which copaiba is the best. This medicine, taken by the mouth, and injected into the rectum, is highly lauded in this disease; and in many cases undoubtedly deserves its good character. But my own experience is coincident with Mr. Liston's, in leading me to prefer cubebs, in doses of twenty grains twice or three times a-day, to which I often add half the quantity of uva ursi and the same proportion of magnesia. I have succeeded in relieving for a time, by this prescription, a person whose calls, for years, to pass urine, were almost continual, night and day. Under the use of the cubebs she was so much benefited, that in the course of a fortnight she was able to go out everywhere with freedom; and could retain her water easily for three hours to three hours and a half. In a few weeks, however, the disease returned; the same remedy was prescribed, but its effects were no longer as beneficial as before. The balsam was then used, but without effect; nor was I more successful with a short trial of strychnia. Enemata of oil of turpentine with yolk of egg, blister to the sacrum, injections of warm water, or of a solution of morphia into the bladder, have been generally recommended and used. I have tried them all, but without any encouraging results. Sulphate of quinia and analogous tonics are sometimes serviceable, at other times again seem to aggravate the disease. Much stress is laid by some writers on an issue established in the perineum, as decidedly more remedial in its effects than a similar drain and counter-irritation on the sacrum or spine higher up. Blisters on the inside of the thighs sometimes give partial relief. Even in the chronic form of the disease, after the use, so generally ineffectual or partially successful, of balsams, I have succeeded in giving comparative comfort for weeks to a patient by small doses, two or three times a-day, of emetic tartar; and have directed the application of this medicine to the sacrum, as an external counter-irritant.

The opposite in some respects of cystirrhœa is *ischuria vesicalis*, or retention of urine. In this latter the kidneys, unlike that which occurs in ischuria *renalis*, perform their office as usual, and the urine makes its way into the bladder; but from some cause it cannot be ejected from that organ. In this case, there is more or less pain and uneasiness in the region of the bladder, accompanied, for the most part, in the earliest stages, at least, by an urgent desire to pass off the urine. The distended

bladder forms, in most instances, a swelling above the pubes, not only perceptible to the touch, but, sometimes, even to the eye; and the drawing off the urine by the catheter, if this can be effected, always gives great and immediate relief to the patient's sufferings.

The cause of retention may be inflammation, spasm, or mechanical obstruction at the neck of the bladder or urethra, or a combination of these causes. Retention of urine is also an attendant or consequence of hysteria, of paralysis, or of other affections of the bladder, such as a preternatural thickening of its coats, &c. If long continued, it causes suppression of urine, or it may end in rupture, gangrene, &c., of the bladder.

According to the cause will be our treatment. If inflammatory symptoms prevail, we have recourse to free venesection and cupping over the sacrum and loins, antimony, &c.: if spasm be present, opium is to be given by the mouth and enema; also belladonna, particularly in the form of extract rubbed on the perineum and pubes, or introduced as a suppository into the rectum. The tincture of chloride of iron has acquired great reputation in this last-mentioned state. Failing soon to cause the bladder to evacuate itself, we must introduce the catheter and draw off the water; and here I may mention, parenthetically, that the best for one who is not a practised surgeon, is the common-sized silver catheter. If there be symptoms of paralysis or weakness of the spine, moxa or a small blister is to be applied to this part, and iron and strychnia given internally. When there is associated derangement of digestion, the blue mass, alternating with magnesia and bicarbonate of soda, will answer a good end. The *prognosis* in retention of urine occurring in old persons is not favourable. We must not be surprised at their sudden death, preceded by apoplexy or paralytic seizure.

Proportion of Diseases of the Urinary Apparatus in the Two Sexes.—As regards the proportion of cases of urinary diseases in the two sexes, in England at least, we learn that they destroy five times as many males as females—the rate of mortality under this head having been ·199 and ·087 per thousand. This disparity has been ascribed to mechanical causes; but will a mechanical explanation account for the fact, that sixty-eight males, and only twenty-eight females, died of diabetes? Dr. Yellowly, in a paper published in the Philos. Trans. 1829, estimated that one in one hundred and eight thousand persons was cut annually for stone in England and Wales. It appears from the table, that forty-seven in one million males, and five in one million females, die of stone and gravel. "The latter, it must be admitted, is a vague term in popular language; but the mortality from stone is certainly one in one hundred thousand annually."—*Registrar's Report*, p. 105.

LECTURE LXV.

DR. BELL.

DISEASES OF THE ORGANS OF GENERATION.

Connexion between Diseases of the Genital and of the Urinary Apparatus—The former not adequately studied or described by English physicians—Influence of the genital organs on the moral nature of man,—his sentiments and emotions.—DISEASES OF THE MALE ORGANS OF GENERATION—The organic are—I. *Urethritis* and its consequences; II. *Balanitis and Posthitis;* III. *Orchitis* and its consequences; IV. *Neuralgia of the Urethra and Testicle;* V. *Prostatitis.*—Urethritis defined.—*Causes*—Various kinds of irritants—First seat of the disease—Period of incubation.—*Symptoms*—New sensations in the urethra, discharge, thickening and hardness of the canal, occasionally hemorrhage—Sympathetic and consecutive inflammation of other parts—Appearances of the urethral discharge—Chordee—Terminations and consequences of gonorrhœal urethritis.—*Pathology*—Inoculation the true test of gonorrhœal and chancrous virus—Matter of gonorrhœa does not produce chancre—Syphilis not a consequence of gonorrhœa—Gonorrhœa essentially an inflammation of the mucous membrane of the urethra.—*Treatment*—Too often empirical—Systematic division into the preventive, aborting, and curative—Chief preventive means—Aborting remedies—Injections—Gonorrhœa to be treated like other inflammations—Hunter's remarks—Comparison with coryza and incipient catarrh—Remedies following antiphlogistic course—stimulants and astringents.

I CANNOT enlarge on the subject of diseases of the organs of generation to the extent justified by the importance of the subject. That which I have to say finds, however, its place more appropriately at this time than either antecedently or at a later period. The contiguity of the genital with the urinary apparatus, their community of nervous and vascular supply, and sameness of tissue, and their reciprocal irritation, suggests, naturally, a notice of the diseases of the one after those of the other have been described. Thus, we find, for example, the uterus in close anatomical relation with the bladder, so that displacements, or even simple irritation of the former, affect not a little the functional exercise of the latter; as, *e converso*, a distended bladder is apt to cause a common troublesome displacement, and, as in labour, interference with the contractile and expulsive efforts, of the uterus. In the male, the urethra is a canal for the passage of urine and of semen, and its inflammation will induce, at times, that both of the bladder and even kidneys, as well as of the testicles. We have seen, when speaking of diabetes, that, concurrently with great functional disease of the kidneys there was, also, associated such an atonic state of the testicles as to be followed by loss of virility. Nephritis often gives rise to pain and retraction of the testicle, as orchitis does to disorder of the kidney, and suppression of renal secretion. The most common and, in a measure, diagnostic symptom of stone in the bladder is itching of the glans penis.

In England, the diseases of the genital organs have not had justice done to them by the physicians, because they willingly and much too readily yield them up to the surgeon and the man-midwife, by neither of whom can the subject be adequately appreciated without a more profound and enlarged study of pathology, including the sympathetic and secondary disorders of the generative organs, than most of these gentlemen, in their

routine practice and limited special views, give to it. Often your professional opinion and advice will be invoked for various derangements of function of the nervous and digestive and even vascular systems, between which and disorder of some one of the genital organs, and especially of the uterus, no connexion is suspected by the parties applying to you. Without a knowledge of both the physiological and pathological relations between these organs and those in other regions, and the influence which they reciprocally exert on each other, you will be greatly embarrassed and too often unsuccessful in laying down a suitable course of therapeutical and hygienic treatment.

There cannot be derangement of function in any part of the animal economy without some change in the disposition, mood, or mind of the individual. But in no case is this fact so strongly exemplified as in either congenital or in acquired defects of the genital organs. Discourse as two lovers may ever so copiously and eloquently of the refinements of sentiment, the elevation and purity of thought, and their disinterestedness of feeling, each being to each a dearer self, certain it is, that all of this would dissolve in thin air, and the love would cease to be either felt or understood, or even imagined by the swain, if he were by any cruel chance, as that which happened to Abelard, to become emasculated. Nor could the sweet, shrinking, and blushing Phyllis, on her side, retain her former delightful emotions, and sensibilities, or her expansive regard for the world at large, if her ovaries had become atrophied. Love and all its associations would be for a eunuch what song and orchestral accompaniments are to a deaf-mute—things unfelt and unappreciable except by analogies.

I would not idly seize an occasion to throw a shade over young romance or to abate the fervour of enthusiasm: the period for the indulgence of either is too short and too quickly curtailed by the stern realities of life. But, as physician and physiologist, it becomes my duty to impress on you the connexion between our physical and moral nature, or rather, how much the latter is an educt of the former. Can there be, for example, a greater contrast in the disposition, feelings, and general frame of mind between a young girl suffering under chlorosis and uterine atony, and the same person a year afterwards, with rich blood coursing through her heart and vessels, and new vitality in her uterine organs.

I do not now speak, although it properly relates to the present theme, of the effects on the mind, of real or supposed impotence in an individual of the one sex or of sterility in one of the other. Often life receives an entirely different colouring from a belief, even though without adequate foundation, that there is inability to perpetuate the species. Some, from entertaining suspicions of themselves of this nature, have kept aloof from society, or looked on it at a distance with an eye of fear and suspicion, degenerating, after a while, into hate and positive malevolence towards their fellow beings, whom, under better auspices, it would have been their pleasure to render contented and happy.

Diseases of the Male Organs of Generation are first to be considered. Of congenital deficiencies and malformations it is not my business to speak, nor shall I dwell on those affections in which a more purely surgical treatment is indicated. It would not be correct to class under this head a series of changes affecting different textures and systems, as in syphilis, which, for the most part, show themselves first on the organs of generation.

With these reservations I shall divide the chief diseases of the genera-

tive system in males into the two common heads of Organic and Functional Organic diseases of this system will include — I. Urethritis and its consequences. II. Balanitis and posthitis. III. Orchitis and its consequences. IV. Neuralgia of the urethra and testicle; and V. Prostatitis.

URETHRITIS.— Under this title I would wish to designate both inflammation and inflammatory irritation of the mucous membrane of the urethra, from whatever causes proceeding, and of the concomitants and effects of the phlegmasia in augmented and perverted secretion and occasional thickening of the mucous membrane. The more common names for this disease are *gonorrhœa*, and, in later times, *blenorrhagia;* its more chronic form being termed *blenorrhœa*. As the former is still that in most familiar use, it is one which I shall most employ. The term for the disease is of no great moment, provided we have an accurate notion of the organic seat and changes of tissue in its course. Let me add, however, that although gonorrhœa in the vast majority of cases is confined to the urethra, yet that, in some, the irritated surface may be that of the prepuce, from which a puriform discharge at the time takes place; and hence *posthitis* may occasionally be a variety of gonorrhœa.

Causes.—Urethritis proceeds from various kinds of irritants, viz., physical, chemical, and a virus or specific poison. Illustrations of the first are met with in the supervention of gonorrhœa on venereal excesses, by which one or even both of the parties, previously quite sound and healthy, may have a purulent discharge, with heat and irritation, from the urethra. Masturbation will produce the same effect. So, also, will violence to the genital organs of young girls, in the infamous attempts at rape, give rise to the disease in them, which consists in irritation and inflammation, with discharge, of the urethro-vaginal surface. Riding on horseback, by undue pressure on the perineum, or a bruise of this part by being thrown on the pummel of the saddle, or from other causes, will be followed by gonorrhœa. Under this head we class, also, the irritation caused by a calculus in the urethra or bladder, and the introduction and especially the undue retention of a catheter in the urethra.

Chemical irritants, liquid ammonia, for example, injected into the urethra, as in the experiment performed by Swédiaur on himself, has caused gonorrhœa. Of an analogous kind are certain secreted fluids, such as the menses, or the matter of leucorrhœa, or of the lochiæ, which have caused the disease in men who had sexual intercourse with females when the latter were in the particular state in which these secretions took place.

Gonorrhœal discharge has been alleged to follow the irritation of worms in the rectum, and, also, of hemorrhoids. In the former case, as when the disease is met with in children of the female sex, the worms which escape from the anus may find entrance into the vagina, and prove a sufficient cause of irritation to induce the blenorrhagic discharge.

The most frequent cause of urethritis, is the alleged contamination, in coition, with a person who labours under gonorrhœa at the time, or, as stoutly alleged by some, who has a chancre on the glans penis or at the opening of the urethra in a male, or on the nymphæ or in the vagina of a female. This mode of contracting the disease is said to be by the inoculation with specific poison or virus.

It is not easy to understand why, if gonorrhœa be produced by the inoculation with virus of an exposed mucous surface, the preputial lining and the continuous *corona glandis penis* should not always be the part at

least primarily affected. Now, we know that gonorrhœal disease here is of rare occurrence. Then, again, as the urethra is really the part that takes on the disease, how is it that it becomes affected or inoculated? It is not, at any rate, generally alleged that the gonorrhœal matter in the vagina gets into the canal during coition. It is impossible at least, as John Hunter properly remarks, that it can get so far as the common seat of the disease, or into those parts of the urethra where it very often exists, that is, through the whole length of the canal. The orifice or beginning of the canal made by the glans penis is not the seat of primary irritation or disease. (*A Treatise on Venereal Disease*, by John Hunter. With notes, by George G. Babington. Philadelphia Edition.)

The celebrated writer just named suspects that it is communicated or creeps along from the glans to the urethra, or at least from the beginning or lips of the urethra to its inner surface. If we should receive this explanation we shall have to admit the propagation of contagion by sympathy from one point, the orifice at the glans, to another, the beginning of the urethra proper, without the intermediate surface being affected.

The limited extent of mucous surface of the urethra at first and often exclusively affected, is worthy of notice; being seldom more than an inch and a half or two inches at most within the orifice, a distance which Hunter believes to be truly specific, and which he calls the specific extent of inflammation. Next to the upper portion, or the fossa navicularis, of the urethra, the lower or membranous is that most inflamed in gonorrhœa, when once it is fully formed and after it has lasted some time, or assumed a chronic character.

Period of Incubation.— There is great difference in the period within which the urethral discharge shows itself after exposure to the morbid cause; in some instances only a few hours and in others six weeks have elapsed. One author mentions a case in which the disease did not show itself until five months after coition. The common period may be stated at from five to eight days.

Symptoms. — The first symptoms of urethral irritation is an itching or feeling analogous to titillation at the orifice and upper portion of the urethra and a slight tumefaction of the lips. Soon after this a discharge or "running" appears; the itching is converted into a troublesome heat and pain, the latter felt more particularly at the time of voiding the urine. In this respect there is, however, no uniformity; the discharge being often copious, and continuing for a length of time without pain, while at other times, the pain, or rather soreness, comes on long before any discharge appears, and it may continue after this latter ceases.

The sensations of uneasiness and pain and also a thickening and hardness of the urethra will vary in their seats according to the portion of this canal which is more especially affected. Swellings or little knots are felt by the fingers externally all along the under side of the penis in the course of the urethra, owing to inflammation and sometimes distention with mucous congestion of the lacunæ or muciparous glands. These sometimes ulcerate and discharge into the urethra; but occasionally open outwards through the skin. The thickening and inflammation of the canal diminish the size of the meatus, and the stream of urine is narrower in consequence, and often divided just as it leaves the passage. This deviation from the natural discharge of urine is not confined to gonorrhœa, but occurs in every disease of the urethra, and is thought to be one of the diagnostic

signs of stricture. It is met with, also, in many cases of diseased prostate gland. Sometimes there is hemorrhage from the urethra in gonorrhœa; a symptom most seen when chordee is present.

If the lower or membranous portion of the urethra be the seat of the disease, there is severe pain in the perineum and neighbourhood of the anus, increased by pressure and accompanied with a frequent desire to discharge urine. It is at this time that consecutive inflammation of the prostate, testicles, and bladder, is apt to occur. It is no uncommon thing for the patient with gonorrhœa to be tormented with what may be called sympathetic pains, viz., in the groins, dragging of the testicles, rectal irritation, and tenesmus. A fever, sometimes of an inflammatory, at other times of a remittent, and even distinctly intermittent type, is met with in this disease. Affections of the joints called gonorrhœal rheumatism sometimes occur.

The discharge in gonorrhœal urethritis is at first thin, nearly colourless, and in small quantities, little different from the mucous fluid which flows from the urethra after venereal excitement. Before long, however, the discharge has the consistence and colour of true pus; and is either white, yellow, or green, according to the stage and degree of inflammation. With the subsidence of this latter, the fluid is generally of a lighter colour; green, indicating a more virulent disease: but in this respect there is no uniformity—there being nothing positively diagnostic in the characters of the discharge alone.

A very painful accompaniment, quite common in the course of gonorrhœa, is *chordee*, which may be inflammatory in some cases and spasmodic in others. It consists in an imperfect erection of the penis, owing to the extravasation of lymph in the reticulated erectile tissue of the urethra, which prevents the distention of the corpus spongiosum urethræ, and by making it unequal, in this respect, to the corpora cavernosa penis, causes a curvature at the time of erection. This latter is generally at the lower part of the penis. The inner membrane may be so much on the stretch during the erection, which is most apt to occur in the night during dreams, that it is in some degree torn, and there follows, frequently, a profuse bleeding from the urethra, by which, often, the patient is relieved, and even sometimes entirely cured of the chordee.

Terminations and Consequences of Gonorrhœal Urethritis.—John Hunter called some of the terminations of the disease now under consideration, *continued symptoms*; of this character are the chronic disease running into gleet, an irritable bladder, and hardness of the testicle, or rather of the epididymis, and chordee.

There are other incidental complaints ensuing on gonorrhœa, such as stricture of the urethra, irritable bladder, ulceration and *fistula in perineo*, dilatation of the ureters, and enlargement of the pelvis of the kidney, besides what may be called more directly sympathetic complaints, such as swelling of the testicle and of the glands of the groin. A more persistent and oft-recurring disease secondary to and consequent on gonorrhœa is ophthalmia, of which I shall speak more fully hereafter.

Pathology.—In detailing the causes of urethritis, I mentioned that gonorrhœa was produced, principally, by the contact of virus resulting from morbid secretion of the mucous surface of the urethra in males and of the vagina in females. I adverted to that other opinion, that the disease was also caused by the matter secreted from chancre. At the present time we

have small reason for adhering to this last notion, disproved as it is by careful observations and experiments. The fallacy of the belief in the chancrous origin of gonorrhœa was kept up by the fact of an urethral discharge, accompanied by symptoms of irritation, following the introduction of the matter from chancre into the urethra. But more careful inspection showed that in this case there was true inoculation, and that an ulcer was formed in the meatus, the irritation and discharge from which simulated and were taken for gonorrhœa. We are authorised, in the existing state of our knowledge on this subject, to reject the opinion of Hunter, who tells us, as a reason for giving small doses of mercury in the case of gonorrhœa, "It is always necessary to have in view the possibility of some of the matter being absorbed and afterwards appearing in the form of a lues venerea."

Inoculation affords the true test in this question, as clearly proved by M. Ricord (*A Practical Treatise on Venereal Diseases*, &c.). He has shown that the matter of gonorrhœa never produces chancre, nor does the pus of chancre give rise to gonorrhœa, when each respectively has been applied to the surfaces and tissues in which these diseases are developed in common.

Gonorrhœa consists essentially of a more or less diffused inflammation of the mucous membrane of the urethra, which may be spread by contiguous sympathy to the vesiculæ seminales, vas deferens, and epididymis, causing swelled testicle; and to the bladder, ureters and kidneys, giving rise to symptoms already detailed. The kind of inflammation is erythematic or erysipelatous. In some instances, abrasion of surface and ulcerations have been noticed on the canal of the urethra; but, for the most part, there is no great change other than a slight injection of the mucous membrane of that part of the passage more immediately affected, and some enlargement of the muciparous glands, after a subsidence of the first and more evidently acute stage.

Urethritis proceeding from the common irritants, direct or sympathetic, heretofore detailed, is called simple gonorrhœa; that from morbid secretion is venereal gonorrhœa, which, when restricted to a limited surface, is termed mild, and when more extended in its seat and accompanied with sympathetic irritation of other parts, is called virulent gonorrhœa.

Treatment.—For the most part the treatment of gonorrhœa is quite empirical, being directed to the suppression of the discharge by the use of astringent injections into the urethra, or of certain articles taken by the mouth, and supposed to exert a specific action on the parts affected. A common effect of this course is an aggravation of the symptoms, by exciting a greater degree of inflammation than had previously existed, and a prolongation of the period of the disease.

Systematically considered, the treatment has been divided into the preventive, aborting, and the curative. Of the first, or preventive, we cannot speak with any certainty, even if the means were entirely at our disposal and under our control, for the reason that the prodromes or symptoms of approaching gonorrhœa can only be approximative if not conjectural. Still, it will be desired in all cases, and in some with peculiar earnestness, that, if possible, the disease should be prevented from coming on, both on account of the person himself and of some other innocent one who may be endangered by coition with him.

The chief and most reliable means will be, immediately after coition, to

pass urine, and to wash all the exposed surface carefully with soap and water, directing the ablution by means of the end of a small piece of sponge into the meatus, and cleaning well the lips. If other kinds of wash be used, they should consist of a little cologne merely diluted with common water, or, preferably, the fluid chloride of soda of the shops mixed with three parts of water. If some hours have elapsed, and the person is alarmed after suspected connexion, by a slight irritation of the urethra, dragging of the penis and testicles, some redness and tumefaction of the lips of the meatus, and uneasiness in making water, it may be advisable to introduce into the upper part of the urethra an astringent injection, such as rose-water, green tea, or a solution of sulphate of zinc or of alum; or doubts being entertained of the prophylactic efficacy of these and the fear of disease being great, recourse may be had at once to a strong solution of the nitrate of silver.

During all this time, perfect rest and quietness must be observed, and a simple and cooling regimen adopted, including an avoidance not only of stimulating food and drinks, but also of any venereal excitement, or of company or objects calculated to give rise to it.

After undoubted symptoms of gonorrhœa show themselves, although with mildness, nearly a similar course to that just sketched, as regards the hygienic and medicinal means, should be pursued. It is now that the aborting treatment may be used. This consists, in connexion with the hygienic means just indicated, mainly of the use of an injection of a strong solution of nitrate of silver, or of the solid nitrate applied to the part of the urethra first and more particularly affected. After the patient has discharged his urine, and the last drops have been carefully squeezed from the urethra, an injection, consisting of fifteen to thirty grains of the nitrate of silver to an ounce of water, is to be thrown into the urethra, by means of a glass syringe, with some degree of force, so as to make the fluid traverse at once the entire canal. If the injection be slowly performed, as would be done by a person unaccustomed to the operation, the mucous membrane is puckered up, the canal is narrowed, and the fluid does not find entrance. The injected fluid should be allowed to remain in the urethra about half a minute before it flows out. Very soon, severe pain is felt in the part, as if the canal contained pins and needles. It will be proper, after the injection has been made, to tell the patient that he may expect a temporary increase of pain and discharge, with some difficulty of urinating, and perhaps the emission of some blood. Commonly the pain ceases at the end of two or three hours, although some increase of the muco-purulent discharge may continue for from six to ten hours.

The severe pain is followed by complete ease; the urine is readily passed, and the discharge is sometimes quite dried up. Occasionally the patient is thus cured at once, but unless he observes for a while the greatest precautions, the discharge in a day or two will re-appear. If it do so, we shall have recourse to a second injection, and under a renewal of the disease a third one. But, generally, the discharge has become so slight, thin and mucous, that mere astringent injections suffice.

You will remember, however, that M. Ricord, whose advice I have just been repeating, judiciously adds, that he does not rely on injections alone to cut short gonorrhœa: it is only when they are used at the same time as internal medicines, chiefly copaiba, cubebs, and the terebinthinates, sustained by a suitable hygiene, that their aborting effects are procurable. Of these

medicines I shall soon speak. Just now the remarks I have to offer will be applicable both to the aborting treatment and to the management of the disease, if it has fairly and fully set in.

If the discharge and other evidences of urethritis are not very soon removed, the patient must expect inflammation to set in, and he must then be subjected to remedies of an antiphlogistic nature. These, in force and number, will depend both on the constitution of the individual under treatment and the violence of the symptoms. If he be young and robust, and of a sanguine temperament, and suffer much from smarting in making water, or from dysuria, and exhibit febrile reaction, with a full and hard pulse, we should have no hesitation in directing venesection to such an extent as to produce a marked impression; and follow this remedy by active purging, free dilution, abstinence from animal food, and entire rest. By this simple yet active treatment I have succeeded in relieving at once virulent gonorrhœa, marked by dysuria, phymosis, impossibility to retract the prepuce, and swelled testicle, and in rendering the disease easily controllable by common routine remedies. Calomel, given in doses of two or three grains every four hours for a day or two, may be regarded as auxiliary to and in fact a part of the antiphlogistic treatment. Tartar emetic in divided doses will sometimes be requisite in addition, under the same therapeutical indications as in other cases of phlogosis.

In weakly constitutions, and in those whose systems have been debilitated by prior excesses or suffer under scrofulous tendencies, there will be less call for sanguineous depletion, except by means of a few leeches applied to the dorsum penis or to the perineum, if there be much heat and pain in these parts of the urethra, and incipient orchitis. This measure will be found serviceable even in the chronic stage, or that which assumes a chronic character from the beginning, if, on careful examination of the urethra, we find a part which is indurated, and hot and painful on pressure.

Here I will repeat, for your benefit, the just observation of Hunter, "that gonorrhœa is to be cured in the same way as every other inflammation; and it must, also, appear that all the methods used are only to be considered as correctors of irritation in general and of disordered circulation." Availing myself of the words of this same distinguished teacher, I advise that, "when the inflammation has considerably abated, and the disease only remains in a mild form, its cure may be attempted either by internal remedies or local applications." Regarding gonorrhœa, however, as a specific inflammation, which necessarily pursues a certain course anterior to its cessation, Hunter was skeptical of the value of treatment, which he was inclined to believe is very seldom of any kind of use, perhaps not once in ten cases. Under the idea that every gonorrhœa cures itself, he gave certain patients pills of bread, which were taken with great regularity. The patients always got well, but some of them, he admits, not so soon as they would have done had the artificial method of cure been employed. While he contends that gonorrhœa is not capable of being continued beyond a certain time in any constitution, he is unable to fix a period of duration, and he adds, that in cases where it is violent or lasts long, it is owing to the parts being very susceptible of such irritation, and readily retaining it. Even without insisting on urethral gonorrhœa being a specific inflammation, we have, in the analogical instances of catarrhal irritation and phlogosis of other parts of the mucous system, as of the

Schneiderian membrane, for instance, evidence of the disease going through successive stages, characterized by different degrees of sensibility of the part and of vascular injection and by peculiar appearances and properties of the secreted matter; this latter being at first thin and seromucous, then muco-purulent, and of various colours and consistence. Sometimes we know and in our own persons feel that an incipient coryza is cut short by treatment, or disappears at once spontaneously; but, commonly, we are equally well assured, that, once the disease has fully set in, it goes through, almost of necessity, different stages during a period of average duration.

In coryza and incipient catarrh, the local inflammation and constitutional sympathies are sufficiently intense and active to justify venesection, &c., or, in its place, the application of leeches, and, at any rate, a cooling regimen and rest. But when the secretion is fully established, and there is a subsidence of excitement, debilitating measures are rather hurtful than otherwise, and recourse is had beneficially to revulsives, a more nutritive if not stimulating food, and moderate exercise in the open air.

Returning now, after this, we will not call it digression so much as explanation, to the treatment following the use of antiphlogistic measures in gonorrhœa, we shall find it to be chiefly stimulating and astringent, or, according to the phraseology of the day, revulsive or revellent. In some few cases, early recourse to articles of this class, both topically applied and operating through the stomach, has been followed by speedy cure; but, in a great majority, they will deceive any confident expectation on this score, and even require in some cases, by the aggravated irritation to which they give rise, the employment of an active antiphlogistic course. One condition for their success, viz., entire rest and abstinence from the pleasures of the table, is that which is seldom complied with by the class of persons who are most liable to suffer from gonorrhœa.

LECTURE LXVI.

DR. BELL.

TREATMENT OF GONORRHŒAL URETHRITIS (*Continued*).—Selection of remedies—Chief ones employed—Copaiba balsam preferred to all others—Loses after a while its effects—Alternation of remedies—Necessity of inspecting the urethra—Local obstructions to be removed—Doses of copaiba and forms of administering it—Use by enema; by injections into the urethra—Whether its virtues are greatest by purging—Copaiba sometimes injurious to the general health; causes skin diseases—Cubebs; its doses and preparations—Oils of cubebs and copaiba preferable—Extract of cubebs—Adulteration of the balsam of copaiba and of the cubebs—Instances of failure in the latter—Iodine; particularly the iodide and the iodureted iodide of potassium—Mercurials; when useful—Cantharides—Astringents; tannin and iodide of iron the chief ones—Topical remedies in gonorrhœa—Injections; Hunter's remarks on their use—Emollient and sedative injections and warm fomentations—Enemata of the same nature—Stimulating and astringent injections—Sometimes curative at the inception of the disease—Recourse had again to them in chronic cases, conjoined with internal remedies—Use of medicines to be continued for a while after apparent cure—In cases of morbid sensibility, caustic to urethra—M. Ricord's plan of keeping the sides of urethra apart—Compression of the urethra.

WE will suppose, now, that the proper stage of the disease for the exhibition of stimulant and revulsive remedies is reached; we have next to

make the selection. These are drastic purgatives, terebinthinates and balsams, cubebs, iodine and its combinations, and cantharides; and various injections *per urethram*. Stress has been laid by some practitioners on the use of drastic or hydragogue cathartics in the incipient stage of gonorrhœa, with a view of extinguishing the disease. Prescribed with this intention purging will generally fail us. In some of the more chronic varieties, or in acute supervening on chronic disease, I have derived benefit from the practice, which, without entirely arresting the discharge, has prepared the system to be favourably impressed by the more directly recognised anti-gonorrhœal or alleged specific remedies. I must tell you, however, that Hunter lays little stress, or rather speaks disparagingly of purgatives under these circumstances.

The medicine which of all others unites the largest number of suffrages in its favour, for the cure of gonorrhœa, is *copaiva* or *copaiba balsam*. Judicious practitioners have placed such entire reliance on its remedial virtue in every stage of the disease as to give it at once whenever their assistance is invoked, and without waiting to administer antiphlogistics or any other preparatory remedies. They give it in large doses, the only measure of which is its toleration by the stomach. Monteggia and Fuller, for example, prescribe from half an ounce to an ounce of the balsam, night and morning, at all periods of the disease. Delpech cured four hundred cases, by administering two drachms and upwards for a dose, three times a-day; not omitting venesection if there was acute inflammation. The average duration of treatment in Rossignol's practice, pursued in a similar manner, was eight days. Anterior, I believe, to any of these authorities in favour of copaiva thus early and freely used, was its recommendation in this way in the United States by Dr. Chapman. The above is a shorter period than you must expect generally for obtaining a cure. Often, after a few doses of the copaiva have been taken, during a day or two days of treatment, you will be agreeably surprised at the rapid diminution of the discharge and abatement of other accompanying symptoms. But on the next visit of your patient, he and you both will be annoyed at finding that the "running," which had almost ceased, is renewed again, sometimes as badly as before. Now and then an explanation of this untoward change is found in errors of regimen, or excessive exercise, or in a less regularly taking the balsam; but, at other times, we are unable to trace the falling off to these causes. A suspension of the medicine for a day or two will not be followed now by any farther augmentation of the discharge, but its resumption will be productive of good effects, similar to those first observed. More generally, however, a change to another article, as the cubebs, will be followed by a marked alleviation of the disease, and a prospect of cure. Once more, however, your expectations may be vain, and the cubebs will fail you as the copaiva had done before. The next remedy should be iodine, on which I am myself disposed to place considerable reliance; but even this may not produce the desired relief.

Shall we at this juncture have recourse to injections, hopeless of the success of any general remedy? We may on certain conditions, to be afterwards mentioned, do so; but a preferable course will be to examine well the state of the urethra, and if there be phlogosis or induration of a portion of its mucous tissue, we should endeavour to remove it by the application of a few leeches and fomentations; or, in chronic cases, intro-

duce a bougie and ascertain whether there be a stricture keeping up discharge and irritation. In this latter case, the use of a bougie or of a gum-elastic catheter of gradually increased size is called for. Relief being given to the local obstruction, whether it be inflammation, congestion, or thickening of tissue, recurrence to the balsam or cubebs will generally complete the cure.

I deem it more instructive to place before you a picture of probable difficulties and embarrassments in the treatment of a case of gonorrhœa, than to persuade you, by implication even, that you have only to give some favourite article, alone or in combination, in adequately full doses to insure the desired results. With these cautionary remarks I now proceed to a more minute specification of the doses and formulæ in which the chief medicines used in the cure of gonorrhœa are administered.

Copaiba balsam is given in doses of from one drachm to half an ounce, according to its toleration by the stomach, either alone or combined with some vehicle, such as mucilage of gum arabic, or simple syrup. It may be taken floating on a spoonful or two of wine, or a glass of lemonade, or a little coffee, or with milk—according to the tastes or idiosyncrasies of patients. By some I have seen it taken preferably after being dropped on a lump of sugar. Dr. Chapman recommends it to be taken swimming in half a wine-glassful of water, to which a few drops of bitter tincture has been added. But apart from a wish to disguise its taste, most persons who use the balsam for gonorrhœa are desirous that the medicine should not be readily recognised by those near them, and hence an additional reason for its being taken in combination. The chief difficulty, after all, in its use, is for the stomach to retain it when taken in large doses or continued for a length of time. Often you will be obliged to discontinue its administration from this cause alone. I shall avail myself of the industry of Mr. Langston Parker, in his useful summary, entitled *The Modern Treatment of Syphilitic Diseases*, while placing before you particular forms for the administration of copaiba.

℞. Balsam. Copaibæ, ℥j.
Mucilaginis Gummi Acaciæ, ℥ij.
Vini Xerici, ℥iv. M. (Val de Grace.)
A fourth part twice a-day or more frequently.

℞. Balsam. Copaibæ, ℥j. ad ℥ij.
Aquæ, ℥iv.
Vitell. Ovi, No. I.
Liq. Opii sedativ. M. x. ad xx. M.—*Cullerier.*
The quarter part, or more, night and morning.

℞. Balsam. Copaibæ,
Syrup. Tolutanos,
Mucilaginis Gummi Acac., āā. ℥j.
Aq. rosæ, ℥iij.
Sp. Ætheris Nitric., ℥ss.
The quarter to the half, night and morning.

℞. Aquæ Menth. Pip.,
Sp. Vini rect.,
Balsam. Copaibæ,
Aq. Aurantii, āā. ℥ij.
Sp. Ætheris Nit. ℥j. M.—*Chopart.*
Two large spoonfuls, three times a-day.

℞. Resin. Copaibæ,
Sp. Vini rect.,
Syrup. Bals. Tolutan.,
Aq. Menth. Pip.,
Aq. Aurantii, āā. ℥ij.
Sp. Ætheris Nit. ℥ij. M.—*Chopart.*
Three or four large spoonfuls, night and morning.

Of late years it is customary to take the balsam enclosed in envelopes or capsules of gelatin, by which its peculiar and unpleasant taste is avoided; but subsequent nausea and eructation, which last is so annoying to some patients, are not prevented with any uniformity by this means. Each capsule contains about ten grains of balsam.

Although placing little reliance, myself, in the fashion of *capsules*, as a mode of preparing copaiva for use in gonorrhœa,—on the plea of the ready ingestion of the medicine, and its not being so liable to nauseate and offend the stomach, it is due to the opinions of others that I should make farther mention of their use. M. Ricord prefers Requin's gluten capsules, containing a little magnesia, to those formed of gelatin. He has endeavoured to prepare similar ones, less expensively, as follows: Thirty parts of copaiba are solidified with one and a half of magnesia, and then covered with gelatin. The dose of capsules will depend on the quantity of the copaiva which they contain.

The combination which I usually prescribe myself is the following:—

℞. Balsam. Copaibæ, ℥ss. ad ℥i.
Syrup. G. Acaciæ, ℥ss.
Aquæ Menth. Virid. ℥ijss.
Spts. Nitri dulcis, ℥ij. M.
Dose, a tablespoonful, three or four times a-day.

If this mixture purge much, half a drachm of tincture of opium is to be added.

Syrup of copaiva has been recommended. It is prepared by rubbing four ounces of the balsam with thirty-two grains of calcined magnesia, and then adding sixty-four drops of the oil of peppermint and sixty-two ounces of simple syrup. Copaiba pills, made by solidifying the balsam with the addition of calcined magnesia in the proportion of half an ounce of the former to six drachms of the latter, had vogue for a while; but they cannot be relied on alone, owing to the difficulty of swallowing the requisite number for a suitable dose. The following formula has been recommended, as enabling us to administer at the same time with the balsam other adjuvants of some activity:—

℞. Extract. Catechu,
Balsam. Copaibæ, āā. ℥ss.
Terebinthinæ Chiæ, ℥i.
Sanguin. Draconis, ℥ss. M.

To be made into pills or boluses of ten grains, from ten to thirty of which are to be taken daily, at intervals.

Where copaiva proves too offensive or irritates the stomach, recourse may be had to its use by the rectum. M. Velpeau extols this fashion as speedy and efficacious in its operation; but we believe that general opinion will sanction that of M. Ricord, who asserts that the action of the medicine is as uncertain in this way as it is efficacious when conveyed

into the stomach. The copaiva lavement, or enema of Velpeau, is thus prepared:—

℞ Balsam. Copaibæ, ℥ij.
Vitel. Ovi, i.
Aquæ Destillat., f ℥viij.
M. ft. emulsio et adde
Tinct. Opii. gttm. xx. ad xxx.

But this preparation is faulty in two particulars, — first, in there not being enough of the balsam; and secondly, in the quantity of water being too large; so that it must cause inconvenient distention of the rectum, and thus increase the chances of expulsion of the whole mixture. One-half the prescribed quantity of fluid addition will be quite enough. The rectum should be previously evacuated by a common enema, and then, after a short period, the copaiva lavement in small bulk introduced. The following formula is preferable:— ℞. Balsam copaiba, 6 or 7 drachms; decoction of poppies, ℥iij.; yolk of egg, i. M. It should be given at bed-time, and the patient must endeavour to retain it all night.

Injections, into the urethra, of the balsam mixed with sugar and dissolved in alcohol, to which water and a few grains of extract of opium are added, may be used, as in the following:—

℞. Balsam. Copaibæ, ℥i.
Sacchar. Albi, ℥i.
Sp. Vini, ℥vi.
Aquæ Destillat., h. j.
Extract. Opii, gr. vi.

Mix the balsam with the sugar, then add the water and the alcohol gradually; pass the injection through a funnel with a view of extracting those portions of the balsam which may not have been dissolved. This injection is employed by Desruelles at Val de Grace, in chronic gonorrhœa complicated with cystitis. (Parker, *op. cit.*)

Little reliance can be placed on this practice. It has been a debated question, whether the beneficial operation of copaiba is best obtained when it purges or when the bowels are comparatively costive. Differences in the general result will depend on the stage of the disease, the extent of secondary irritations and the constitution and temperament of the patient. It may not be amiss for it to cause some purging at first; but its most permanent anti-gonorrhœal effect is obtained by its more decided action on the kidneys and urinary apparatus generally; and hence the propriety of adding to the copaiba, if it continues to purge, a few drops of laudanum.

Copaiba is not always given without injury to the general health of the patient, or the production, at least, of certain unpleasant symptoms and disorders. I have already adverted to the nausea and sickness of stomach caused by its ingestion, especially after the first few days of its use. These effects are in a measure obviated by the medicine or the combination into which it enters being taken soon after a meal in place of before it, on an empty stomach. Colic, and, in some instances, cholera, have been caused by copaiba. In large doses it acts powerfully on the nervous system, and has given rise to cerebral congestion, chorea, paraplegia, and hemiplegia. A more frequent and less dangerous, but still a troublesome effect, is a cutaneous eruption of greater or less extent, resembling roseola, although it may assume the appearance of urticaria and erythema. Mr. Judd de-

scribes two eruptions caused by the balsam—one he designates as a small puliceous patch eruption ; the other as a papular eruption.

These skin disorders following the prolonged use of copaiba are most apt to occur where there has existed much intestinal complaint. I have seen them after a somewhat free use of the medicine for chronic rectal irritation, accompanied by hemorrhoids, and occasional discharge of muco-purulent matter. It is desirable that a timid patient of the hypochondriacal class, who has heard or read of secondary symptoms in gonorrhœa, and taught to regard it as a variety of syphilis, should be made easy respecting the cause and nature of these cutaneous eruptions. They disappear with time. Laxatives and the warm bath will facilitate this result.

Cubebs (*Piper cubeba*) is the article which ranks next to copaiba in the treatment of gonorrhœa. Resembling this balsam in its general effects on the digestive and genito-urinary apparatus, as well as on the nervous system, cubebs is applicable to the same class of cases, and is administered with very nearly the same intentions. It is thought to be still safer than copaiba in the first or inflammatory stage of the disease ; but we shall, not unfrequently, be rebuked for our precipitate prescription of it at this time, by an aggravation of the symptoms. Its use, like that of the copaiba, is better adapted to the prevention or strangling the disease at its very inception, than after its symptoms are distinctly marked, and irritation and phlogosis set in. With the former view it may be given in half-ounce doses. More generally the dose is one to two drachms, alone, or as I generally prescribe it, combined with carbonated magnesia, or bicarbonate of soda, according to the extent of urethral and vesical irritation, which I find to be greatly relieved by these carbonates. If there be constipated bowels and febrile irritation, I direct the combination of cubebs with phosphate of soda or sulphate of magnesia, and, in cases of a chronic character, with uva ursi. The following formulæ meet my intentions under these varying circumstances :—

℞. Pulv. Pip. Cubeb., ℥i.
—— Magnes. Carbonat.,
—— Sodæ bicarbonat., āā. ʒij.
M. ft. pulv. viii. Sum. 1. ter vel quater in die.

℞. Pulv. Pip. Cubeb., ℥i.
—— Sulphat. Magnes., ℥ss.
M. ft. pulv. viii. Sum. ut supra.

℞. Pulv. Pip. Cubeb., ℥i.
—— Uvæ Ursi, ʒij.
M. ft. pulv. viii.

When cubebs alone fails to produce the desired effect, a combination of it with copaiva is often successful, as in the following :—

℞. Bals. Copaibæ,
Pulv. Pip. Cubebæ, āā. ℥i.
Liq. Potass., ʒij.
Pulv. G. Acaciæ, ℥ss.
Aquæ Rosar., ℥vi. M.
Dose, a tablespoonful or two four times a-day.

An electuary of cubebs is thus prepared :—

℞. Pulv. Pip. Cubebæ,
——Sanguinis Draconis,
——Ratanhiæ,
Extract. Catechu, ää. ʒij.
Balsam. Copaibæ, q. s. ut. ft. elect.

Dose, from two to four drachms in the course of the twenty-four hours, in chronic gonorrhœa or gleet.

To meet the like indications the following merits notice :—

℞. Pulv. Pip. cubeb., ℥ss.
Balsam. Copaibæ, ʒij.
Ferri Sulphat., ʒi.
Resinæ flavæ vel terebinthinæ Chiæ, ʒiij. M.

To be made into boluses of ten grains each.—Dose. From fifteen to thirty a-day at intervals.

M. Velpeau has the following prescription and direction in one of his lectures :—" Take of balsam of copaiba two drachms, powdered cubebs six drachms, powdered opium two grains, mix, and add sufficient carbonate of magnesia to form a paste, which is to be divided into six parts—one to be taken three times a-day, and, generally speaking, three doses will effect the cure. But we should not discontinue the administration of it for a few days after, as, if we do, the discharge is very likely to return, and, what is worse, in increased quantity. By following the plan I will now lay before you, you will be able to act most beneficially for your patient. Commence by ordering the medicine according to the preceding formula for *three days*, then one day is to be passed without any being taken ; on the fifth it is to be resumed, and continued for three days more—then an intermission, and on the ninth day commence again and continue for three days more ; this will be found to be mostly sufficient. You must, however, always pay particular attention to the state of the stomach and bowels during its use."

Ricord is partial to the combination of cubebs with carbonate of iron, which, long before any announcement of his practice in this particular, I have, from time to time, prescribed with advantage, in this fashion :—

℞. Pulv. Pip. cubeb., ʒi. ad ʒij.
Ferri carb., ℥ss. ad ʒi.

M. ft. pulv. To be taken thrice a-day, after the subsidence of the acute symptoms.

This gentleman also recommends a small portion of powdered alum to be added to the cubebs in the proportion of one part of the former to fifteen of the latter.

Preferably either to the balsam or cubebs, in the estimation of some practitioners, are the oils of these substances ; the volatile of the latter and the essential of the former, in a dose of from ten to twenty drops in a little sugar, or mixed with mucilage or syrup of gum arabic. The dose has been carried as far as ʒi. I have employed these oils sometimes alone and sometimes combined with the copaiva or the cubebs. Tincture of cubebs is a favourite with Dr. Montgomery of Dublin, who says that he has found it cure gonorrhœa both speedily and satisfactorily. The dose is one or two drachms three times a-day, in some convenient vehicle. Extract of cubebs (the oleo-resinous extract), first used on the continent of Europe, has been within a few years highly spoken of by some English practitioners. Mr. Judd (in Royal Med. Brit. Transactions) gives cases of speedy cure

of gonorrhœa, brought about by the use of the extract, in a dose of 15 grains three times a-day.

The balsam of copaiba is often adulterated. Cubebs by being long kept is relatively inert. In one year, in Sweden, the failures from its use were so general that its use was about to be given up; when, on inquiry, it was found that the importation was all bad.

Iodine and its preparations come next to be considered in the cure of gonorrhœa. The tincture and solutions of the iodide of potassium and the ioduretted iodide of potassium are those which I have prescribed in this disease. The tincture, except in gleet and in atonic states of the urethra with lymphatic temperament, is generally too irritating. The others are susceptible of being more freely used. The dose of the iodide of potassium (hydriodate of potassa), is two to four grains, dissolved in some sweetened aromatic water, three times a-day. Much larger quantities are, I know, habitually given both in gonorrhœa and in other diseases, but not, as I conceive, with corresponding increase of therapeutical power. The solution of the ioduretted iodide of potassium, the compound liquor of iodine of the United States Pharmacopœia, and nearly approaching to Lugol's solution, is given in doses of twenty drops two or three times a-day in sweetened water. For extemporaneous prescription we direct, in the proportion of one grain of the iodide of potassium to half a grain of the iodine dissolved in water, as follows:

℞. Pulv. Iodid. Potassæ, ℈i.
Iodini, gr. x.
Aquæ Fluvialis, ℥ij.

M. ft. solutio. Dose, a teaspoonful twice or thrice a-day in some aromatic water with sugar.

In sub-acute and chronic forms of gonorrhœa with congestion and enlargement of the mucous glands of the urethra, iodine and its saline combination exert a beneficial influence, and, within my own observation, tend not a little to accelerate the cure. In protracted cases, I often direct a solution of the iodide of potassium conjoined with the cubebs or balsam, suspended or mixed with syrup and adjuncts already mentioned.

It is in analogous cases that I have used with marked benefit preparations of mercury, and especially the blue mass, either alone or combined with extract of hyosciamus, in pills. Of the latter combination, a pill of five grains may be taken every night. In this way the urethra is prepared to be acted on to the best advantage by cubebs or copaiba in the morning.

Cantharides in the form of tincture has been found serviceable in old cases of gonorrhœa, commonly called gleet. The action of this medicine is most probably, as suggested by Mr. Roberton, by exciting a mild inflammatory action of the urethra; and, in fact, the discharge becomes thick, opaque, and puriform. The dose is ten drops, gradually increased to thirty and even more, three times a-day, in some barley-water or flax-seed tea. Dr. Pereira states that he has frequently found equal parts of tincture of chloride of iron and tincture of cantharides a successful combination in old-standing gonorrhœas.

Various tonic and astringent medicines taken by the mouth have been recommended at different times, but more formerly than of late, in the disease under notice. The only two which I think worth while to notice

just now are tannin and the iodide of iron. They may be tried in gleets of long standing, and the latter, particularly, may be used in stricture or glandular engorgements of the urethra, at the same time that bougies are employed. The form will be the *liquor ferri iodidi* of the United States Pharmacopœia, in doses of twenty to thirty drops three times a-day.

Topical Remedies—Injections.—It now remains for me to speak of topical remedies for the cure of gonorrhœa. These are internal as introduced into the urethra, and external or applied to the glans penis, the skin of the penis, and perineum and adjoining parts. The internal are those which merit notice first. Of the mode of action and their probable value, therapeutically considered, I cannot give you a better idea than in the words of John Hunter (*op. cit.* p. 74).

"Fluid applications to the inside of the urethra are commonly called injections, and, like the internal remedies, are without number; every practitioner thinking, or wishing to make the world think, that his own is the best. But as every venereal inflammation is frequently removed under the use of injections of various kinds (which was observed with respect to internal medicines), have we not here a strong corroborating circumstance in favour of an opinion, that every such complaint will in time cure itself? I think, however, it appears from practice, that an injection will often have almost an immediate effect upon the symptoms, and that, therefore, they must have some powers; and yet the kind of injection which would have the greatest specific powers I believe is not yet known: if an injection has no specific powers, it must be very uncertain in its effects, and can only be of service as far as it may be adapted to a peculiarity of constitution or parts. As injections are only temporary applications, it becomes necessary to use them often, especially in cases where they are found to be of service; they should therefore be applied as often as convenient, perhaps every hour, or even oftener; but this must be regulated in some measure by the kind of injection, for if it be irritating it will not be proper to use it so often, as it may be productive of bad consequences." It has been objected to injections that they frequently give rise to stricture by inducing inflammatory action and deposit; but to this it is replied that more danger is to be apprehended from allowing the gonorrhœa to remain, in reference to the probability of stricture, than from setting up a new, even though violent action, by injections, and thereby terminate the disease. Velpeau asks—How many individuals have stricture who never had gonorrhœa, and others who never made use of injection?

Mr. Hunter's division of injections is still one of the best, viz., into four kinds; the irritating, the sedative, the emollient, and the astringent.

The emollient are adapted to an early stage, and a degree of irritation and inflammation, in which the irritating or even astringent would do harm. In virulent gonorrhœa with swelled testicle they are occasionally of service. They consist of thin mucilage of gum arabic, of pith of sassafras, or of the bark of the slippery elm, milk and water, or sweet oil. With them we may usefully combine sedatives, such as extract of belladonna, of stramonium or of opium, dissolved in water and mixed with the emollient injection. Much comfort will be afforded to the patient at this time by warm fomentations to the penis and perineum and groin, or by frequent sponging of these parts with warm water. Repeated injections of warm water into the urethra act the double part of emollient and sedative. Under this latter head come weak solutions of the acetate of

lead, which, as Hunter justly remarks, and as I have uniformly taught in my lectures on Materia Medica and Therapeutics, may be reckoned a sedative so far as that it abates inflammation. Its operation is to diminish, and if continued long, to destroy gradually the sensibility and motility of a part, and to arrest all its secretory and absorbent functions. Hunter thinks that it may act also as a gentle astringent, but its powers in this way are rather inferred from analogy than directly proved by the phenomena consequent on its use.

In nearly all the circumstances in which emollient and sedative injections into the urethra and fomentations externally are beneficial, we shall derive good effects from enemata of a similar nature. Indeed we often find that relief is more speedily and completely procured by this latter means than by the former, where there is irritation at the lower part of the urethra and of the bladder in gonorrhœa.

Less disappointment would be felt in the results of stimulating and astringent injections, if the proper time were selected for their use. During the period of inception of disease, when there is a barely perceptible oozing of mucus from the meatus, or just enough to cause adhesion of the lips, an irritating injection, as already stated, will sometimes prevent the development of the disease, and carry off all the suspicious symptoms. Corrosive sublimate was formerly, as nitrate of silver and iodide of iron are now, among the preferred remedies, for the purpose of exciting a new action in place of the incipient morbid one. But after the inflammation is fixed and the secretion becomes muco-purulent, failure will generally follow the use of either irritating or astringent injections. Beyond this period, again, and after maturation, as we may term it, of the new morbid product of secretion, and if there be no induration of any part of the urethra, this class of remedies, sometimes alone, and often in conjunction with the balsam, cubebs, &c., by the mouth, will usefully modify the mucous surface and entirely arrest the discharge. Hunter's formula was two grains of the chloride of mercury (corrosive sublimate) in eight ounces of water. In using the nitrate of silver we direct various proportions, from one grain to ten grains to the ounce of water. M. Velpeau prefers this article to all others for injection in gonorrhœa. He directs one grain, and in old standing cases two grains to the ounce. Of four old cases treated by this medicine, two were cured in five days. Even in the acute stage, if carefully used and compression of the urethra be practised at the same time, the result will be found decidedly beneficial. Carmichael is equally well satisfied with the nitrate of silver, but in smaller doses, as from a quarter to half a grain. These prescriptions are better adapted to older cases.

In cases in which the inflammation has not subsided, a solution of the acetate of lead will be employed in the proportion of one to ten grains to the ounce of water. Infusion of the watery extract of opium will form a useful addition to this saturnine injection. Where a more direct astringent is demanded, we have the acetate and sulphate of zinc, the sulphate of copper, alum, iodide of iron, infusion of oak bark or of galls, &c.

The acetate of zinc is preferred to the sulphate. It is formed by double decomposition, in the common prescription of the acetate of lead and sulphate of zinc dissolved in water; the acetic acid of the former combining with the zinc of the latter salt, and the sulphuric acid of this

uniting with the lead. Acetate of zinc remains in solution; and the sulphate of lead being insoluble is precipitated in the form of a white powder. The simpler plan is to prescribe this salt alone, in the proportion of one to four grains to the ounce of water, for injection. The sulphate of zinc is directed in the same manner. In both instances, however, the strength of the injection may be greatly increased. Dr. Pereira refers to a case of gleet in which a drachm of sulphate of zinc was dissolved in an ounce of water and used as injection with success. Hunter directs two scruples to eight ounces of water. The sulphate of copper succeeds in chronic gonorrhœa better, I think, than any of the astringents. The common preparation is from half a grain to a grain to the ounce of water. I have prescribed with advantage a much stronger solution than this in old cases.

Of the preparations of iron, the chloride and the iodide are those most entitled to our confidence for topical use in gonorrhœa. The former is directed in the proportion of one drachm to water six ounces. The iodide of iron is strenuously recommended by Ricord, as adequate to the cure of obstinate gonorrhœa in four or five days. In some cases the medicine produced at first some pain, attended with a renewal of the acute stage and conversion of the matter of the discharge from muco-purulent to sero-sanguinolent. Here, however, suspension of the injection was followed by a disappearance of the disease in a period of seven or eight days. Some patients were obliged to discontinue its use on account of the irritation to which it gave rise. M. Ricord has found one grain of the iodide in an ounce of water suffice in some cases, whilst in others the dose was raised to eighteen grains. The difficulty of its use from its ready decomposition, adverted to by this writer, is obviated in the officinal preparation of the United States Pharmacopœia, termed *liquor ferri iodidi.* Eight to ten drops will be equivalent to a grain of the salt, and should be mixed with an ounce of sweetened water, for still greater security against decomposition.

When the case degenerates into mere gleet without any morbid sensibility of the urethra, injections of port or claret wine, either alone or combined with tannin, will sometimes suffice to bring about a cure.

A cautionary remark is applicable both to the continuation of injections and to remedies by the mouth. It is, not to desist from their use so soon as the discharge ceases; but to use them of less strength and at longer intervals, for some days after all visible symptoms of disease have disappeared.

In cases of gonorrhœa with morbid sensibility of some part of the urethra unaccompanied by inflammation, or even in chronic discharge without pain and noticeable obstruction, the practice of Lallemand may be imitated, as it has been by Ricord and others; viz., to apply caustic to the part by means of an appropriate instrument,—carrying it down, guarded, to the prostatic region, and then exposing the caustic and withdrawing it while giving it a rotatory movement. Sometimes the introduction for a few times of a bougie or catheter past the tender part or seat of induration or other slight obstruction will carry off the remains of disease and arrest the discharge. The good effects will be increased in these cases by rubbing in camphorated mercurial ointment, or ointment of iodide of potassium mixed with extract of belladonna, on the dorsum penis or perineum, over the affected portion of the urethra.

M. Ricord attaches much importance to separating the sides of the ure-

thra, by introducing dossils of lint, for the cure of gonorrhœa, as is done in the treatment of balanitis. "The strip of lint is introduced with the greatest facility, by means of an India rubber canula, introduced to the posterior part of the urethra. One of the ends has a loop made with a thread, so as to afford a resting point for a style, which holds it whilst the canula is withdrawn; when this is done, the style is also removed, whilst the lint remains in its place, where it ought to be kept till the next time of passing the urine. If too much irritability be not present, it should be replaced two or three times in the twenty-four hours; otherwise once will suffice. The use of this strip of lint often succeeds alone, or may powerfully aid the effect of injections, cauterization, or internal treatment."

Compression of the urethra is used by M. Velpeau, in addition to the treatment of gonorrhœa by injections of nitrate of silver in solution. The way in which the compression is to be made is by the application of small compresses placed along the lower part of the urethra (the bulb and membranous portion), and retained there by a bandage. Compression ought not to be continued uninterruptedly for any length of time.

LECTURE LXVII.

DR. BELL.

Effects of Gonorrhœal Urethritis.—Bubo—Chordee—Various remedies for hemorrhage from urethra.—*Treatment*—Irritable and inflamed bladder.—*Stricture of the urethra*—Too exclusive use of surgical or instrumental means—Simulated stricture—Connexion between local and general disorder—Irritable urethra—Disease of prostatic urethra—Sympathetic pains of the urinary organs—Difficulty of diagnosis between spasmodic and permanent stricture—Treatment of stricture—Caution against too free use of bougies—Retention of urine—its terminations—Termination of stricture in ulceration—A cause of disease of kidneys—Gonorrhœal inflammation of the joints—Synovitis—*Treatment.*

Effects of Gonorrhœal Urethritis. — The effects of gonorrhœal urethritis are direct and remote. I have already adverted to the chief ones.

Hemorrhage from the urethra during gonorrhœal disease need seldom cause alarm. Its operation, on the contrary, is salutary; and in the case of chordee it carries off this complaint at times entirely.

Ulcerations of the urethral glands and those of Cowper, supposed by Hunter to require the mercurial treatment, may be left to run their course with but little aid from medicine. They are not followed by secondary symptoms.

An irritable and inflamed bladder consequent on gonorrhœa will be treated according to the constitution of the patient, the recency of the disease and the violence of the symptoms. Venesection may be necessary; but more generally leeches to the perineum or over the pubes, or cups to the sacrum, will meet this indication; while opiate clysters, free dilution, opiate plaster to the sacrum, and a small blister to the perineum, and warm pediluvium and fomentations to the vicinity of the affected organ, will complete the treatment in its essential parts. A small cold enema containing a little laudanum, given twice a-day, will often relieve the pain better than any other remedy that can be used.

Swelling of the glands of the groin or gonorrhœal bubo is occasionally met with and causes not a little fear to the patient, who supposes that he has real syphilis and begins to suffer from constitutional taint. For the most part the swellings and accompanying tenderness and pain disappear with the removal of the primary irritation of the urethra. Sometimes, however, the glands suppurate, and, as in all cases of suppurative inflammation of the lymphatic system, are sometimes slow to heal. You must not on this account give into the vulgar error of supposing that the delay here depends on any specific taint. On this point, as well as in reference to other effects of gonorrhœa, you should bear in mind the following remarks of Hunter. "The symptoms which continue after the virus is gone do not owe their continuance to the specific qualities of the virus, but to its effects upon the parts, such as inflammation and its consequences; for the same degree of inflammation arising from any other cause would leave most of the same effects."

The cure becomes more difficult and complicated where the bubo is the result of the primary irritation of chancre in the inner surface of the urethra, and by which the chief symptoms of gonorrhœa are produced. It then comes under our notice as properly a syphilitic affection, of which I shall speak hereafter.

Inflammation and thickening of the prepuce causing phimosis or paraphimosis, though often associated with gonorrhœa, yet as more directly belonging to balanitis, will be spoken of when this latter comes under notice.

Chordee, more properly an accompaniment than an effect of gonorrhœa, occurs both as the product of inflammation and in what is called a state of spasm. In a young and robust subject, and when the inflammation runs high, it will be advisable to draw blood from the arm to such an amount as to produce a marked impression on the system. More frequently, however, the application of leeches along the dorsum of the penis, or to the perineum, will answer a better purpose. Their good effect will be increased by subsequent fomentations with cloths wrung out of warm water, or by poultices on which powdered camphor has been sprinkled. Internally, opium is often of great service, especially when the inflammation has subsided, and the chordee assumes a spasmodic character. The activity of the opium is greatly increased by its union with camphor. More benefit still is procured by an enema of twenty to thirty drops of laudanum in an ounce or two of mucilage or starch with water. Injections into the urethra of the watery extract of opium, or of the extract of belladonna, or of stramonium mixed with sweet oil, have been used with advantage. A more common practice, again, is to rub on the skin, along the whole course of the urethra, camphorated mercurial ointment, or ointment made of the narcotic extracts just mentioned. These latter, as well as cicuta, have also been taken internally — by the mouth and sometimes per anum — with relief to the patient. Ointment of the oil of tobacco rubbed along the outside of the urethra and perineum has operated very beneficially. In protracted cases and in weakened constitutions, infusion of Peruvian bark, or sulphate of quinia in pill, is of great service.

Stricture of the Urethra is one of the most frequent and troublesome consequences of gonorrhœa; and more particularly is it apt to follow repeated attacks of the disease. I shall not embarrass you by an array of contradictory opinions touching either the precise anatomical characters or the treatment of stricture. I would merely caution you, in advance,

against the notion that it is so much an affair of special surgery as it is generally regarded. In American practice the multiplied divisions of the healing art and science so common in Great Britain cannot be received without detriment to the sick. There are indeed some, the capital operations as they are called, which are best performed by those who have in a more particular manner directed their attention to surgery, and who, from their connexion with hospitals, may be supposed to have had opportunities for frequently operating and of acquiring the dexterity and coolness requisite for success. But we meet not unfrequently with all the qualifications of a ready surgeon among our brethren in the country, by whom, in some place or another, every surgical operation of any magnitude has been well and successfully performed.

In the disease now under notice, too exclusive an attention has been paid to the mechanical, or, as they are thought to be, merely surgical means of removing the stricture to the oversight of constitutional and topical treatment of a medical nature. After all the discussions on the subject, I believe it will be conceded that, where a bougie or catheter can be passed, we may content ourselves with the introduction of one or other of these instruments, gradually increasing the size so as to dilate adequately the stricture. The pressure of the bougie on the thickened mucous coat, or the deposit of sub-mucous cellular tissue, stimulates to absorption, and in this way restores the parts to their normal state. The skill required for this is little more than that which every physician has at command when he introduces a catheter into the bladder. He will, judging from my own experience, nor is it solitary in this respect, find it easier and safer to introduce at first a common silver catheter, or, if this be not sufficiently small, a gum-elastic one mounted with a rod or stilet, than to use the bougie. There will be less risk of false passages being formed by the use of the catheter than by that of the bougie, particularly if this latter be pointed.

The surgical treatment of stricture of the urethra will be somewhat modified according to the part affected. Strictures near the orifice and at the anterior part of the urethra require dilatation by the introduction of bougies or of metallic instruments. Often in these cases the dilatation is readily accomplished, and the use of the bougie once in two or three days is sufficient to prevent a recurrence of the contraction. During the early period it will be advisable to introduce the bougie every evening, and allow it to remain for a few minutes each time.

Stricture at the bulb of the urethra is not so tractable, owing to its situation at the beginning of the course of the urethra and the liability of this part to spasm. In asserting that the disease is not to be cured by medicines, Sir Benjamin Brodie (*Lectures on the Diseases of the Urinary Organs*) adds, that medicine may sometimes be of advantage in aid of the local treatment. Thus, where the liability to spasm is increased by a too abundant secretion of lithic acid by the kidneys, whether it shows itself in the form of red sand or of small calculi, or of lithate of ammonia, attention to diet and mode of life, and the exhibition of purgatives and alkalies, and such other remedies as may tend to restore the urine to a healthy condition, will be of essential service, and will enable you to accomplish by means of the bougie what you would in vain have attempted to accomplish otherwise.

The methods which are chiefly useful in the cure of stricture at the bulb

of the urethra are well presented by the writer just cited, as follows:—1. The dilatation of it by means of the common plaster bougie; 2. The dilatation of it by means of a metallic bougie, catheter or sound; 3. The retention of the elastic gum catheter in the urethra and bladder; 4. The application of the bougie armed with the nitrate of silver.

In using the metallic bougie, this careful and experienced surgeon prefers most properly the solid to the flexible metal. The smaller ones are of solid silver; the larger ones of silver or steel, or steel plated, or of a composition similar to but firmer than that of the flexible metallic bougie. These sounds should be slightly curved, and for ordinary cases not more than eight and a half or nine inches long exclusive of the handle. In old and obstinate cases of stricture, if a small plaster or catgut bougie cannot be made to enter, recourse should be had to a sound of solid metal rather above the middle size, and only of a moderate curvature. No part of it, however, is more than one-fifth part of an inch in diameter, and at the point the diameter is reduced to one-sixth of an inch. This instrument should be used in the same way and with similar intent as the silver catheter in retention of urine; viz., by making steady pressure against the stricture with the end of the sound until it relaxes or yields and allows the instrument to enter; care being taken, of course, that it has been directed in the line of the urethra towards the bladder.

But that which I am most solicitous should engage your attention in my remarks at this time, and which was in my mind when, a few minutes ago, I deprecated special or exclusive surgery, is the necessity and paramount importance of constitutional treatment. Mr. Abernethy, some years ago, awakened the interest of the profession generally in Great Britain and Ireland to the constitutional treatment of local diseases. The connexion and mutual dependence of the local and general disorder and of the two orders of remedies being more familiar to our professional brethren, who are general practitioners, in this country than in Europe, where the divisions are more numerous and arbitrary, this work of Mr. Abernethy had not the same novelty to recommend it here as there. But still, very useful hints are contained in it for the guidance of the young practitioner and the exclusive surgeon, and on scarcely any one topic more so than on "Disorders of the Urethra," at the close of the volume.

This distinguished surgeon describes a form of disease which most practitioners must have met with, although many may not have fully understood its real character. It is manifested by frequent desire to void urine, and by some pain and irritation after the act, and occasionally an unpleasant sensation in the perineum at the lower part of the urethra. An introduction of a bougie sometimes reveals the presence of a stricture in this part; but often there is no obstruction of the kind. The uneasy sensations on the introduction of the bougie are only complained of as the bougie passes through the last inch of the urethra, which is contained in the prostate gland. "In some cases, also, the strictures will be the less degree of the disease, and the irritation in the prostate the greater; and in some cases it will be found that nothing is discoverable which can be fairly denominated a stricture, and yet the tenderness which I have described exists in a painful degree." (Abernethy, *op. cit.*) The following advice is so much to the point that I shall repeat it in the words of the author:—

"Some cases of disorders of the urinary organs are made worse by the attempt to cure strictures; and I think I deliver an important admonition

to the younger part of the profession, when I caution them to beware, in their attempts to cure strictures, that they do not irritate nor injure the last inch of that canal, where there are no strictures, but in which considerable disorder may nevertheless exist."

This disorder is often relieved by the introduction of a bougie or gum-elastic catheter into the bladder, and allowing it to remain there for a few minutes at a time. The same good effect will be obtained by merely carrying the end of the catheter or bougie as far as the neck of the bladder. On the first introduction severe pain is often felt, and even faintness is occasioned: but if the operation be repeated three days afterwards, the pain is much less severe, and it will diminish at each succeeding introduction of the instrument, although blood may be discharged from the urethra in consequence of the operation. Auxiliary means of relief will be found in sponging the perineum with warm water and the use of the hip-bath. These remedies will be found of great service in regular stricture, in which, if we direct the use of a few leeches to the point externally, corresponding with the stricture, and the inunction of mercurial ointment, or ointment of the iodide of potassium mixed with extract of belladonna and stramonium, we may anticipate permanently good effects as far as relates to the local treatment. But this will prove inefficient without attention to the general health, and above all to the digestive functions. The occasional use of the blue pill with extract of hyosciamus, and small doses of rhubarb and magnesia, solution of the iodide of potassium or of iron, and the warm bath, will be found useful means in carrying out this indication. A drachm or two of balsam of copaiba taken at night is often very serviceable in these cases. Enemata, sometimes of warm and sometimes of cold water, according to the state of disease and peculiarity of constitution, are good auxiliaries. I have in the course of a few days' treatment of this kind given entire relief to patients who were unable to urinate with any freedom, and who were tormented with almost hourly micturition through the night, accompanied by much pain.

When the morbid sensibility of the prostatic urethra arises, as it sometimes does arise, from an irritable bladder, the measures already recommended may prove equal to the removal of the former, yet they will seldom be of more avail than to alleviate somewhat the latter. It is in reference more particularly to the probability of this union that you should be careful to content yourself with just introducing the instrument into the bladder; but not carry it so far as to allow of its being pushed against the mucous membrane of this latter, or even of the organ contracting on the end of the instrument.

If the local disease be influenced by general remedies, of course by medicines acting through the general system, we need not be surprised at its being aggravated by irritation of other and comparatively remote organs. On the subject now before us the following language of that experienced and philosophical surgeon, Sir Charles Bell, in his "*Institutes of Surgery*," is clear and expressive.

"These sympathetic pains which seem to affect the urinary organs, and which have their real seat in irritation of the rectum, or the other intestines, bring full one-half of those patients to the surgeon who are considered as labouring under stricture of the urethra." And again: "It is a fact that ought never to be absent from the surgeon's consideration, when a patient

presents himself, complaining of frequent micturition, pain in the bladder, and pain in the perineum, that these symptoms very frequently depend neither on stone, nor stricture, nor inflammation, nor any mischief in these parts, but on remote irritation." With the admission and knowledge of this cause of urethral irritation and simulated stricture, follows directly a selection of the appropriate remedies, which I have just now detailed to you, and on which I need not enlarge.

I have not attempted to give, what even practised surgeons themselves often fail to do, viz., the diagnosis between spasmodic and permanent stricture. We are told, indeed, by a very competent observer, Brodie (*op. cit.*), that spasmodic stricture is always situated in the membranous portion of the urethra, where the canal is surrounded by a kind of sphincter muscle of no inconsiderable size, connected by a small double tendon to the arch of the pubes. Still it must be acknowledged that the existence of a purely spasmodic stricture is of rare occurrence. Its continuance by repeated attacks lays the foundation for a permanent thickening of the mucous membrane. The general outline of treatment, except in the less frequent use of the bougie or catheter in the spasmodic than in the permanent, is the same in both, with perhaps greater stress on the use of narcotic anti-spasmodics in the former variety than in the latter.

I shall close this part of my subject by some additional cautionary remarks of the able teacher so recently quoted. "I have affirmed," says Sir Charles Bell, "that there never occurs a proper stricture, posterior to the internal fascia of the perineum. But the inflammation to which the parts behind are peculiarly exposed, very often gives rise to the symptoms which are readily attributed to stricture; these parts are *Cowper's glands*, the *sinus pocularis*, the *prostate gland*, and the *vesiculæ seminales*. There are men whose hourly business is poking into this passage with bougies, who, if they have heard the names, neither know the place nor diseases of these parts, and sometimes, by forcing what they consider a stricture, they rupture the membrane, and enter their instrument into the substance of the prostate, or fix it in the sinus of the seminal carbuncle."

In the more formidable kinds of stricture of the urethra there is not only irritability of bladder and frequent calls to void urine, but at times complete retention. Generally this state of spasm, as it may be termed, is relieved either naturally or by art; but sometimes death is the result, by rupture of the bladder. Oftener still, relief is procured by rupture of the urethra behind the stricture, and infiltration of urine into the adjoining cellular tissue, with inflammation, gangrene, low fever, and death. A catastrophe of this nature rarely occurs before the third or fourth day. The retention may continue for a week, with occasional intermissions, during which small quantities of urine are discharged, and this is the more frequent variety of the disease, the symptoms of which, as far as regards the partial discharge, may impose on the inexperienced practitioner, and cause him to overlook the still increasing distention of the paralysis of the bladder, until the retention is complete.

A stricture may sometimes be destroyed by ulceration; occasionally it is followed after symptoms of retention of urine by tumour and abscess of the perineum, with fever and fistula in this part, through which the urine flows. Some cases are met with in which an abscess of this kind has made its way into the rectum. Of the connexion between strictured urethra and disease of the prostate gland, I shall soon have occasion to speak.

Stricture of the urethra not only impedes the flow of urine from the bladder, but also interferes, to a certain extent, with the passage of urine into it. "One result of this is, that the ureters, pelves of the kidneys, and infundibula, become dilated, the glandular structure absorbed, and the whole organ converted into a membranous bag divided by septa into different compartments, which, however, communicate with each other."

Inflammation of the prostate gland is one of the occasional effects of gonorrhœa; but as this and other affections of that organ occur from several causes, I shall treat the subject under a separate division.

More emphatically still is swelled and inflamed testicle, and particularly epididymitis, a frequent consequence of urethritis, and above all of the gonorrhœal variety. Still it will be more convenient to speak of orchitis in general, and of all its causes and phenomena separately. I can then include all that is necessary on the subject of the secondary or symptomatic phlogosis of the testicle.

A variety of ophthalmia designated as gonorrhœal, is one of the effects of the disease of the urethra, which has engaged our notice. Of it I shall speak, when treating professedly of diseases of the eyes. The simultaneous occurrence of gonorrhœa with rheumatic affections of the joints is often met with, and of these latter with gonorrhœal ophthalmia has just been mentioned. The articular inflammation with effusion is located at times on the synovial membrane of the joints. In some cases there is also effusion of lymph, stiffness of the joints, and occasionally ulceration of the cartilages terminating in anchylosis. Pains of great intensity in the back (loins and sacrum) often accompany gonorrhœa, and sometimes are left after this latter is removed. Compound sarsaparilla syrup with iodide of potassium, colchicum, and the sulphate of quinia, are the remedies most efficient in the treatment of such cases. Change of climate, from a cold to a warm one, has been followed by recovery.

LECTURE LXVIII.

DR. BELL.

BALANITIS AND POSTHITIS—Slight difference between the two—Chief cause of balanitis in gonorrhœa—External gonorrhœa—*Symptoms*—*Treatment*—*Phimosis*—Description of—Causes—Suspicion of chancres—*Treatment*—*Paraphimosis*—Symptoms—Danger of gangrene in—*Treatment*—Indication, to restore the displaced parts—Taxis—Incision—Subsequent treatment—ORCHITIS—Two forms, acute and chronic—Is primary and consecutive—Causes of primary acute orchitis—Consecutive inflammation; chief cause, gonorrhœal urethritis—*Hernia humoralis*—*Epididymitis*—Explanation of the mode of consecutive orchitis—Continuous inflammation from urethra to testicle by mucous surface—Consecutive orchitis, or mumps—Wasting of testicle a rare effect of this disease—*Symptoms*—Progress in the consecutive disease from the vas deferens to the testicle—Sympathetic form—Varieties in the symptoms—Duration of orchitis—Right testicle most liable to orchitis—*Diagnosis*—Difference from hernia; between primary and secondary orchitis—Epididymis always affected in gonorrhœal orchitis—*Treatment*—Venesection and active antiphlogistic remedies—Local treatment—Compression; its advantages; mode of applying it—Modification of treatment in irritable habits.

II. THE next division of diseases of the organs of generation in the male subject is BALANITIS and POSTHITIS. Balanitis is inflammation of the

cutaneo-mucous membrane covering the glans penis and particularly about its neck (from βαλανος, gland). Posthitis is inflammation of the prepuce, and especially of its cutaneo-mucous membrane. But, as there is no natural line of division between the two portions of membranes, the one covering the glans and the other lining the prepuce, the two being continuous with each other, and both of the same texture and vital endowments, I shall speak of their inflammation under the head of balanitis.

Balanitis, though it may proceed from various causes, most generally is traceable to gonorrhœal infection, and hence its common name of *External Gonorrhœa.* The predisposition to this disease is said to depend on length of prepuce and narrowness of preputial orifice, by which matter, either secreted from the part or remaining adherent after coition with an impure person, — one, for example, labouring under gonorrhœa, or blenorrhagia, or who has at the time the menstrual flux—excites the mucous surface and glands to phlogosis and increase of morbid secretion. Other exciting causes are friction and constriction in coition and in masturbation. A predisposition is induced also by the fixed retention of the prepuce on the glans penis in phimosis. The disease is not uncommon in boys or adolescents, against whom there is often no well-founded cause for suspicion of indulging in sexual intercourse. Most generally, however, balanitis is referable to gonorrhœal origin; and in some it, instead of urethritis, is manifested after impure coition.

The *symptoms* of balanitis are heat and itching at the glans and end of the prepuce with a discharge of matter, sometimes accompanied, but rarely, however, with sympathetic irritation of the testicle and inguinal glands. If the prepuce can be withdrawn, the glans is found to be swollen and red, and covered with purulent mucus of a rank odour, which has been compared to that of old cheese. The epithelium covering the glans and the prepuce is in some spots removed, and shows the membrane of a deep-red colour with papillæ in its surface; but these appearances are simple excoriations and not ulcerations. The sebaceous follicles at the corona glandis are, also, more developed than usual; their orifices being patulous and the secreted product more abundant and liquid. The pain is inconsiderable unless the preputial orifice be distended by the inflammation and irritated by the access of urine after the discharge of this fluid.

The period of duration of balanitis is short, except it be complicated with phimosis or paraphimosis. Repeated attacks of inflammation of the prepuce in particular, or the disease running into a chronic state, may give rise to thickening and induration of this part; if the secretion be excessive and prolonged, there may be hypertrophy of the mucous membrane and adhesions formed between the prepuce and glans, which, in some instances, have given rise to cancer. Balanitis may be complicated with venereal symptoms, such as chancre, or with urethral gonorrhœa.

The *treatment* of balanitis is for the most part simple; consisting in attention to cleanliness by frequent ablution, cooling washes, as of solutions of sugar of lead, and simple regimen. If the swelling be so great as to prevent the withdrawal of the prepuce, injections should be thrown in between the fold and the glans penis. Frequently in mild cases, as in those following coition with women whose menses have not quite ceased, or who labour under leucorrhœa, washing the parts with a sponge dipped in diluted chloride of soda or solution of chloride of lime will remove the disease in a day or two. This practice I have found to be quite as suc-

cessful as that recommended by M. Ricord, viz., to rub a pencil of nitrate of silver rapidly over the affected surface, and then draw the prepuce forwards over the glans. Compresses wet with lead water may be usefully applied to the entire penis. In this as in other irritations of mucous surfaces, and in cutaneous ulcers, also, wet applications fail, or even aggravate the malady; in which case some desiccant powder, as prepared chalk, or simple astringent, as impure carbonate of zinc (calamine), or even powdered bark, will do good service.

Phimosis and Paraphimosis.—The most troublesome and dangerous complications of balanitis are phimosis and paraphimosis, on which I shall offer some remarks.

Phimosis (from Φιμοω, I bridle or bind up) is such a diminution of the opening of the prepuce as to prevent this latter from being retracted, and the head of the penis or glans exposed. It may be congenital or acquired; and in the first case may be complete, so that there is no opening at all for the escape of urine from the urethra. Although this latter is not common, yet as it may occur, one of the first inquiries enjoined on the accoucheur is, whether the newly-born male child has, within a short period after birth, discharged its water. A negative reply will require an inspection of the part, and if complete phimosis be present, an operation, which is generally of a simple kind, should be at once performed. This may be done either by taking up a portion of the end of the prepuce between the finger and thumb of the left hand, and puncturing the very extremity with a straight bistoury; or better still, to excise the end of the prepuce, previously drawn out a little from the glans so as to preclude the danger of wounding this latter.

In some cases, again, the orifice is of almost capillary fineness, and is not in a parallel line with the meatus of the urethra, so that the urine is imperfectly discharged, and part of it being retained under the prepuce and between it and the glans proves a source of no small irritation. The rectification in this case is easy; by cutting the prepuce on a grooved director, the free end of which has been previously introduced into the urethra.

In a still larger number of subjects the orifice of the prepuce is sufficiently large to allow of the end of the glans and the meatus urinarius being seen, but not of the entire retraction and exposure of the head of the penis. If this should be done after great effort, there is sometimes danger that the prepuce could not be drawn forwards again. In some persons advanced in life, the mucous membrane of the prepuce is seen to be thickened and almost fibrous, compressing the glans and with great difficulty retracted. To such a degree is phimosis carried under these circumstances, that the urine is retained under the prepuce in such quantity and for so long a time that calculi have formed. A most remarkable case of this nature is related by M. Begin, in which the calculus had attained the size of a hen's-egg. It remained in this pouch for five years.

Various are the inconveniences and detrimental effects of congenital phimosis; such as difficulty of seminal discharge in coition, retention of secreted matter and occurrence of balanitis, and greater liability to chancre from the retention of syphilitic virus under the prepuce.

Accidental or occasional phimosis, as already stated, may follow gonorrhœal urethritis and balanitis, and still more frequently chancre; the inflammation associated with the latter, both enlarging the glans and the

prepuce: if they are deep-seated, or if near the border of the prepuce, they cause by their healing a contraction of its orifice and aggravation of the evil. These two parts feel hot and painful. The cellular tissue between the inner and the outer, or the mucous and cutaneous membrane of the prepuce is so tumefied as to cause nearly an occlusion of the preputial orifice. The tumefaction and inflammation are increased by the retained secretions from the mucous surface and the pus from chancres, if these be present, and the urine is imperfectly discharged. This state of things cannot last long without danger of gangrene of the prepuce and even of the glans penis. In milder cases, the lymphatic exudation of itself tends to prolong the disease with its troublesome accompaniments.

Treatment.—Accidental or acquired phimosis, you must by this time be aware, is an inflammatory affection, which you are required to subdue as promptly as possible; but in doing so, you will be somewhat embarrassed by the difficulty of reaching a diagnosis between phimosis the result of or associated with simple or mere gonorrhœal balanitis and phimosis mainly caused and kept up by chancre. In the latter case it is obvious that, however freely you employ antiphlogistic measures, you cannot expect by these means to subdue, still less to cure, the ulcerous sores denominated chancres; and until this is done, the inflammation and morbid tumefaction will persist to a greater or less extent.

Under all the probable circumstances of the case, and where we are not enlightened by the patient as to the early symptoms, we should act as if there were chancres of the glans and prepuce, and, while we abate the violence of inflammation, we should make topical applications with a view of cleansing the chancrous sores and promoting their healing; and also of washing out or diluting retained morbid secretions. In a commonly-constituted subject, who has not been greatly debilitated by previous excesses, we need not hesitate to draw blood from the arm, administer calomel followed by salts, and restrict the patient to the use of diluents and food of the simplest kind, while we enjoin on him perfect quietness, a recumbent posture, and elevation of the penis against the abdomen. The local symptoms persisting without any notable abatement, recourse is had to leeches to the body of the penis and to the groins, followed by cold applications to the organ itself. Simultaneously with the first use of general remedies, we direct emollient injections, of a tepid temperature, between the prepuce and glans, to be succeeded by solutions of sugar of lead; and soon afterwards by those of the chlorides of soda or of lime, or even of corrosive sublimate, and still better of nitrate of silver, with a view of healing, or, at any rate, reducing the size of the chancrous ulcers, by which, as I have just shown, the phimosis is at times kept up.

When gangrene is threatened, M. Ricord recommends, from personal observation of the good effects of the remedy, fomentations with a solution of extract of opium, and injections of the same fluid between the glans and prepuce. Great relief is afforded, also, by the internal administration of opium in a dose of a grain, two or three times in the twenty-four hours, but more particularly when given in an enema with eight grains of camphor. Erysipelatous inflammation has been benefited by mercurial ointment freely rubbed on the prepuce, and applied into its inner surface as far as may be.

In the extreme case of threatened or incipient gangrene, recourse is

had to an operation with a view of freeing both prepuce and glans from the extreme compression to which, reciprocally, they subject each other. The commonest process is to slit open the prepuce on the lower side in the line of the penis, from the orifice to the neck of the glans. The objects proposed are first to unbridle the parts, and next to allow of the application of dressings to the hitherto concealed chancres, and the washing out of the accumulated matter of the secretions. Caution, however, is required in choosing the right time for this operation, lest by precipitancy the inflammation be increased rather than diminished, and the dreaded mortification accelerated in consequence. Nor must we expect an entire exposure of the glans by an eversion of the prepuce; for this latter will sometimes remain closely adherent except at the space made by the incision; and hence we can only apply dressings directly to the chancres or other sores which may be on the surface that is partially denuded.

In the progress of the disease an opening is sometimes made at the lower part of the prepuce by ulceration and a vent is thus given to the contained matter, while some additional facility is obtained for the introduction of washes to the inner preputial surface and the glans. Surgeons, taking a hint from this ulcerative process, have made an opening with a bistoury or even a lancet into this cavity. M. Ricord sometimes cuts off a flap of the prepuce, so as to leave a division in the form of a V, with the base on the margin of the prepuce and the summit towards the base of the glans. He prefers circumcision, as follows:—

"The penis being relaxed, without stretching the skin which forms the prepuce, I draw with ink a line which follows, in all its circumference, the oblique direction of the base of the glans and about an eighth of an inch from it. I next draw the prepuce forward and fix it between the blades of a common dressing forceps, held by an assistant. The portion of the prepuce which projects beyond the forceps is to be held by the operator with his left hand, whilst with his right, he makes an incision with a bistoury, following the line traced with the ink. After this section, the mucous lining, which by its anatomical disposition does not allow of its being drawn forwards like the skin, remains entire and covers the glans. To avoid a secondary phimosis, or paraphimosis, it should be immediately divided. I do this by dividing the mucous membrane by a single cut with the scissors on the dorsal surface of the glans to its base: then I remove the flaps around to the frenum, and with a single stroke, still holding the two flaps together, I remove the frenum with them. The cure is complete in twenty or five-and-twenty days, no deformity ever remains, nor is there any fear of a consecutive phimosis, or paraphimosis supervening."

Paraphimosis, from παρα, about, φιμοω, is a disease in which the head of the penis is strangulated, as it were, by the orifice of the prepuce, when this latter is everted, and acts like a ring or clasp. It may be caused in various ways; as in young persons, by withdrawing the prepuce from over the glans, either through curiosity or in efforts at masturbation, and in adults during coition, and during or rather after the partial relief of phimosis by the eversion of the prepuce, which is, however, still too much swelled and inflamed to allow of its ready movements over the glans; and now that it is everted, it remains fixed in this position and causes a stricture of the glans and a paraphimosis.

Once established, the disease rapidly increases itself, by preventing the return of blood from the glans; and even the efforts made to draw the prepuce over this latter, by augmenting the pressure, aggravate the swelling. The penis at this time is hot, painful, and increased in volume; somewhat rigid and in a state of half-erection, with a spiral turn, owing to the different degrees of force with which it is drawn by the different portions of the tumefied prepuce. The glans presents a shining surface, is of a red and sometimes of a brownish colour. Even though the swelling should be at first œdematous it soon becomes inflammatory, if the constriction be continued for some days. Unless checked by appropriate treatment the tendency of paraphimosis is to gangrene, a termination shown to be imminent by the glans becoming brown, livid, shrunk, losing its sensibility and being studded with eschars, sometimes superficial and at other times deep-seated, so as to cause a true sphacelus. Generally, however, the mischief is not so great, and the parts destroyed by gangrene are confined to strips of the internal membrane of the prepuce and the surface of the glans.

The most pressing indication in the beginning of the treatment of paraphimosis is to restore the displaced parts. For this purpose, the patient lying on his back, the professional attendant takes his stand at the right side of the bed, and seizes the penis in his left hand at the junction of the folds of the prepuce with the glans, while he presses on the head of the penis and contiguous portion of the prepuce with the thumb and forefingers of his right hand; and by a judicious continuance of this kind of taxis he draws back the blood from the capillaries into the body of the penis as well as the serosity accumulated in the glandular tissue. This partial diminution having been accomplished, and the surface of the glans being well smeared with fresh lard, simple cerate, or sweet oil, the physician, by a combined action of the two hands, pushes back the glans at the same time that he draws forward the prepuce, and thus completes the reduction. If the state of the general system or habit of the patient allow, it would be well to produce temporary collapse of the capillary vessels, both superficial and interstitial, by bloodletting to approaching syncope, or by nauseating doses of tartar emetic combined with calomel.

Failing to reduce the parts to their proper position by taxis, recourse should be had to incision of the strangulating border of the prepuce at the lower side of the penis. The skin first, then the cellular tissue is to be cut through by a straight bistoury or even scalpel, and the tense fold of the preputial border is then readily exposed and easily cut. The operation is advisable even if gangrene should have commenced. The reduction being accomplished, suitable measures should be taken to remove the still-existing inflammation and turgescence of the prepuce and glans, and thus to prevent phimosis and even adhesions between the two contiguous surfaces; an occurrence which may take place if there be chancres or ulcerated sores. The means adapted to this end have been so recently detailed that I need not repeat or recur to them now.

If either phimosis or paraphimosis have proceeded from chancres, the subsequent treatment will be carried out on the principles required by the presence of these ulcers. This subject belongs to syphilis, and will receive its full consideration when that disease in its several stages comes before us.

ORCHITIS—INFLAMMATION OF THE TESTICLE.—This disease presents itself in two forms, viz., acute and chronic; and it may be either primary or consecutive. Of the primary variety, we recognise an idiopathic of internal unknown origin, and an external, the results of direct injury to the part. Primary acute orchitis may be produced by contusion of any kind; and sometimes it proceeds from vicissitudes of weather, as if it were of a rheumatic character. Dr. McLeod thinks that he has several times seen rheumatism of the tunica albuginea testis. I have myself met with a case of this description. It was in an old sea captain, who was, he said to me, as readily affected in this way by changes of weather as common rheumatic subjects from similar cause. He was then suffering at *Porto Praya*, Cape de Verde Islands. Great excitement of the sexual organs without the opportunity of indulging, may also be followed by inflammation of the gland. I have known it to result from excessive venereal indulgence, and have been called to prescribe for such a case in the early period of the honeymoon. In many instances, again, the disease comes on without any evident cause. Mr. Curling relates two cases of inflamed testes in two children, one but five months, the other two years old.

Consecutive inflammation of the testis is by far the most frequent form of the disease, and it ensues for the most part after urethritis, and above all gonorrhœal urethritis. Its more common name under these circumstances is *hernia humoralis*, a term derived from the tumefaction of the gland and temporary effusion into the cavity of the tunica vaginalis. More appropriately, reference being had to the portion primarily and often solely attacked, it is called *epididymitis*.

The explanation of the mode of consecutive phlogosis of the testicle is easy to those who bear in mind the anatomy of the testicle, and the continuous connexion of surface from the urethra by the vas deferens, vasa efferentia, and seminal tubes, to the interior of the gland itself. The continuity of mucous surface from the bladder and urethra along the seminal canals of excretion and secretion, explains the manner of transmission of phlogosis from the inflamed urethra to the testicle, and, also, to a certain extent, the mode of operation of remedies for the removal conjointly of urethritis and orchitis. It is not necessary, as has been done, to suppose a metastasis by which the inflammation is suddenly transferred from the urethra to the testicle, when disease of this latter follows gonorrhœa; nor to believe that this sudden transfer is the result of cessation of the urethral discharge brought about by certain remedies.

We ought, it seems to me, to place under the head of consecutive orchitis that which follows cynanche parotidea or mumps. The belief that wasting of the testis is a frequent result of this disease is not well founded. Sir Astley Cooper states, that he has not met with any instance of the kind in his own practice; and Mr. Curling, in his excellent monograph (*A Practical Treatise on the Diseases of the Testes*), gives similar testimony; nor did he hear of any from the different medical friends amongst whom he made inquiries. He refers, however, to two cases related by Dr. R. Hamilton, of Edinburgh, and which came within the observation of the latter.

Symptoms.—The testis becomes swollen, hard, tender to the touch, and feels heavy and painful,—these changes from the natural state occurring sometimes in the course of a few hours in acute orchitis. The consecutive inflammation is usually preceded by uneasiness in the course of the vas

deferens; the patient experiences distress and irritation about the bladder, and is troubled with a frequent desire to pass water, which is shortly followed by a dull aching pain and slight fulness in the groin. The spermatic cord, on examination, now feels full and somewhat œdematous, and the vas deferens is found to be tender and enlarged. This latter change goes so far, at times, as that the duct feels nearly as large as the little finger. The epididymis soon afterwards becomes swollen and painful, the tumefaction beginning at the lower part or tail, and it increases very rapidly. The swelling is at the back part of the testis and of an irregular, elongated form, and sometimes fuller and larger than the gland itself, and extremely tender, whilst the body of the testicle may often be pressed on without causing uneasiness. The inflammation may stop here and never reach the testicle, but more commonly, after the interval of a few hours or even a day or two, or longer, the gland and tunica vaginalis are implicated. In this case the parts form a uniform tumour, in which the epididymis can scarcely be distinguished from the other parts. In what is called the sympathetic form of the disease, the epididymis and testicle are swelled without any symptom of previous affection of the vas deferens. In gastro-enteritis caused by the ingestion into the stomach of a virulent poison, we sometimes see a similar freedom from inflammation in a part of the small intestines, although the two ends, the stomach and the rectum, are violently phlogosed. In primary acute orchitis the pain is of a dull aching description, usually very distressing to the patient, and it resembles the sensation followed by squeezing the testis. The pain extends upwards to the loins, where it is often very severe. Sometimes it extends to the hip or upper part of the thigh and centre of the ilium. With the progress of the disease the testicle becomes exquisitely tender, the scrotum is injected and hot, red, smooth, and slightly œdematous. The constitutional sympathies are well-marked and severe, the pulse hard and frequent, and the tongue white and furred. Often nausea and vomiting supervene, and occasionally there is pain in the lower part of the abdomen.

There is, however, great variety in the symptoms. In some cases the swelling is considerable, whilst there is little complaint of pain; in others again, the sensibility of the part is acute, although there is not much tumefaction. In general the symptoms increase in intensity until about the seventh or eighth day, when they begin to subside. As the swelling diminishes the epididymis becomes distinct, forming an indurated, knotty, and irregular swelling at the back part of the testis, which often lasts for many months, and in many instances never disappears entirely.

The duration of the disease is variously estimated. M. D'Epine makes it, on an average in fifteen cases, thirty-three days and a half; and M. Gausseul estimates it, from an inquiry into seventy-three cases, to vary from thirty to thirty-five days. Mr. Curling's experience leads him to indicate a shorter period of duration, and my own impressions are correspondent. I have not kept a register of cases of this kind; but I find that the last which I was called upon to treat within a short period, was of twenty days' duration, including two days of incipient disease, during which the patient was walking about and had not been subjected to any regular treatment. As it was, I could not make use of local blood-letting nor of compression, without an exposure which the patient greatly deprecated. Relapses readily take place; and there is a greater tendency afterwards in the testis to orchitis than before. Sometimes, also,

it remains more sensitive, and feels uneasy under pressure, when the patient suffers from subsequent indisposition.

The question of the side on which secondary orchitis most commonly occurs, furnishes a good lesson against decided inference until we are sure of the premises, and at any rate, against explanations of cause when the cause does not exist. Thus M. Ricord asserts, that it has at all times been observed that the left testicle was more frequently affected than the right; and then he proceeds to assign the reason, in the general fashion of men carrying the scrotum on the left side of the seam of the trowsers. Now, unhappily for this explanation, there is one great obstacle to its admission, viz., that orchitis occurs chiefly in the right testicle. Of M. Gausseul's cases, seventy-three in number, the disease was in the right side in forty-five, and on the left side in twenty-four; four were double. In twenty-nine cases noticed by M. D'Epine, he found that twelve were on the right, eleven on the left, and six double. Of thirty-six cases registered by Mr. Curling, twenty-one occurred on the right side and fourteen on the left; one only was double. "Taking the three series of observations together, we have 138 cases of orchitis: of these, the right testis was the seat of disease in seventy-eight, the left in forty-nine, and both glands in eleven." The proportions may be said to be of right to left orchitis as nearly 5 to 3.

The *diagnosis* of orchitis exhibits no difficulty, except when it is a question whether it or hernia be present. The absence of general abdominal tension, the limitation of pain and tenderness to one side, and the greater hardness, solidity, and pain of the swelling, will distinguish it from hernia, from which, also, it differs in its being clearly defined at its upper part, unless there is much swelling of the spermatic cord. A testis detained in the groin and inflamed, renders the diagnosis more difficult.

Secondary or consecutive orchitis differs from inflammation originating in the body of the testis, in its being preceded by swelling and tenderness of the spermatic cord and vas deferens; in the epididymis being invariably the part of the organ first affected; in the more rapid formation and greater size of the swelling; in the disease being of a more chronic character, and in the pain and constitutional suffering being less severe. It rarely leads to suppuration, disorganization, or atrophy of the gland, but usually leaves the epididymis enlarged and indurated. No gonorrhœal orchitis occurs without the epididymis being affected, and the engorgement of this latter, which generally succeeds but sometimes precedes the pain, is the most obstinate. Epididymitis rarely ends in suppuration. When this change does occur, it is almost always in primary acute orchitis. Concrete pus found sometimes in testicles that have suffered from acute inflammation, has been confounded with the yellow matter effused in chronic inflammation, and also with tubercular deposit.

Treatment.—This should be frankly and decidedly antiphlogistic. Venesection to such an amount as to produce a marked impression on the patient while he is seated in bed, followed by free purging and the administration of tartar emetic in doses, of at first a sixth of a grain, increased gradually to a third every two hours, together with restriction to simple diluents in place of food, constitute the main points of treatment for the first forty-eight hours or three days. After this, calomel or blue mass may be given two or three times a-day, with a view to its febrifuge

and secernment properties, either alternating or conjoined with tartar emetic, if the phlogosis and fever still persist.

The local applications are cold or saturnine washes, or a solution of hydrochlorate of ammonia, in the proportion of a drachm to five ounces of water and one ounce of rectified spirit. Mr. Curling gives a preference to warm applications; such as a good-sized dossil of lint surrounded with silk to keep it moist. Relief is often obtained by topical depletion procured by leeches to the scrotum; and preferably still on the line of the cord and on the perineum. I have prescribed them with advantage on the lower part of the abdomen of the affected side, in cases in which it was desirable to conceal the nature of the disease from the other members of the family. Commonly, indeed, we are prevented from having recourse to leeching the scrotum or perineum in families, from the natural dislike of the patient to divulge his infirmity to the different persons in the house. In these cases, cups to the loins may be substituted with a good result.

Of late years, a variety of local treatment for orchitis has been found to be very successful. It is that by compression, first employed by Dr. Fricke, of Hamburgh. By this means the duration of the disease was greatly abbreviated. M. Ricord tells us, and his experience is coincident with that of other surgeons; "by means of compression we obtain the cure of sympathetic epididymitis in five or six days. When well applied, it prevents the development of hydrocele, and indeed it may permit the patients continuing to follow their occupation without feeling any ill effects." Compression is made by means of strips of *emplastrum plumbi*, or *emp. hydrargyri*, about half an inch in width, and eight or nine inches long. The parts having been shaved and the patient being in a recumbent posture, and time allowed, by holding up the inflamed testicle, for the gorged vessels to be relieved, the opposite testis and side of the scrotum are to be drawn away, and then, while the inflamed organ is kept, but without any force, at the lower part of the scrotum, the operator begins to envelop the parts with the plaster. For this purpose, he places the first strap circularly round the cord near its insertion into the testicle, and sufficiently firm to prevent it from slipping, and continues the circles of strips round the testicle so as to produce a uniform pressure, and without making any folds in the skin. Others in a longitudinal direction, at right angles to the first strips, are then to be applied so as to extend from the upper part of the scrotum along its front and under the testicle, and up behind to the line opposite to that where it began: the whole forming a kind of basket. Mr. Curling recommends the alternate application of the circular or horizontal, and the longitudinal strips. The parts are afterwards to be supported by a suspensory bandage. Generally, the strapping requires to be renewed in the course of twenty-four hours. Although some surgeons practise compression at the very onset of the inflammation, it will be more prudent to premise venesection and a saline purgative, and use conjointly with the topical remedy the tartar emetic.

Engorgement and thickening of the epididymis and induration of the testicle are to be treated by the blue pill or iodide of potassium internally and by camphorated mercurial ointment, or that of the iodide externally; care being taken not to continue the mercury so as to touch the gums. Chronic enlargement and induration are advantageously combated by painting the scrotum of the affected side with the compound tincture of iodine, prepared as follows:—℞. Iodin., ʒi.; potass. iodid., ʒss.; sp. vin. rect., $\overline{ʒ}$i.

The application is to be repeated every third or fourth day, until the gland is restored to its healthy state.

In some irritable habits, in which depletion fails to relieve, the blue mass, with extract of hyosciamus and occasionally with sulphate of quinia, will exert a good effect. The use of rhubarb and magnesia may be occasionally interposed; and the diet of the patient somewhat improved. Strapping is to be practised at the same time.

Among the means preventive of orchitis, an early recourse to, and the sedulous use of, approved anti-gonorrhœal remedies are the best; and if the patient is stirring about out of doors, he should by all means provide himself with a suspensory bandage, and continue to use it even when confined to his bed. A neglect of this precaution and the excitement of much exercise and stimulating food are the chief causes of orchitis supervening on gonorrhœa, much more than the often alleged one of the sudden stoppage of the discharge by injections or balsamic remedies taken by the mouth. As an encouragement for early treatment, we may take M. Ricord's experience, from which it appears that orchitis does not occur once in three hundred cases during the first week of the existence of gonorrhœal discharge. He adds that, within his observation of the patients who have used the special anti-gonorrhœal medicines, about one in twenty of them will be found to have been subsequently affected with epididymitis. M. Ricord attributes the disease of the testicle to the continued urethritis and discharge, and not to the cessation of this latter. The longer the gonorrhœa lasts, the greater the risk of the extension of inflammation to the vas deferens and epididymis; and this occurrence may be expected even after the subsidence of irritation and its effect, a discharge at the upper part of the urethra.

LECTURE LXIX.

DR. BELL.

CHRONIC ORCHITIS—Its origin; and chief anatomical characters and seat—Yellow matter—Glandular matter—Hernia testis—Is often indolent for years—Misapplication of the term scirrhous to indurated and enlarged testicle—*Causes*—*Symptoms*—Result generally favourable—Occasional termination in ulceration of the tunics and teguments, and in hernia testis—*Treatment*—Blue pill, and opium—Sometimes iodide of potassium and sarsaparilla, or corrosive sublimate and some narcotic extract—Local applications—Treatment of hernia testis—preferably by cauterization.—SYPHILITIC ORCHITIS—Symptoms and treatment analogous to those of chronic orchitis—Mischief sometimes from persisting in the use of mercury—Other organic diseases of the testicle not treated of—NEURALGIA OF THE URETHRA AND TESTICLE—*Symptoms* of irritable urethra—Cause often obscure—Connexion with constipation and deranged bowels—M. Civiale's and Sir Charles Bell's experience—*Treatment*—Various—First to use catheter or bougie—Disorder of digestive organs to be rectified—Remedies often had recourse to the same as for neuralgia in general—*Neuralgia of the Testicle*—Causes not well known—*Symptoms*—*Treatment*—*Irritable Testis*—*Symptoms*—*Treatment.*

CHRONIC ORCHITIS.—Chronic inflammation of the testicle occasionally succeeds the acute, but more generally comes on without such precession. Slow in its progress and not attended by much pain, it is liable to be neglected until structural changes have reached to disorganization and destruction of the gland.

The chief anatomical character of chronic orchitis is the deposit of a peculiar yellow, homogeneous, inorganic matter in the structure of the testis, called, but erroneously, *yellow tubercle of the testis*. Amidst the doubts and discussions respecting its seat, one is allowed to adhere to the opinion of Sir Benjamin Brodie, confirmed by the experimental observation of Mr. Curling, that this matter is formed, by secretion, in the tubuli seminiferi, although the tumefaction of the testicle may derive increase from effusion into the cellular tissue of the testicle. The term *sarcocele* was at one time applied to this disease, as it was indeed to various other affections of this gland; but, as being without definite application and meaning, it is becoming, properly enough, in a measure obsolete.

The peculiar matter effused in chronic orchitis, if the disease be attended to in time, undergoes, for the most part, complete absorption, and leaves the testis competent to the discharge of its function. Sometimes, on the contrary, it happens that ulceration destroys the investing tunic and common integuments, and we see protruded through the opening a fungous-looking tumour or *granular swelling*, as it is called, which might be farther designated as *hernia testis*. This hernial growth may occur in consequence of an attack of acute inflammation supervening upon chronic disease and terminating in suppuration of the substance of the gland. In a case of this kind they are generally sinuses which burrow in the interior of the organ, and discharge pus mingled with yellow matter.

A testicle the seat of chronic inflammation often remains indolent and stationary for years, giving rise to very little inconvenience. The yellow adventitious deposit is found to possess considerable firmness and consistence; the tunica albuginea is thickened, and in some places as dense and indurated as cartilage; and the surfaces of the tunica vaginalis are closely connected by old adhesions. In some cases the morbid growth is at the expense of the proper glandular structure, which is greatly diminished and reduced to the size of a nut, at which the spermatic cord terminates. To the indurated enlargements of chronically inflamed testicle the term *scirrhus* was commonly applied; but this is clearly objectionable, as the alteration is quite different from that, for example, of a scirrhous mamma, and it rarely assumes a malignant character.

The *causes* of chronic orchitis are so well laid down by Sir Astley Cooper that I shall repeat his language on the occasion: "With respect to the causes of this disease, it is wrong to view it as a local affection; for there is in persons prone to this complaint, a constitutional tendency to the malady. It often occurs in those who have been scrofulous in their youth. It is frequently the product of a constitution worn and broken by intemperance. It often follows a long-continued course of mercury; and it arises in habits in which the vital powers are diminished, and in which we so often find sloughing of the cellular membrane, in the form of chronic carbuncle. Frequent exposure to wet, cold, or fatigue, and an excessive indulgence of the passions, also dispose to its production. The most frequent occasional cause is urethral disease, whether it be irritation only, exciting a sympathetic influence, or an organic change in the mucous membrane; and many of those causes which I have mentioned, in speaking of acute inflammation of the testes, are, in different cases, the precursors of this disease; the chief difference in the nature and production of the two complaints being in the state of the constitution."

Mr. Ramsden, in 1811, was the first surgeon to point out clearly the

frequent connexion between enlargement and induration of the testis, called by him *sclerocele*, and some affection of the urethra; and that they must be cured by remedies intended to correct the diseased condition of this canal. In most cases of frequent return of inflammation of the testicle, some disease or source of irritation in the urethra may be suspected.

Symptoms.—The testicle at the beginning of the disease feels somewhat tender, and the patient becomes sensible of enlargement of the gland and irregular induration of some part of it. This induration often commences at the lower part of the epididymis. The swelling which, after a time, brings the gland to twice its natural size, is smooth, firm, and inelastic, and of uniform consistence. With it is associated pain of an obtuse character, and a sense of weight in the part, and also in the loins. The spermatic cord is not generally indurated; but it feels full and its veins are rather swollen.

The testicle often acquires considerable size before the patient's attention is seriously directed to it. Relief is given by a suspensory bandage, and the usual occupations are continued until fresh inflammation is excited by a blow, or excess in drinking or venery; when the symptoms become sufficiently alarming to induce the patient to seek for professional assistance.

After the disease has lasted for many weeks or even months, the skin at some part of the scrotum, usually the front, grows thin and prominent, and is, at the same time, red and inflamed. In a short time it breaks, and a fungous-looking substance and sometimes a small quantity of pus are discharged; and this is soon followed by a hernial protrusion of the substance of the testis, which gradually increases until the part presents the characteristic appearance of a granular swelling. The disease in this state is very indolent, and, if not interfered with, lasts for many months without undergoing any perceptible change. The epididymis often escapes the morbid ulceration affecting the body of the gland; but in other cases it, also, is found to be nodose, irregular, and hard.

The testicle, as remarked by Sir A. Cooper, sometimes becomes enlarged and hard, even in very young children, but without pain or any inconvenience; and the disease is only accidentally discovered. It may remain in this state for many weeks, months, or years; and then, under improvement of the general health, the enlargement subsides and the gland is restored to its natural state.

Treatment.—Chronic inflammation of the testicle is quite amenable to remedies. We may begin with a few leeches; not so much with a view of abating inflammation as to quicken the absorbent process under the operation of medicines to be afterwards given. Of these the chief and most reliable is mercury, in the form of blue pill or of calomel, but preferably the former, in doses of five grains, with a quarter of a grain of opium, twice daily. This is to be continued until the gums become a little tender, and then remitted for a while, and resumed until the swelling has subsided and the induration is in a great measure removed. I say in a great measure, for the remains of disease disappear often without any additional treatment. It is desirable that the patient should be kept at rest and in a recumbent position. Some practitioners prefer minute doses of corrosive sublimate, a tenth to an eighth of a grain twice a-day, made up into pill, with three or four grains of extract of cicuta. Fomentations of hot vinegar and water, or of warm water or of vapour, are of service, alternating

with inunction by the camphorated mercurial ointment or ointment of the iodide of potassium. Counter-irritation may be kept up advantageously by painting the scrotum every second day with the tincture of iodine. These local applications are of most service when fluid in the cavity of the tunica vaginalis prevents compression. This latter, by means of strapping applied in the manner already explained, tends not a little to accelerate the cure, by promoting the absorption of the adventitious deposit. In cases of a scrofulous diathesis, or in which mercury is contra-indicated, recourse is had advantageously to the iodide of potassium, in doses of five grains daily, with the decoction or syrup of sarsaparilla. Sometimes, this disease is associated with and seems to form a part of rheumatism or gout, in which case colchicum combined with anodynes will be of service. During the treatment, all kinds of excitement, both venereal and that of stimulating drinks of any kind, must be avoided.

The hydrocele consequent upon the chronic inflammation generally disappears with the cure of the latter. Due time being given for the absorption of the effused fluid, which we may expect to take place in proportion to the recovery of the general health; but this result not being obtained, we may then proceed to draw off the fluid by acupuncture or by the introduction of a trochar, and wait the result. If it should collect again, it will be time enough to use an injection; a remedy which, under the circumstances, is not without the risk of exciting fresh inflammation of the gland.

The treatment of hernia testis is by incision, as recommended and practised, but after different fashions, by Mr. Lawrence and Sir Astley Cooper; and by means of cauterization according to the methods of Sir Benjamin Brodie and Mr. Curling. The latter is entitled to the preference. Mr. Curling, after enjoining rest on his patient and directing blue pill night and morning, until all inflammatory action has subsided, then applies lint large enough to cover the sore dipped in a strong solution of nitrate of silver, in the proportion of five grains to the drachm of water. Over this are applied compresses of lint, and compression is procured by several strips of adhesive plaster, and the whole secured by a bandage. This is to be repeated daily, and as the protrusion recedes, the scrotum is to be drawn over it, and the edges of the wound are gradually approximated by narrow strips of plaster. Brodie recommends mercury internally, and the surface of the fungus to be covered every day with finely-powdered levigated nitric-oxide of mercury (red precipitate), and over this some simple dressing. So soon as the surface of the fungus is covered with red healthy granulations, the application of the nitric-oxide of mercury may be left off and replaced by a weak solution of sulphate of copper in camphor-mixture as a dressing. On this topic you should bear in mind the observation of Sir Charles Bell, that, in strumous habits, scrofulous inflammation and fungus of the testis are apt to be excited by courses of mercury.

Syphilitic Orchitis.—The testicle is liable to undergo, in persons affected with secondary syphilis, a chronic morbid enlargement, of a pyriform shape, with induration; it is accompanied with pustular or scaly eruption of a venereal character, periosteal inflammation and not unfrequently iritis. The symptoms closely resemble those of chronic orchitis, with the exception of the testis in the *venereal* inflammation of the gland becoming occasionally more tumid and painful during the evening exacerbation, or in the occurrence, in some cases, of nocturnal lumbar pains.

The inflammation commonly commences in the body of the gland, and rarely terminates in suppuration, or in the production of hernial fungus.

The induration begins in spots or nuclei of cartilaginous hardness, which approach each other, unite, and ultimately involve the whole organ. The epididymis and the cord generally remain free from the disease which affects the testicle, whereas in scrofula the former parts are those generally first affected. The scrofulous testicle developes itself by projections in relief, as if appended to the epididymis or testis, while the indurations in the syphilitic testicle are generally confined to the body of the organ. Still the diagnosis is by no means easy; and we must, in order to reach a satisfactory conclusion, take into consideration the antecedent history of the patient, as respects his constitutional predispositions and his habits.

It is often difficult to distinguish syphilitic from cancerous testicle. The rapid development of the tumour, its greater volume, its softness, which may be mistaken for fluctuation, and the lancinating pains in encephaloid disease, contrast with the uniform hardness and indolence of the syphilitic testis, the growth of which has more confined limits. The vas deferens is frequently hard and unequal, and in syphilitic testicle the swelling of the glands does not occur.

The *treatment* of syphilitic inflammation of the testis should be conducted on the same principles as ordinary chronic orchitis. The remedies used must, however, be persisted in for a longer time in the former than in the latter of these diseases. The exceptional remark to the use of mercury in all cases, made when speaking of its use in simple chronic orchitis, is strictly applicable in the present disease. Not only can we cure it without mercury, but our success in some instances depends on withholding or ceasing to administer the medicine at all, as in the instructive case recorded by Sir B. Brodie. The testis was enlarged and suppurated whilst the constitution was suffering from the effects of syphilis and the continued use of mercury. On the patient's taking sarsaparilla in place of this medicine, the testis was diminished and the abscess healed. A prolonged alterative treatment is, however, often demanded in this disease, similar to that in secondary syphilis.

Of various other but rare organic diseases of the testicle, such as *tubercle* and *carcinoma*, under the latter of which are properly included *scirrhus*, *encephaloid*, *colloid*, and *melanosis*, it is not my intention to speak at this time. I shall dismiss them, therefore, with the single remark, that for tuberculous disease of the testicle the remedial course must consist in those adapted to the cure of scrofula, of the diathesis of which this is a part of the morbid development. The subject of scrofula in general will engage our attention at a subsequent period.

Neuralgia of the Urethra and Testicle.—The nervous affections of the testicle, including the irritable testis and neuralgia of this gland, come more within the scope of our present plan. In my division of the organic diseases of the Generative Functions, you may remember that this was one of them.

Pain and sensations of heat are not unfrequently felt in the urethra, without any inflammation of the mucous membrane of the canal or primary irritation of the bladder. The pain sometimes shoots through the parts just mentioned and extends to the loins and sacrum, attended by a sensation of heat and itching in the urethra, especially at the extremity of the penis. The paroxysms are accompanied by an urgent call to discharge

the urine, although there is often great difficulty in passing it. When being evacuated, it is thrown out in jets, or the stream is suddenly stopped. The attacks are frequently periodical, either recurring daily at a certain hour, and this generally night or morning, or every second or third day. During the interval the patient is free from pain and the urine is passed without difficulty.

This irritable urethra has been described by different surgical writers, and more particularly by M. Civiale. The *causes* are not commonly appreciable; although the disease has been generally observed in those whose nervous system has been over-excited by venereal excesses or moral emotions, or who have had neuralgia of other parts of the body. Prolonged irritation of the urethra and neck of the bladder, commencing stricture, constipation, diseases of the rectum and urethra, are circumstances favouring its production; but in many cases the causes cannot be referred to any of these circumstances. Sir Charles Bell (*Institutes of Surgery*) cites cases originating from intestinal irritation. "The fact is simply this," says Sir Charles, "that I have received patients after having used bougies for months, nay years, who had no other complaint than an habitual disorder of their large intestines." Great tenderness of the perineum experienced by some persons and attributed by them to stricture of the urethra, is also, at times, owing to the same cause. I must make another quotation from the work of this author, which abounds in admirable precept and pointed examples, and yet it is not, I am sorry to say, at all appreciated at its true value. "It is sufficient for practical purposes, at present, to observe, that there is not only a sympathy between the bladder and the other parts contained within the pelvis, by which the diseases of the one may be mistaken for those of the other; but certain parts of the intestinal canal through its whole extent, sometimes the stomach, sometimes the ileon, often the colon, and still oftener the rectum, being the seat of irritation, will produce sensations in the bladder, the perineum, or urethra. These will fill the mind of the sufferer with the most serious apprehensions and lay him open to the mistakes of ignorance." Mr. Abernethy (*Diseases of the Urethra*) had pointed out analogous cases of "a state of irritability and disorder of the canal produced or maintained by constitutional causes."

The *symptoms* of neuralgia of the urethra are very vague and variable. The sensations and the difficulty in making water depend equally on some organic disease of the prostate or bladder, paralysis of the bladder, stricture, &c. The transitiveness and mobility of the symptoms will most aid us in the diagnosis; they cease, re-appear, increase and diminish, without appreciable cause, and more rapidly than any other affection. The general health, at any rate for some time, is not affected. But after a longer or shorter period an organic disease is set up; and this nervous state is complicated with catarrh or some other severe lesion of the bladder or prostate gland. The rectum in time becomes affected, and the general health suffers. Local and minute examinations are of course necessary to fix the diagnosis. The introduction of the catheter, undertaken with a view to ascertain whether stricture is present, or of a sound to detect the presence of stone, sometimes gives the greatest relief to a neuralgic urethra.

The *treatment* is often begun by the introduction of a catheter or bougie, which alone is sometimes competent to the cure. Introductions daily or

every two days, for ten or twelve times, according to the irritability of the patients, are, in old cases, sufficient, and fewer in recent ones. The use of the bougie should be continued until it ceases to give pain. In other cases M. Civiale found the injection of simple water of a gradually reduced temperature contribute much to the cure. Irrigations are still more beneficial even in cases apparently desperate. The last resource is revulsives; such as purgatives, cold douche-baths, or tartar-emetic ointment to the hypigastrium and perineum. M. Civiale has cured several cases by relieving obstinate constipation. Sir Charles Bell, as might have been inferred from his specification of the causes of the disease, has frequently removed complaints falsely attributed to stricture, as well as the aggravation of the proper symptoms attending such obstructions, by dislodging scybala from the colon and rectum. "There is an old patient of mine," he continues, "who, when distressed in this manner with pain in making water, can ascertain, by his finger *in ano*, that it proceeds from hardened feces there; and by a clyster of warm water and soap he removes the pain." In inveterate cases, the application of caustic, forcible injections, ligature of the penis near the glans (to prevent the escape of the urine), have been beneficial, by their producing a stronger impression.

A more soothing and occasionally effectual mode of treatment will consist in the general or the hip warm bath, or warm water and sometimes opiate enemata, or a suppository of opium or of belladonna or stramonium, or friction of the dorsum of the penis and the perineum with tincture or ointment of these narcotics. When the disease assumes a periodical character, the sulphate of quinia may be expected sometimes to succeed. The mention of this remedy suggests a case mentioned by Sir B. Brodie (*op. cit.*) of retention of urine, in which, although the catheter could be introduced with great ease, the attack used to recur during several nights, and for which Sir Benjamin was summoned out of bed to give the desired relief. At last it occurred to him that he was sent for on alternate nights; and on inquiry he found that the attack of retention regularly came on about twelve o'clock, and even though the catheter entered the bladder, the spasm did not relax, so as to enable the patient to make water by his own efforts until five or six in the morning. He then determined to treat the case as other intermittent or periodical diseases, and he prescribed the sulphate of quinine. The first night after the patient began to take it he had an attack of retention; but he had no attack afterwards.

Neuralgia of the Testicle may include what is called the *irritable testis* of Sir Astley Cooper, as well as the disease properly qualified by the term neuralgic. I shall speak of neuralgia proper first. The nerves of this part are liable to a painful affection resembling tic douleureux, in which the pain is sudden, severe, and remittent, and occurs in paroxysms of variable duration, generally at irregular but occasionally at regular intervals. The pain is usually attended with a forcible retraction of the testis to the groin by spasmodic action of the cremaster muscle, and occasionally with nausea and vomiting.

This disease is unaccompanied by fever; but, for the most part, there are associated derangements of the digestive organs, and after a time of the general health, from the acute suffering and disturbance of the patient's rest. The neuralgia is almost always confined to one side, while in morbid sensibility both sides are frequently implicated. Neuralgia of the testis occurs at all ages, and without our being able to assign

to it any definite cause, nor is there any change in its structure to account for the pain. In some instances it has appeared to depend on derangement of the digestive organs, and in others it was evidently attended with a disposition to gout. In several cases, also, it has succeeded an attack of orchitis.

The *treatment* of neuralgia of the testis cannot be based on either definite or readily recognised principles. We should always begin with restoring the digestive organs to a healthy state, and then address ourselves to the removal of the pain, by administering the remedies which have been found efficacious in analogous diseases of other nerves. Cases of an intermittent character are to be treated by quinine in full doses, as five grains three times a-day, or by the *liquor arsenicalis* (Fowler's solution). Dr. Graves cured a case of great intensity by large doses of the sesquioxide of iron freshly prepared, and frequent inunction of the testicle and cord with belladonna ointment. The oil of turpentine sometimes proves efficacious in this as in other varieties of neuralgia. It may be given in the form of linctus, prepared as follows: — Take the yolk of an egg; oil of turpentine, ʒiij.; syrup of orange-peel and of tolu, of each ʒij., and of laudanum, ʒi. Three tablespoonfuls to be taken daily. The application of a belladonna plaster often gives relief. Success has sometimes followed the use of ointment of aconitine, one grain to a drachm of lard, and also of tincture of aconite. The latter is applied to the scrotum with a piece of sponge, and has relieved both the morbid sensibility of the testis and neuralgic pains. The same good report has sometimes been made of the extract of hyosciamus, combined with half a grain of the acetate of morphia, taken twice a-day. Mr. Curling, from whom I so largely borrow on all that I have said respecting the diseases of the testicle, tells us that he has no confidence in counter-irritation, or the veratria and iodine ointments; nor is any benefit derived from the action of mercury, except when given in small doses to improve the secretions.

Barras (*Traité sur les Gastralgées et les Enteralgies*) was for four years tormented with neuralgia of the spermatic cord just below the inguinal region, and only found relief and cure by the application of moxa over the seat of the disorder.

Made almost desperate by the violence and continuance of the pain, patients have sometimes besought their surgeons to ease them by castration. In some cases, as in the three performed and described by Sir Astley Cooper, in which the neuralgia was purely local, the operation gave entire and permanent relief; but in some other instances the disease returned with all its original violence in the other testicle.

The *irritable testicle* is thus described by Sir Astley Cooper. "The patient has an unnatural sensibility in part of the testicle or epididymis; it is extremely tender to the touch, painful on exercise and unusually sensitive at all times.

"Its sensibility becomes occasionally so much increased, that the slightest touch produces the most exquisite sufferings; the pain is felt in the back and groin. The motion of the testis, and the slight pressure it receives from the clothes in walking, produce so great a degree of pain as almost to forbid exercise; and the patient is obliged to seek relief by continually reposing upon a sofa, or by remaining in bed. The testicle is but little swollen; it is not equally tender in every part, but there is a point in which the morbid sensibility particularly resides; the epididymis and spermatic cord also manifest similar sensibility, and if the part be not

supported, the pain is scarcely tolerable; and when the patient is in the recumbent posture, he is obliged to place himself on the opposite side to the disease, or he does not rest; he has pain in the groin and thigh upon the same side, and the testicle appears fuller and more loaded than the other; motion, in most cases, produces not only pain at the time, but much increased inconvenience for some hours afterwards; the pressure of the hand in examining it occasions great uneasiness, and leaves the testis additionally sensitive. The stomach is rendered extremely irritable, even to the degree of occasional vomiting."

The *treatment* of irritable testis will be modified by the knowledge of the cause, when this is ascertainable. In general, we must be content to administer remedies after the general indications for the relief of morbid sensibility. Tonics, and especially sulphate of quinia and chalybeates, come foremost in the list, sometimes combined or alternating with narcotics. Occupation of the mind by work or change of scene gives relief. Cold bathing and sponging the organ with iced water or a cold douche on the part from a kettle, for instance, severally does good. Supporting the scrotum and a belladonna plaster have also their beneficial effects. Contact and friction with any part of the dress are to be avoided by a full-sized suspender with a layer of soft wadding or wool. If onanism have been the cause, this must be desisted from, and seminal weakness cured by appropriate means, including the introduction of the bougie, either simple or armed with caustic. Castration should never be performed for this disease, as the same train of symptoms which occurred in the ablated testicle may appear in the remaining one.

Diseases of the Spermatic Cord might come properly enough under the head of the class on which I am now discoursing, viz., those of the organs of generation; but as their treatment is mainly surgical, I shall not enter into details which might lead us away from more important subjects.

LECTURE LXX.

DR. BELL.

PROSTATITIS—Why considered in the present connexion—Necessity of inspection of parts on the dead body—Substitutes—Appearance of the prostate gland.—*Acute Prostatitis*—*Causes*—*Symptoms*—Extension of disease—Mode of examination for—Reduction of disease—Resolution—Discharge of blood—Terminations in suppuration and abscess—To give early discharge to matter of abscess—*Treatment*—Decidedly antiphlogistic—Catheter for retention of urine—Cause of obstruction to catheter at the neck of the bladder—Danger in trusting to the patient's account of himself.—*Chronic Prostatitis*—A common, a troublesome, and often incurable disease—Old men very liable to it—Hunter's directions—Brodie's descriptions—*Symptoms*—Secondary affections—Case of—*Treatment*—Chiefly palliative—Instrumental and therapeutical.—FUNCTIONAL DISEASES OF THE MALE ORGANS OF GENERATION—*Satyriasis*—Degenerates into monomania—Diseases with which connected—Caused by cantharides—An effect of prior disease—*Treatment*.—MASTURBATION—Occasional causes—*Symptoms*.—SPERMATORRHŒA—Causes of—Predisposition to—Immediate cause and anatomical seat—Two varieties; daily pollution and nocturnal pollution—*Symptoms*—*Treatment*—Local and general—Sedatives and tonics—M. Lallemand's method by cauterization—Testimony in its favour—Mode of applying the caustic—Adverse opinions—Regimen—Exercise—Change of air—Clothing.

PROSTATITIS.—In completion of my purpose, I have some remarks to offer on diseases of the prostate gland. Rigorously speaking, this body is not

part of the organs of generation, but it is so closely connected with them, anatomically, by the continuity of its inner surface with the vasa deferentia in one direction and the urethra in another, and so readily affected by diseases of these organs, as well as by excesses of their functional exercise, that I may well speak of it in the present connexion.

I will repeat for your edification a few words, introductory to the subject, by Sir Charles Bell, with the previous remark, that in this country every student of medicine is, or ought to be, also, a student of surgery, as in after-life he will be a general practitioner, who is required to give relief in the premises, by surgical as well as common therapeutical means. "The student of surgery has his most important lesson to get from the dead body. He should examine the outside and neck of the bladder; the place of entrance of the urethra, the relation of the vesiculæ seminales and prostate gland; the distance of the prostate gland from the anus. He should consider how these parts should feel with his finger *in ano* in the living body. He should open the bladder, and pass his probe along the mucous membrane, thinking of the possibility of natural obstruction to instruments, and the place of diseased obstruction." As a substitute, although an imperfect one, for the parts themselves, you will have recourse to the inspection of a drawing to show the relative position of the prostate gland. Happily all of you can enjoy the means of making an inspection of this nature; for those who have not Quain's large and beautiful plates are probably in possession of those by Dr. H. H. Smith, and at any rate of some illustrated work on Anatomy, in which the prostate gland and the adjoining parts are clearly drawn.

It will not be expected of me to describe anatomically the prostate gland; but simply to say that it is a dense, yellowish, elastic and slightly extensible body, of a glandular nature, surrounding the neck of the bladder and the neck of the urethra. It consists of two lobes united by an isthmus, or, as Sir Everard Home and some other anatomists call it, the middle lobe: its base is directed to the neck of the bladder, the apex forwards, and the convex side towards the rectum. The urethra in passing through the prostate lies one-third nearer to the upper than to the lower surface. The two risks of embarrassment to the inexperienced hand in passing the urethra at this region, are the projecting verumontanum and the depression of the prostatic sinuses.

Inflammation of the prostate gland is acute and chronic, both of which may give rise to new structures, and ultimately, if not checked, to disorganization. *Acute prostatitis* may be caused by venereal excesses and masturbation, the excessive use of spirituous drinks, intense inflammation of the urethra, especially in progressive gonorrhœal urethritis when it reaches the posterior part of the canal, violent contusions of the perineum by blows or falls on the part, or by being thrown with force in riding on the pummel of the saddle. Existing gonorrhœa predisposes the individual to prostatitis from a comparatively slight action of one of these causes. The disease is more apt to occur in youth or the vigour of adult age.

Symptoms.—Acute prostatitis is ushered in with a feeling of heat and deep-seated pain at the perineum, near the anus; and the patient, the neck of whose bladder is continually irritated by the phlogosis, has incessant calls to discharge his water, even although there be but a few drops in the bladder. The passage of this fluid is usually compared to that of a burning substance, and the pain is most acute at the moment of contraction to expel the last drops of urine.

The rectum conveys the sensation as if it were in part occupied by a weighty and voluminous body, which provokes to defecation, yet interferes with the due exercise of this function, by inducing the patient to make expulsive efforts after the complete evacuation of the feces. The finger introduced into the anus apprises the examiner of a smooth, round, and hot body projecting somewhat into the intestine; or if not of enlargement, yet of considerable heat; and the pressure is productive of pain. If a bougie or catheter be passed along the urethra it encounters no obstacle in the first two regions, but when it reaches the prostatic it is accompanied by an acute and sometimes intolerable pain and intense spasmodic contractions. Rarely does prostatitis give rise to much febrile disorder.

The inflammation may extend from the neck of the bladder to the lining membrane of its cavity, and then we find superadded to the other symptoms, frequent expulsion of urine loaded with mucus, sometimes mixed with blood, or the urine is of a red brick-dust colour. Under these circumstances, the most formidable symptoms may arise, such as retention of urine, fever, great restlessness and delirium, terminated sometimes by death itself.

When, by a suitable treatment, or possibly by unassisted nature, the process of resolution is set up, all the preceding symptoms are abated, and at the same time the secretion from the mucous follicles of the prostate itself is greatly augmented and is mixed with the urine, under the form of a whitish or greyish viscous matter, deposited at the bottom of the vessel without adhering to its sides, and bearing a resemblance to imperfectly elaborated pus. In proportion as the parts resume their customary functions, this matter decreases in quantity and finally disappears.

The discharge of blood in prostatitis of a more chronic form arises from a rupture of varicose veins of the gland, which burst and discharge blood freely into the bladder, so that it coagulates there and obstructs the flow of urine. As the urine flows into the bladder the coagulum is dissolved, and the urine is for a long time charged with blood. Sometimes the bleeding may come from some ulcerated surface.

Inflammation of the prostate may end in suppuration, and an abscess forms, the symptoms of which are at first obscure. As the abscess advances, the perineum becomes tender, and there is a perceptible though slight tumefaction and hardness in some one part of it. The abscess, if left to take its own course, sometimes bursts internally, that is, into the urethra; not unfrequently it makes its way through the fascia, cellular membrane, and muscles of the perineum, and bursts through the external skin. Much constitutional distress attends these local changes, and if the urine gets access to these suppurations about the prostate gland and vesiculæ seminales, they may destroy the patient by fever and irritation, and an incessant call to urinate.

If suppuration has taken place and an abscess formed, we must endeavour to procure a discharge externally for the matter, in order to prevent its bursting into the urethra. If the symptoms already described exist, and go on for some time increasing, and you discover a fulness and tenderness of the perineum, do not wait for any more certain indication of the abscess; but introduce a lancet in the direction indicated by the tenderness and swelling. It will often be necessary to pass it quite up to the shoulders, or even to the handle, before you reach the abscess, and even if there be none, the patient is not made worse, but, on the contrary, partly

from the loss of blood and partly by removing the tension of the soft parts of the perineum, he is greatly benefited by it. There are cases in which the abscess breaks spontaneously into the bladder or the rectum, and the gland eventually heals up as before. Occasionally the end of the catheter has burst a prostatic abscess, as in the case related by Petit and quoted by Begin (*Dictionn. de Med. et de Chirurg. Prat.*).

Treatment.—Acute prostatitis requires an active antiphlogistic treatment; the initial part of which will be venesection, and this to be repeated within a short period if the symptoms are still urgent and it be not contra-indicated by the former state of the patient. Recourse is subsequently had to leeching the perineum near the anus, the hair having been previously shaved; and if a speculum be procurable, the leeches might be put in it and made to adhere to the rectal surface of the prostate or that inside the anus. Care should be taken before the speculum is withdrawn that no portion of the mucous membrane protrude into the slit or fissure through which the leeches were enabled to take their hold. General and seat baths of warm water or emollient enemata, mucilaginous drinks and a mild vegetable and after a while milk diet, will properly be had recourse to after the bloodletting. If the lower bowels have been loaded with fecal matter, this should be evacuated; but much purging is prejudicial, by increasing the determination to the gland and contiguous parts. Calomel, so useful in most phlegmasiæ, is not without its value here; but it should be combined with opium or a narcotic extract, to render its action on the bowels mild, and to contribute to its antiphlogistic operation. If the pain and irritation be considerable after suitable depletion, a suppository of opium or of extract of belladonna, or an enema of laudanum will be found necessary. The local employment of cold and even suppositories of ice have been recommended, but the use of such a means is, to say the least of it, of very questionable efficacy.

If there be retention of the urine in prostatitis, a catheter should be introduced and the fluid withdrawn. An instrument of simple gum elastic without a wire or stilet will sometimes suffice. But in other cases a small silver catheter will, as I have said before when speaking of stricture, be found of easier introduction, especially by an inexperienced hand. It is better to introduce the instrument from time to time as it is wanted, than to leave it constantly in the bladder or urethra. Obstacle is sometimes offered to the introduction of the catheter by the enlargement of the middle or third lobe, the *uvula vesicæ* of older writers, forming a projecting tumour from the posterior and deepest part of the prostate into the bladder, which rises like a valve and obstructs the stream of the urine in its ejection. Of the probability of retention of urine and an enormously distended bladder in this disease we ought to be aware, and watchful to obviate the dangerous consequences. If we ask the patient himself whether he has discharged his urine, he will reply in the affirmative, and to a question, whether he has emptied his bladder, he will give the same answer. But the small quantity evacuated at each frequently renewed expulsive effort falls far short of the quantity brought by the ureters; and the patient is deceived, when, owing to a sensation produced by the pressure of the abdominal muscles on a full and distended bladder, which is transmitted to the uvula vesicæ and drags it down, he thinks he has emptied his bladder. You will find, however, on inspection, that the fundus of this organ is raised above the pubes by the distention of its contained and accumulated urine,

and, on introducing the catheter, the patient, to use the homely phrase of Sir Charles Bell, fills the chamber-pot with urine.

If the prostate becomes suddenly enlarged in consequence of stricture of the urethra or of gonorrhœa, it resumes its normal size by the disappearance of the original disease.

Chronic Prostatitis is a much more frequent and, in some cases, a more troublesome, as it certainly is a more incurable disease than acute inflammation of the prostate. The causes are occasionally the same in both, but their operation slower in the one than in the other. Chronic enlargement of the prostate is a disease of old age, so common a one too, that Sir Everard Home asserts his having seldom seen the gland in a natural state in any male subject over fifty years of age brought to the dissecting rooms. On swelling of the prostate gland, read Hunter in his work on the *Venereal Disease*. You will find there quite a lucid, yet succinct account of the state and peculiarities of parts which, to read the lectures of some of his distinguished successors, you would suppose were discoveries of theirs, or only well elucidated by them for the first time. Hunter, after speaking of the swelling of the lateral parts of the prostate, those which chiefly press on the urethra, points out very distinctly, but without naming it, the middle lobe of Home; and explains how, by its enlargement, it becomes a cause of obstruction to the exit of urine in the passage of a bougie or catheter.

Could the subject be brought before us more clearly than in the following passage, which I transcribe from Hunter (p. 146, *Am. Edit.*). "When a difficulty in making water takes place, a bougie is the instrument which the surgeon will naturally have recourse to; and if he finds the passage clear, which he often will, in such cases he may very probably suspect a stone. If search is made and no stone felt, he should naturally suspect the prostate gland, especially if the sound or instrument used meets with a full stop, or passes with some difficulty just at the neck of the bladder. He should examine the gland. This can only be done by introducing the finger into the anus, first, oiling it well, placing the fore part of the finger towards the pubes; and if the parts, as far as the end of the finger can reach, are hard, making an eminence backwards into the rectum, so that the finger is obliged to be removed from side to side, to feel the whole extent of such a swelling; and if it also appears to go beyond the reach of the finger, we may be certain the gland is considerably swelled, and is the principal cause of these symptoms."

Brodie tells us, that, when the hair becomes grey and scanty, when specks of earthy matter begin to be deposited in the tunics of the arteries, and when a white zinc is formed at the margin of the cornea, at this same period the prostate gland usually, one might say invariably, becomes increased in size. The degree of enlargement in some cases is slight; but frequently it is two or three times, and occasionally even ten or fifteen times its natural size. There is, also, more or less alteration in the texture.

The *symptoms* of enlarged prostate are, some of them, common to stricture and irritable bladder; some, again, are identical with those of acute prostatitis. The diagnosis of the chronic inflammation of the gland we rest on the following considerations:—The patient has most generally been affected with prolonged or badly-cured gonorrhœa. He urinates more frequently, and resists less the desire to do so than common. He cannot

eject or expulse with any force the last drops of urine that fall perpendicularly from the penis. There is a feeling of weight at the anus: the feces are frequently flattened or hollowed in their anterior part by the projection of the prostate into the rectum: it is rare that the act of urinating does not produce a desire to go to stool as if the rectum were filled with a mass of stercoral matter. Commonly when the urine flows slowly, if the patient make efforts to accelerate the discharges, these, so far from doing so, rather retard if they do not stop the jet. On exploring the rectum, there is ordinarily felt an enlarged prostate which projects into the cavity of the intestine. If a catheter is introduced into the bladder, this instrument penetrates without any obstacle as far as the neck of the bladder; but there its point is arrested, and the operator can only succeed in introducing it by raising it under the symphisis pubis and depressing correspondingly the handle. Catheterism with a decidedly curved instrument is more readily performed than with the catheter of a common inflection.

Sir Benjamin Brodie points out secondary renal affections in chronic enlargements of the prostate gland; such as, 1, considerable augmentation of the secretion of urine; 2, great diminution or entire suppression of this secretion. Dropsy and effusions in the brain are among the sequelæ of the latter state of things. I have seen such a termination in the case of an old gentleman whom I attended many years ago for diseased prostate, with impossibility of discharging his water without a catheter, which I was obliged to introduce for him. In that case, by the advice of Dr. Physick, who saw the patient occasionally with me, the catheter, of gum elastic, was allowed to remain in the bladder two or three days at a time. I now do not deem this to be advisable practice, and do not adopt or recommend it. My patient had no symptoms of effusion before his cerebral seizure, which came on without any premonition, when he was sitting up in bed engaged in conversation. He survived the attack about 36 hours.

The prostate is sometimes the seat of calculi, which in the early stage of formation might give rise to symptoms of chronic enlargement and inflammation.

The *treatment* of chronically enlarged prostate or chronic prostatitis is partly instrumental and partly medicinal; and in both more frequently palliative than curative. The immediate and pressing necessity is to draw off the water, and thus relieve the distended bladder, which, if allowed to remain, would itself destroy life, even though it were not to be ruptured. And here I may mention that this kind of termination hardly ever occurs in suppression of urine from enlarged prostate. Preference is generally given by the British surgeons, as, for example, by Sir Charles Bell and Sir Benjamin Brodie, to a gum-elastic catheter without a stilet. The latter properly recommends that the surgeon have a number of different sizes, to which various curvatures have been given by strong iron stilets having the curve of a silver catheter. He admits, that in difficult cases, the catheter without the stilet will not succeed. The instrument should be of a medium size; not so large as inconveniently to distend, nor so small as to approach to a pointed instrument with all the inconvenience of its liability to get entangled in the tumour of the prostate. As already remarked, the stilet ought to be considerably curved. By this means the point is directed forwards towards the pubes, and it avoids the obstruction behind of the projecting lobe, the *uvula vesicæ*. If embarrassed in intro-

ducing it, you had better bend the point forward as it approaches the prostate, either by means of the finger in the rectum or by pressure on the perineum. Gentle manipulation is all-important in these operations; otherwise there is danger of passing the instrument directly into, if not through, the prostate gland. This result in most cases would be called bungling surgery; but in some, where there is retention of urine and the catheter cannot be introduced by the natural passage, surgeons have recommended to make a false passage rather than have recourse to the more perilous expedient of puncturing the bladder.

After a time, the patient must learn to introduce the catheter himself, beginning with that wanting a stilet.

Reference has been made before to hemorrhage from the prostate gland. When severe it is to be treated on the same principles as hemorrhages in general; and hence you will draw blood, if not from the arm, at least by cups from the loins or sacrum, administer salines, purgatives and antimonials, keep the patient on low diet, and in a recumbent position. Cold water or ice in the rectum, and sugar of lead by the mouth, may be necessary in some of the severer cases.

The general therapeutical treatment of chronic prostatitis is not satisfactory in its results. Can we sum it up better or in fewer words than by Sir Charles Bell, when he says: "As to the farther treatment of the disease of the prostate—1, guard against lodgment in the rectum by the use of clysters; 2, apply leeches to the hemorrhoidal vessels; 3, mild laxatives; 4, the tepid bath; 5, a pill with conium and pil. hydrarg., or soap and opium, or Dover's powder; the bowels the while kept open by castor oil and manna, sulphur, and confection of senna." Iodine, so decidedly useful in the swelling left by acute inflammation or in some of the more recent cases of chronic, fails in the older ones. Still is it, in the form of iodide of potassium, worth a trial for a certain period. Laudanum injections give present relief.

Of the topical means, blisters to the perineum have been used. More decided benefit has been known to follow a seton in the perineum continued for some months.

Before dismissing the subject it may be well for me to direct your attention to a peculiar form of disease of the prostate gland, the treatment of which, although purely surgical, is comparatively simple and easy of attainment. Mr. W. Colles (*Dublin Journ. Med. Sciences*, 1846) describes the disease and the operation for its relief. If, in addition to the common symptoms of chronic prostatitis, "we introduce the finger into the rectum, and find the gland enlarged on either side, and upon pressing on one particular spot we feel the point of the finger sink, as if into a cavity, and particularly if we find this pressure causes the discharge, *per urethram*, of a quantity of this purulent fluid, to the amount varying from a few drops to a teaspoonful, we may hope to render an essential service."

The operation consists in simply incising the hollow soft spot, which will generally be found to contain some matter. This is performed by introducing a pharyngotome into the rectum, previously adjusting the lancet so as to allow of its only projecting from an eighth to half of an inch; the forefinger of the left hand resting on the soft part of the prostate and serving as a director to the instrument on the finger of the right hand.

In one or two cases, urine has passed by the rectum; the quantity, however, was in general very inconsiderable. The escape of this fluid gradually ceases in a week or two, never to return.

Mr. Colles has employed this operation in some few cases of obstinate gleet, where he had satisfied himself that there was not any stricture in the urethra, and where he felt the cavity in one lobe of the prostate, and pressure on this caused a flow of precisely the same kind of fluid as that which constituted the gleet.

Functional Diseases of the Male Organs of Generation.—Having completed my proposed sketch of the diseases of the organs of generation in the male, which involve structural changes, I shall notice next the diseases of function. These include undue excitement on the one hand, and retardations, obstruction or loss of the generative power on the other; regarding this last as the essence of the function for which the entire apparatus is prepared.

Satyriasis in the term expressive of inordinate venereal excitement. At first a manifestation of mere animal propensity, which the intellect may devise schemes for gratifying, it may become an erotic monomania, over which volition ceases to exert any control. Various internal or inherent causes have been assigned for this morbid exaggeration of a functional desire; such as a particular temperament, never by the way very clearly defined, prolonged continence, abstinence from sexual intercourse after it has been once indulged in, rheumatic or gouty diathesis, herpetic eruption, phthisis pulmonalis, leprosy, convalescence from certain diseases, as from the plague, &c. Of the external causes, the chief is ingestion of cantharides, spices, and heating condiments, unless under this head we admit libidinous spectacles, books, &c. No one of these causes, if we except cantharides, supposing them all to have at times given origin to the disease, can, however, be regarded in any other light than occasional, if not fortuitous or accidental accompaniments. The most remarkable cases on record are those detailed by Cabrol and quoted by M. Londe (*Dictionn. de Med. et de Chir. Prat.*), of men to whom large doses of cantharides had been administered by empirics for the cure of intermittent fevers under which they laboured. Most frequently the effect of large and irritating doses of cantharides is, to cause priapism, painful and prolonged erection, but without corresponding venereal excitement.

Looking at the history of most of the cases of satyriasis, we cannot resist the impression that this disorder is itself an effect of antecedent derangement of the health, and most frequently depends on lesions of parts remote from the genital apparatus. More especially should we be inclined to agree with Gall and Spurzheim and the phrenological school generally, in the belief of satyriasis, like less vehement excitation of the generative functions, being dependent on irritation and at times inflammation of the cerebellum. Spermatocele has been indicated, but on very insufficient foundation, as a precursor of this disease.

The *treatment* of satyriasis will consist in—1, a withdrawal of the presumed external causes whatever they may be; and, 2, recourse to cooling, and if the exigency calls for it, depleting remedies. Hence we should direct that the diet be exceedingly simple, to the exclusion of all spices or heating articles of any description, and under this head ought coffee to be classed. The bowels are to be freely acted on by calomel and saline purgatives; and unless there be contra-indication, owing to symptoms of cerebral or cerebellar congestion, an emetic might be a good means of derivation by its setting up a revulsive action in the gastro-hepatic circulation and secretions. The continued use of tartar emetic, carried to the point

of nausea, could hardly fail to subdue the morbid excitement of satyriasis. If a sudden sedative impression be required, the cold bath, or what would be still more effectual and for a while irresistible, a cold douche along the spine should be applied. In cases of greater violence threatening congestion of the brain or other parts, and amounting to true erotic monomania, venesection will be called for, and if necessary be followed by cups to the nucha, or leeches behind the mastoid processes, so as to relieve the oppressed vessels of the cerebellum. Cold to this region, as by cold cloths or ice retained in bladders, has a most tranquillising effect, worthy of remembrance, when we wish to remove either the disease now under notice, or nymphomania, the corresponding disease in the other sex. If it be thought advisable to apply cold to the parts of generation, this should not be continued long, as there is some danger of gangrene, which would be increased by the protracted application of cold.

Where the attacks are frequent, but of less intensity than I have supposed, in the cases justifying the measures now detailed, we must look to wise prevention. This will be found in active and somewhat fatiguing occupation of the intellect, and much muscular exercise out of doors, while a sober regimen is to be strictly persevered in. Fasting and restrictions carried so far as to prevent moderate gastric action are not to be enjoined. Their effect is to disturb the nervous system, and to foster morbid sensibility.

The natural means, as in sexual intercourse or coition, of calling into excitement the generative functions and producing a discharge of the seminal fluid, only become causes of weakness and disease by too frequent repetition. Of this latter evil there is little danger unless the palled senses are goaded by new and various appeals in promiscuous intercourse. Over-excitement produces in the case of the genital functions analogous effects to those caused by such kind of excitement in all the other functions of the economy—viz., a compound of weakness and irritability, which, exhibiting itself in various degrees, may end in entire impotence, utter atony of the parts.

Masturbation.—If the state of things just mentioned results from unbridled licentious intercourse with the other sex, still more probably and to a greater extent is it brought on by the unnatural and vile practice of solitary indulgence or self-pollution, called masturbation or manustrupation and onanism. Sometimes it is accidentally suggested to a young person by particular posture or dragging of the prepuce ; but far more frequently it is begun from imitation, as when the practice is disseminated through an entire school or other institution in which boys familiarly consort with each other. Various distressing effects on the constitution ensue from this practice, which is apt to degenerate into a confirmed habit, increasing in its requirements until its miserable victim hardly allows himself any cessation from its indulgence. Headaches of an anomalous kind, weakness of the senses, confusion of thought, palpitation, tremours, derangement of the digestive organs, shyness and aversion to society, and especially to that of the other sex, and depression of spirits, are among the prominent symptoms of the disease, for such, after a while, must we call habitual masturbation. In a further degree, it will be followed by marasmus, palsy in some form, and complete dementia, fatuity. Deplorable examples of this vice and of its consequences, just enumerated, are met with among the inmates of a prison. *A priori*, it may be said, as it was by Hunter, that no greater injury accrues from this kind of excitement of

the genital organs and consequent discharge, than from similar commotion and secretion in sexual intercourse; but facts are adverse to this view, and reasons have been given by a comparison of the phenomena in the two acts why there should be a difference in the extent of injury to the constitution and mind of those indulging in them. One of the most protracted and difficultly managed weaknesses, which itself causes farther disorder and debility, induced by masturbation, is seminal discharges without lascivious contact of any kind, and occurring both by night and by day, and often not preceded by any erection or noticeable prior excitement of the organs.

Spermatorrhœa is the name given to this frequent and profuse involuntary emission of semen, and to the various constitutional disorders either resulting from or associated with it. Although inordinate indulgence in coition and the settled habit of masturbation be its chief causes, yet is it susceptible of being developed under various modifications of irritation of the genital and even contiguous organs. Thus, gonorrhœa, phimosis, chronic eruptions on the prepuce, scrotum, and glans, certain disorders of the anus and rectum, such as fissures in the former and ascarides in the latter and hemorrhoids, have each severally been causes of spermatorrhœa. Considering, however, the relatively small number who are affected with this discharge, compared to those subjected to the alleged causes, we must, it seems to me, look for a particular predisposition, and this will be found in the debility following the excessive excitement of the organs from inordinate coition or prolonged habit of masturbation.

The immediate cause, the anatomical seat and condition, on which spermatorrhœa depends, is an irritable and congested state of that portion of the urethral canal more directly in relation with the seminal ducts and testicle. In this way we can explain why the disease should follow tedious gonorrhœa or chronic inflammation of the prostate, or even be occasionally produced by vesical calculi, all which give rise to or keep up the congestion of the mucous membrane of the prostate, urethra, and contiguous portion of the bladder. The irritation in some cases would seem to be radiated from the cerebellum, which we may regard, in the present state of our knowledge, as the normal exciter of the generative functions.

Of the two varieties, if we can call them such, of spermatorrhœa, daily pollution, and nocturnal pollution or discharge, the first is the most exhausting and unquestionably morbid. The semen is emitted when the patient is at stool and when he discharges his urine. In the first instance the emission takes place at the moment when the patient strains violently. The passage of the fluid along the urethra is often felt, and is accompanied by a voluptuous sensation at the moment of its excretion. The glans is found to be bedewed with a glutinous fluid. Sometimes the semen remains for a while in the urethra and escapes on the linen. You will not confound this fluid with the appearance of the thick mucous secretion from the glands of Cowper and the prostate, which is not unfrequently discharged by a person who strains a good deal to expel hardened feces.

If the involuntary emission occurs while the bladder is being evacuated, it is usually in the last expulsive efforts, owing, we may suppose, to the contraction of the perineal muscles and the ejaculatory muscles of the penis. Towards the end of the urinary discharge, it assumes an opaque, white, or albuminous aspect, which, of course, is caused by the semen,

and, in this respect, differs from the turbidness caused by opacity of the urine in vesical or urethral disease. The appearance of the semen in the vessel in which it was received is two-fold; viz., that of a starch-like liquor, occupying or forming the lowest stratum of the contents of the vessel; or that of brilliant granules, like grains of the substance called semoline. If this granular appearance were due to salts we should not see it until the urine had cooled.

We are still farther aided in our diagnosis by microscopic researches. If, *in limine*, we wish to ascertain whether the discharge be semen, and, if so, whether it possess a procreative quality, we have only to procure a single drop and place it pressed out on the object-glass. Its vitality and distinctive nature are evinced at once by our seeing thousands of animalculæ appear, resembling tadpoles in shape and moving about with great vivacity. These movements may be preserved for many hours if the fluid be kept from evaporating and at the temperature of the body. As the seminal fluid is, you know, a compound fluid made up of matter secreted from the testicle, the epididymis, vas deferens, glands of Cowper, and the mucous follicles of the urethra, the essential characteristics are to be looked for in that portion secreted from the testicle, and of these the existence of zoospermes or spermatic animalculæ is the leading one. If we wish to make our diagnosis sure, we cannot rely on the appearance merely of the urinary deposit, but ought to subject this latter to the field of the microscope. Premising the remark that these beings lose their vitality when immersed in the urine, we look next for their characteristic figure. M. Donné (*Cours de Microscope*, &c.) advises that the urine to be examined should be left at rest for some hours in a long and narrow vessel, and when the deposit is fully made that the urine should be drawn or decanted off. Successive drops of the deposit are then to be placed in the field of the microscope; and if there are zoospermes they will soon be recognised by their peculiar form. M. Donné assures us, that he has frequently taken a drop of semen on the point of a glass rod, and having mixed it with half a pint of water, he was still able to detect under the microscope several of the animalculæ. This writer mentions a fact of some importance, both in its relation to the present subject and to medical jurisprudence, viz., that, if these zoospermes, mixing with salts of urine, deposited at the bottom of the vessel, and imbedded in the crystals, be subjected to washing with water, and afterwards, if necessary to drive off the saline particles, to heat, they will still be found entire and unchanged in form. This conservation has been noticed after their delay for three months in either water or urine, and it presents a great contrast with the fragile nature of the infusoria.

In order to give full value to the sign derived from the presence of spermatic animalculæ in the urine, we ought to be able to say that their appearance is not met with in this fluid when discharged from persons in health. M. Donné asserts that this is, in fact, the case, unless when urine is passed soon after coition and draws with it in its passage through the urethra some minute particles of semen remaining in the canal. An interesting chemical characteristic of spermatic urine has been noticed by M. Donné, viz., that generally oxalate of lime is found in this fluid. Animalculæ are never seen in blenorrhagic, including the leucorrhœal or gonorrhœal discharges.

The *symptoms* of seminal weakness or of involuntary discharges are,

some of them, derived immediately from the state of the genital organs, some from that of the general system. Among the former we find mentioned inability to procure erection, or an imperfect or too brief erection; premature or tardy emission and want of sexual desire. It is customary, in connexion with these symptoms, to speak of the semen not being animalculised or procreative, so that impregnation is impossible; but M. Donné's observations would lead us to doubt the accuracy of such a belief. Even in the most watery and nearly stainless semen discharged by some persons at night, not only involuntarily but without erection or any sensation or after-recollection of the act, constituting what he calls white discharges, he has always found the zoospermes. On this point he is at issue with M. Lallemand, who speaks of having seen cases in which the semen was so impoverished that the animalculæ were incompletely developed, and reduced to globules without any caudal or other prolongation.

In addition to these signs there are others, also of a local nature, viz., great sensibility of the prostatic portion of the urethra, evinced when a bougie or catheter is introduced; and frequently, an irritability of the bladder, corresponding with that of the vesiculæ seminales; giving rise, in the former, to a morbid frequency in emptying the bladder, and, in the latter, to preternatural discharges.

The general or constitutional symptoms are various in the extreme; but for the most part are such as we might expect in dyspepsia and confirmed hypochondriasis. In fact, we may readily suppose that these diseases are actually present as secondary causes, themselves produced by the irregular and frequent excitations and perturbations of the nervous system. The pains are sometimes referred to the epigastrium, to one or other of the hypochrondria, or to the cardiac region; sometimes to the head—the aches of which are frequent and anomalous. Complaints of headache, apparently organic, in patients who came to consult him were the immediate cause of M. Lallemand's being led to the study of involuntary pollutions, which he soon found gave rise to these head affections. The expression of the patient is quite peculiar, and in a great degree pathognomonic; in the timid and suspicious look, and the quickly-averted yet half-inquiring eye, with paleness, emaciation, depression of the angles of the mouth and of the features generally.

Treatment.—Hitherto my remarks and descriptions refer to emissions of semen of a purely passive kind that take place during the day, and constitute the worst variety of spermatorrhœa. Nocturnal emissions at moderate intervals, although not quite so innocuous as some imagine, need not excite the same solicitude; but, as far as remedial measures are thought of, they will be nearly identical with those which I am about to detail for the other worst and passive variety. The treatment is local and general. Believing the state of the prostate mucous membrane and the contiguous parts to be in a state of congestion and irritability, we may in some cases practise with advantage local bloodletting, by leeches to the perineum or cups to the sacrum; and after this, or it may often be the primary remedy, is the cold hip-bath, cold enema just before going to bed, and if the strength will allow of it, twice a-day. Sedatives applied to the perineum, or introduced into the rectum as a suppository, will contribute to allay the exciting irritability. To meet this latter indication, tonics are the best remedy; they exert a peculiar effect on the nervous

system, more analogous to the narcotic than any other mode of action, equalise circulation, and break the chain of habit by which the disease is sometimes sustained even after a removal of the primary cause. Of this class iron in some cases, salts of quinia in others, are the best. Mere astringents give temporary relief; but by causing costiveness they subsequently seem to aggravate the disease. Camphor in small doses daily repeated, beginning with a grain and gradually increasing to four grains at a time, has been successfully administered. Extract of lettuce, in doses of two grains increased to eight, has had a similar effect. I think I have derived good effects from iodide of potassium, explicable by its action on the diseased mucous membrane and sometimes substance of the prostate itself. In nocturnal pollutions I have found benefit from extract of the dulcamara in pills, and more again from tartar emetic in small doses so as not to nauseate. Chalybeates in some of these cases are beneficial.

Agreeable to the division of treatment I ought to have spoken, under the head of local remedies, of the use of the caustic to the prostatic urethra, as recommended and largely practised by M. Lallemand (*Des Pertes Seminales Involontaires*). Analogy certainly was not wanting to suggest the use of the nitrate of silver, nor to explain the manner of its beneficial action. In inflammation and irritability of other mucous surfaces, as of the conjunctiva, in certain irritable ulcers which, in their secreting and other properties at the time, are analogous to the mucous, we have examples of the indirectly sedative and almost tonic effect of this salt directly rubbed over the diseased surface. Of more recent but still satisfactory experience is its use in certain morbid conditions of the stomach, as in gastrodynia, and of the bowels in enteralgia and in some cases of chronic dysentery, in which the irritation of the mucous surface calls the subjacent muscular coat into irregular spasmodic and painful contraction. But whatever value we may attach to analogy or *à priori* reasoning, the real importance of a new proposition must be tested by experience; and in the case of cauterization of the prostatic urethra, this is quite large, though far from being conclusive, in its favour. The practice had been occasionally resorted to by Home for cases similar to those in which it is now recommended, but from a different motive. This surgeon used the caustic to remove spasmodic stricture, on which he thought the involuntary emissions depended.

Mr. Curling (*op. cit.*) speaks with confidence of the beneficial effects of this mode of treatment, and gives a figure and description of M. Lallemand's instrument, which is the best for applying the caustic. "In general the emissions cease entirely after one or two applications of the caustic, though it is sometimes necessary to make three or four before they are completely arrested." Mr. Phillips (*Med. Gaz.*, Dec. 1842, Jan. 1843) adduces cases, preceded by some general remarks, illustrative of the efficacy of this practice. In four cases out of five, one application of the caustic sufficed. In the sixth case the rectum was the primary and sustaining seat of the irritation, the morbid condition of which being rectified, the seminal discharges ceased. The following cautionary advice of Mr. Phillips respecting the use of the caustic will be valuable to those of you who may find it necessary to have recourse to this mode of treatment. "It may be asked," says the writer, "why pass the instrument into the neck of the bladder at all, and why state that an inch in front of the neck

of the bladder is a point beyond which the caustic instrument shall not penetrate? Why, again, the spot where acute pain is indicated, during the passage of the bougie, may not be regarded as the proper place for applying the caustic? In many persons the urethra is very sensitive, and the patient complains so frequently, that a little difficulty is experienced in deciding with that test; but when you have ascertained that from the orifice of the urethra to the neck of the bladder is seven inches and a half, and when you farther find that in the passage of the bougie the most acute pain was experienced a little more than six inches from the orifice, you can then, with much confidence, cauterise the space between the sixth and seventh inches, satisfied that the orifices of the ejaculatory ducts will not escape. It may be thought by some persons that all these precautions are unnecessary; this may be true; but off-hand surgery I dislike, and if in one case, by the neglect of such attention, I cauterised the neck of the bladder, and in another case applied the caustic entirely in front of the seat of mischief, my conscience will not acquit me of blame.

"The foregoing precautions having been taken, the caustic must be exposed and slightly revolved along the floor of the urethra, for half a minute without fear of harm, and rarely does it excite much pain—very rarely, indeed, does the patient complain of it." It may as well be stated here, that the space which M. Lallemand usually cauterised is from the neck of the bladder to the membranous portion of the urethra; but sometimes he brushes over the internal surface of the bladder itself to a greater or less extent. He cautions us strongly against repeating the operation too soon, and advises us to wait two or three weeks before we re-apply the caustic. Many of his cases appear to have been cured by a single application.

In the *British and Foreign Medical Review*, for April, 1843, there is a good practical article on the subject now before us, in which the writer adduces his own experience and that of other surgeons with whom he corresponded on the subject, in favour of cauterization. As an occasional substitute for the application of the solid nitrate of silver, one of them recommends an injection of the solution, another the cautery to the external orifice of the urethra and for about an inch down. Mr. Phillips has no confidence in the injection of the nitrate, and its application to the orifice will be found to be more painful than when the part affected is directly touched with it.

The *Pulv. Cubebis*, in small doses of from gr. xv. to gr. xxx. combined with the tincture of henbane, taken twice a-day, by its influence on the urethra, materially aids the cure of the disease. In very slight cases this remedy and the occasional introduction of a catheter or bougie are sufficient to correct the morbid condition and sensibility of the mucous membrane without the caustic.

Among the unpleasant effects that sometimes ensue immediately from the use of the caustic are pain and a slight discharge of blood; but they disappear at the end of from twelve to forty-eight hours. In one of M. Lallemand's cases, they are described as lasting three weeks; but this is a rare exception. Syncope occasionally results. The conversion of the emissions from *diurnal* into *nocturnal*, and the fact of their being once more accompanied with erections and pleasurable sensations, may be regarded as a sign of the good effects of treatment and prospect of cure.

I shall conclude by repeating Mr. Curling's description of the instru-

ment and his mode of using it, which, taken in connexion with the observations of Mr. Phillips already quoted, will make you masters of the affirmative side of the subject.

"M. Lallemand's instrument consists of a slightly-curved platina canule or tube, rather smaller than a middle-sized catheter, through which plays a caustic holder, having at its further extremity a narrow groove, eleven lines in length, for the purpose of receiving the caustic. After filling the groove with the nitrate of silver by fusing it over a spirit lamp, the caustic becomes so securely fixed that there is no danger of its escaping. At the other end there is a sliding screw or stop, by which means the application of the caustic may be limited to any extent less than the length of the groove which contains it. In employing this instrument I proceed as follows:—Having regulated the caustic holder so as to admit of nearly the whole of the groove being uncovered, and having closed the instrument so as to conceal the caustic, I introduce it well oiled as far as the prostatic part of the urethra, its arrival there being easily ascertained by the pain experienced by the patient, and by my being able, after the instrument is depressed and has passed the triangular ligament, to carry it freely onwards. I then thrust forwards the caustic holder, and after passing it once or twice backwards and forwards instantly close the apparatus and then withdraw it. At one time I used to employ a straight instrument, which may generally be introduced without difficulty; but one slightly curved is rather more convenient."

I have said that you are now masters of the affirmative side of the practice of cauterization in the prostatic urethra for the cure of spermatorrhœa. On the negative side I will only adduce the names of MM. Civiale and Donné. M. Civiale (*Mem. sur l'Emploi des Caustiques dans quelques Maladies de l'Urètre*) is almost as decided in his reprobation of this remedy as M. Lallemand is in its favour. He denies that the caustic in many cases reaches the part to which it is said to be applied, and when it is, it produces the alleged effects. He admits the good faith of those who report cures; but he explains by saying, that the parties treated by caustic apply afterwards to a different professional man for the disease brought on after a while by caustic. He is adverse, also, to the use of caustic for stricture of the urethra, which disease is, he thinks, always better treated by dilatation than by cauterization. M. Donné (*op. cit.*) assures us that the cases which have come to his knowledge are not favourable to M. Lallemand's practice; he has seen persons treated by cauterization, some even cauterised by the professor of Montpelier himself, who were not cured. M. Donné prefers the general or the more distinctly recognised therapeutical means already stated, and particularly cold baths.

A well-devised regimen is of the highest importance in spermatorrhœa. It should be such as to increase the tone of the system without excitement; and hence all substances which stimulate unduly the gastro-intestinal surface and by sympathy the genito-urinary organs must be sedulously withheld. Spices and other condiments have often a strong action on the rectum, through which, even if they have not a coincident one on the neck of the bladder, they irritate the genital apparatus. In this way costiveness is an occasional exciting cause of seminal discharges. All alcoholic liquors should be abstained from, and coffee also is of the prohibited class. Tea is indirectly hurtful by interfering with the soundness of sleep, and thus increasing the chances of nocturnal emission.

Exercise, already indicated as one of the remedies, both preventive and curative, for masturbation, is entitled to great confidence in spermatorrhœa. Of course it must be regulated by sound discretion, so as not to cause a strain upon any part of the muscular apparatus and particularly of the back, which has itself at times given rise to the disease. Change of air and of scene, and particularly change from town to country, and the use of sea-bathing will often restore the patient to health. The pantaloons and drawers should be loose enough not to compress or expose the parts to friction of any kind in walking or riding or in still more active exercises. In the case of young persons the dress about the pelvis should be as cool as possible compatible with the avoidance of other diseases of a catarrhal or rheumatic character. At night, the bed-clothes ought likewise to be relatively light, so as to induce almost slight feeling of chilliness on the part of the patient, who, it is understood, of course, in all these cases, sleeps on a hair or straw mattress.

Impotence.—The loss of procreative power is either temporary or permanent. In the first it may be caused by mental emotion, disorder of the organic functions and more especially of the kidneys, stricture of the urethra, certain acute diseases, excessive indulgence in venereal pleasures, masturbation, the prolonged use of narcotics. Of the permanent causes we may enumerate paraplegia and congenital deficiency of the penis; although, in reference to this latter, it is not easy to say in what the defect shall consist, for if the semen can be excreted at all and deposited in the vagina, conception is liable to follow. Original deficiency or subsequent loss of the testicles, for it must be of both these glands, is necessarily a cause of impotence. Under this category we place, also, early and excessive sexual indulgence and masturbation, by which the virile power is lost in the maturity of life.

The *treatment* of impotence will of course be regulated by the cause. If dependent on some known organic disease, as of the testicle or urethra, this must be removed, or on functional disorder of other organs, as of the digestive or renal, it is to be carried off by appropriate means. General languor, debility from prior excesses, implies, as a preparation for its ultimate cure, if this be still possible, a cessation from those criminal indulgences. The medicinal means for farther restoration will be at first a hot, then a warm douche along the spine and sacrum, liniments or small blisters to the nucha and mastoid processes, electro-galvanism and the sedulous administration of chalybeates alternating with vegetable bitters. Prompt but temporary restoration of virility has been procured by the use of nux vomica both in cases of impotence with paraplegia and where no lesion of the nervous centres existed.—(*Trousseau et Pidoux, Traité de Therapeutique et de Matière Médicale*, tom. ii., p. 792.)

In cases in which the weakness depends upon mental emotion or on the imagination, the means will sometimes suggest themselves to the patient and sometimes be advised by the physician. Both parties will get useful hints on this point from the quaint, egotistical, always amusing and often instructive Montaigne.—See Book i., chap. xx. of his Essays.

Hunter has some useful remarks on this subject in Chap. xii. of his work on the Venereal Disease.

LECTURE LXXI.

DR. BELL.

DISEASES OF THE FEMALE ORGANS OF GENERATION—Organs included in the genital apparatus of the female—Selection of the more important diseases—Anatomy does not indicate the vital actions and sympathies of the uterine system—Physiologically considered, the changes under functional exercise are diversified and marvellous—Three functions or stages of function of the uterus—What general anatomy points out—Genito-urinary system of mucous membranes—Connexion between the uterus and vagina and other contiguous organs—Importance of *cervix uteri and os tincæ*—Knowledge of these things aids a comprehension of uterine diseases, and suggests better treatment—Examples—Attention not to be fixed on the uterus alone in studying any of its diseases—Diseases of the genital apparatus of three kinds; neuralgia, textural or organic, and functional—Means of better diagnosis; by the touch and with the aid of the speculum—Both these indispensable in every fixed disease of the uterus.—HYSTERALGIA—*Symptoms*—Coincident neuralgia of the vagina—Accompanying phenomena—*Anatomical character and causes*—*Diagnosis*—*Treatment*—Result uncertain—Occasionally, if congestion be present, local bloodletting—Nitrate of silver to the cervix—Simple neuralgia to be treated by chalybeates and narcotics—also nitrate of silver, with some narcotic—Ergot—Use of the pessary—Remedies when dysmenorrhœa is present—Rest and recumbent posture, all-important in hysteralgia.—*Neuralgia of the Vagina*—Its *treatment*.—*Neuralgia of the Ovaries*.—AMENORRHŒA—Two forms, that of *retention* and that of *suppression*—Amenorrhœa after puberty—Treatment depending on presence of plethora or anemia; in the first, depletion and revulsion; in the latter, chalybeates and other tonics, as in chlorosis.—*Suppression of the Menses*—Acute or recent and chronic—Causes of acute suppression—Effects serious and alarming—Treatment by free depletion, in some subjects of a full habit—Purgatives and anti-spasmodics in spare and delicate women.—*Chronic Suppression*—To study the functions generally—It may be either cause or effect of constitutional disorders—*Symptoms*—*Treatment*—Sometimes purgatives, or blue pill, chalybeates and purgatives—Sulphate of potass and aloes or rhubarb—Emmenagogues so called—The best are preparations of iron and of iodine, and of mercury and ergot—Various stimulants to vagina and uterus—Vaginal injections—Travel, and mineral springs.

A DESCRIPTION of the diseases of the genital apparatus of the human female includes a consideration of the uterus, vagina and external organs, and of the ovaries and fallopian tubes; but as all these are not equally interesting to the practitioner, nor equally liable to present themselves for his action, I shall restrict myself to those which I believe to be the most important by their functional activity and consequent liability to disease. Hereafter, in a separate work, I hope to be able to redeem the promise made elsewhere, to give an extended view of the whole subject, with special reference to the hygiene of females.

Anatomy aids us little, if at all, in drawing any inference respecting the importance of the apparatus in question. If we except the plexus of veins of the uterus, there is no remarkable vascularity, nor is the supply of nerves considerable—two tests these of great functional activity and power. The small, hard, and apparently semi-fibrous structure of the uterus itself—I am speaking now of the unimpregnated one and anterior to menstruation—gives little evidence of active vital properties or of extended sympathies. But when once the first function of the uterus is manifested by the appearance of the menses, and physiology becomes our guide, how great and marvellous the change wrought in the whole organism. In the second function of the uterus, or pregnancy, the reception of an ovum and the

development of a new being, arise another series of new and diversified actions modifying every function and eliciting almost every modification of sensibility and sympathies. Finally, in that still other state of function or expulsive action of the uterus by which the new being is born, we have cause to marvel at a new series of movements. Nor do the secondary and remote but remarkable phenomena end here. The still excited uterus calls into action the function of the apparatus for lactation, and widens the sphere of sympathetic actions. From the date of the second series of functional exercise in pregnancy, the nerves of the uterus which are supplied from the great sympathetic and sacral nerves become gradually enlarged, so as to impart a higher and more active range of organic movements and sensibility to the organ. But still more, with the enlargement of its system of nerves, is that also of its coats, bloodvessels, and absorbents. It is chiefly by the influence of these nerves that the uterus performs the varied functions of menstruation, conception, and parturition; and it is solely by their means that the whole fabric of the nervous system sympathises with the different morbid affections of the uterus.

So far we see the means by which the uterus more directly establishes its relations with the organs of the body; but there are certain points of resemblance between parts of its structure and parts in other remote viscera, coming under the head of general anatomy; and also certain connexions between it and its annexes and the contiguous organs, which you must carry along in your minds in order to be able fully to appreciate the pathological phenomena, direct and remote, of the uterine system, and to understand the indications for the cure of its diseases. It behooves you to know that the vaginal canal, extending from the uterus to the external parts, is lined with a mucous membrane, continuous in one direction with the entire lining membrane of the uterus and fallopian tubes, and in another with the bladder, constituting that division of the system of membranes in the female which Bichat designated by the term genito-urinary. In the male it forms a more directly continuous system along the canal of the urethra in the bladder, and thence by the ureters to the pelves of the kidneys; the only deviation being along the vasa deferentia to the testicles. Like other divisions of the mucous membranes, the genito-urinary has its direct and remote causes of excitement and disease; its catarrhs, its profluvia, its morbid sensibilities and associated irregular muscular contraction or spasms. As respects the different degrees of sensibility and organic properties possessed by the different parts of the vagino-uterine structures, it is well to know that the cavity of the vagina has these more active than the cavity of the uterus proper; but that the *cervix uteri* with its canal containing compound mucous ducts or lacunæ, and its termination the *os tincæ*, are both more sensible and more irritable, more prone to affect the functional exercise of the uterus and to modify its diseases than any other part of the system. The *os tincæ* particularly is the sentinel of the uterus, which gives alarm, and sometimes is the chief sufferer in disease of the organs. In pregnancy, also, no matter how great may be the growth of the gravid uterus and how apparently prepared it may be for the expulsion of the fœtus, this process cannot be accomplished, if at all, without great risk of loss of life itself to the mother, unless the cervix uteri have been correspondingly and fully dilated and thinned so as to allow of the passage along it of the new being. In menstruation, although the changes are not as remarkable, yet still they are chiefly evinced by some variation in the state of the *os tincæ*.

A knowledge of the anatomical connexions between the vagina and uterus and the adjoining organs is essentially necessary to a clear understanding of the symptoms of the uterine disease. When we learn, for example, that the vagina adheres firmly by cellular membrane to the urethra, the bladder, and the rectum, we cease to be surprised that it should both impart to and receive irritation from these organs. So, also, the position of the uterus is to be noticed between the colon behind and the bladder in front; the latter being in direct contact with its cervix. When a female complains of a frequent desire to urinate, and asks you for a remedy to relieve or remove the disorder, you will, with preliminary anatomical knowledge, be induced to suspect that the irritation of the bladder is here but secondary to that of the uterus. So, on the other hand, when complaint is made of pain in the region of the uterus, without any other symptom of organic affection or correspondence between it and menstruation, you will take pains to ascertain whether the patient have suffered from costiveness; and should this be the case you will administer a pretty smart purge or two, instead of opiate or anodyne or anti-spasmodics, and you will generally carry off or greatly mitigate the uterine pain. Hemorrhoids, ascarides, fissure of the anus, may, you can now readily conceive, become so many causes of vaginal irritation, manifesting itself in leucorrhœa or of other uterine disorder with deranged menstruation. And again, when a female patient complains of pain in the groins and somewhat diffused in their vicinity, you must remember that the round ligaments of the uterus, composed of some fibres with bloodvessels and nerves, pass down through the abdominal rings and are lost about these regions.

By its direct anatomical connexions, its portion of the system of mucous membranes and its relations with other organs through the nerves, the uterine system has, we may readily suppose, numerous and diversified sympathies with all parts of the animal economy, and must be impressed disadvantageously by derangement of function of any one of these, as in its turn it will act on them by its own primary disorders. There is, therefore, no disease of the uterus, functional or even organic, in which the attention can be exclusively fixed on this organ alone, to an oversight of the state of any other one.

After some study of the diseases of the genital apparatus of the female, we discover that they are of three kinds: viz., 1st, the neuralgic, or that in which the neuropathic state prevails; 2d, the textural or organic, with its consequences of morbid functions; and 3d, the functional, consisting chiefly of abnormal or defective secretion. One of the first, and indeed the most difficult part of the diagnosis of uterine diseases, is to distinguish perverted and otherwise morbid sensibility from inflammation and its disorganising processes, and both of these from simple disorders of the secretory function. In some instances, as in dysmenorrhœa, we have all three combined; excessive pain, membranous matters extruded, and secretion considerably perverted.

Before I speak, even in a cursory manner, of the different diseases of the uterine system embraced in these three divisions, I must say a few words on the means of studying their symptomatology and enlarging their diagnosis. Among these means are the use of the senses of touch and sometimes that of sight, or in other words, the examination *per vaginam* and introduction of the *speculum uteri*. By the first we learn the tem-

perature, hardness or softness, extent of fulness or tumefaction of the *os tincæ* and *cervix uteri*, and, if necessary, of the body itself of the uterus; also its actual and relative position, and whether it is displaced: points these which it would be impossible for us to learn by other means, or the still common fashion of asking the patient to describe her feelings, and of feeling her pulse, looking at her tongue, &c. By the aid of the speculum, so as to allow of our seeing the mucous surface of the vagina and the mouth and neck of the womb, we are enabled to tell whether there be redness and tumefaction, or ulceration; in fine, the state of the parts indicative either of inflammation or of specific disease. The same channel through which we inspect the parts allows also of the introduction and application of leeches, or, if required, of caustic, &c.

In the existing state of our diagnosis and improved treatment of diseases of the uterus and vaginal passage, no physician can pretend to do his duty to his patient or justice to himself who is not able to turn these precious means to account. Beyond some obviously necessary prescription to regulate the bowels and to allay febrile excitement, not a step can be usefully taken in the treatment of any settled or of recurring disorder of the uterus without recourse to the touch at any rate; and if this do not satisfy the doubts of the physician, he must avail himself of the additional aid of the speculum. It is chiefly in a more ready resort to these aids and somewhat greater facility from practice in their use that the city physician or professor has any claims to confidence superior to that of his professional brother in the country. On the score of greater knowledge of the resources of therapeutics or judgment in applying them, the former cannot lay claim to superiority.

Hysteralgia—Irritable Uterus.—This is the chief neuralgic affection of the genital apparatus. The term (from υστερα, uterus, and from αλγος, pain) is sufficiently expressive. Hysteralgia may be original or symptomatic; the sole disease, or a troublesome addition to another and more serious one, such as metritis, or inflammation of the womb, or a fibrous tumour of this organ. It is characterized by severe pain before and during menstruation, increasing in severity for some days after the discharge has ceased; and independently of the periods in question, frequently attacking the lumbar and hypogastric regions. The pain is increased by exertion and mental emotions, and speedily relieved by the recumbent posture: a perfect interval of ease rarely occurs. Sometimes violent spasm accompanied by a smarting and stinging sensation attacks the sphincters of the vagina and rectum, particularly in the sitting posture: the excessive sensibility may even extend to the pubic region and abdominal parietes. Sometimes the whole of the vulva and the vagina, especially at its orifice, are slightly swollen; and when the disease is thoroughly confirmed, any movement by which the neck of the uterus is brought into sudden, jarring contact with the surrounding part excites severe suffering. Hence defecation, if it be difficult, and even the evacuation of the bladder, are most painful operations. Leucorrhœa is a frequent attendant.

Hysteralgia may replace rheumatism in other parts, and sometimes accompanying the gouty diathesis, and is often associated with, as we must in such cases believe it to be dependent on, deviations or malpositions of the uterus. This organ is represented to be almost always a little lower in the pelvic cavity than natural, and by some authors it is said to be constantly prolapsed. The former of these opinions expresses more nearly

the fact; but to it there are exceptions. It has happened to me, before now, to give attention in cases in which all the usual symptoms of *prolapsus uteri* were present, and yet, on examination *per vaginam*, I found the womb in its place, and even quite high up. But the touch revealed the true character of the disease by apprising me of the great sensibility of the os tincæ and cervix at the time. In irritable uterus or hysteralgia, the cervix is often somewhat shortened and expanded, and occasionally puffy and swollen, and the lips of the mouth (*os tincæ*) are more than naturally closed. The speculum often show a redness of the cervix; and at times a dusky-red state of the vaginal mucous membrane of the neck, associated, perhaps, with abrasion of surface or patches of superficial ulceration.

Anatomical Characters and Causes. — The opinion advanced by Dr. Gooch, to whom the profession is indebted for the first description of the disease, that irritable uterus is purely neuralgic and unconnected with organic change and formation of new products, has not been sustained by subsequent observations. The constitutional sympathies are sometimes slight; the pulse being natural, the tongue clear, and the appetite good. But in other cases there is vascular excitement, with a quick, compressible pulse, which in plethoric women is harder and fuller. Evening fever and its concomitants, also headache and dyspepsia, on occasions, add to the distress of the patient. The general health is more liable, however, to suffer from the confinement to the house, and mostly to a sofa or bed, and consequent privation of fresh air and exercise, and from the use of narcotics to allay pain, than from the hysteralgia itself. That the disease is closely allied to inflammation or congestion seems the more plausible opinion, since we have most of the phenomena of one or other of these morbid states present; and, moreover, the treatment, in some cases at least, is that applicable to chronic inflammation. Dr. Ingleby (*Clinical Lectures on Diseases of the Puerperal State*) has kept notes of seventeen cases of irritable uterus, three of which were unconnected with any appreciable cause; one was attended by descent of the ovary into the uterus; one by descent of the uterus soon after marriage; one originated in extreme distention of the uterus during pregnancy; seven followed delivery, and four were connected with fibrous tumour. Dr. Ingleby adds a remark, interesting in connexion with the symptomatology of the disease: viz., that in several of these cases there was one prominent—excessive irritability of the vagina. One of the most distressing cases of neuralgia of the uterus which this writer met with, arose from an enormous distention of the organ by the liquor amnii in connexion with an acephalous fœtus. So severe were the symptoms at the sixth month of pregnancy that it was determined to induce labour by puncturing the membranes. Great and instant relief followed the operation, but the acute sufferings returned soon after delivery and continued for many months. According to Dr. Ingleby's experience, the irritable uterus frequently depends upon a severe labour. Among other causes have been enumerated a too powerful injection for the cure of leucorrhœa, and cold ablution of the vulva, and also a sudden stoppage of the menstruation from alarm. Sexual intercourse is undoubtedly an occasional cause; and it will be found, on inquiry, that some of the greatest sufferers from the disease are those wretched beings who live by prostitution. But, still, we cannot overlook the fact of this disease being not infrequent in the virgin state.

In the *diagnosis* of hysteralgia the chief difficulty is to distinguish it from

chronic inflammation, supposing, what is not always the case, that they are different diseases. Its affinity to rheumatism is obvious. We must, in forming our opinion, be guided both by the history of the case, its duration, and its being associated often with menstruation, and the disproportion between the symptoms and the degree of tumefaction of the vaginal portion of the womb. In chronic inflammation, we rarely find tenderness of the vagina even near the cervix, which latter is sensitive in this disease as well as in neuralgia.

The *treatment* of hysteralgia will be undertaken with a confidence that relief can be afforded, but without an assurance of a permanent cure. This latter result can never be procured unless any obvious exciting cause, such as sexual intercourse, be abstained from. The indications are twofold: 1st, to mitigate, and, as far as any textural change is present, to remove the local lesion; and, 2d, to improve the general health and invigorate the constitution.

If there be redness, heat, and congestion of the *cervix uteri*, a few leeches applied by means of the speculum will give, I know from experience, great and prolonged relief. Scarifications by a cornea-knife passed down the speculum, seven or eight in number, and crucial in direction, so as to abstract three or four ounces of blood, is also an excellent remedy. Where, in addition to redness and tumefaction, there is some abrasion of surface or minute ulcers, nitrate of silver should be used after the leeching, and in some cases will of itself suffice. It may be applied either in its solid state by touching the parts affected, or in solution and introduced by injection. The first is the preferable method when a speculum is at hand.

But when the disease is clearly neuralgic and the uterus and its cervix are small, dry, and as it were shrivelled, no benefit can be promised from leeching or scarification. In this case as well as in the other variety, after local depletion recourse is had to the various remedies applicable to neuralgia, such as chalybeates with narcotics, to the exclusion, however, of opium. Where dysuria prevails, as is often the case, tincture of the chloride of iron is the best form, and if necessary tincture of hyosciamus may be added. Dr. Ingleby recommends as a substitute for opium a combination of extract of henbane, camphor, and ipecacuanha, in doses of from four to five grains of the two former and half a grain of the latter. The extract of belladonna sometimes displays remarkably soothing effects in the dose of a grain or a grain and a half to be taken at bed-time, or a smaller quantity to be taken at intervals of six hours.

In intermittent neuralgia of the uterus, sulphate of quinia or infusion of bark gives prompt relief; or one may give extract of hyosciamus, wine of colchicum seeds, and extract of cinchona combined. Preferably to any of the substances yet mentioned in the cure of hysteralgia is, according to Dr. Ingleby's experience, the nitrate of silver, varying from one-eighth of a grain to half a grain, combined with three or four grains of the extract of conium.

In some cases of what Duparcque calls congestive engorgements of the neck of the uterus, which I have known to be associated with neuralgia, I have used on his recommendation ergot of rye, in doses of five grains two or three times a-day, with very marked, but I must add temporary benefit.

There remains a remedy to be yet mentioned, that would seem to be illy calculated for this disease, in which the slightest contact of a foreign body often gives exquisite pain. I refer now to the use of the pessary.

In some cases in which the *os uteri* had sunk low in the pelvis and even rested on the perineum, and in which the patient had suffered for years, the introduction of a small-sized pessary has been followed by striking and permanent relief. The benefit on these occasions might be attributed to a renewal of the dragging of the uterus, but in others, and I have had such cases myself, the pain and irritation were removed by the introduction of the pessary, although there had been little or no displacement of the uterus. May we not then refer the relief to sustained pressure of the instrument on the lips and neck of the uterus, which we sometimes find serviceable in other forms of neuralgia. On this principle, and from the analogy of the benefits of the bougie in irritable and strictured rectum and urethra, some have used this instrument in irritable or neuralgic vagina. Regarding the latter, however, as for the most part symptomatic of irritable uterus, the practice, to which other objections will naturally and properly apply, can hardly be called for, except in some peculiar and rare cases.

When neuralgia of the uterus is associated with dysmenorrhœa, the warm or the tepid bath and warm pediluvia are of service: but in other cases not so connected, the cold bath is sometimes beneficial. Aware of the association between irritation of the spine, or rather of the intervertebral portion of the spinal nerves, and neuralgia of remote parts, an examination should be made of the spine on both sides, and if any evidence of morbid sensibility be detected, a few leeches or a small blister ought to be applied to the part.

Rest in a recumbent posture is essentially necessary, both for the avoidance of pain and to facilitate the operation of direct treatment. If possible, however, the patient should have at the same time the enjoyment of a fresh and pure air; and if circumstances allow of it in the warmer season, the advantage of sailing, or the passive exercise of riding on a railroad.

Neuralgia of the Vagina is frequently associated with that of the uterus, and like the latter would seem to be a form of rheumatism or of gout; being an evidence of the gouty or rheumatic diathesis in females. The vagina in some cases is exceedingly sensitive and painful to the touch, so much so as that even the sitting posture is not without pain, and the motion of a carriage, and walking itself, are almost intolerable. Symptoms of congestion of the organ, which feels full, swollen, and, as it were, stuffed up, and of the pelvic viscera, accompany the vaginal pain.

The treatment is analogous to that of hysteralgia. Pain will be relieved by the use of some emollient and sedative injections, such as the poppy-head decoction, and, if there be associated discharge and evidence of inflammation, it may be conjoined with a solution of sugar of lead. At a later period, the pain persisting, a trial might be made of nitrate of silver, applied either in solution, by injection, or in its solid state, by lightly pencilling the vaginal surface.

Neuralgia of the Ovaries has not been described; but taking into consideration the seat and character of the pain, we cannot doubt that this variety prevails more than is generally supposed. When the diagnosis can be established we should use the remedies found serviceable in other forms of neuralgia, several of the more active of which have just been detailed.

I now proceed to another of the three divisions, laid down by me, of the

diseases of the uterine system; but I shall deviate from the order in which they were enumerated to speak first of functional diseases of this system. These will consist of deviations by privation or excess of the function of the uterus and its appendages in unimpregnated females; for, at present, my remarks will be restricted to this class of subjects. The deviations from the rhythmical function of the uterus called menstruation, are—1. Amenorrhœa, in which this discharge is wanting. 2. Dysmenorrhœa, in which it is deficient in quantity and otherwise abnormally altered; and, 3. Menorrhagia, in which it is in excess.

Amenorrhœa.—This may be briefly defined as the absence of menstruation. It consists of two forms: 1, *the amenorrhœa of retention;* 2, *the amenorrhœa of suppression.* The first of these again includes three varieties; viz., amenorrhœa dependent on congenital deficiency, malformation or structural disease of the genital organs; that which, independently of deficiency or malformation, proceeds from a slow or a partial development or an entire absence of puberty; and, finally, the amenorrhœa after puberty is fully established. The amenorrhœa of suppression, where menstruation, having existed for perhaps a length of time, has, independently of pregnancy or lactation, become suppressed, includes two varieties—viz., recent or acute suppression and chronic suppression.

When amenorrhœa occurs from congenital deficiency, art can do but little; if the ovaries are wanting, nothing at all; for, as your physiology will teach you, we have now good reasons for believing that all the phenomena of menstruation depend upon the ovaries, and that at each period a Graafian vesicle bursts and its contents escape. The removal or destruction of both ovaries is followed by the absence of menstruation. Imperforated hymen and occlusion of the os tincæ are not causes of amenorrhœa, but rather of obstructed excretion or discharge of the menses.

In the circumstances of tardy puberty connected with slow and imperfect development, time is the chief element of relief, aided by invigorating nutritive life and imparting additional tone to the system. Amenorrhœa, after puberty is fully established, will be treated according to the predominance of plethora or of anemia, and the state of the other functions. In the first kind, we deplete by venesection or by cups over the loins and sacrum, mercurials and saline purgatives and reduced regimen, while the exercise should be regular and carried to the point of fatigue. All the excretions, pulmonary, renal, and cutaneous, are to be maintained and moderately increased. Exercise on foot will have this effect on the first and last, while the second is to be kept up by mild diuretics and watery vegetables. No attempt should be made, either by drastric purgatives or by supposed specific emmenagogues, to act on the uterus until plethora and vascular excitement be reduced and the functions of the body at large brought to a healthy standard. This general result obtained, the special one or procurement of menstruation will generally follow. Failing in this expectation, the requisite local afflux may be obtained by leeches to the labia, inner surface of the thighs, the groins, and os uteri, followed, if need be, by the warm or vapour hip-bath, continued for half an hour at a time, enemata of warm water, and injections of the same into the vagina. Leeches to the mammæ sometimes bring on the menses. Symptomatic or secondary amenorrhœa will be treated by remedies addressed to the primary diseased viscus.

The regimen should be simple and in greater proportion of vegetable

matters, with an abstinence from spirituous or vinous drinks and malt liquors.

Amenorrhœa, on the other hand, in delicate and irritable subjects, and in those prone to hysteria, will require a different treatment. Often a series of symptoms present themselves designated by the term chlorosis, of which I shall soon speak and describe its pathology and treatment. Nearly all that is said there will apply to the present kind of amenorrhœa; and I shall not anticipate now, except to remind you, that the chief pathological condition is an impoverishment of the blood by the great diminution of its globules, and the chief therapeutical indication is to restore them and its lost colour. We fulfil this latter by the regular and prolonged use of chalybeates, generally combined with purgatives—often with vegetable bitters.

Suppression of the Menses, or the amenorrhœa of suppression, was stated to be recent, or acute and chronic. I shall speak of the former first. The two great causes of acute suppression are mental emotions and the application of cold. Sexual intercourse during menstruation, fever, idiopathic or secondary, hemorrhage or venesection, severe purgatives or emetics, iced water and ice cream, are auxiliary and less frequent causes. In a young and middle-aged woman, fleshy, of a plethoric habit and ruddy complexion, the immediate suppression of the secretion will be followed by congestion if not by inflammation. While in a woman, delicate, thin, and spare, of sallow aspect, and highly nervous, the more probable consequences are irritation, attended by spasm and paroxysms of severe pain, with intervals of ease. In the former case there will be sensations of weight and pain in the head and loins, tension and acute and constant pain in the region of the uterus, which is aggravated on pressure, short breathing, a hot skin, and a full, hard and rapid pulse; occasionally there will be violent hysteria and not seldom delirium. Apoplexy, hysteria approaching to epilepsy, partial and transient paralysis, are occasional consequences of suddenly suppressed menses. (Ashwell—*Practical Treatise on the Diseases peculiar to Women*, Part I.) Inflammation of the uterus and of the ovary ought to be added to this enumeration.

Treatment.—Time is not allowed us, in the alarming emergency of suddenly or acutely suppressed menstruation in full habits, to attempt to restore the discharge by emmenagogues so called. Venesection should be immediately practised and repeated in a short period; or if an impression has been produced by the first bleeding, leeches to the uterine region, as over the pubes, or cups to the sacrum, will suffice. Tartar emetic with a little opium or calomel, and opium may be given every two hours. The warm bath, in which the patient ought to remain half an hour, will be a useful auxiliary to the more active treatment just detailed. Much distress and agitation still remaining, it would be well to act on the rectum, at first by a saline enema, and afterwards by one of oil of turpentine with mucilage, to which a few drops of laudanum have been added.

Suppression in the case of a delicate and spare woman, who is highly nervous and irritable, is perhaps a still more frequent occurrence than that just described. Even here inflammation may occur, although it is an event of infrequent occurrence. According as it is present or absent, and as the pain is either neuralgic, spasmodic or inflammatory, will be the readiness to deplete or abstain. As a general rule, venesection will be seldom called for; and after local bleeding and counter-irritation by a

sinapism or stimulating embrocation, the pain is often quickly transferred from the uterus to the head, or from the head to the chest or heart, and again from those parts to the intestinal canal (*Ashwell*). More reliance is placed on free purging than on bloodletting in this variety of suppression; to be followed by a warm bath at 96° to 98°, or a warm mustard hip-bath, or mustard pediluvium. An anti spasmodic draught may be given every two or three hours till the symptoms begin to subside. Liquor of acetate of ammonia, tincture of assafœtida and camphor-mixture, make a useful combination for this purpose; or a pill containing two or three grains of camphor may be taken every three hours. I have occasionally found free drinking of hot water to give great relief from pain and spasms in some cases of this nature. But still more soothing and even decidedly beneficial, are enemata of laudanum or of laudanum with assafœtida-mixture. Dry cupping to the hypogastrium and upper part of the thighs is worthy of trial.

Chronic suppression of menstruation may result from an acute attack, or it may gradually come on either from defective activity of the uterus or from functional derangement in other organs affecting the general health. Before we engage in a course of treatment for suppressed or very scanty menses, we ought to know the history of the patient and her habit in this particular. In some cases recorded by Dr. Dewees there was a great anticipation of the period of the decline and cessation of the menses, as where the function ceased altogether before the twenty-fifth year.

The *symptoms* of chronic suppression are various and some of them anomalous, being the product of disorders of the nervous system which may simulate nearly every other complaint. Hence, we meet with peculiar sensations in the head, disorders of the senses, breathing and spasms, dyspnœa, palpitations, pains in the chest, &c. Secondary to suppression may even supervene serious organic disease, including phthisis itself and dropsy.

In studying the pathology of this disorder we are struck with two opposite conditions, viz., sometimes the amenorrhœa being the cause or precedent and sometimes the effect of derangement of the general health. According to the order of succession and the state of the uterus itself and of the other organs, will be our treatment. In general, however, it will be safest to adopt a rational plan for the restoration of the general health, and leave the uterus to follow in the line of healthy sensibility or imitation. If suspicion of chronic inflammation exist, we must begin the treatment by its removal, at any rate before we give emmenagogues, so called.

Treatment.—In some instances I have found an active purge, in others a few doses of blue pill, suffice to restore the menses after a prolonged suspension. The combination of chalybeates with purgatives, and especially the sulphate of iron and aloes, is worthy of being used for a length of time; or if there be any undue local determination we relieve it by a few leeches and warm pediluvia. The sulphate of potassa and aloes or rhubarb have acted with me as a good emmenagogue. The additional emmenagogues called constitutional are numerous, viz.: mercury, iron, ergot of rye or secale cornutum, iodine, strychnia, madder, rue, savin, senega root and black hellebore: nitre and digitalis by their action on the kidneys, cyanide of gold and the watery extract of aconite, infusion of the bark of the prunus lauro-cerasus (two ounces to the pint—in 24 hours), have each been employed with advantage. Of these remedies, where either

congestion or chronic inflammation of the uterus or of any other viscus prevents menstruation, mercury is preferable. It may be given in such a manner as to produce its full constitutional effect without salivating. In cases of anemia and general languor of function, the carbonate, sulphate and tincture of the chloride and the iodide of iron are the chalybeates to which we ought to give the preference. I have succeeded best with the iodide of iron and the iodide of potassium. These articles are indicated in strumous habits suffering from amenorrhœa. Some give a preference to metallic iron in a state of minute division.

Various stimulants, applied to the vagina and uterus, have been at different times well spoken of. Some years ago a vaginal injection of the liquor of ammonia in milk was held forth as an almost infallible remedy. Subsequent experience, while it does not sanction such extravagance of eulogy, shows, however, that it is sometimes incontestably serviceable in atonic amenorrhœa. The following is the formula: ℞. Liq. Ammon. fort. ʒi. vel ʒiss., Lactis tepid. ℥xvi. M. ft. injectio vaginalis. It rarely does good, if it is not attended and followed by a pungent sensation of heat, tingling, and some pain in the vagina. Its use should be begun three days before the expected menstrual period; and the patient, after each injection, should apply a napkin to the vulva, so firmly as to cause the injected fluid to be retained for ten or fifteen minutes. Its use is of course only applicable in the absence of congestion and acute irritation. With similar intention mustard has been injected into the vagina, as follows:— ℞. Sinapis. pulvis. ʒij., Aquæ ferventis, ℥xvi. M. ft. injectio. A third part to be passed into the vagina three times daily. Reference has been already made to the mustard hip-bath. It ought to be strong, and used twice a-day, the patient remaining in it for nearly an hour each time, at a temperature of from 96° to 98°. Medicated bougies introduced into the os tincæ have been used. I tried once the frequent introduction of the end of a fine common catheter, as well as of a bougie for protracted amenorrhœa, but with only slight advantage. Such remedies ought to be employed only in extreme cases where all the other resources of art fail, and always in the presence of a discreet female friend or member of the family. Enemata of aloes and other drastic purgatives or stimulating substances, just before the expected return of the menses, have failed to bring on the discharge. Electricity and electro-magnetism have been employed with success in amenorrhœa. Great stress used to be laid on sexual intercourse as an emmenagogue; but, although it is sometimes successful, its efficacy has been greatly overrated. The attention was too steadily directed to such remedies and measures as were believed to have a direct or specific exciting action on the uterine organs, without taking into consideration the state of the system at large.

Travel and the exercise and recreation incident to it are among the most efficient emmenagogues; and still more so if the patient should drink for a few weeks of the water of a chalybeate and saline or sulphur spring. At home, lighter gymnastic exercises should be encouraged, such as skipping with the rope, dancing, &c.

LECTURE LXXII.

DR. BELL.

DYSMENORRHŒA—Difficult or painful menstruation—Definition—Appears in different temperaments—Its gravity—*Symptoms*—Varieties—Neuralgic, plethoric and congestive—*Diagnosis*—Difference between membrane expelled and the decidua—*Prognosis*—*Treatment*—Membranes not proof of prior inflammation—Sometimes local bloodletting, or derivative bleeding from the arm—Treatment resolves itself into that during the pains and that in the interval—Anodynes and narcotics, ergot, acetate of ammonia, volatile tincture of guaiacum, warm hip-bath in the first period—Mercurials, chalybeates, and other tonics, and cold bathing in the second—General principles to guide in the treatment of dysmenorrhœa—Its association with disorder of the assimilating functions—Connexion with diseased ovary—Part of a gouty or rheumatic diathesis—Methodical treatment, including hygienic measures, as of paramount importance.—Dysmenorrhœa from mechanical obstruction treated by metallic bougies introduced into the canal of the cervix—Dr. Mackintosh's success—Dr. Churchill's admission.—MENORRHAGIA—Divisions into active or acute and passive, the latter including the congestive—Acute menorrhagia—*Symptoms*—*Causes*—*Diagnosis*—Similarity of menstrual to common blood—*Treatment*—Passive menorrhagia—Risk of organic cause—Necessity of examination by the vagina.

DYSMENORRHŒA (from δυς, difficulty, μηνες, menses, and ῥεω, I flow)—*Difficult* or *Painful Menstruation*, comes next before us. This disorder has been defined: Menstruation, preceded and accompanied by acute and often lancinating pains in the uterus and adjacent parts, and occasionally in the mammæ, with derangement of the secretive function; the catamenia being usually though not invariably scanty in quantity, and in the severer and more chronic cases, clotted, shreddy or membranous (*Ashwell*).

Dysmenorrhœa is quite a common and a painful disease, attacking, as far as my own observation extends, females of very different temperaments and external appearance and constitution—the otherwise healthy and of florid complexion, and the thin, the nervous, and the pale; sometimes the sanguineous, sometimes the lymphatic. It often prevents conception, and, in the cases of single women, lays the foundation for future organic disease of the uterus. Lisfranc (*Clinical Lectures on Diseases of the Uterus*) asserts, that it is hereditary, and that on inquiry it will be found that other members of the patient's family have suffered in a similar manner, and have died of disease of the uterus. Mere pain in the pelvic region and fulness and tightness of the head are not to be regarded as dysmenorrhœa, if these disturbances pass away with the flow of the menses. Scanty menstruation is not always difficult; nor is the opposite state free from suffering.

Symptoms.—This disease may exist with different conditions both of the uterus and of the constitution, being sometimes plethoric, sometimes neuralgic, and again congestive. Menstruation comes on at the usual time in those subject to dysmenorrhœa, but with an intensity of pain, scarcely exceeded by that of labour itself. In some cases of the neuralgic kind the symptoms are of short duration, continuing only for the first day or two of the period; when, after the expulsion of a small clot, not always firmly coagulated, the discharge assumes its natural consistence, and is unaccompanied by more than the usual local uneasiness. In others, the

whole time is one of intense suffering, commencing with sharp, darting, lancinating pains in the uterus and vagina, and extending apparently to the uterine appendages. There is acute sympathetic pain in one or both breast; the lumbar pain, running down the sacrum to the thighs and groins becomes excessive: and during the emission of the discharge the expulsive pains, resembling the throes of labour, add much to the suffering. During the whole period little febrile excitement exists, and the amount of constitutional injury, from one or even several of these attacks, is inconsiderable. But with the continuance of the disease the case is different: the digestion suffers and the health begins to fail.

In plethoric dysmenorrhœa the menstrual period will be preceded by headache, flushing of the face, full and quick pulse, a sense of weight in the pelvis, rigors, and sometimes by delirium. These precursory symptoms are followed by the catamenia, which are sometimes profuse and with more or less of coagula. More frequently, however, the discharge is scanty, and consists of clots with portions of membrane; and the difficulty of emission is extreme.

Still availing myself of the description of the varieties of this disease by Dr. Ashwell, I shall next notice *congestive dysmenorrhœa*, which often becomes so by mismanagement, owing to a stimulating treatment in former attacks and the large and indiscriminate use of iron and aloes. The premonitory symptoms in this variety are comparatively slight. A sense of weight in the pelvis, with the bearing down pains of prolapsus, lumbar pain, frequent micturition and constipated bowels denote an enlarged uterus. But it is not till the function is about to commence that the very severe symptoms arise. There is often intense uterine pain, with a sensation as though some foreign body were shut up in the uterine cavity; and in the attempts at its expulsion the uterus is aided by the voluntary as well as involuntary efforts. One marked peculiarity in this form is the absence of inflammatory symptoms. The pulse is rather weak, sometimes quick and irritable; the skin is perspirable, and there is exhaustion, not inflammation. During the intervals of congestive dysmenorrhœa, where false membranes are constantly expelled, there is generally abundant leucorrhœal discharge, the health becomes increasingly disordered, the mammæ shrivel, and the legs are œdematous. It is in this variety that spurious abortion most frequently occurs. A mass is ejected from the uterus, which is made up of a condensed or laminated coagulum with portions of membrane, or a membrane moulded to the cavity of the uterus inclosing a large coagulum.

Diagnosis.—The general character of dysmenorrhœa is proclaimed sufficiently by the symptoms, and it is only in cases of what are called spurious abortion, or expulsion of coagula, and membrane resembling the decidua, that doubt can be entertained respecting the real character of the disease. We shall be aided in our opinion by a knowledge of the duration of the disease, the nature of the menstrual secretion in former periods, and the enlarged state of the uterus from congestion, as ascertained by examination through the vagina and the rectum. Dr. Montgomery, in the ninth chapter of his admirable work on *The Signs and Symptoms of Pregnancy*, distinguishes the two products, that in dysmenorrhœa and that in pregnancy, in the following passages:—

"The substance expelled in such cases will be found deficient in several of the characters of the true decidua; for although produced by an action

in the uterus analogous to that by which it prepares the decidual nidamentum for the reception and support of the ovum, it differs therefrom in two essential points: first, that it is a morbid product; and secondly, that, not being intended, like the true decidua, to become an organ, or at least a medium of nutrition for the ovum, it is not furnished with a structure such as would only be required for the performance of such an office; hence, it is thin, flimsy, and very unsubstantial in its texture, of a dirty white or yellowish appearance when slightly agitated in water, devoid of the soft, rich, pulpy appearance, deep vascular colour, and numerous foramina for the reception of the nutrient vessels from the uterus, which are always so distinctly observable in the true decidua, which, however, in one point it resembles, having its inner surface smooth, and the outer unequal, but of a ragged, shreddy appearance, unlike that of the healthy uterine decidua, and it is, moreover, entirely destitute of the little cotyledonous sacculi already described as an essential character in the latter structure.

"In texture, it more nearly resembles that of the reflexa than any other structure; but no trace of the transparent membranes of the ovum can be discovered within it, or attached to it, and should it happen to come away entire, in the form of a hollow triangular bag, we never find within it a duplicature of itself forming an inner pouch or reflex layer, as in the case of the natural decidual envelopes of the ovum. Morgagni has given a very accurate account of this accidental product, as it occurred in the case of a noble matron of his country, who expelled it almost every month with pains like those of child-birth, having its external surface unequal and not without many filaments that seemed to have been broken off from the parts to which they had adhered; but internally hollow, on which surface it was smooth and moist, as if from an aqueous humour which it had before contained." (Epist. xlviii., art. 12.)

Prognosis.—This ought to be very guarded. The opinion of Denman, that no woman in the habit of forming this membrane has been known to conceive while such habit exists, is not correct. Cases of its disproof must have occurred to most practitioners of much experience in female diseases.

Treatment.—This cannot be satisfactorily carried out unless we are able to ascertain the actual state of the uterus, whether it is congested, or its cervix thickened or not. An examination during the inter-menstrual period, if allowed, will enable us to prescribe with judgment on these occasions. It has been argued that the membrane discharged from the uterus, and evidently a coat formed in its mucous membrane, is proof of inflammation, and the croup has been referred to as an analogous case. It cannot, however, be denied that this membranous formation on mucous membranes is formed at times in states of very moderate arterial or capillary excitement, as in epidemic angina or diphtherite, and also in that disease which I designated by the title of *enterorrhœa with membranous formations.* It is a little curious, as I stated at the time, that some of the most marked cases occurred in females, who, while affected with obstinate diarrhœa for months and even years, passed daily a large number of these membranes. Hence we are not allowed to assume the presence of inflammation in every case of well-marked dysmenorrhœa, and to deduce from this view an antiphlogistic treatment. When, however, plethora is present and the cervix uteri congested, we ought to draw blood by means of cups to the loins

or leeches to the vulva or to the cervix itself. A derivative bleeding from the arm to the extent of a few ounces will also be serviceable in such cases.

For the most part, the treatment resolves itself into that during the period of pain or menstruation and that during the interval. If depletion, as just described, have been used, we continue the effect by ipecacuanha or tartar emetic in doses approaching to a nauseant operation. I have, from analogy of the disease to rheumatism, directed wine of colchicum with, I believe, good effects. It may be well to know that rheumatism or the rheumatic diathesis sometimes manifests itself in the female by dysmenorrhœa. Undue confidence is placed in anodynes from the narcotic class for the relief of pain in the disease now under notice. When combined with ipecacuanha, as in Dover's powder, or with tartar emetic, they are more reliable. Camphor sometimes gives much comfort, and by Dr. Dewees (*Diseases of Females*), it was said to be "the most efficient and uniformly certain that he has yet discovered." In violent sympathetic excitement of the nervous system an opiate may be given in the evening, or an anodyne enema or suppository directed in its stead. In aid of the expulsive efforts of the uterus, ergot, either in decoction or tincture, may be repeatedly given. Just now the medicine which enjoys most vogue in dysmenorrhœa is the liquid acetate of ammonia (spirit of Minderus), in doses of from fifty to seventy drops, which may be repeated four times in the twenty-four hours. In smaller dose its effects are hardly appreciable. Its administration is followed by a sort of temporary intoxication. More reliance is to be placed in the tincture of belladonna, in conjunction with the acetate. Sometimes the former is given in enema.

We must not neglect to inquire into the condition of the bowels, and if constipation have prevailed, to empty them by an emollient clyster, or a more active one of castor oil and turpentine in neuralgic cases. I have given a full dose of calomel with opium at night, and wine of colchicum and magnesia in the morning, with evidently soothing effect. The warm hip-bath or the general warm bath is comforting and serviceable; but to be so, the patient ought to remain in it until a sensible languor is experienced. Dr. Chapman thinks very highly of the polygala senega, and Dr. Dewees of the volatile tincture of guaiacum in painful menstruation.

When consulted in dysmenorrhœa, I take pains to tell the patient or her friends, that scarcely anything beyond mere palliation can be accomplished during menstruation or the period of suffering. Our curable efforts should be made during the interval. With this view I direct an alterative course of blue pill or calomel and hyosciamus, if the digestion has suffered, or there be evidences of uterine engorgement or congestion. Hemorrhoidal congestion will sometimes require leeches to the anus and a warm semicupium. In more clearly neuralgic cases, I direct chalybeates, and chiefly the iodide of iron and the tincture of the chloride, alternating with laxatives according to the state of the bowels. I have administered iodine and chiefly the iodide of potassium in five cases of females who had been married for some years, but who, on account of their dysmenorrhœa, had never conceived, but yet who, after having continued the medicine for some time, became pregnant and bore healthy children. Arsenic is worth a trial in the more violent cases of dysmenorrhœa; but before having recourse to it sulphate of quinia should have been used in tolerably full doses. The cold bath and cold hip-bathing, and cold injections in the vagina, are said by Dr.

Locock to be attended with much benefit, during, as I understand him, the inter-menstrual period.

If, in fine, we are to be more successful in the cure of dysmenorrhœa, we must take a more enlarged view of the pathology of the disease, and insist on a more prolonged and systematic plan of treatment than comports with the hasty and empirical practice at present so commonly pursued. A valuable contribution to a better knowledge of the subject has been furnished within a few years by Dr. Edward Rigby, in a small treatise *On Dysmenorrhœa and other Uterine Affections, in Connexion with Derangement of the Assimilating Affections.* I give you the full title of this treatise, as it indicates the scope of inquiry taken by the author and the chief causes of the disease. He makes a good application of the general principles laid down by Mr. Abernethy, and of the chemico-physiological observations of Dr. Prout on assimilation, to the pathology and treatment of dysmenorrhœa.

Dr. Rigby, after pointing out the tendency of the mucous membranes of the intestines and urinary and respiratory apparatus to take on morbid secretion of albuminous matter and membranous formations, where malassimilation prevails, and particularly in gouty and rheumatic subjects, proceeds to show that in various uterine affections, and particularly in dysmenorrhœa and leucorrhœa, there is a similar tendency from the same cause.

The author confesses that he is unable to state with certainty, the precise circumstances on which depend the formation of the fibrinous exudations, which every now and then attend cases of dysmenorrhœa of what he terms a rheumatic gouty nature. He adds, however, the remark, that, if there be any fact which seems to be common to all the cases of dysmenorrhœa which have been attended with exudation, it is the connexion of some local inflammatory action of a neighbouring organ. "In some it has been the kidney, in others (and on the whole more frequently) the ovary, which may easily be presumed from its close connexion with the uterus, and from the generally received opinion of its being essential to the function of menstruation. In others, the os and cervix of the uterus itself have been the seat of inflammation. If the ovary be the part affected, the patient suffers much pain in one or both groins, increased on pressure, or by putting the integuments of the part on the stretch in assuming the erect posture. It is greatly aggravated at each menstrual period, coming on for one or more days before the appearance of the discharge, and attended with much pain, throbbing, and sense of heat and swelling in the part, and generally accompanied by considerable irritation of the bladder or rectum."

Discharge of flatus from the vagina has been observed by Dr. Rigby, in several well-marked cases of the disease under notice. The urine betrays very well-marked evidence of the gouty or rheumatic diathesis, in its being generally high-coloured, strongly acid, with excess of lithic acid or lithate of ammonia. The phosphates, especially the phosphate of lime, are copious, and form a dense precipitate with ammonia. The specific gravity of the urine is usually considerable at this time. The hemorrhoidal diathesis prevails, as observed in a large majority of the affections of the uterus, of which you must be aware dysmenorrhœa is but one of the manifestations. Leucorrhœa is a frequent accompaniment of this state of things.

Dyspepsia, it may readily be supposed, is common in subjects thus suffering, and must indeed be regarded as the primary cause of the derangements in question.

From these premises we can deduce the treatment of dysmenorrhœa, and allied disorders including hysteralgia, vaginitis, and metritis in its milder forms. This will be found to consist not so much in new remedies as in a methodical and consistent employment of those already known, aided by suitable hygienic treatment. Special attention will be paid to the digestive apparatus by securing regular and healthy intestinal discharges, to the skin by restoring its functions of transpiration, and to the lungs by their free play in a pure air.

When local depletion is required, nearly as much benefit will be obtained by leeches to the anus, and emptying thereby the hemorrhoidal vessels, which are so closely connected with the uterine ones, as to the uterus itself.

The dysmenorrhœal attacks, as has been already stated, are associated with symptoms of inflammatory action in one or both ovaries. Of this latter I shall take occasion to say a few words hereafter. Just now I shall merely repeat the experience of Dr. Rigby, as to the best means for removing chronic or sub-acute ovaritis, or oophoritis with dysmenorrhœa. It is, friction with tartar-emetic ointment, carried nearly to the extent of producing a slough.

Dr. Mackintosh (*Principles of Pathology and Practice of Medicine*), believing that some cases of dysmenorrhœa depended on mechanical obstruction, by occlusion of the os tincæ and passage into the uterine cavity, recommended and practised the introduction into this canal of a very fine metallic bougie. He reports twenty-four cases of cure in twenty-seven of disease. "Nine of the women had suffered for a shorter period than two years; some for three or four; and others ten." Dr. Churchill divides the disease into three species; the inflammatory, the neuralgic, and the *mechanical*. He cites Capuron as enumerating mechanical obstruction among the causes of dysmenorrhœa. Dr. Churchill mentions a case in which he and Dr. O'Reilly distinctly ascertained the presence of a stricture about half-way up the canal of the cervix. This stricture they succeeded in dilating. But he frankly admits, in proof of the disease depending on something else than mechanical obstruction, that although the stricture was relieved the dysmenorrhœa continued as before. If this were the cause, it ought to be removed by childbearing; but although this effect is sometimes procured, yet in other cases the disease persists with all its violence. One of the worst cases I ever saw, was of a lady who had then a daughter of nubile age.

Menorrhagia.—Having spoken of retarded and suppressed menstruation under the head of amenorrhœa, and of difficult and painful under that of dysmenorrhœa, it remains for me to make the same remarks on the excess of this function designated by the title of *menorrhagia* (from μην, month, and ρηγνυμι, I break forth). More appropriate is the term *Metrorrhagia*. Believing with Dr. Locock (*Cyclop. Pract. Med.*), that it is a needless refinement to attempt to distinguish between the simply over abundance of the menstrual discharge and the addition to this secretion of pure blood, I shall regard menorrhagia as consisting in an immoderate flow at the menstrual returns, whether these latter be monthly or every two or three weeks. I like Dr. Ashwell's definition, which I shall repeat: Inordinate menstruation, both as to the frequency of the return and the amount of secretion; in the majority of instances accompanied by direct loss from the uterine arteries.

Without indulging in needless divisions, it will suit for all practical purposes to regard menorrhagia as exhibiting itself under two forms, the active and the passive; under the latter of which may be included the congestive. I do not think we can recognise in practice the three forms laid down by Dr. Churchill, since the symptoms representing them may all three be met with in the same case. The patient may have, for example, at first the discharge of the natural quantity, then very large, and occasionally mixed with clots of blood, and lastly, together with loss of blood, a marked change in the size and position of the uterus.

The preliminary *symptoms* of active or acute menorrhagia are very similar in most respects to those that precede other hemorrhages, viz., alternations of chilliness and flushing, a sense of general fulness, headache, frequent throbbing and often hard pulse; and in addition to these general symptoms, pain in the back and loins indicate more particularly the seat of the coming discharge. But even in these there is nothing very distinctive, for the same feelings often precede in both sexes an attack of hemorrhoids. Like this latter disease, menorrhagia, at first preceded and accompanied by marked symptoms of fever and phlogosis, is at each successive return less open and frank in its associated disorders, and comes on without the evidences of vascular excitement. But this is rather in anticipation of a remark that might be properly made when describing the gradual transition of active into passive menorrhagia. In nervous and irritable, as well as plethoric habits, the menstrual discharge is sometimes profuse; but in the former we should expect to find the pulse frequent and thrilling, without much tension and a paleness or sallowness of complexion rather than flushed face. In fact the uterus, although, as we all know, powerfully affecting and affected by the general system, is apt to set up habits of action of its own, the precise origin and sustaining causes of which we are not always able to reach by observation or reasoning.

Sometimes the menses come on in the usual way, then soon increase beyond the normal standard, and degenerate into a true menorrhagia. In other cases, there is hemorrhage mixed with uterine secretion from the very beginning, and the discharge is almost a gush, which, however, may happily subside and leave the patient free from danger, although very weak. Active and passive are terms which, it seems to me, serve more appropriately to express the condition of the general system than of the uterine discharge, which may itself be active in both these states, although, it must be confessed, that there is usually a direct correspondence between the topical and the general symptoms when the sthenic diathesis and plethoric habit prevail.

The *causes* of menorrhagia are general and local. Under the first we include, after hereditary predisposition, plethora and the circumstances in which undue excitement of the system is kept up; such as gross alimentation, or food highly-seasoned, excessive exercise or strain, by lifting, pushing, or pulling, or the contrasted state of indolence, hot rooms, &c. Passive menorrhagia is caused, on the other hand, by whatever tends to lower the tone of the system, and weaken the action of the heart. But in both forms we must look for local causes which give rise to uterine rather than to other kinds of hemorrhage. Of these, we find recorded, bruises and falls, frequent and recent abortions, the indulgence in sexual intercourse, rectal irritation by retained scybala, and of course costiveness, hemorrhoids and irritation of the bladder. Polypus and certain organic dis-

eases of the uterus are sometimes the sustaining causes; and hence in obstinate and oft-recurring discharges it will be desirable to make an examination, in order to ascertain, if possible, the occurrence of this state of things. In many parts of this country the practitioner must have often been struck with the cause of menorrhagia mentioned by Dr. Locock, viz., an impeded or disordered circulation of the portal system and more or less hepatic disorder. In some rare cases, chlorosis would seem to be the cause of passive and exhausting menorrhagia.

Diagnosis.—Although, in general, there is little difficulty in determining the presence of menorrhagia, it is not so easy to be able to say whether the discharge is merely an excess of the proper menstrual fluid or of blood mixed with it. The attempt to establish characteristic differences between the two fluids has not been successful. Chemists have told us that the menses contained less fibrin: but the circulating blood when discharged by morbid processes will present great differences in the proportion of this element. M. Donné (*op. cit.*) asserts, that menstrual blood differs in nothing from blood in general except in the former having an acid reaction.

Treatment.—A recumbent posture with the hips a little raised, and the body resting on a hard mattress, are first to be obtained; then if we are called to treat a first attack of menorrhagia in a woman well constituted and at all plethoric, or in whom the constitutional sympathies are active, the safer plan will be to begin the treatment by the abstraction of blood from the arm. The exhaustion of the patient will be much less by this operation than from the continuance of the uterine flow. The next step is to procure an evacuation of the lower bowels, either by a simple enema or a laxative, and thus remove a probable cause of irritation. After this you will prescribe the sugar of lead in doses of from two to five grains, according to the emergency of the case, combined with half a grain of opium, every two hours, until four doses are taken. The discharge still continuing, the sugar of lead may be continued and the opium withheld. If any fear be felt of the acetate of lead, or if it fail to control the vascular excitement, tartar emetic, in adequately full doses, as a fourth of a grain combined with an eighth of a grain of opium every two hours, should be prescribed. Nausea, although not desired, will assist in restraining the hemorrhage. Emetics have been recommended by some, but unless under peculiar circumstances of overloaded stomach they are better withheld. Opium alone has, by Dr. Burns and others, been used even in as high a dose as two or three grains. After venesection or analogous depletion, or if the menorrhagia has been very profuse and of some duration, this medicine well deserves a trial. More is to be expected from its equable and diffused capillary action and in a measure derivation, in the different organs, than from any direct anti-hemorrhagic or styptic operation. But the frequent use of opium in successive attacks of menorrhagia is to be deprecated, by its inviting congestion and weakening the action of the heart. Nitre in full doses is a refrigerant adapted to the present disease. Different astringents are recommended as useful adjuvants at this time, such as alum, rhatany, &c. I should prefer withholding them until some control over the disease had been procured by remedies of a different class.

In general, it will be a safe practice to follow the order of administering remedies analogous to at least, if not identical with those which I have just indicated, before having recourse to local sedative means, the chief

of which is cold. In uterine hemorrhage during the parturient or puerperal state, cold is one of the best, perhaps the best of our remedies; and it is advised by many judicious practitioners in menorrhagia. Thus, Dr. Locock, after saying that the free application of ice to the abdomen, pelvis, loins or back, is one of the most powerful means we possess of restraining menorrhagia, adds the remark, that the cold hip-bath, dashing cold water, or vinegar and water, on the person, injecting cold water into the vagina, and applying ice, both externally and internally, to the os uteri, may be had recourse to with much and decided advantage. This writer very properly advises that the direction and supervision of the application of cold should be by the physician himself, as nurses, or the common assistants at the bedside on such occasions, will either fail to apply cold in an adequate manner, or will overdo it, and expose the patient to an extreme of sedation, which, added to the loss of blood, certainly may induce prostration and require the use of diffusible stimuli.

A convenient and, as I have found it, quite an efficacious method of applying cold, is by an enema of cold water thrown up the rectum, and renewed from time to time as the continuance of the symptoms may require. If at the same time cold drinks be taken, acidulated with sulphuric acid, an effect will be produced, short it may be of that which ensues on the application of cold directly to the parts, but which will prove in many cases fully adequate to the relief of the patient, and be less open to the objections made against this latter practice, as liable to convert the periodical and temporary congestion into serious inflammation (*Churchill*). Injections into the cavity of the uterus, have been accused of such disastrous consequences in France as to deter many from an imitation of the practice, even if *à priori* reasoning were more in its favour. Dr. Houghton, good authority, however, thought he had saved many a life by the injection of a solution of sulphate of iron in a strong infusion of green tea into the cavity of the uterus, but this was in profuse menorrhagia. Sugar of lead in solution might be thrown up the vagina, and perhaps better still, the rectum. These measures failing, plugging the vagina has been recommended; and in favour of its use at this time more may be said than in uterine hemorrhage occurring after parturition. Still greater efficacy may be expected from the plug (tampon), being well soaked in an astringent wash before it is inserted into the vagina, and gradually carried onwards until the end presses moderately against the *os tincæ*. I have found cloths dipped in vinegar answer a good purpose at this time.

Persistent or recurring discharge I have known to be greatly mitigated by cupping the loins and sacrum.

In milder cases rest and recumbency, cool enemata, and cold acid drinks, with a light regimen, and bathing in cool fresh water, will suffice.

Passive or *chronic menorrhagia*, as I have already suggested, is not essentially different from the acute or active, as regards the state of the uterus. In both, congestion preceded secretion and hemorrhage, which is less abundant although more persistent in weakened constitutions than in the plethoric. It may be the continuation of active menorrhagia, or it may occur primarily in weak and even anemic habits from local causes. The discharge in the latter will often evince, by its venous and sometimes even watery appearance, the poverty of its origin and contrast with the florid blood discharged in acute menorrhagia.

The symptoms of a sensation of fulness of the head, palpitation, throb-

bing carotids and a pulse even of some volume, might impose on us for evidence of plethora; but the pallid look and almost bloodless appearance of the skin and coldness of the extremities can hardly fail to remind us of chlorosis; and, in fact, the affinity between the two states is considerable. Both may occur after exhausting hemorrhages; for, in reference to menorrhagia, it happens, differently from what would at first be supposed, that hemorrhage by impoverishing the blood attenuates it and allows of its escape more readily than a more sthenic state of the system.

The suspicion in acute menorrhagia of organic disease of the uterus being present, must be still stronger in the chronic, and justify still more recourse to vaginal examination.

The *treatment* in this form of disease is not specifically different from that already recommended in the acute. Hence, if there be any remains of plethora or obvious visceral congestion, bloodletting will be indicated, either from the arm or in the neighbourhood of the affected organ. Purgatives are here more called for than in the antecedent variety. Sugar of lead, in small and often repeated doses, is still not without its value; but it failing to relieve, we soon pass on to the real astringents. In lymphatic or in worn-out subjects, this class of medicines is preferable, at times, to any other. In simple chronic menorrhagia of long standing, in a person forty years of age, I have directed venesection, and immediately afterwards the chlorided tincture of iron, with the effect of entirely relieving the patient. In another younger subject of eminently lymphatic temperament and lax fibre, who suffered from menorrhagia and leucorrhœa, with very often diarrhœa, I have succeeded entirely by means of tannin in doses of three to five grains three times a-day. In less than two days a marked amendment was evident. The mineral acids, alum and sulphate of zinc, are freely prescribed in this disease. I have used the alum with success. Canella alba and preparations of which it forms the basis, have been viewed by some as almost a specific in this form of the disease. Ergot, of late years, has been highly spoken of. Dr. Waller (*Lectures on the Functions and Diseases of the Womb*) mentions a case which would induce us to think favourably of the refrigerant and *quasi* astringent operation of vegetable acids, and particularly of common vinegar, in suppressing excessive flow of the menses. Plugging the vagina is also had recourse to. Injections into the uterus have been referred to; —Dr. Blundell inclines to their use.

There are cases of menorrhagia with spasm and pain which are greatly benefited by, indeed require opium and analogous remedies, together with the so-called anti-spasmodics, for their cure. Though not coming methodically under this head, ipecacuanha in grain doses every hour till nausea is produced, is beneficial in this way; and to enemata of opium and assafœtida the same remark applies.

Menorrhagia with hepatic congestion or other disorder will be treated by the Plummer's pill or blue mass, and the decoction or extract of taraxacum. Constipation should be guarded against by pills of rhubarb and soap with a little ipecacuanha, and also by common enemata, as of salt and water or soap and water. In addition to this Dr. Locock recommends the frequent application of a few leeches to the anus. "Even in very debilitated and exhausted constitutions, this remedy, when carefully watched, may be safely administered, and relief will be very rapidly manifested."

As in every other disease, so more particularly in those liable to periodical recurrence, a preventive treatment during the intervals is of the greatest importance. With this view in some cases of menorrhagia we shall either direct a bleeding or two, and purgatives with a spare regimen and moderate but regular exercise, for the plethoric and the luxurious; or purgatives and tonics, including chalybeates and quinine, with counter-irritants, as a blister to the sacrum, and a plain nutritious diet for the anemic, or the nervous and irritable. To all, fresh air, regular hours, avoidance of undue excitement of any description, clothing worn loose and without ligatures, are indispensable for preventing a return of the disease. Travelling and drinking mineral waters with a slight chalybeate impregnation have served to guarantee some of the menorrhagic against any farther trouble.

I will dismiss this subject with a remark in the way of caution from the quaint yet generally judicious Blundell: — "In both forms of menorrhagia, whether the active or the passive, beware of an over-activity in your practice. Most cases would, I suspect, be found to cease, sooner or later—say at the end of two, four, or six months—even if left to themselves; and as there is a reasonable hope of a spontaneous cure, though slow, there is the less necessity for having recourse to violent remedies. In medicine it is good to know when you ought to be active, and it is better still to know when you ought to be quiet." (*Observations on Some of the More Important Diseases of Women.*)

LECTURE LXXIII.

DR. BELL.

ORGANIC DISEASES OF THE UTERUS.—LEUCORRHŒA—Whether a disease of the vagina or uterus—More frequently is a metro-vaginitis—Definition of leucorrhœa.—*Acute metro-vaginitis—Symptoms*—Subsidence of symptoms—Alternations of disease and suspension—State of the *cervix uteri.—Chronic or gleety vaginitis—Symptoms—Causes* of vaginal and uterine leucorrhœa—Lesions of the os and cervix uteri—Ulceration and induration of their parts—*Morbid Anatomy*—Change in the vaginal mucous follicles—*Diagnosis*—That between leucorrhœa and gonorrhœa cannot be made—Between vaginal and uterine leucorrhœa—*Treatment*—To withhold astringents and special medication during the first stage—Antiphlogistic remedies—In chronic or advanced, purgatives and tonics, then astringents—Cold bath or cold sponging—Injections—at first sedative and anodyne, then stimulating and astringent—Special remedies—Injections into the cavity of the uterus—*Regimen—Exercise—Baths—Clothing.*—GONORRHŒAL VAGINITIS—*Gonorrhœa in Women*—Symptoms and treatment; same as in leucorrhœa with some few modifications—Ovaritis following gonorrhœa—Its treatment—Vaginal abscesses—Early use of injections of nitrate of silver—Lint introduced into vagina—Ulcerations in cavity of uterus—Injections of nitrate of mercury and nitrate of silver into its cavity.

LEUCORRHŒA—ACUTE, CATARRHAL, AND CHRONIC VAGINITIS, OR METRO-VAGINITIS—*Fluor Albus—Uterine Catarrh—Whites—Menstrual Alba.*—Leucorrhœa (from λευκος, white, and ῥεω, I flow), the generally received term for the disease of which I am about to speak, is as little applicable as any other that could be given, on the strength of an occasional physical character of the discharge, which is itself but a symptom or effect of organic irritation or other lesion. Still, as the current one, we must, for

a while at least, employ it provisionally until a better term comes into use. For a long time leucorrhœa used to be spoken of as a uterine disease, dependent on some affection of its lining membrane; the discharge being supposed to come from the same vessels that furnished the menses, and hence one of its titles *menstrua alba*. In later times, however, it has been regarded, perhaps too exclusively, as a morbid secretion from the vagina alone. We are well assured on this point, that it occurs often in great abundance in pregnant women, where there is, of course, occlusion of the uterine cavity, and also in girls of seven, eight, and nine years of age, and even in infants. It would have been better if writers had adhered to the opinion of Morgagni, who believed and proved by dissections that, in different cases, the morbid secretion issues from both organs. Blegny (referred to by Churchill) found the whitish fluid accumulated in the uterus of a female, who had been subject to whites. Blattin says, that in 9 cases out of 24 which he had examined, the discharge proceeded from the uterus. Frank mentions a case of unusual obstinacy in the subject of which, after death, the Fallopian tubes were found to be the origin of the disease. In broad contrast with this experience is the language of Dr. Dewees, who tells us (*op. cit.*), "I have never been properly satisfied, but in three or four instances, of the very many cases of leucorrhœa which have been under my care, that the discharge in question proceeded from the cavity of the uterus." It is probable, that, if we include under the title of vaginal leucorrhœa that in which the membrane covering and lining the cervix uteri is affected, this will represent the larger number of cases of the disease. That the uterus is often implicated, will be proved in the course of this lecture.

Leucorrhœa is defined by Dr. Ashwell: An excessive and altered secretion of the mucus furnished by the membrane lining the vagina and uterus, by the follicles of the interior of the cervix uteri, and by the lacunæ of the *vestibulum*, generally white, or nearly colourless and transparent, usually without much odour, glutinous, muco-purulent or purulent, sometimes yellow, green, or slightly sanguineous, and of varying degrees of consistence. The amount of constitutional derangement depending on the severity of the affection and the susceptibility of the patient.

Acute Metro-Vaginitis.—The division of leucorrhœa into acute and chronic is the most natural, and for its treatment the most useful. In the first or acute, corresponding with that form designated by Dr. Dewees as the leucorrhœa of direct irritation, the symptoms are those of inflamed mucous membrane, pain, swelling and heat of the vagina, with, at first, merely an increase of the natural mucus of the part, but which becomes a thin exudation like that from the Schneiderian membrane; and subsequently thicker, and finally purulent. The patient, in the beginning, has itching of the external parts, which, together with the heat and soreness of the vagina, are succeeded by smarting and a feeling of weight and bearing down, and also of tightness, as if the mucous membrane of the vagina were swollen, which is proved to be the case in fact, if an examination be instituted at this time. Dragging pains felt in the loins, and a sensation of weight and heat in the pelvis, tenderness of the hypogastrium, may be considered as evidence of the irritation having reached the uterus, or at any rate its cervix. Occasionally the pain shoots down to the groins, hips, sacrum and inner parts of the thighs; and the labia are swollen, and walking and standing are insupportable. Micturition and

irritation of the rectum are frequently present. The discharge varies much in quantity; sometimes it is so profuse as to oblige the patient to change the napkins several times daily; at others less in quantity but acrimonious; and in colour and consistence there is an almost endless variety.

Short of this acute or inflammatory form of leucorrhœa, the disease may present itself in a modified manner as the result of mere hyperemia or vascular congestion. Under such a state the secretion will be more abundant than in health; but it will still retain its natural characters, and continue to be a white, transparent, and glutinous mucus; attended by some constitutional derangement, slight *ardor urinæ*, and some sensations of heat and tenderness about the generative organs.

When the stage first described has lasted six or eight, or, as some tell us, ten days, the inflammatory symptoms gradually diminish, the discharge becomes thicker, and its colour white or greenish; both it and the scalding by which it is accompanied progressively diminish. After many variations in its colour and consistence; after alternately disappearing and unexpectedly returning, it finally stops in the time above mentioned, unless when it passes into the chronic form. Not unfrequently, however, the inflammatory symptoms, after having early disappeared, re-commence with fresh violence; sometimes without any known cause, sometimes from imprudence on the part of the patient.

In most of the cases examined by Dr. Churchill, the vaginal portion of the cervix uteri was not affected, and he says, that he has only discovered a trifling increase of the body of the uterus and some tenderness of the cervix in the inflammatory form, but more in the protracted or chronic variety. The state of the cervix is occasionally soft, and the *os tincæ* rather patulous. Sometimes the orifice is not at all open, but generally the whole of these parts are supple, bathed in discharge, and much more relaxed than in health. In several instances, in which Dr. Ashwell used the speculum, the cervix has been pale; in more acute cases slightly red, and in two severe attacks it was of a deep crimson tinge. In none where there was not suspicion of venereal taint did he see erosion or ulceration.

Chronic Metro-Vaginitis.—The chronic or gleety form of leucorrhœa is the most common of all the diseases of females, as much so, one might say, as catarrh itself, few escaping an attack at one time or another of their lives. The period in which it is most common is from the beginning of the menses to their cessation. It is comparatively rare in the young, but common in married women.

Dr. Blundell introduces the disease to our notice in so graphic a manner, that I must use his language on the occasion.

"In the gleety form of the disease, the patient, perhaps, comes to you with an appearance pale, and worn, and weary; she tells you that she is very liable to coldness of the hands and feet; that she feels a perpetual fatigue; that she has scarcely any appetite; that she has a great deal of flatulence, with other symptoms of indigestion; that she has a sensation as if the anterior part of her body would leave her person, with aching of the back, and bearing down, and irritation of the bladder; that she is in a high degree irritable, and susceptible, and nervous, and wretched; and that, in connexion with all this, she has the *whites*, as she terms the disease, or, to use a form less offensive to the *molles auriculæ*, a *weakness*, by which she understands a discharge, more or less copious, from the geni-

tals, of a muciform character, not offensive in smell usually, but sometimes so irritating, especially if there is a neglect of cleanliness, as to give rise to excoriation of the surrounding parts.

"If women give suck during the time that they have this *leucorrhœa*, this, it is said, has a tendency to diminish the discharge. Of this I have had no proof myself, though I am not prepared to deny it; but I think I may say, that this diminution is neither certain nor frequent. Women labouring under leucorrhœa, if the discharge be sparing, may become pregnant nevertheless; but those who labour under a copious effusion will, I think, generally remain sterile. When menstruation occurs, it is said the discharge ceases, but of this I doubt. I think it more probable that the leucorrhœa is concealed by the catamenia of red colour which mingle with it, and that the whole together comes away from the womb as if it were merely the ordinary secretion."

In reference to the suspension of leucorrhœa by the menstruation, I have been assured by some patients that they were apprised of the near approach of the menses by the almost entire suspension of the whites.

In chronic leucorrhœa there is scarcely any increase of heat, and little or no pain or tenderness, and the inguinal glands are never affected. Where the leucorrhœa is chronic and aggravated, there is a great variety in the discharge. Sometimes it is glutinous, transparent and colourless, the natural secretion in excess; at other times it is decidedly purulent, muco-purulent, or watery: the result of the inflammation changing the action of the parts. Nor is the colour less variable; a green or brown tinge may indicate excessive irritation, and blood mingled with the discharge will probably result from abrasion or rupture of the capillaries of the uterine surface, or it may announce the approach of the catamenial period.

Causes.—The causes of leucorrhœa in general are irritants of any kind, which have acted directly on the vagina, or indirectly by disturbance of functions, with which this organ and the uterus sympathise. To the first belong laborious parturition, application of instruments, abortion, excessive coition, irritating substances applied to the surface of the vagina, extraneous bodies introduced into this cavity, prolapsus uteri, stimulating injections, a pessary remaining too long in the vagina. To the second head, or vaginitis from disease or functional disturbance of other organs, belong, cold causing suppressed perspiration, or alternations of wet and dry weather, unduly prolonged lactation, gastro-intestinal excitement by too stimulating a diet, the use of alcoholic liquors, coffee and tea. Lisfranc regards as the most frequent cause, in France, the great use of coffee and chauffoirs or portable pans of live coal over which the feet are held. Tight lacing should be added to the list. Ascarides, indurated feces in the rectum, and internal piles, may, also, be enumerated among the sympathetic irritations giving rise to leucorrhœa. Irritation of the spinal marrow is an occasional cause of the disease.

Leucorrhœa is of more frequent occurrence in variable climates in which cold and moisture prevail, and during spring and autumn than in warm regions and seasons. Thus it has been observed that the disease is more common in the north than in the south of France. Residence in a city constitutes a strong predisposing if not exciting cause. There are instances of females, so soon as they begin to reside in a city, after having lived in the country, becoming leucorrhœal. Low and damp

localities, and houses recently built or from other causes not properly dry, have a similar effect.

There are not wanting examples of the epidemic prevalence of leucorrhœa, especially when spring and autumn are colder and more moist than usual.

Although the chief period in which the disease shows itself is during that in which a woman has her regular menstrual returns, as from fifteen to forty-five years of age, yet there are abundant instances of its occurrence both before and after this period. Of 273 cases of females suffering from leucorrhœa, 63 were attacked before the first coming on of the menses. In many of these latter, the whites ceased after menstruation had been established. In a still larger number, or 225 out of 248, on whom observations were made, the disease returned after the completion of the menstrual secretion. Indeed there is reason to believe, that in a great many cases the discharge of whites is merely masked by that of the menses, and really continues with the latter, as both chemical analysis and microscopical examinations show the presence of uterine and vaginal mucus mixed with the menstrual discharge proper (*Briere de Boismont, De la Menstruation*).

Dr. Simpson (*Lib. Pract. Med.*) thinks the discharge is, in many instances, but an indication of the general vigour and activity of the organs of generation. "It is compatible with excellent health, a full habit of body, and amounts only to a local inconvenience. The persons so constituted are, however, liable to pains in the situation of the ovaria, which endure many days with but little fever, but great discomfort, amounting at times to agony. The paroxysms unite the characteristics of two maladies, colic and circumscribed peritonitis; and did the symptoms not remit, and thus for days remain stationary, instead of running the onward course of a pure inflammatory disease, we might be much puzzled. It is best relieved by local instead of general bleeding, by saline and not by aloetic aperients, and by anodynes. The above form of leucorrhœa must be considered as dependent on constitutional cause and on local irritability."

We cannot appreciate either the pathology of the diseased states which pass under the name of leucorrhœa, or the diversified remedies required for their treatment, unless we take into view the functional disturbance, and even organic lesions of organs which precede or, at any rate, are connected with, the disease now under consideration. It is to be regretted, upon the whole, that the word leucorrhœa has been retained to express a distinct disease, when, in fact, it is merely a symptom, as of simple vaginitis, for example, or of metro-vaginitis, and may be the product of very moderate irritation of the mucous surface alone, or be evidence of great disorder of the assimilating functions in general and of great congestions of the pelvic viscera in particular. To some of its connexions in the latter way, I adverted when repeating the observations of Dr. Rigby on dysmenorrhœa, and now return to the subject. Of others I shall speak also, with brevity.

The most frequent organic lesion giving rise to leucorrhœa in adult females, who have had sexual intercourse, is that of the *os* and *cervix uteri*, which are sometimes simply engorged, in others inflamed, and in many more exhibit a granular surface with ulceration. Of fifty-nine cases observed or referred to by Dr. Roberts, in his valuable paper on leucor-

rhœa (*New York Journal of Medicine*), thirty-three were accompanied by ulcerations, and in forty the discharge was seen to issue from the *os tincæ*. Similar are the results of M. Marc d'Espine's observations, soon to be noticed under the head of diagnosis.

Dr. James Henry Bennet, in the opening of his "*Practical Treatise on Inflammation, Ulceration and Induration of the Neck of the Uterus*," remarks: "With reference to leucorrhœa, indeed, I have ascertained, to my complete satisfaction, firstly, that, setting aside cancerous disease, in the very great majority of adult females, who have been exposed to sexual intercourse, a confirmed leucorrhœal discharge, whatever may be its nature, is accompanied by inflammation of the neck of the uterus; secondly, that this inflammation seldom exists long without producing ulceration; and thirdly, that ulceration is *always* accompanied by more or less engorgement (swelling with or without induration) of the substance of the uterine neck."

Dr. Rigby, in the treatise already quoted, after describing the phenomena of disordered assimilation associated with uterine disease and of congestion of the pelvic vessels, adds: "The local symptoms resemble those of chronic leucorrhœa with inflammation of the cervix uteri." He gives cases in which leucorrhœa was associated with, one might say symptomatic of, congestion and inflammation of the neck of the uterus and darting and burning pains through the pelvis, and in others dysmenorrhœa.

After you shall have studied the pathology of leucorrhœa in its chief important bearings under the guidance which has just been offered, you will, I am sure, when you meet with cases of vaginal discharge called leucorrhœal, naturally suspect the existence of deeper-seated mischief than would accrue from the mere secretion of muco-albuminous or of a serous fluid; and while reaching a correct diagnosis, be more guarded in your prognosis than the popular view of leucorrhœa and its common empirical treatment would suggest.

Morbid Anatomy.—In simple acute vaginitis, the mucous membrane is of a lively or deep-red colour, injected and thickened with a larger quantity than usual of blood; and to such a degree is the inflammation, which affects also the sub-mucous cellular tissue, carried, that the opposite surfaces adhere to each other and give rise to, if not an obliteration, at least a narrowing, of the vaginal canal. In some cases, the chief organic lesion takes place on the mucous follicles and papillæ of the vaginal mucous membrane, so that this latter is unequal and rough as from papular projections. The epithelium is destroyed to a greater or less extent, and slight friction will cause a bleeding of the abraded surface. The vaginal secretion is altered in various ways, as will soon be described to you.

Diagnosis.—The diagnosis of leucorrhœa involves some questions of moment,—1, to distinguish whether the uterus or the vagina be the seat of the discharge in the case before us; 2, to distinguish simple leucorrhœa or vaginitis from gonorrhœa or gonorrhœal vaginitis. Sir Charles Mansfield Clarke (*Diseases of Females*) has classed the diseases of the female genital organs according to the nature of the vaginal discharges, of which he designates five different kinds, viz., 1, *the transparent mucous*, arising from increased secretion on the vaginal surface; 2, the *white mucous*, from inflamed *cervix uteri* or vagina; 3, the *watery*, from cauliflower excrescence, hydatids, or oozing excrescence of the labium; 4, the *purulent*, from inflammation of the mucous membrane of the womb or

vagina; and 5, the *sanguineous*, from ulcerated scirrhus, cancer, or abscess. Without attaching anything like the diagnostic value to these kinds of discharges which the author himself does, we may admit them to be of some service as aids in connexion with other symptoms.

Dr. Churchill, more formally than his predecessors, has treated separately of vaginal leucorrhœa and of uterine leucorrhœa as two distinct diseases, although they may, he admits, run into and be confounded with one another. The latter "is distinguished by the circumstances in which it is observed, as, for example, after abortion and delivery; preliminary to and vicarious of the first menstruation, &c.; or by its peculiarities at the menstrual epochs and its greater effect upon the constitution." In the few cases of uterine leucorrhœa which came under the notice of Dr. Dewees, "the following peculiarities were present: 1st. During the night there was no discharge whatever; but upon rising, there would be a very abundant one of glairy, tenacious substance, and sometimes mixed with some of a purulent appearance. 2d. That, during the day, when it did escape, it was always suddenly, and accompanied by a sensation of effort within. 3d. That when a piece of sponge was introduced into the vagina at night, for the sake of determining the point, it was never found filled with the kind of matter that very quickly issued when this was removed. 4th. All these cases I found to be incurable, though capable of some relief. 5th. All these women were barren."

An examination with the aid of the speculum advances us somewhat in the path of diagnosis. The following are the results in 193 cases, recorded by M. Marc d'Espine (*Archiv. Gén.* 1836). In 23 the uterine orifice was found dry, in 40 there was just a drop of discharge in the orifice; in 130 the discharge was abundant. The orifice was at times quite healthy; or pale, or red, or bright red, and occasionally it was granulated and bloody.

"From leucorrhœa, the consequence of structural or malignant disease, the diagnosis will be made from the accompanying symptoms, and from examination of the vagina and rectum, not only by the finger, but by the speculum."

We are told, that in vaginal leucorrhœa the fluid is of a normal colour, being a white opaline mucus of a creamy consistence, and of acid reaction. It is never thick and glairy like uterine mucus. Subjected to the microscope, it seems to be filled with mucous globules and epithelial scales.

The uterine leucorrhœa furnishes a fluid, which is dense, viscous and albuminous, and contains those flocculi, so often discharged by women who are troubled with the whites. It is alkaline in its reaction.

The alleged effect of leucorrhœa in causing sterility is not proved. When it does occur, we must suppose it to be in the uterine variety of the disease.

The diagnosis between leucorrhœa and gonorrhœa cannot be made out at all satisfactorily. M. Donné asserts, that the animalcule, called by him *vaginal tricho-monas*, is seen only in gonorrhœa. Both for the sake of conjugal peace and as a matter of medical jurisprudence, you must bear in mind that every now and then the discharge in leucorrhœa may be so acrimonious as to irritate the glans penis and even give rise to urethritis and its usual symptoms—in nothing hardly distinguishable from common gonorrhœa.

Treatment.—The first step in the treatment of leucorrhœa ought to be a

removal or an abatement, as the case may be, of the obviously exciting causes of the disease. Its pathology has been drawn with, I hope, sufficient clearness to persuade you that leucorrhœa is not, in its acute stage certainly, nor even in many cases of chronic form, a disease of mere debility, as is too often believed by professional persons. With the great diversity of constitutions and of duration of the disease, following as it does at one time delivery, at another prolonged lactation; sometimes occurring in the plethoric, sometimes in the emaciated and anemic, the remedies must necessarily be different under these circumstances. As a general rule, however, you will forbear to prescribe either astringents, or special, some in their overweening confidence might say, specific remedies, until fever, if it be present, and the signs of local inflammation or of irritation, be removed. To meet this latter indication, if there be pain in the back, extending into the pelvis and down to the groins, with heat or pain in the vagina, it will be advisable to abstract blood by means of cups to the loins or sacrum, or leeches to the labia, and to administer salines and antimonials, alternating with two or three doses of calomel; and, for topical application, sponging of the genital organs, groins, and pudendum with moderately warm water, and using injections of the same into the vagina.

Even in the more chronic forms of leucorrhœa you will find it best to act with some freedom on the bowels with blue mass and aloes, or the compound extract of colocynth; to be followed, after a brief period, by rhubarb and magnesia, or the rhubarb and soap pill. In fine, without attempting much minuteness of specification, I would counsel you to make all proper inquiries into the state of the functions generally, and of the digestive apparatus more particularly, as through it you will find the disease to be often controlled. When you apply yourself to relieve dyspepsia and various nervous affections in its train, the concomitants if not effects of leucorrhœa, the vegetable bitters and mineral acids, and the salts of quinia, will very properly occur to your minds. To these will succeed, if necessary, mineral tonics and astringents, such as the sulphate of iron and of zinc; and in a torpid state of the bowels, an enema of turpentine and oil, or an aloetic purge. If there be adequate powers of reaction, the shower-bath, or preferably, in my own experience, sponging the loins, sacrum, perineum, and inguinal regions daily with cold water, will contribute to the recovery of the patient. But should the circulation be languid and symptoms of hysteria prevail, the patient will be benefited by the warm bath of 94° on every second day.

I have as yet said nothing of injections, which unfortunately are too often had recourse to at once, in advance and not seldom in place of all other remedies. Some of the milder cases of the disease will require no other injection than that of simple tepid water, which, for prevention and as a cleanly practice, ought to be done daily; but where the discharges are acrimonious and persist *after* the administration of cooling general remedies, recourse will be had, first to those of a sedative and anodyne nature, such as of sugar of lead, decoction of poppies, infusion of opium, and the like. Dr. Gooch says, that the liquor plumbi acetat. is now used at the Middlesex Hospital, and with general success. Their good effects will be aided not a little by alteratives of calomel or blue mass with ipecacuanha and the extract of hyosciamus, or of magnesia with ipecacuanha.

When the disease has been of some duration, or the health feeble and the vagina relaxed, and the discharge simply mucous, some one or a succession of the various vegetable and mineral astringents may be employed with a prospect of advantage. Of these a decoction of rhatany and solution of alum are among the most active. Still more curative and useful in some chronic cases are injections of nitrate of silver, made of from three grains up to half a drachm to the ounce. Preferably to its use in this way is that of the solid nitrate applied to the vagina, and, if need be, to the *cervix* and *os uteri*, with the aid of a speculum. Dr. Huston (of the Jefferson Medical College), in his edition of Churchill on the Diseases of Females, indicates his satisfaction at the effects of oil of turpentine suspended in mucilage of elm or of flaxseed, in the proportion of a drachm of the turpentine to two ounces of the mucilage, injected into the vagina two or three times a-day. I have myself directed often with advantage solutions of the chloride of lime or of soda. Failure often attends injections, owing to their not being continued with regularity. Among topical remedies should be mentioned blisters to the sacrum or to the inside of the thighs.

Of remedies of a more special character for administration internally are the balsams, and above all, balsam copaiba; also cubebs, cantharides, and iodine. I have prescribed them all, with the exception of the cantharides, with more or less success. With the iodide of potassium, and, in old cases, the tincture of iodine, I have had good reason to be pleased. Iodinic preparations are most entitled to our confidence in cases of metro-vaginal or of purely uterine leucorrhœa, in which a more prolonged alterative course will be demanded than in the simply vaginal form of the disease. They may be well combined with sarsaparilla decoction or syrup. With similar intention the somewhat prolonged use of mercury in the form of blue pill, with extract of cicuta, will be had recourse to. Dr. Dewees was exceedingly partial to tincture of cantharides, in doses of thirty drops three times a-day until some strangury was induced; if in the meantime the disease did not yield, after an interval of suspension the tincture was renewed in the same dose as before. Ergot has been prescribed with decided success.

Injections into the cavity of the uterus itself, even of a virgin subject, have been recommended and practised by MM. Melier, Ricord, Vidal, and others; and their use has been defended by M. Recamier, even where the precautions laid down by M. Vidal have not been attended to. These are, the proper application of the speculum, the introduction into the uterus, through the neck, of a long, straight silver tube, of smaller diameter than that of a female catheter, and terminated by a slight bulb, perforated with holes. The quantity of fluid introduced is necessarily very small, and the injection must be made in the gentlest manner, with a glass syringe for the purpose. The injected fluid should be seen escaping from the os tincæ, between the instrument and the sides of the neck of the uterus. M. Vidal says, that nine grains is as much as can be introduced into the uterine cavity of a female who has never had children.

M. Gibert has made trial, in chronic cases of leucorrhœa, of the hydropathic treatment with satisfactory results. His practice consisted in, 1, cold hip-baths, daily, in which the patient sat for a few minutes only; 2, cold ascending douches and cold enemata; 3, cold and substantial food.

Regimen in its largest signification must be regulated with great care

for the patient with leucorrhœa. Not only is moderation demanded, but an entire change of dietetic habits will be necessary. Tea, coffee, spices, and condiments, and of course wines and fermented liquors of all kinds, are to be given up, and in their stead water, and, if it at all agree, milk, is to be the fluid addition to plain nutritious food, taken at regular hours and stated intervals. Hot and close apartments are to be exchanged for or converted into cooler and airy ones; and in all cases feather beds and soft cushions are to be replaced by hair mattresses and seats of the same. Exercise without fatigue in the open air on foot, or on horseback in older forms of disease; sea-bathing when it can be procured, and easy-fitting garments, complete the hygienic treatment.

Gonorrhœal Vaginitis—Gonorrhœa in Women.—As the symptoms of this disease are so closely analogous to and in a great measure identical with those of leucorrhœa, so the treatment is the same in both diseases. In both the approach is sometimes so gradual as not to excite attention; and a woman may, sometimes innocently, as regards her veracity, deny that she has any gonorrhœal taint. But in other cases, again, the first acute stage is marked by symptoms of considerable violence, more as a general thing we might say in gonorrhœa than in leucorrhœa. In the former, also, we may expect to meet more than in the latter with swelling of the nymphæ and labia, accompanied by serous infiltration requiring incisions, and also by vaginal abscesses. Ovaritis, considered as a complication of gonorrhœa, requires antiphlogistic treatment commensurate with the intensity of the symptoms. Leeches applied to the lateral and lower parts of the abdomen, anus, and sacral region; venesection, sometimes aided by emollient fomentations and cataplasms, generally succeed. The bowels ought to be kept open by gentle laxatives. Here, as in orchitis, frictions with mercurial ointment made upon the abdomen may promote resolution.

In some cases in which acute gonorrhœa proves intractable to the antiphlogistic regimen, and in which the vaginal mucous membrane is still red and turgid, M. Ricord tells us, that he has obtained astonishing results from the use of nitrate of silver, used in its solid state or in solution applied by means of lint, to cauterise the mucous surface. After the use of the cautery, a tampon of dry lint must be introduced to prevent the contact of the parietes of the vagina. This suggests the mention of a treatment to which M. Ricord is partial in the gonorrhœa of both sexes. I have already described it in treating of urethritis in the male. In the case now before us, he fills the vagina without much distending it with dry lint, renewed two or three times a-day, according to the quantity of the discharge, which, in the cases that terminated successfully, was white and milky, and proceeded from the vagina alone. Ulcerations and papular granulations must be cauterised with nitrate of silver, which is to be preferred, or with nitrate of mercury by means of a bit of lint.

Like other portions of the mucous membrane of the sexual organs, the internal orifice of the womb is frequently the seat of ulcerations, which the means hitherto pointed out cannot cure. To meet the emergency, M. Ricord has injected into the uterine cavity one part of nitrate of mercury in eight parts of water; but the effects were so violent as to incline him to diminish the strength of the solution by adding to a grain of the nitrate twelve parts of water. Subsequently he substituted nitrate of silver, six grains to the ounce of water, and found that in some instances a chronic purulent discharge was cured after two or three injections. M. Ricord

states that nitrate of silver, applied to the cervix and cavity of the uterus, frequently acts as an emmenagogue.

After the cure of vaginal and uterine gonorrhœa, M. Ricord advises injections of cold water to be continued for some time, once or twice a-day; taking care to discontinue them four or five days before the period when the menses are expected, and again employing them four or five days after their cessation.

LECTURE LXXIV.

DR. BELL.

METRITIS—INFLAMMATION OF THE UTERUS—Varieties according to tissue and part affected—Catarrhal metritis and parenchymatous metritis—The first treated of under the head of leucorrhœa—The neck chiefly affected in the parenchymatous variety—Increased thickness of tissue—Formation of pus—Fallopian tubes and peritoneum sometimes implicated—*Symptoms*—Various according as the body or neck is inflamed—Local and general—Examination *per vaginam*—Change of position of the uterus—Discharge—*Diagnosis*—To be distinguished from peritonitis, ovaritis, vaginitis, and cystitis—*Prognosis*—In general favourable—Obliteration of the Fallopian tubes—Death of the fœtus in a pregnant subject—*Causes*—Traumatic ones—Cold—Sudden suppression of the menses—*Treatment*—Antiphlogistic remedies to be freely employed.—Counter-irritation on the hypogastrium or sacrum.—CHRONIC METRITIS—*Anatomical characters*—*Symptoms*—For the most the same as of acute metritis, but of less violence—Occasionally increase of embonpoint—State of the neck and os tincæ, to the touch and speculum—Ulcerations—Muco-purulent matter and blood—*Prognosis*—The disease generally slow in its progress—*Causes*, some of them mechanical—*Treatment*—According to the part affected—the complication of ulcers and the constitution of the individual—Antiphlogistic, with modifications—Counter-irritants—Mercury—Iodine—Frictions with tartar emetic in solution—Ergot—Arsenic—Iodide of iron—Mineral waters—Living *absque marito*.

ORGANIC DISEASES OF THE UTERUS. — I do not intend to discuss at length organic diseases of the uterus and its appendages, nor shall I even pretend to enumerate them all.

METRITIS—INFLAMMATION OF THE UTERUS. —The subject of inflamed womb presents itself to us under various aspects; as regards, first, the texture affected; secondly, the part of the organ,—whether it is the body or the neck that is inflamed; thirdly, whether it be simple inflammation of the womb, or that occurring in connexion with or following phlebitis and peritonitis, in puerperal fever.

Two divisions of metritis have been made, viz., into 1, phlogosis of the internal mucous membrane, or catarrhal metritis; and 2, inflammation of the substance of the uterus or parenchymatous metritis. This division is natural enough, and I have already adopted it by speaking of the catarrhal variety as a disordered function of the uterus, under the head of leucorrhœa; but I cannot see the propriety of separating this latter from catarrhal metritis, or from metro-vaginitis, of one or both of which it is so common a symptom, and in connexion with which it so generally appears. I pass on, therefore, at once to a consideration of parenchymatous metritis, and first of that affecting the body of the uterus; reserving for separate notice, the inflammation of the neck and its too commonly associated ulcerations. I shall be better understood, if I say, that while in simple parenchymatous metritis the whole womb is affected, including

the neck, the latter is often the exclusive seat of lesion, giving rise to a most extended series of the phenomena of uterine disease.

Acute Metritis is most commonly productive of increased size of the organ; its tissue is redder and sometimes harder, but less resisting than natural: not infrequently, however, it is softer and accompanied with serous infiltration, which in the more violent forms and advanced stage of the disease is replaced by pus. This latter is, in some cases, formed in separative abscesses, free or encysted. In still rarer cases, the pus finds its way into the uterine cavity, which is, itself, lined by a false membrane. On detaching it, the surface is seen to be rough, injected, and easily torn. Similar changes may take place in the Fallopian tubes, one or both. On occasions the peritoneum participates in the inflammation, giving rise to the symptoms of *metro-peritonitis*.

The *symptoms* of acute metritis vary according as the body or neck is the part affected with inflammation. When the latter is the seat of lesion, the patient complains of heat and darting pains at the upper part of the vagina. Sexual intercourse is very painful. Examination *per vaginam* shows the neck of the womb to be hot, tumid, and very sensitive under the slightest pressure and somewhat hard.

But when the body of the womb is inflamed in whole or even in greater part, we observe the following general as well as local symptoms. A violent chill often ushers in an attack of the disease, violent and darting pains in the hypogastrium are complained of, which are increased by pressure, coughing, deep inspiration even, defecation and urinating, and by nearly every kind of bodily movement. All attempts to take an erect posture give rise to pain; and hence the patients, whether seated or lying down, have the trunk bent forwards, and lower extremities drawn up towards the abdomen. Most of them complain of a feeling of weight at the anus, and even true tenesmus. The excretion of urine and feces is generally very painful, to which may be added dragging sensation and shooting pain in the groins, along the thighs and in the sacral region. Most of these symptoms, as remarked by M. Grisolle, are explicable by the situation of the uterus, which, becoming enlarged, presses on the rectum, bladder, and sacral nerves, and becoming heavier, drags the ligaments by which it is fixed in the pelvis. Pressure on the hypogastrium enables us to feel the now enlarged and elevated fundus of the uterus, and the finger in the rectum apprises us also of the organ being inflamed, enlarged and painful. Examination *per vaginam* will reveal to us either the participation in or immunity of the neck of the uterus. The organ is heavier than usual, as is ascertained by raising it up somewhat on the end of the index finger, and giving it a slight balance movement. In its direction the uterus is depressed and lies somewhat oblique in the pelvis—sometimes indeed it acquires an inclination to antiversion or retroversion. It is not uncommon at this time for a discharge of a whitish, yellowish, or greenish matter, in some cases tinged with blood, to escape from the uterus.

The sympathetic disturbances of function are considerable, as manifested by want of appetite, thirst, nausea, and even vomiting of watery or bilious matters; distended and somewhat tense abdomen, and constipation. These symptoms, however, and fever, great anxiety expressed in the countenance, acute cephalalgia, and even delirium, are either absent or slight in degree, unless there be *metro-peritonitis*, or the metritis be associated with phlebitis, a combination only to be expected in the puerperal state, and, happily, rare in it.

In the *diagnosis* of metritis we have to distinguish it from peritonitis, ovaritis, vaginitis, and cystitis, with one or other of which it may be confounded. In peritonitis, although the pain is first felt at one part of the abdomen, the umbilicus, the hypogastrium, one of the hypochondria, or in the loins, yet it soon becomes diffused, and is more superficial and acute, so as to be developed by the slightest pressure on the abdomen with the hand or a single finger. The fever and other constitutional disturbances are more fixed and violent, and accompanied with greater prostration than in metritis. But our chief reliance in diagnosticating this latter, will be the localising, as it were, of the malady, by means of the finger in the vagina and in the rectum, so that the suffering organ can be felt, and the dimensions within which pain and other morbid phenomena confined to the part take place. This is the more necessary to enable us to distinguish metritis from partial peritonitis. By similar means we can generally determine whether the disease be vaginitis or metritis — the heat, tumefaction, and great pain on introducing the finger, indicating clearly the former. In ovaritis, which is mostly of one ovary alone, the symptoms are often obscure, but when more distinct, they show a lesion on the one or other side, in the iliac region and groin more distinctly than when the uterus is the seat of inflammation. In its chronic stage, ovaritis is often readily ascertained by a tumour being felt distinct from the uterus, as I shall soon point out to you when making separate mention of this disease. From cystitis we can distinguish inflamed womb, by the fixed and yet superficial pain in the hypogastrium, the frequent and unsuccessful attempts to urinate, and the pain and anxiety preceding each attempt of the kind: there is, also, an absence of inguinal pain in cystitis.

The *prognosis* in simple acute metritis is favourable, in the unimpregnated state of the uterus. Resolution is the most common mode of its termination, which takes place from the tenth to the fifteenth day. A not infrequent termination of the acute form of metritis is the chronic.

We must be prepared to look, in some cases, among the consequences of acute metritis, for obliteration of the Fallopian tubes, adhesions of their fimbriated extremities, and consequent sterility; also, adhesions of the uterus to the sides of the pelvis, which, by preventing the free movement or play of the organ, will give rise to abortion. Metritis in the pregnant female is almost always followed by the death of the fœtus and its premature expulsion. Still farther, the sides of the uterus may be softened by inflammation, so as to allow of the escape of the fœtus into the peritoneal cavity and be followed by fatal results.

The *causes* of metritis seldom act on the uterus of a female before menstruation has been established, or of one who has reached advanced life. The disease is, also, rare in pregnancy, and when it does occur, it is owing to some traumatic cause, and especially to criminal manœuvres for procuring abortion. It may follow operations on the neck of the womb, excessive coition, the irritation of a pessary or its undue retention in the vagina, blows or falls on the back and hips, cold applied to the hypogastrium, the sudden suppression of the menses, irritating and astringent injections unseasonably applied for the removal of leucorrhœa or the suppression of uterine hemorrhage; and, finally, the extension of inflammation of the vagina to the womb.

Treatment.—Antiphlogistic remedies should be freely used; and foremost among them is bloodletting, at first by venesection, and then if the

disease persists or is merely mitigated in violence, by leeches above the pubis, or to the groins, or the anus, or, if need be, to the *os tincæ* itself. Cups applied to the sacrum and even to the hypogastrium, may, I know from experience, supply the place of leeches when these are not procurable. Following this part of the treatment will come the warm hip-bath, bran poultices, or other means of fomentation to the abdomen, simple laxative enemata, if there have been costiveness, and afterwards opiate ones. I have seen considerable relief obtained, after bloodletting, by calomel, in doses of five grains with extract of hyosciamus in the same proportion, or half a grain of opium. This last kind of medication is still more called for if the inflammation be sub-acute, or tumefaction of the uterus remain after partial subsidence of the inflammation. By some, blistering the hypogastrium or the sacrum is recommended. I prefer counter-irritation by means of croton oil or tartar-emetic ointment.

Chronic Metritis.—So common is the connexion between chronic inflammation of the uterus and similar lesion of the cervix, and so frequently does the disease of the organ spend itself upon the latter, that I shall treat, under the present head, of lesions of a chronic character, resulting from or associated with inflammation, whether they present themselves in the body or in the neck.

Chronic Metritis is a much more common disease than the acute form, and still more is it met with as a partial than an entire inflammation of the organ. It comes on for the most part slowly, and independently of any acute attack. The symptoms, though of the same kind, differ in degree from those attendant on the former inflammation. To its consequences we attach the most importance. These are, ulceration, suppuration, and indurated enlargement of the substance of the uterus generally, and especially of its neck; of the existence of which you can only assure yourself by examination both by the touch and introduction of the speculum. Pain of some part of the cervix on moderate pressure with the finger will usually be felt. The elevated state of the mucous follicles, termed granular inflammation of the cervix, and in other cases abrasions and ulcerations, are ascertained also in the same way.

The constitutional disturbance from chronic metritis is manifested often in the sallow countenance, the impaired appetite and digestion, abdominal pain, slight emaciation, and a gradual loss of strength and appetite.

The *anatomical characters* of chronic metritis, whether the whole, or, as most frequently happens, a part only of the uterus be implicated, are tumefaction and alteration of form of the organ, manifested by an increase of bulk, which is sometimes of the whole, but still oftener of one particular region. The engorged portion is heavier and harder than natural, but of a uniform surface, and not knotted or unequal, as when the uterus is the seat of schirrus, or of fibrous tumours. The texture is of a greyish or reddish hue, hypertrophied, and allowing of easy incision by the scalpel. The increase of volume of the uterus is not accompanied by any enlargement of its cavity, which, on the contrary, is sometimes smaller than before. Displacement, either by prolapsus or deviation from its customary line of direction, is quite common in chronic inflammation of the uterus.

The *symptoms* of chronic are, for the most part, the same as those of acute metritis; the difference being in their less intensity in the former than in the latter stage of the disease. Irritability of the bladder, especially of the neck, and constipation or occasional tenesmus, are among

the most frequent symptoms. Standing and progression on foot aggravate the uneasiness and distress of the patient, who finds most relief in a recumbent posture. Menstruation is, generally, painful, and otherwise deranged in the subjects of this disease. Leucorrhœa is also quite a concomitant.

In speaking of the constitutional disturbances, I mentioned indigestion and slight emaciation among the number. I must add, however, that, within my own observation, and the fact is stated by authors, some women suffering under chronic metritis not only retain, but increase their embonpoint; and this even when they are unable to take any exercise. Instances might be given of decided polysarcia in some who are greatly afflicted with chronic metritis in an aggravated shape.

The symptomatology of this disease must, however, be incomplete, unless recourse be had to an examination *per vaginam*, the *toucher*, which will reveal to us any change of size and direction of the uterus and of its texture, and, also, the location of the disease, in the body or at the cervix. This latter is frequently infiltrated and hypertrophied; its mucous follicles being filled with fibrous effusion, are prominent and project unduly beyond the surface. "With a doughy feeling of the cervix is associated a patulous condition of the *os tincæ*, which is more widely open than natural, and often one or other lip is tender on slight pressure, and has a roughness almost amounting to abrasion. The upper lip is generally the one most swelled. If a speculum be used, the neck and *os tincæ* may be seen red and injected, or dotted with minute ulcerations. Sometimes on a red ground are spots of a still darker red, which should be regarded as evidences of obstinate inflammation. Spots of a vinous-red of various sizes on the neck, are, also, associated with old lesions of the part. When ulcerations have set in, they begin at the orifice of the uterine cavity, whence they spread. A small quantity of muco-purulent matter is almost always found at the upper part of the vagina, on examination by the speculum. The pressure of the edge of this instrument or even of the pledget with which the mucus is wiped off, occasions a slight oozing of blood from the abraded or ulcerated surface. The same effect often follows coition, a fact of which the patient herself is aware."

You will be the more solicitous to ascertain the presence of chronic inflammation of the cervical region of the uterus, when you learn that its consequences are disorganizations and malignant diseases, which art may measure the stages of, but can seldom cure. Such are corroding ulcers, cauliflower excrescence, and cancer of the uterus.

In our *prognosis* of chronic metritis, we must be aware that it is slow in its progress; that two or three months will generally elapse before we can remove it by successful treatment; and that it seldom terminates in suppuration, or in schirrus or cancer,—although these two last terminations have been described among its usual consequences.

The *causes* of chronic engorgements and of inflammation of the uterus are dependent on its state of functional activity, and are most operative in females between the ages of twenty-five and forty. By far the most frequent causes both of metritis and of ulcerations of the neck of the womb, are abortion and protracted labours. On the other hand, it ought to be distinctly remembered, that a not infrequent cause of abortion consists in chronic ulcerations of the cervix uteri. The practical inference is obvious—we must ascertain the existence of ulcerations, and take appropriate measures for their removal. Excessive coition, under circum-

stances of disproportionate length of the virile member, comes in also for a share in the etiology of this disease. Chronic is sometimes the direct sequence of acute metritis. Internal metritis or inflammation of the lining membrane of the uterine cavity, has been alleged to accompany and keep up the ulceration of the cervix.

The *treatment* of chronic metritis will be regulated by the portion of the uterus affected—body or cervix; the complication of ulcerations; and the constitution and degree of general excitement of the system of the patient. As a general rule, you will begin with the use of antiphlogistic measures, sometimes venesection, more frequently leeches to the groins, perineum or anus, or cups to the loins and sacrum. In very lymphatic habits, even where there is fulness of frame amounting to obesity, the detraction of blood in any way is badly borne; and we must content ourselves with recourse to purgatives, salines with antimonials, but in doses not to offend the stomach, and small doses of calomel with some adjuvant, so as to insure its laxative operation. Leeches to the cervix itself, and scarifications of this part, through a speculum, have been used with good effect in some cases; but for the most part all the advantages attributed to this kind of bloodletting can be more readily procured by the more common and easily practised fashions before mentioned. Auxiliary to any of these are the general warm bath, the semicupium, injections of warm water into the vagina, or in a more protracted and indolent form of the disease the ascending douche, and laxatives, alternating with simple warm-water enemata.

Control having been obtained over the vascular system and the local phlogosis, when it has exhibited active phenomena, your attention will next be directed to the use of counter-irritants, such as pustulation by tartar emetic or croton oil to the loins, iliac regions or groins, and inside of the thighs; and the administration of deobstruent remedies; and of these chiefly mercury, iodine, and the alkalies. Of the different preparations of mercury preference will be given to the blue pill conjoined with extract of hyosciamus, given every evening; care being taken that the bowels shall be moved daily by, if necessary, a laxative or an enema in the morning. Mercurial ointment may also be rubbed into the inguinal regions, daily, after they have been bathed and fomented with warm water. Time having been allowed for the beneficial operation of mercury, but without your obtaining the desired result; or the state of your patient from scrofulous diathesis, tendency to tubercle, or constitution otherwise broken down, having from the first prevented the use of this substance in any form, you will then make trial of some iodinic preparation. Iodide of potassium, in doses of five grains, in infusion of quassia, every morning,—some narcotic, or narcotico-laxative compound in the evening,—and inunction of ointment of the iodide of potassium, constitute a mode of treatment to which I am quite partial in chronic metritis, as in other glandular engorgements. Taraxacum in extract is a useful addition, when united with hyosciamus or conium, to the remedies just mentioned. Opium and its salts will, of necessity, be directed in many instances; but in all chronic affections you will be backward in accustoming the patient to the use of this drug, as an imperious habit is soon acquired, which is productive of great derangement of the nervous system, and is often persisted in after the necessity for it has ceased. I have employed, with advantage, frictions on the inside of the thighs and iliac regions, of tartar emetic in

weak solution or in ointment, one part of the former to thirty-two of the lard, so as not to pustulate, in the manner recommended by Duparcque. A small blister to the sacrum kept discharging for some weeks might be of service. From ergot I have, also, procured much relief for some of my patients. Arsenic has its advocates in this disease; so also has hydrochlorate of lime. In anemic subjects, the iodide of iron is preferable to the iodide of potassium; and in these cases some preparation of iron alone is entitled to a regular use. Different mineral waters—particularly the sulphuro-saline and the saline chalybeate—have been drunk with very satisfactory results by patients afflicted with chronic metritis.

As justly observed by Dr. Ashwell, it cannot be too strongly urged that iodine, mercury, conium, lime, or arsenic, will exercise no beneficial influence in exciting absorption, unless we have had recourse to local depletion, aided by other means, such as saline laxatives, a plain yet nutritious diet, as that of milk, for example, recumbent posture, abstinence from sexual intercourse, country or sea air, and abstinence from every kind of excitement.

But, a full trial can hardly be given to the most systematic and best-devised treatment, unless the patient, if she is married, live for a season, *absque marito*. What the medical practitioner does, the husband undoes. Abstinence from all excitement must be enjoined, and if possible, residence in the country substituted for that in a city. The diet should be simple, and, at the same time, adequately nutritious. Milk, when it agrees with the stomach, will meet very well this double requirement.

LECTURE LXXV.

DR. BELL.

Ulcerous or Granular Metritis—Its *etiology* and *symptoms* nearly the same as those of chronic metritis in general—Three varieties—*Treatment*—To allay irritation and to remove the associated engorgement and hypertrophy of the *cervix*—More serious in women who have borne children—Ulceration the common result of inflammation—Local blood-letting, rest, posture, and laxative enemata will precede topical applications—Astringent injections—Caustics—Nitrate of silver—To be repeated at intervals—Directions for its use—Deuto-nitrate of mercury in nitric acid—Means of using caustic remedies—Productive of little pain—Rest, warm bath, and soothing vaginal injections—Treatment of associated hypertrophy—Benefit from cauterising the neck of the uterus—Injections into the cavity of the uterus.—Granulations with Stricture of the Os Uteri and Cervix—State of the passage to the womb a cause of dysmenorrhœa—*Treatment*—Cauterization and the use of a delicate bougie, and injections into the uterus of simple and medicated fluids.—Physometra—*Uterine Tympanites*—Idiopathic and symptomatic—*Causes*—*Symptoms*—*Diagnosis*—Uterine seat of physometra—State of the uterus in—*Treatment*.—Hydrometra—*Uterine Dropsy*—Different species—Conditions for its occurring—*Causes*—*Symptoms*—*Treatment*—Watery discharges after parturition.

Ulcerous or Granular Metritis. — It is only of late years that the attention of the profession has been directed to this form of uterine disease, which, is, however, not only of frequent occurrence, but is productive of very troublesome effects, and requires its peculiar treatment.

In that variety of chronic metritis marked by ulcerations of the neck and mouth of the womb, and which has been designated by the title of *ulcerous* or *granular metritis*, some important modifications in the selec-

tion and employment of remedies are demanded. Of its etiology and symptoms I have already spoken, as nearly identical with those of chronic metritis in general. I do not refer now to syphilitic ulcers or chancrous sores of the womb; nor shall I attempt the refinement of some writers in describing herpetic and scrofulous ulcers of this organ, in addition to the others of an ordinary character.

Of idiopathic ulcerations of the uterus, three varieties are described: viz., *simple erosions* or *ex-ulcerations*, *erosions with granulations*, and *ulcers, properly so called* (*Grisolle, op. cit.*). Erosions are quite superficial ulcerations, which seem to be the effect entirely of the destruction of the epithelium, and of inflammation of the *corpus reticulare*, which is red and of a uniform surface. More commonly, however, the ulcerative lesions exhibit the appearance of numerous small red granulations, which easily bleed, and are separated by minute sulci, giving the appearance of a raspberry. These little excrescences may be well compared to those which are raised in blistered surfaces of some duration. They occupy sometimes one of the labia of the uterus, but more generally the entire circle of the mouth and the inside of the neck, which is swelled and puffy, extending into the body of the organ itself. The last variety of ulcerations, or ulcers proper, is of rare occurrence. These may show themselves on the neck or appear as fissures in the place of the sulci, made by lacerations of the neck incident to labour.

The *treatment* of granular ulcerations of the uterus will consist in allaying irritation when it is present, and disposing them to cicatrise; but without neglecting measures required by the not infrequently associated engorgement and hypertrophy of the cervix, and even of the body itself. The distinction drawn by Dr. Bennet (A Practical Treatise on *Inflammation, Ulceration, and Induration of the Neck of the Uterus*), between the treatment of the disease in women who have not borne children, and that in those who have, "is merely valuable as calculated to impress on the mind the superior gravity of the disease in the latter."

Inflammation of the mucous membrane of the cervix is so soon followed by ulceration, that you will seldom be called on to treat the first alone; and, on the other hand, the ulceration being the result of inflammation, you must bear in mind the double indication, in directing your remedies. Hence, small bleedings, in the manner heretofore advised for chronic metritis, rest, posture, mild vaginal injections and laxative enemata, will, in subjects of a sanguine temperament, or whose circulation is unduly excited, and in whom there is much sanguineous congestion of the cervix, precede the use of the more strictly topical, which in this disease constitutes the most important part of the treatment.

When the period of inflammation has passed, or when this latter has taken a more indolent course, astringent injections, such as solutions of alum, and sulphate of zinc, infusion of oak bark, rhatany, Peruvian bark, galls, &c., are to be administered. The sugar of lead, commonly mentioned with astringents, is in fact sedative, and is adapted to irritable and painful states of the neck with ulceration when the former would be inadmissible.

In general, however, these remedies will fail us in granular ulcerations of the *cervix uteri;* and we are constrained to apply caustic, of some kind or another, directly to the part affected. This is done through a speculum; different physicians and surgeons extolling different ways of caute-

rization. The simplest and the most efficacious is the nitrate of silver in its solid state, with which, brought to a point, the ulcerated surface should be lightly and quickly pencilled, after you have carefully wiped off with lint any adhering mucus or other secretion. Some prefer using the nitrate in solution, and applying this latter by means of a fine brush. Emollient or slightly astringent injections, three or four times a-day, will be used after cauterization; and if there be any constitutional reaction approaching to fever, a purgative or two may, also, be administered.

An examination of the parts after a week or ten days, will, generally, show a subsidence of inflammation and an approach to, if not a complete, cicatrization of the ulcers. One application will, however, seldom suffice; and after an interval of eight or ten days, it will be well to repeat it. With suitable precautions, in regard to posture and the use of a proper instrument, the solution of nitrate of silver may be injected *per vaginam*, so as to be applied almost directly to the *cervix* and *os tincæ*. For this purpose, the patient ought to recline on the side of a bed or a lounging chair, with the pelvis elevated in such a way as to make the vagina an inclined plane, of which the cervix is the lowest part. When it is desired to apply the fluid to the uterus and not to the vagina, the terminal bulb of the projecting tube of the syringe should be carried in, so as to be felt at the cervix or mouth of the womb, and then withdrawn half an inch, before the contents of the portion are thrown against the diseased surface. If there should be vaginal heat and pain afterwards, a solution of common salt will soon neutralise any remains of the solution of the nitrate which has not combined with the animal tissue.

The acid of nitrate of mercury is a fluid caustic, to which many of the French practitioners are partial. It is a solution of deuto-nitrate of mercury in nitric acid. It is too powerful a remedy in slight ulcerations; and when it is used, a longer period ought to elapse before a repetition than in the case of the nitrate of silver. The proportions laid down by Dr. Bennet, in his valuable treatise, are, of eight days' interval for the acid nitrate of mercury, and four for the nitrate of silver.

The cervix, it has been already mentioned, should be cleansed of any adhering mucus or other fluid—blood for instance. This is done by means of a little lint or sponge held in a pair of long forceps, ten inches in length and made on purpose. "The solid nitrate of silver, fixed in a long porte-caustic, must be drawn two, three or four times over the ulcerated surface, according to the effect wished to be obtained.

"In order to apply a fluid caustic, the following plan should be resorted to: A small thin stick, about a foot in length, having been chosen, is formed into a brush, by inserting between its divided extremities a little wool, lint, or old linen, which is then fastened by a few turns of thread. These little brushes may be made *extempore*, and being of no value, can be thrown away when they have been used. The brush, having been introduced into the acid, should be pressed against the rim of the bottle, in order that it may be merely moistened with the caustic, and then drawn over the ulcerated surface." In cauterising the cervix, the speculum must be firmly applied to the parts, so as to protect the vagina from the action of the caustic. This precaution is more especially called for when the acid nitrate of mercury, the mineral acids, caustic potash, or the tincture of iodine is used. M. Jobert de Lamballe, surgeon at the St. Louis Hospital, has, for some years past, relied on the actual cautery.

The application of a caustic and even of the actual cautery to the cervix, causes very little pain to some patients; but others suffer severely. Dr. Bennet says: "I have certainly seen cauterised, or cauterised myself, several hundred females, and have never known a really serious accident follow. Cauterization, such as I have described it, may give rise to some few hysterical symptoms in nervous females, but that is all."

Rest, warm bath, and some soothing vaginal injections, are demanded on the day in which cauterization is practised; but afterwards, unless there be inflammatory symptoms, the patient may be allowed to go about as usual. Abstinence from sexual intercourse must be enforced during the entire period of treatment, which, if there be associated hypertrophy, will last from two to three months.

To hypertrophy your attention will be directed contemporaneously with the ulcerations; not relying on the treatment alone, as is sometimes done, to the exclusion of appropriate constitutional means, such as I have already placed before you. At the same time, you should be apprised of the fact, that, not only chronic inflammation of the mucous membrane, but, also, inflammatory congestion, and even hypertrophy of the neck of the womb, are often greatly abated by the topical remedies of a caustic nature. That even the entire organ is affected, in a salutary manner, by this means, is proved from the fact of the menstrual function becoming more regular in consequence of their use. So satisfied are some experienced practitioners on this point, that they have recourse to active cauterization of the neck of the uterus, with the express view of diminishing hypertrophied induration of this part. Accordingly, M. Gendrin employs, for the purpose, Vienna paste (quick-lime and potassa fusa, equal parts, reduced to a powder and intimately mixed), and M. Jobert, as before stated, the actual cautery. The result is, that not only is the hypertrophied cervix diminished by the extent of the eschar which separates, but, also, by the absorbents being excited in the chronically indurated tissues for their removal. "When this result is not obtained by the first cauterization, a second or a third seldom fails to reduce the uterine neck to its normal dimensions."

This mode of practice is intended to act more particularly in cases in which the weight of the uterus is so far increased that it causes displacement, commonly *prolapsus* of the organ.

M. Vidal de Cassis (*Essai sur un Traitement Methodique des Quelques Maladies de la Matrice*) gives details of cases of granulated ulceration of the cervix cured by iodinic solutions injected into the cavity of the uterus, by a process already described to you in my lecture on Leucorrhœa.

While thus intent on a removal of ulcerations of the uterus by local applications, we must not lose sight of the constitutional treatment. On this point the following observations by Dr. Evory Kennedy (*Dublin Quart. Journ.*) come in quite appropriately:—

"The use of wine, malt drink, and animal food, is a subject that requires distinct consideration in each individual case. As a general maxim, we would say that the two first are best abstained from, or, if permitted, given very sparingly; there are, however, cases in which they become imperative, as the constitutional health gives way on their withdrawal, and of course the reparative powers are unequal to their task. The principal objection to their use is their effect in keeping up chronic inflammation and congestive determination, and it must always be borne in mind that a strong predisposition exists, particularly to this latter affec-

tion, after healing up these long-existing ulcerations, requiring our most marked attention to prevent, or, if it should occur, to remove. Everything, therefore, calculated to induce irritation or congestion, must be abstained from; thus, long continuance in the erect posture, jolting in carriages over rough roads, intercourse, wine, fermented liquors, stimulating food, and exposure to cold or fatigue, are all to be avoided whilst under treatment, and even for some time after the healing of the ulcer, as we have known a neglect of these precautions frequently retard the recovery, and even produce relapse. Should these precautions be neglected, and congestion occur, then the uterus is likely to relieve itself either by a hemorrhagic discharge, more or less profuse, or by blenorrhagia occurring from the uterus, vagina, or both. Should these symptoms set in, leeching may be necessary, but our patient can seldom bear depletion well at this stage of her treatment. Counter-irritation now becomes the most powerful means of reaching these deep-seated congestions and inflammations, particularly when attending the structural alterations and chronic affections described; and with this view, either the application of repeated small blisters over the pubes or sacrum, Albespeyre's paper, or the hot iron, as recommended by Dr. Corrigan in sciatica, will be found very serviceable. In some of the more obstinate cases, which did not yield to simple remedies, the introduction of a caustic issue, kept open for some weeks, or months, has been most efficacious. The nitrate of mercury allowed to lie on the abdominal surface, over the pubes, for some minutes, has answered very well, and produced a sufficient slough to imbed a piece of felt in, and is a less severe and painful application than the potassa fusa, generally applied where caustic issues are required.

"We should have mentioned that amongst the plans of constitutional treatment had recourse to in some of the more obstinate cases described, change of air is pre-eminently useful. Often we have seen these ulcers become stationary in some stage of their progress, then extend, assume an unhealthy appearance, and, when every variety of local treatment seemed to fail, moving our patient a few miles from her previous residence induced a speedy healing action. In the lapse, perhaps, of a fortnight matters again became stationary, when the change of place was repeated with the same good effect. In fact, this circumstance is now so familiar to us, that not infrequently a patient is kept moving about from place to place until the cure is effected. It is remarkable also that this check in the progress of healing is more likely to occur in the approximation to cicatrization than in the earlier stages of the treatment. Sea air answers best in the great majority of cases, but we have even found a change from the coast inland of service."

Granulations with Stricture of the Os Uteri and Cervix.—M. Velpeau has pointed out, in his clinical lectures, a resemblance between a granulated condition of the internal surface of the cervix, and a narrowing of the passages, analogous to stricture of the urethra. He regards this disease as a cause of dysmenorrhœa and sterility. The *treatment* consists of cauterization with the acid nitrate of mercury, once in eight days, for a month or six weeks, and then of recourse to a bougie, to be carried into the womb, and to be replaced by a larger one as the passage becomes suitably dilated. M. Velpeau also directs the injection of fluids into the uterus, either simple or medicated, as the case may require.

Dr. Holmes of Hinds County, Mississippi, describes nearly an analogous

treatment, with the addition of frequent leeching of the *cervix uteri*, which he pursued in some cases detailed by him in the New Orleans Medical and Surgical Journal, Vol. II. His common practice, in ulceration with engorgement of the uterus, was, to direct leeches to the os tincæ, then to paint the entire neck with tincture of iodine, and afterwards use a wash consisting of half a drachm of nitric acid in twenty-eight ounces of water: a syringeful to be thrown up three times a-day. These remedies were followed by cauterization of the ulcer with nitrate of silver. Pills were given every night to keep the bowels open. He also had recourse, in some cases, to the use of a delicate bougie introduced into the cavity of the uterus.

Physometra, or *Uterine Tympanites*.—Hydrometra, or *Dropsy of the Uterus*.—I shall occupy your time but for a few minutes, while speaking of two diseases of the uterus; manifested in one by the formation of air or gas, in the other by that of water. Both of them are of rare occurrence.

Physometra (pneumatosis of the uterus) consists in an accumulation of air or gaseous fluid in the cavity of the uterus. It is either idiopathic or symptomatic:—the first constituting a secretion from the interior surface of the organ, sometimes without apparent cause, sometimes after certain diseases; the second depending on the evolution of gas from the decomposition of certain matters retained in the uterus, as of a dead fœtus, portions of placenta, clots of blood, or cancerous ichor, polypus, the coagula resulting from menorrhagia, and still more dysmenorrhœa, and the fluid between the amnion and chorion. The gas is inodorous in the idiopathic variety; but, as might be readily supposed from its origin, it is fetid in the symptomatic variety. Sometimes it escapes from the vagina with considerable noise, so as to preclude the patient from appearing in company. When it is retained, however, and distends the uterus, so as sometimes to impose on the person herself, as well as others, a belief that she is pregnant, there must be occlusion of the passage of the neck, or of the os tincæ itself, and probably of both.

The *symptoms* of physometra are nearly the same as those of pregnancy, viz., suppression of the menses, protuberant abdomen, enlarged mammæ, and sometimes the secretion of milk. Although in some instances no complaint of uneasiness or disturbed health is made, yet, in others, as might *à priori* be inferred, the enlarged uterus interferes with the digestive functions, the appetite is in consequence impaired, and costiveness is present. There is, also, pain in the uterus, extending to the groins and thighs.

The *diagnosis* of physometra, when uncomplicated with other diseases, is comparatively easy. It is distinguished from pregnancy by a greater elasticity and lightness of the uterus, a more rapid increase of bulk of the organ, and the absence of *ballottement* or fœtal movement, and of the signs of fœtal circulation, as furnished by auscultation. It differs from hydrometra or uterine dropsy, in the diminished weight, and the greater resonance under percussion, of the uterus; from ascites and tympanites, by the circumscribed and defined tumour, and the uterus being found, on examination, of its natural size, in these two last-named diseases. The occasional discharge of air *per vaginam*, will, also, contribute to enlighten us on the diagnosis

The uterine seat of physometra has been fully established by the observations of Gooch and Ashwell, both of whom record cases in which the disease only occurred when this organ was in a state of vacuity, and in which it ceased so soon as pregnancy took place.

Of the infrequency of true idiopathic physometra, you can easily judge, when you learn that Dr. Ashwell, in his long and large experience, never saw a true case: "one where the air has been the product of morbid secretion from the uterine vessels, and where, from closure of the os, it has been allowed to collect for weeks or months in the uterine cavity, and has then, either spontaneously or by treatment, been expelled; but," continues Dr. A., "I have several times been called in to cure explosions of gas from the vagina, which forming in the uterus escaped involuntarily, and with so much noise, as to prevent the sufferer from entering society."

Inferentially, more than from direct demonstration, it is argued that the air secreted in idiopathic physometra is owing to a sub-acute or chronic inflammation of the internal membrane. With this state must coincide obstruction of the cervical canal, itself caused by morbid secretion or false membrane. Among the *causes* of this disease we find mentioned coition, masturbation, inertia of the uterus after parturition, and great hemorrhages. The subjects predisposed to it, are, women between forty and fifty years old, of a nervous temperament, hysterical, and who have had children.

Treatment.—Acting on the suggestion furnished by the spontaneous cure of physometra, from the patient suddenly stooping, or when dancing or jumping, some have formally recommended exercises of this kind, and also to excite vomiting and sneezing. The propriety of such a course must depend on the condition of the patient at the time, as regards the existence and extent of uterine tenderness and pain, the sympathetic derangements of other organs, and the presence of fever.

Looking to the first indication, which is the evacuation of the secreted or accumulated air in the uterine cavity, a canula or catheter has been introduced so as to favour its escape. This operation requires, of course, great delicacy of manipulation, and supposes a not too great occlusion of the cervical canal. Care must, also, be taken, after it has been performed, to prevent the occurrence of inflammation. Injections of warm water should follow, and if there have been putrid remains a weak solution of chloride of soda or of lime may be similarly used. Astringent and nitrate of silver lotions have been likewise recommended; but in their use much caution is requisite. More permanent good may be expected from those remedies, which, while they give tone to the general system, will, at the same time, act beneficially on the uterus, and prevent the formation of air. With this view, after purgatives, we prescribe bitters and chalybeates, with some preparation of iodine and mineral waters.

Hydrometra, or *Uterine Dropsy.*—This disease, which consists in any morbid accumulation of fluid in the uterus, has been divided into three species: 1, *hydrometra ascitica*, where the fluid is in immediate contact with the cavity of the uterus; 2, *hydrometra hydatica*, caused by hydatids, formed in the uterus; and, 3, *hydrometra gravidarum*, which can only occur in pregnancy. To these, J. P. Frank has added a fourth variety, which he calls *hydrometra cellulosa;* but as the only case, which he adduces, is, evidently, one of hydatids, developed in the substance of the uterus as well as in its cavity, this last must be included in the second species, or *hydrometra hydatica.* Burns believes hydrometra to be one large hydatid, which fills the uterine cavity. Some corroboration of this view is found in the case mentioned by Denman, in which he saw a bag

of the size and shape of the uterus which had been expelled after the discharge of the fluid.

The concurrence of the secretion of watery and other fluids with occlusion of the *os tincæ*, gives rise to uterine dropsy. The disease is *idiopathic*, when the fluid is secreted by an apparently healthy mucous membrane; and *symptomatic*, when the secretion follows, or is the result of morbid states of the lining membrane, such as when fungi or ulcerations are present, or in case of pregnancy or parturition. The appearance and qualities of the fluid vary in different cases: sometimes it is simply serous, at other times it is sero-sanguinolent; and it has been found nearly clear or turbid, the colour of urine, or of coffee, or of muddy water.

The causes of occlusion of the *os tincæ* and the cervical canal, are represented to be, various tumours—fungous excrescences and polypi,—thickened mucus, a false membrane, spasmodic contraction, &c. The quantity of fluid contained in the uterus has varied from a few ounces to as many gallons. What shall we say of the case related by Vesalius, in which a hundred and eighty pints of serosity were discharged from the uterus of a woman labouring under hydrometra?

Of the *causes* of this disease we are ignorant. In some cases its occurrence has been traced to a blow on the abdomen; but for the most part we are unable to assign any proportionable or even appreciable connexion between cause and evident effect. Hydrometra occurs chiefly in married women, and in some instances would seem to be traceable to suppression of leucorrhœa, and also of the lochia.

In speaking of the *symptoms* of simple hydrometra, we ought to be apprised of its exhibiting two varieties,—the permanent and the periodical, or rather the fugacious, for this latter shows itself at intervals, which may be either regular or irregular. Progressive tumefaction of the abdomen from below upwards, causing a round, circumscribed, soft, fluctuating tumour, which gives on percussion a dull sound, is the most evident and constant symptom. To this may be associated various secondary and sympathetic disturbances,—pain, weight and dragging in the loins, groins, and hypogastrium, micturition and constipation. Commonly there is suppression of menstruation, and often enlargement of the mammæ, as in pregnancy. Examination by the vagina, and palpation of the abdomen, enable us to distinguish the hydrometra from ascites, and also, in connexion with stethoscopic signs, from pregnancy. The difference in sound and in fluctuation distinguishes the disease from physometra, in which latter there is resonance on tapping the abdomen, and at the same time no fluctuation.

The *treatment* of hydrometra will be conducted on the same principles, and after the same indications, as were pointed out to you when speaking of physometra. These were, to evacuate the fluid, to prevent its future accumulation by topical remedies addressed to the uterus, and by constitutional ones calculated to give tone to the general system. Puncturing the neck with a trochar, if it should be found impervious, is recommended, even at the risk of metritis; since uterine dropsy cannot, without serious detriment, be allowed to persist. Among the means of prevention against future accumulation of fluid in the uterus, are purgatives and diuretics, alternating with, and followed by, alteratives and tonics. Counter-irritants to the sacrum will rank properly among the curative means.

I may mention here, before entirely dismissing the subject, that dis-

charges of water from the uterus are not infrequent during gestation ; but it was not so generally known, until the appearance of Dr. Ashwell's paper on the subject, that after parturition, pints of watery fluid might pass away by a gush, and subsequently by draining. The labours in the cases narrated by Dr. A., were natural, although somewhat protracted and severe. The patients were delicate women, but free from serious illness. The principal dangers connected with this morbid secretion appear to be of the inflammatory kind ; the weak and rapid pulse, the tenderness and enlargement of the uterus, and the almost entire suppression of the milk and the lochia, plainly point to puerperal mischief.

In the case of a patient, aged 29, the particulars of which are related by Mr. Bury, and which ended fatally, the internal surface of the uterus presented three elevated masses, having both a fungoid and melanotic appearance, more resembling what has been designated the " cauliflower excrescence," than any other morbid or disorganised production. In the left ovary there was nearly half an ounce of pure pus, and the organ itself was surrounded by some adhesions formed by coagulable lymph.

Hydatic hydrometra comes properly under the head of hydatids ; the effusion of fluid being only an occasional accompaniment of the morbid growth, or hydatid proper.

LECTURE LXXVI.

DR. BELL.

TUMOURS OF THE UTERUS—Divisions of tumours in general—Those of the uterus into *fibrous, polypoid, and cancerous.*—FIBROUS TUMOURS OF THE UTERUS—Definition—Varieties—Sometimes may be malignant—Difference in termination between the malignant and non-malignant tumour—Mode of connexion of the first division of fibrous tumours of the uterus—*Symptoms—Progress—Diagnosis—Treatment*—Second division of fibrous tumour, or the sub-mucous—*Symptoms—Diagnosis—Treatment.*—POLYPOID TUMOURS OF THE UTERUS—Their character—Varieties—Mode of formation—*Causes—Symptoms—Diagnosis—Prognosis—Treatment.*

SHORT as will be my remarks on tumours of the uterus, I cannot refrain from introducing them by a concise view of the chief division and leading characters of tumours in general, derived from that excellent work, Vogel's *Pathological Anatomy of the Human Body.* The meaning to be attached to the word tumour, is thus concisely expressed by this author :—

" When the pathological epigeneses of the elementary tissues treated of in the preceding pages, do not serve to unite portions of the body severed by wounds, or to restore loss of substance ; when further they do not, as in hypertrophy, increase the mass of an organ by the addition of new substance similar to, and not to be distinguished from the original ; but when, on the contrary, the newly formed mass is more or less distinct from the surrounding parts, and when the scalpel of the anatomist can separate it from them and isolate it, such an epigenesis is commonly named a *tumour.* The idea attached to the word *tumour* is, however, very indefinite, and there is no distinct line drawn between tumours and regeneration of lost parts and hypertrophies. Again the tumours occurring in individual cases show an endless variety."

The two great divisions of tumours in a histological point of view are described as follows: — "To the first belong those whose elements may be considered histologically to agree with those of the normal body, and which, further, being once formed, discharge the duties of the normal constituents of the body, take a part in the general metamorphosis of tissue, and are nourished and increased like other parts. These are homologous, non-malignant tumours.

"In the second division, we must place those whose elements in a histological point of view differ more or less from those of the normal body, and which (as in the process of suppuration) from their nature give way, soften, and destroy the organic parts which surround them or which they inclose—heterologous, malignant tumours.

"But even this division cannot in all cases be strictly adhered to, for if there are not peculiar intermediate structures, there are at any rate combination of tumours, in part belonging to the one, and in part to the other division; as, for instance, scirrhus, in which there is invariably a combination of homologous with heterologous elements."

I. The non-malignant tumours analogous to the normal elements of the body, consist of eight groups—viz., vascular, fatty, fibrous, cartilaginous, osseous, melanotic, gelatinous and encysted.

II. The malignant heterologous tumours — pseudo-plasmatic — are divided into two classes. The first class includes pseudo-plasmatic, slightly or not at all organised, viz., typhous deposits, scrofulous deposits, and tubercle. The second class embraces epigeneses of a more highly organised character, viz., cancer, under the several forms of cellular cancer, encephaloid; fibrous cancer, scirrhus; melanotic cancer; gelatinous cancer, colloid.

The tumours designated under the terms of polypi and fungoid growths have nothing distinctive to entitle them to separate divisions. The only feature common to the polypi is their arising from or being invested with mucous membrane; but this does not preclude great differences among them in a histological point of view. "The nucleus of a polypus may however be formed by almost any form of tumour, either by a non-malignant structure — as lipoma, fibrous tumour or encysted tumour, or by a malignant structure — as carcinoma." On the subject of tumours generally, let me refer you, for abundant information, to the valuable work of Dr. Gross, of the Louisville University, on *Pathological Anatomy*.

The chief tumours of which the uterus is the seat are the *fibrous*, the *polypoid*, and the *cancerous*. By Dr. Ashwell these tumours are classed according to their *locality*. "Thus, tumours of the uterine walls, including the parenchyma of the organ, will be separated from the more malignant growths of the os and cervix; and these, again, will occupy a place in the classification, distinct from the pediculated and carcinomatous productions of the lining membrane of the uterus." Although this division can have no pretension to scientific accuracy, it has some advantages in the study of the subject, and merits adoption to a certain extent.

Fibrous Tumours of the Uterus.—Under the head of fibrous, we may class those which Dr. Ashwell describes as "tumours of the walls of the uterus, characterized by induration." The different states of fibrous, cartilaginous and osseous, in which these present themselves, depend more on the stage of homologous transformation than on a primary difference in structure. So true is this, that a tumour has been met with which

is soft and fleshy in one part and calcareous in another. The smaller the tumour the greater is the probability of its being fibro-cartilaginous or osseous. Tumours into the composition of which cartilaginous tissue enters are of comparatively rare occurrence ; and the osseous, so called, are, as far as relates to our present subject, an unorganised deposition of calcareous salts between different histological elements, and they belong consequently to the concretions. Fibrous will, therefore, appropriately serve to designate the class of hard tumours which, occupying mainly the walls of the uterus, grow either externally, which is the most common direction, or internally: in the first instance projecting the peritoneal coat of the uterus and thus obtaining an external covering ; and in the second carrying before them and being invested by the mucous membrane lining the uterine cavity. These tumours vary in size from that of a pea or a small nut to the volume of a pregnant uterus of the later months.

Although, for the most part, fibrous tumours of the uterus are homologous and non-malignant, yet as they are susceptible of transition into malignant or heterologous tumours, we must not be surprised when this composite character every now and then is manifested. Let us bear in mind, however, that the change from a non-malignant to a malignant tumour is not brought about by a transmutation of the normal tissues, but rather by new formations which penetrate among the previously existing histological elements of the body. Both kinds may undergo apparently similar changes, as by softening and ulceration ; but in the non-malignant tumours these are effected through the agency of causes which are not inherent in their nature, but are only accidental and exoteric.

"Malignant tumours, on the other hand, proceed of necessity to softening from exoteric causes ; the softening being a necessary consequence of their development."

Fibrous tumours inclosed in the proper tissue of the uterus, and hence by Amusat called interstitial, vary in their degree of adhesion to this organ. Sometimes they are entirely imbedded in uterine fibres; at other times they are but slightly connected with it by some loose cellular tissue, even a mere pedicle. They may occupy either the front or posterior parietes, or one or other side, or the fundus, but rarely the neck.

The *symptoms* of fibrous tumours of the uterus must necessarily vary with their seat. They seldom give much trouble, until, by their size, they encroach on the cavity of the rectum or bladder, and cause compression of one or both of these organs. In addition to disorder from this cause, the patient complains of a feeling of weight in the pelvic region and indefinable uneasiness in the lumbar region and along the thighs. The abdomen becomes tumid and the mammæ sometimes enlarged, so as, in connexion with the sympathetic disturbance of other organs, to simulate pregnancy.

Examination *per vaginam* will often reveal the presence of a tumour of some portion of the uterus projecting beyond the *os tincæ* into the vagina, covered with a smooth membrane and insensible to pressure ; and there is, at the same time, enlargement of the uterine cavity itself. Descent, or prolapsus of the uterus, is also a frequent if not necessary concomitant.

Pediculated fibrous tumours growing into the cavity of the uterus and covered by its mucous membrane, will conveniently enough be described with polypi ; and accordingly I shall wait until this latter class of tumours comes before us for consideration.

Progress. — Fibrous tumours may remain stationary for years and without the health of those who bear them materially suffering; but not infrequently, after a period of varying duration, their growth increases so fast and is accompanied by such symptoms as to create serious apprehensions, unless it can be arrested by suitable remedies. Although the menstrual secretion is interrupted and irregular, and sometimes wanting in the cases of uterine tumours now under notice, yet still there are instances of conception taking place. Such a result is, however, greatly to be deprecated, for, during pregnancy, the tumours are liable to soften by the increased vascular supply to the uterus at this time, and inflammation and unhealthy suppuration are the consequences. If the tumours be of a large size, death generally occurs soon after parturition. This state of things, clearly described by Dr. Ashwell, has been fully corroborated by Dr. Ingleby in his work on Obstetric Medicine.

The *diagnosis* of fibrous tumours is made with little difficulty when the question is between them and pregnancy. From the enlargement and induration of chronic metritis they are not so readily distinguishable; although the partial development, the inequality of the tumour, and its sometimes defined limits, and greater hardness and insensibility, will aid us in forming a correct opinion. Greater embarrassment is experienced in determining whether the tumour be uterine or ovarian, when it has attained such a size as to occupy, in a great measure, the abdominal cavity. If the former be present, pressure on the abdomen over the tumour, with one hand, will give rise to a depression of the uterus felt by the finger of the other previously introduced into the vagina.

Treatment. — We cannot, in general, promise ourselves or our patients more than a palliation of the disease. This is accomplished by rest and a recumbent posture, or at the most very limited exercise; a regulated state of the bowels and attention to procure a discharge of urine, if the tumour press on the bladder, by the use of the catheter; — occasional local detraction of blood by cups to the sacrum or leeches to the vulva; mild alteratives and a simple diet. Of the remedies which may be supposed to promote absorption of the tumour and thus keep down, if not remove, the disease, mercury and iodine are worthy of trial; but with proper precautions on the score of constitution and bodily vigour, especially in reference to the use of the first of these remedies. My own preference is in favour of iodine, which should be used both internally, in the shape of the solution of iodide of potassium, or of the iodureted iodide, and externally in that of ointment of the iodide of potassium. This latter should be applied over the iliac and inguinal regions and along the inside of the thighs, while recourse is had at the same time to warm fomentations and the warm hip-bath, with a view of increasing the absorbent action of the skin. But where hemorrhage occurs and returns with frequency, cold water introduced into the vagina and the same into the rectum will be preferred; together with the use of narcotics, by injection, to the same parts, and in the form of suppositories. Sexual intercourse ought to be entirely and determinately abstained from, under penalty of aggravating the disease and neutralising the effects of remedies. Irritation of the uterus, kept up by this intercourse, ought, it seems to me, to be regarded as one of the causes of fibrous tumours of this organ.

From the fact of spontaneous removal of fibrous tumours of the uterus by absorption, it has been not unreasonably, albeit sanguinely, inferred,

that by the use of medicines which are known to quicken absorption, a similarly favourable result might be procured by art. Under such a view, iodine has been used in the manner directed. Dr. Ashwell tells us, that this medicine has generally restrained the activity of the disease, confining the bulk of the tumour within the limits which it had attained prior to its exhibition; and, moreover, that, after watching some of these cases for several years, there has been no increase of the affection.

Of late years, some surgeons have recommended the extirpation of fibrous tumours of the uterus; and M. Amusat has succeeded, in two cases, in an operation of this nature. One of the patients, two years and a half afterwards, was still in good health. It may be readily conceived that this gentleman will find few imitators in this fashion of treatment of interstitial tumours of the uterus.

The second division of fibrous tumours of the uterus consists of those which grow internally and obtain a covering from the mucous membrane. They are productive of more immediately dangerous consequences than the first division; but happily they are of quite rare occurrence. These sub-mucous growths, as they are called by Dr. Ashwell, give rise to frequent, excessive and fatal hemorrhage. The catamenial secretion is, also, generally increased, and the uterine mucous tissue is occasionally in a morbid state. Hemorrhages of the unimpregnated uterus, of unusual frequency, resisting the most judicious and persevering treatment, may induce suspicion that a tumour of the kind now described distends the cavity and maintains "so congested and inflammatory a condition of the mucous membrane, as to render these bleedings almost necessary for its partial relief."

Between these fibrous tumours and polypi, with which they are every now and then confounded, there is, with few exceptions, as the writer recently quoted properly points out, a difference in structure, and also in sensibility and vascularity. The first are harder, more numerous, affect the organization of the muscular walls of the uterus, which are thickened, have little vascularity, but evince sensibility. "Pregnancy may, and often does, occur in connexion with hard or fibrous tumours; rarely, if ever, when there is polypus, except where the growth arises from the cervix or os." In some cases, of rare occurrence it is true, a fibrous tumour of the walls of the uterus may protrude into the cavity of the organ, and descend gradually until it finally passes out of the uterus into the vagina in a distinct polypous form, which will allow of removal by ligature.

The *treatment* of this kind of fibrous tumours is conducted on the same general principles and with nearly the same means as were indicated for external and interstitial kind. Iodine is worthy of trial, and in some instances exhibits a power of ameliorating the disease in quite a marked manner. In addition to the external use of the iodine ointment, it may be applied directly to the *cervix uteri*, either by the patient herself, or by a discreet nurse, or other female attendant.

Polypoid Tumours of the Uterus.—A polypus of the uterus has been defined by Dr. Ashwell to be, "a firm and insensible tumour, usually round and smooth, and growing by a stalk either from the mucous lining of the uterus or the structure beneath; its chief symptom being hemorrhage. It commences in the cavity of the womb, in the channel of the cervix, or from the os. It is often of a fibrous texture, not malignant,

and rarely ulcerates. It is covered by mucous membrane, and sometimes by an adventitious coat, the product of inflammation. There is little pain, menstruation is excessive, and conception may [but rarely does] occur."

The varieties of polypus, as enumerated by M. Vidal de Cassis (*Traité de Pathologie externe*, t. iv.), are the soft or vesicular, the soft and lardaceous, the fungoid, the granular—probably venereal vegetations, the hard or fibrous, the sarcomatous, the very hard, including cartilaginous, osseous and stony polypi, and finally mixed or compound polypi. There is a frequent variety which, from its appearance, may be designated as the raspberry polypus. The structure of polypi is undoubtedly vascular, although to what degree opinions differ. Dr. Goddard, in a note to Dr. Ashwell's treatise, points out what he believes to be the mode of formation of uterine polypi; viz., from a coagulum of blood deposited either in the uterine parietes or cavity, and which becomes organised by the entrance of vessels into it. "The irritation produced by its presence, determines afflux towards it, and it becomes the seat of deposits of fibrin —finally it protrudes and gets an investment from the mucous lining of the neck of the uterus, or vagina, the vessels being principally developed in this covering." Dr. G. adds, that he has been able to witness this process in almost all its stages.

Of the *causes* of uterine polypus, we know little. It has been thought that this morbid formation is most frequent in women of a feeble constitution who occupy low and damp apartments and who lead a sedentary life, such as seamstresses, cooks, &c. From thirty-five to forty years of age is the period in which, according to Dupuytren, the uterus is most liable to polypus.

Symptoms.—Insensible though polypus be itself, yet when the uterus is distended by its growth and excited thereby to contraction, there is pain in the hypogastrium, loins, groins and thighs; and in its efforts to push the tumour into the vagina, the womb is occasionally carried down to the *os externum*. Hence, if the organization of the cervix be unusually firm, these expulsive contractions will be frequently and painfully repeated; and the polypus may acquire considerable magnitude before its complete extrusion from the uterine cavity. When polypus descends into the vagina, it is readily felt, on examination, by the professional adviser. This cavity is sometimes distended to an enormous degree by the growth of polypi. Time ought not to be allowed to elapse after the occurrence of anomalous sensations and of mucous discharges with occasionally hemorrhage, without a careful vaginal examination. By the aid of a large double-bladed speculum, the lips of the os tincæ have been opened, so as to allow of a portion of the polypus still in the cavity of the uterus being seen. Ulceration of the labia often accompanies polypus.

Menstruation is often profuse and recurs at short intervals. Vomiting is a constant accompaniment of advanced polypus. Great paleness, loss of appetite, diarrhœa, œdema, tympanites, and emaciation, are of frequent occurrence in such a case.

Diagnosis.—Although we are told by competent observers that the diagnosis of a polypus is not often difficult, yet we cannot forget that eminent men in the profession have before now mistaken a uterus for a polypus, and conversely a polypus for a uterus — to the serious extent of operating in both instances by removing the part, viz., a uterus, thinking

it was a polypus, and a polypus, believing it to be a uterus. To European surgeons attaches the stigma of such mistakes. The detection of the os tincæ, with its lips and their relative position, and the pouch which separates the neck from the vagina, and ascertaining the presence of the uterus above the tumour, by feeling above the neck, and if necessary examining *per anum*, will convince us that we have not a polypus to deal with, or, if one be present, will show its true situation. From inverted uterus, the polypus is distinguished by the insensibility of the latter and its generally smooth surface, the unaltered depth of the vagina and the presence of the os uteri within the pelvis. It differs from cauliflower excrescence in its greater smoothness and density, its capability to bear handling without hemorrhage, and its pedicle. From pregnancy it is distinguished by the absence of the audible and most of the sympathetic signs, and by repeated irregular hemorrhages. Dr. Montgomery relates a case (*Dub. Journ. Med. Sciences*) in which *prominent hypertrophy of the anterior lip of the os uteri* was mistaken for a polypus. It was accompanied with extensive ulceration of the *cervix uteri*. In another case, the polypus, with ulceration of the cervix, was mistaken for cancer. Polypus is, every now and then, associated with *prolapsus uteri*.

The *prognosis* of uterine polypus is always serious so long as the tumour is attached to the uterus; and it is fraught with danger when pregnancy is coexistent,—by the risk of abortion and flooding.

Treatment.—But seldom does uterine polypus spontaneously disappear; and on medicinal means we can have no reliance. There remains, therefore, only surgical processes for its removal by force. These consist in excision, laceration, torsion, ligature, and cauterization. That by ligature is usually preferred, as the safest, and also in the main certain. I shall not give the details of the operation, nor specify the instruments used for its performance, as you would doubtless study the subject in detail, in extended systems of Diseases of Females, or in works on Operative Surgery, if you should be required to perform the operation. I may mention, that I have myself found the double-canula and silver wire to answer very well, though, in general, whipcord is preferable, for the ligature. Dr. Montgomery judiciously remarks, that the cure of long-standing polypus, with large discharges, is liable to be followed by a condition of the system requiring precaution against determination to the head.

LECTURE LXXVII.

DR. BELL.

CANCEROUS TUMOURS OF THE UTERUS.—*Cauliflower Excrescence*—Intermediate between the fibrous and polypoid, and the cancerous tumours—*Symptoms*—*Diagnosis*—*Prognosis*—*Treatment*—Cancerous are malignant or heterologous tumours—Most frequent in the uterus—Definition—Varieties—Cancer or carcinoma the generic name, scirrhus the variety—*Histological elements of cancer*—*Causes*—*Formation*—*Progress*—The blood changed in cancer—*Duration*—*Symptoms and Diagnosis*—*Treatment*—Remedies in the first stage—Palliatives in the second stage—Cauterization, a means of temporary relief—Ablation not to be relied on.

CANCEROUS TUMOURS OF THE UTERUS.—Before noticing this last and most formidable division of tumours, a few words may be given to a form

of diseased structure which may be regarded as midway between the fibrous and polypoid tumours, on one side, and cancerous ones on another. My reference now is to *Cauliflower Excrescence.* This corresponds with the *fungoid* polypus of some French authors, and with the *polype vivace* of Levret.

Cauliflower excrescence — the name first given to this morbid growth of the os uteri by Dr. John Clarke — sometimes, but rarely, springs from the cavity of the uterus. It consists of minute ramifications of arteries, connected by a flocculent tissue, and covered with a secreting membrane. "Its surface has somewhat of the granular feel of brocoli; it bleeds on slight handling, and almost constantly pours forth a watery discharge. It varies in size, is nearly painless, and proves its malignancy by returning after removal either by the knife, ligature or caustic."—*Ashwell.*

This is happily a rare disease. The *symptoms* which first attract attention are an unusual moisture about the external parts, and soon after a copious watery discharge, sometimes so great as to wet a great number of napkins in the course of the day. Blood mixed with this discharge excites alarm on the part of the sufferer, who now, perhaps for the first time, invokes medical advice. Hemorrhages succeed, which exhaust the system and give rise to anemia and its concomitant ailments. Examination furnishes proof of the presence of the tumour in the vagina, and for the most part of its adhesion to the lip of the os tincæ.

The *diagnosis* of cauliflower excrescence is not easy;—more particularly may it be confounded with the edge of the placenta when the latter is adherent to the cervix uteri in pregnancy; and with fungoid growth of ulcerated cancer of the cervix. From hard or fibrous tumour or from polypus, it is not difficult to distinguish cauliflower excrescence.

Prognosis. — This is always unfavourable. Few patients survive the full development of the disease beyond two or three years. In one case, in which the ligature had been twice applied, the disease lasted nearly ten years.

Treatment. — The purely palliative treatment of cauliflower excrescence will consist in an avoidance of all excitement and irritation,—such as of sexual intercourse, and stimulating food and drinks; and recourse to rest, recumbent posture, mild aperients, the cold douche on the back, and cold injections into the rectum and vagina. Occasional abstraction of blood from the sacral and hypogastric regions, will contribute to the end here proposed. Astringent injections into the vagina are, also, of great service.

But we have no security for controlling this formidable disease, so as to give probability of prolongation of life, except by removal of the tumour. This is done either by the ligature or caustic, and its performance frequently gives years of comfort to the patient; although it cannot be spoken of or practised as a means of entire or permanent cure.

I recur now to the subject of *cancerous tumours of the uterus.* These are of the heterologous or malignant kind. The uterus is, more than any other organ, the seat of cancer. It appears, as the result of seven hundred cases of cancerous diseases in females, noted by Mme. Boivin and M. Dugès, that more than one-half of these were uterine. Next in the order of frequency, come the ovaries, and then the mammæ; as if nearly the whole violence of this disease was inflicted on the reproductive apparatus.

Cancer of the uterus is defined by Dr. Ashwell: "A disease sometimes hereditary, almost uniformly fatal, and most commonly, but by no means invariably, occurring at the period of catamenial decline, or at a more advanced stage. Its especial seat is the glandular apparatus of the cervix, commencing as a deposit of a peculiar substance with induration. Sooner or later, ulceration occurs, after which it contaminates, transforms, or destroys surrounding parts, displaying a remarkable tendency to the production of fungoid growths in the seat of ulceration. It is generally attended by cachexia and emaciation, and there is often considerable and not infrequently, intense pain."

The varieties of cancer have been already stated to be, the cellular or the encephaloid, the fibrous, the melanotic, and the gelatinous or calloid. Scirrhus is the fibrous cancer of these. The most frequently met with in the uterus are the encephaloid and the scirrhous,—with the ulcerous termination in both. Attempts have been made to separate carcinoma from cancer, and both from scirrhus. The generic name for all is, properly, cancer or carcinoma: a variety is scirrhus.

It has been properly remarked by Vogel (*op. cit.*), in relation to arbitrary distinctions and separation of species: "The anatomical and histological relations of carcinomatous tumour exhibit the greatest variety; indeed, even in the same tumour, different parts often present very different characters. Their characters further vary with their stage of development. These tumours are sometimes soft, resembling cerebral substance [encephaloid]; sometimes firm, like lard; and sometimes hard, like cartilage; sometimes they are highly vascular, and of a reddish tint; sometimes pale; sometimes they are distinctly separated from the adjacent parts, whilst in other cases there is no line of demarcation between them and the surrounding tissues."

Histological Elements of Cancer.—In carcinomatous tumours we meet with the following histological elements,—not of course in the same proportion, or alike in all. 1. A firm, dense, amorphous substance, bearing a close resemblance to, and probably identical with, coagulated fibrin. 2. Molecular granules, which appear to consist partly of a modified protein compound, and partly of fat, and along with them we frequently meet with large fat globules and fatty granules. 3. Cellular structures form a very important class of elements, which are never absent in perfectly developed forms of cancer. They sometimes predominate to such an extent as to form nearly the whole tumour, as in cases of encephaloid, but are only of secondary importance in hard cancer (scirrhus). The cellular structures occurring in cancer are of two kinds: *a.* Such as during its whole process of development can never exceed the cellular form. These cells are the *characteristic cancer-cells; b.* Such as are capable of development into other structures, namely into fibres, and therefore only to be regarded as cells in a transition state, development of fibre-cells. The characteristic cancer-cells present great varieties, the principal of which are, peculiar, caudate, ramifying cells; cells inclosing numerous nuclei, from two to thirty, or inclosing perfect young cells; cells with a thick wall; double cells formed by the division of one, or fusion of two cells; cells filled with granules; cells inclosing granular pigment. 4. Fibres of various kinds form a further histological element of cancerous tumours. They include Henle's nucleated fibres. 5. Bloodvessels also form an element (although not an essential one) of cancerous tumours. 6. Another element is a viscid

fluid, characterized by the presence of a substance resembling mucin or pyin. (*Vogel.*)

The above elements are the essential constituents of cancer. In the process of softening they undergo changes, which, in all essential points, are identical with those observed in the softening of tubercle. According as one or other of these elements predominates, and according to the various modes in which they are associated and arranged, we have the different forms and varieties of cancer, which, however, cannot be strictly separated from one another, but exhibit every possible transition stage.

Of the *causes* of cancer but little positive can be adduced. "The cytoblestema of cancer, as of all other morbid epigeneses, arises doubtless from the blood, is originally fluid, and identical with aqua sanguinis." The further development of the disease consists in the organization of the cytoblestema, and in its conversion into the cells and fibres already described. We must regard cancer as a thoroughly morbid epigenesis, and as not in the smallest degree produced by a metamorphosis of the tissues between which it is developed. The cancerous matter is formed between original elementary parts of the parent tissue, and occupies, more or less completely, all the interstices.

An attempt has been made to explain the *formation* of cancer, by supposing that a cancer-cell accidentally getting into the body, gives rise to the development of a tumour of this description. Experiments by B. Langenbeck, have been cited in proof of this view; it consisted in the production of cancer in an animal by transmitting recent cancer-cells into its organism. But Vogel failed to produce such a result by a similar experiment, which, like others undertaken by Dupuytren, Valentin, &c., with similar negative results, show that cancer-cells lose their capacity for development very shortly after their removal from the body or after death, and render it extremely improbable that cancer can be propagated in this way.

In thus speaking of the origin of cancer from cells, I ought to apprise you that Dr. Hodgkin, of London, a gentleman as distinguished for his ability and zeal in the prosecution of morbid anatomy, as for his active and enlarged benevolence, strenuously and plausibly contends for the origin of the disease in compound cysts or modifications of serous structure.

Progress.—The series of processes occurring in the development of cancer are distinguished: 1, by the increasing infiltration of cancerous matter compressing the elements of the parent tissue, which latter appear to be blended with the deposit into a homogeneous mass, and gradually become atrophied and disappear: 2, by softening, which may proceed even independently of cell-formations, and which is very gradual, commencing at individual points of the tumour, often at several simultaneously, but continuing to progress so as to involve the whole cellular structure within the tumour; 3, by the passage outwards from the tumour of the collected fluid, thus converting occult into open cancer; 4, by chemical changes in the softened cancerous matter, which becomes decomposed, acrid, fetid, and of an unhealthy appearance; 5, by the putrefaction and disintegration of the fibres and bloodvessels of the tumour, which in themselves have no tendency to soften. The period in which these various processes may be gone through varies greatly in different cases: they always require several weeks or months, and sometimes several years. The rapidity of progress is in proportion to the quantity of cellular tissue in the part; and hence it

has been remarked that the forms of cancer in which cells predominate (encephaloid), usually run their course and terminate fatally in about as many months, as those forms in which fibres predominate (scirrhus) require years.

Cancer is enlarged locally by the increase of cells, the cancerous parent-cells containing in their interior young cells, which in all probability, are capable of a similar mode of increase. When softening has commenced, or sometimes sooner, the disease increases after another mode, or by the formation of "cancerous tumours distinct from the original tumour, often many in number, some being situated in close proximity with the original seat of the disease, namely, in the adjacent lymphatic glands, whilst others occur in remote parts of the organism."

The blood is changed in cancer, as shown by microscopical examinations; its fibrin is absolutely and relatively increased, and its blood-corpuscles very much diminished, and altered in size and other properties, giving rise to a considerable deficiency in the collective solid residue of the blood. Peculiar glistening particles (probably fatty particles) are also noticed by Heller, from whose experimental observations the facts just mentioned are deduced. (*Pathological Chemistry of Cancer.*)

The *duration* of cancer of the uterus is, on an average, about twenty months; the minimum being three, and the maximum sixty-six months, or five years and a half.

Symptoms and Diagnosis.—Many of the symptoms of uterine cancer are common to other affections of this organ; such as irregular menstruation, leucorrhœa and hemorrhages. Various constitutional or sympathetic disorders are also common to several diseases of this organ. Weeping of blood between the menstrual epochs, or still more when the catamenia have ceased to appear, mixed with a discharge of vaginal mucus, will excite suspicion, the confirmation of which should be tested by vaginal examination, both by the touch and by the aid of the speculum. If a polypus should be present, it is readily felt as an indolent tumour with its pedicle distinct from the *os uteri*. Should the tumour be still in the cavity of the uterus, the frequent occurrence of hemorrhages will help to point out its character. By the touch and speculum, both simple and granular ulcerations may be distinguished from the cancerous: the first are superficial, their borders slightly projecting, and their surface red and finely granulated; the cancerous ulcers have elevated, jagged, and indurated edges, and a dark-red or claret-coloured surface, which is dotted with hard excrescences or covered with fungous growth.

Pain is a usual accompaniment of uterine cancer; it is mostly lancinating, sometimes burning. Some patients suffer no pain at all in the uterine region.

Between scirrhous growth and hypertrophy with induration, the diagnosis is more difficult. In the latter the surface is more uniform, often morbidly warm and tender on pressure; while even in the early stages of cancer the surface is irregular and rough, free from tenderness, and there is often a weight, coldness, and stony hardness. The mucous membrane covering the cervix is redder, more vascular, and sensitive in the former; and of a dull white, or slightly grey colour in the latter. The distinct and separate nodules in carcinoma are not met with in chronic metritis, or in hypertrophy of the uterus. Scirrhus is slow in its development; inflammatory engorgement is rapid, frequently reaching a size in six or eight weeks which scirrhus would require as many months to attain.

The diagnosis of cancer in an anatomico-pathological point of view, must rest, in the early stage, before softening has taken place, on the presence of cancer-cells. The irregular caudate cells are especially characteristic; so, also, are the large cells with many cytoblasts and young cells, the cells with a thick wall, and the accumulation of cells in fibrous capsules. After the softening of a cancerous tumour, which may also occur in tubercular tumours, and in cases of unhealthy malignant suppuration, we must search for the cancer-cells, which, as characterized by their form and size, may be readily distinguished from pus capsules, as well as from the indefinite cellular structure of tubercular swellings.

Treatment.—This, to be at all effectual, must be carried out in the first stage of cancerous tumour, before softening has begun. Its chief outlines are well and clearly indicated by Dr. Ashwell. They are, first, hygienic, viz., repose, a simple and unstimulating diet, in which alcoholic stimulants are forbidden and animal food is allowed but once a-day or every two days, absolute abstinence from sexual intercourse; and secondly, medicinal, viz., iodine, mercury, and the narcotics. Among local or external remedies, regular use should be made of bloodletting, sometimes by venesection, but more frequently by cups to the sacrum, or leeches to the perineum, vulva, or *cervix uteri*, or by scarifications of this latter part; warm bathing; blisters and setons; and the topical use of iodine, the chlorides of zinc and mercury, and nitrate of silver.

In order to derive full effect from the bath, the patient ought to remain an hour in the water, night and morning, and so contrive, with the aid of a speculum, perforated with numerous holes at its sides, introduced into the vagina and held there by herself, to allow of the warm water being in contact with this passage and the mouth of the uterus. The application of the iodine to the cervix will, in Dr. Ashwell's opinion, be sufficient to secure its beneficial effects, especially when the friction is persevered in for ten or twelve minutes. "Many patients apply it by the finger, others employ a camel's-hair pencil or sponge, mounted on a slender piece of cane." Dr. Ashwell's partiality for the local use of iodine is founded chiefly on a belief of which I doubt the correctness. It is, that by this means the constitutional disturbances often caused by the iodine will be prevented. If it affect the system by this method, it must give rise to the same symptoms as those that would ensue on its ingestion into the stomach. I have no hesitation, in these cases, in giving iodine by the stomach, conjointly with its use by inunction. The ointment used by Dr Ashwell is thus prepared: — ℞. Iodin. pur. gr. xv. Potassæ hydriodat. ℈ij. Unguent Cetacei ℥iss. M. ft. ung. nocte quâque infricand. A portion of this ointment about the size of a small nutmeg, is to be introduced into the vagina, and rubbed into the affected cervix every night.

Dr. Montgomery's advice respecting the use of mercury in carcinoma of the uterus is, that it should be given so as to bring the system very gently, but decidedly, under its influence; for which purpose it may be combined with iodine in very minute proportions, and, also, with camphor, opium, hyosciamus, or hemlock. It must be well understood that this advice is applicable only to cases uncomplicated with scrofula and anemia, and in which softening and ulceration have not yet taken place.

Nitrate of silver, applied to the diseased parts by solution or pencilling, improves the condition of the mucous membrane, removes leucorrhœa, and diminishes the induration of the cervix. In cases of abrasion, or

softening of the cervix, it may be used in the proportion of 30 to 40 grains to half an ounce of distilled water.

In the confirmed stage of uterine cancer, little can be done, and that purely of a palliative nature ; the chief part of the treatment consisting of the use of various washes,—simple, stimulating, astringent, and even caustic, according to circumstances,—introduced by injection into the vagina and to the *os* and *cervix uteri*. That which I have found to be the most comforting to the patient and most useful in neutralising the offensive odour so common an accompaniment of advanced cancer, is the chloride of lime in water.

As respects cauterising the affected part when it can be reached, temporary relief is the most that can be expected. Ablation of the neck of the uterus — the part chiefly affected with cancer — has been frequently practised ; but the favourable results are numerically too few to serve as an offset to the deaths caused by the operation, and it now finds small favour among experienced practitioners and observers.

LECTURE LXXVIII.

DR. BELL.

Displacements of the Uterus.—Prolapsus Uteri—Definition—*Procidentia uteri*—*Symptoms*—Prolapsus liable to be mistaken for other diseases—*Causes*—Immediate organic ones—Enlarged uterus from chronic inflammation, &c.—*Treatment*—Constitutional and local—The first with rest will often suffice—Of the local, the use of the pessary is the chief—Preliminary treatment in all cases—To replace prolapsed uterus—Avoidance of all strains—Circumstances requiring the use of the pessary—Immediate good effects—The kinds most useful—Directions for their use—Extreme views—Means of supporting the abdominal muscles and perineum—Attention throughout to the general health.—Ovaritis—Oophoritis—*Inflammation of the Ovary*—More frequently occurs than is generally supposed—Divided into acute and chronic—Frequently coexist together—*Anatomical characters* of acute ovaritis—*Progress*—*Termination*—*Symptoms*—These sometimes met with in dysmenorrhœa—Chronic ovaritis—Resembles the acute in its chief phenomena—*Causes*—*Treatment.*—Gonorrhœal Ovaritis—Analogous to gonorrhœal orchitis in the male subject—*Treatment* similar—Ovarian tumour—Ovarian dropsy.

Displacements of the uterus include antiversion, retroversion, prolapsus or procidentia, and inversion. Of these, I shall only speak, at this time, of prolapsus uteri.

Prolapsus Uteri implies a displacement of the womb by its sinking down nearly or quite to the *os externum*, or resting on the perineum. The vagina at this time is considerably everted, and the womb, no longer in the axis of the brim, which is downward and backward, assumes the axis of the outlet or of the vagina, which is backward and forward. A still greater degree of displacement of the organ is designated by the term *procidentia*, which is a complete protrusion beyond the vulva.

As quite a common and troublesome, and by the uninitiated little understood, and, therefore, often a mismanaged affection, I wish to put you on your guard as to the leading symptoms of prolapsus. Every now and then a female will consult you or get a friend of her own sex to speak for her ; more generally, too, the advice will be asked for sideways, and when you are visiting some other member of the family. You will be asked what is

good for strangury, or a frequent desire to pass water; and perhaps, with great simplicity, you may prescribe some diuretic or an anti-lithic; but in vain. Your patient still complains, and will now, perhaps, add that she has pain in her back or loins, and a feeling of dragging and bearing down, and that her bowels are sometimes disturbed without any apparent cause, and without relief by evacuation. She also has leucorrhœa, which, perhaps, she regards as her disease, and therefore one to be treated by nurses' prescriptions rather than by the doctor. It may be that she does not allude to any pelvic annoyances, but will describe to you the feeling of emptiness or gnawing at her stomach, or pain of the left side; she will also have hysterical disorder. Now all these symptoms are frequent, I do not say invariable attendants on *prolapsus uteri*, which, once suspecting your patient to be troubled with, you will ascertain positively by an examination *per vaginam*.

Causes.—Prolapsus, though most common in married females, is not confined to them. Two of the worst cases in Guy's Hospital were, as stated by Dr. Ashwell, in young unmarried girls. I have myself met with it in an unmarried lady, in whom the vaginal orifice, still in a great measure covered by the hymen, barely allowed of the introduction of the finger to ascertain the condition of the uterus: the organ was enlarged and congested, and rested on the perineum. The more common occurrence of this displacement among the poor than the rich, is explained by the greater strain to which the first are so often exposed in different laborious employments.

The immediate organic causes are usually represented to be, increased capacity and relaxation of the vagina, and weakness and undue expansion of the broad and round ligaments of the uterus. A much more frequent cause, and one on which due stress has not, I fear, been generally laid, is increased size and weight of the uterus itself, resulting from chronic inflammation of the organ, with engorgement and often induration, and also, from fibrous tumours and polypi. Want of due support and of moderate compression of the abdominal viscera, owing to relaxation of the abdominal muscles, has also its share in the production of prolapsus. The viscera now press by gravity directly downwards and forwards on the pelvis and its contents, and consequently on the uterus, the ligaments of which are, in consequence, subjected to a great and unusual strain. Dr. Meigs, on the other hand, believes prolapsus to be "an affection of the vagina"—connected with a certain morbid condition of the motor muscles. (*Colombat, Treatise on the Diseases and Special Hygiene of Females.*) It follows labour and the too early resumption of the upright posture; and hence the necessity of cautioning a woman, after the birth of her child, against too soon leaving her bed and abandoning the recumbent posture. Argument may be drawn in favour of either of the etiological views just presented, from this fact, as well as from the greater tendency of prolapse after abortion and during the menstrual period, if any active or unusual exercise, such as running, dancing, and jumping have been taken.

Treatment.—This is constitutional or general and local. The predominance assigned to one or other of these will depend, a good deal, on the views entertained by practitioners of the organic causes of the displacement. I have already stated that which seems to me to be the correct opinion; and it is the one which ought to govern our practice. Descent of the uterus is merely a symptom, an effect, of organic disease

of the uterus, to the ascertaining and treatment of which our attention must be primarily and mainly directed. Congestion or chronic inflammation removed, the uterus recovers its normal size, and no longer drags unduly on its ligaments; or tumours reduced or extirpated, as polypi, for example, the organ in like manner regains its place after the body dragging it down has been removed. There is one part of the treatment applicable to both views of the pathology of prolapse: it is, rest and a recumbent posture, by which not only the congestion or inflammatory enlargement of the uterus is abated, but, also, if such a state of things exists, the uterine ligaments cease to be on the stretch, and have time to recover their proper length and tone.

Part of a constitutional treatment, in addition to that more particularly directed for the removal of chronic inflammation and enlargement of the uterus, will consist in a restoration to health of the digestive organs, especially the removal of costiveness — the straining from which sometimes brings on the disease. Much coughing and violent vomiting have produced the same effect. Tonics of various kinds are also indicated where there is complaint of languor and feebleness, without evidences of inflammatory engorgement of the uterus or associated phlegmasia of another organ. Of the extent to which reliance is placed on general or constitutional treatment alone, we can have a good idea from the experience of Lisfranc, who, in his large practice in the treatment of uterine diseases, never had recourse, in a single instance, to a pessary, or similar topical means of relief.

In all cases of prolapse, the first measure, after subjecting the patient to rest in a recumbent posture, will be to replace the uterus in its former position as nearly as may be, if the descent has been considerable. Sometimes the mere change of posture will of itself be adequate to this end. If, indeed, there should be inflammation and engorgement of the organ, and much irritation about the cervix, some antiphlogistic remedies,—a small bleeding, salines and antimonials with narcotics, and the topical application to the vagina of weak solutions of sugar of lead,—should precede the taxis or manual efforts to replace the uterus. In this latter process, but little difficulty will be experienced; and if it be otherwise, no force should be used to overcome it. A steady yet moderate pressure will be made upwards, at first in the line of the axis of the vagina, and next of that of the brim, while the neck of the uterus is held between the thumb and the first and second fingers, which, as well as the vagina and the fingers of the physician, ought to have been previously lubricated with lard, or sweet oil, or mucilage of flax-seed.

After the restoration of the uterus to its former position, not only entire rest is to be enjoined on the patient, but she should lie with her hips somewhat raised, and avoid all straining or sudden spasmodic efforts of the respiratory apparatus; and hence constipation is to be removed and obviated, and the return of coughing prevented by appropriate means. In many instances, rest and the restoration of the uterus to its normal size will suffice, for the cure of prolapsus. Some aid will be given towards this end, as well as prevention against a return, by the use of moderately astringent injections, and the cool hip or the general shower-bath, if not contra-indicated by the state of the patient, arising out of her habits, or of other organic disease. The alum hip-bath, at a temperature of 94° F., taken every night for a period of twenty minutes, is a useful adjunct to this part of the treatment.

But, when the case is tedious, either from prolonged chronic enlargement and induration of the uterus, or relaxation of the ligaments and abdominal muscles, long confinement to the house and entire want of bodily exercise prove exceedingly detrimental to the general health, and in this way will really keep up in a great degree the disorder which they were intended to cure. In many instances, too, women who are at the head of a family cannot be spared from their household duties and employments; and hence it becomes a matter of urgent necessity, that they should, if possible, be allowed requisite freedom of motion for these purposes. Under such circumstances it becomes an interesting inquiry, whether certain palliative means cannot be resorted to, with a view of enabling the patient to move about, and to take the exercise required, under proper regulations, for her health.

It is now that the pessary may be employed, with, in some instances, very great comfort to the patient, and with the effect of an almost immediate removal of the feeling of dragging at the groins and thighs, pain in the back, sinking of the epigastrium, and after a short period the cessation of troublesome micturition. The main condition for the first introduction and after-use of this instrument, is the absence of inflammation or of any considerable irritation of the uterus and vagina. It should be withdrawn during the menstrual period, if the patient is not obliged to be much on her feet, or to take active exercise at this time ; and, also, if inflammation of the vaginal passage or uterus supervene ; or if it give rise to persistent irritation of the bladder and rectum, and to considerable leucorrhœa.

A good pessary should be light, hard, and smooth, adapted to the size of the vagina, and produce, of course, no abrasion, nor interrupt, by undue pressure, the evacuation from the bladder or rectum. Of the various kinds, in composition and figure, the best are those of silver, with a gilt surface, and of glass, and either globular, or flattened and circular with concavo-convex surfaces. I used, before the introduction of glass pessaries, to employ, in Dispensary practice, from motives of economy, those made of cork covered with repeated layers of melted wax. These were sometimes circular, and often of the figure 8, with a hole in the neck or narrow part. They were found to answer a good purpose, and are far preferable to those made of gum elastic, and even of wood, unless this be of a hard and fine grain, by which it is prevented from absorbing moisture, and thus, as in the case of the gum-elastic and sponge pessaries, becoming saturated with the fluids of the vagina, and rendered very offensive and irritating. The ring pessary is objectionable on the ground of its allowing the *os* and a portion of the *cervix* to pass through and become sometimes strangulated. The circular and flattened pessary with depressed upper surface and convex below, has a central opening to correspond with the *os tincæ*, and allow of the escape of the secretions from the cavity of the uterus.

The process of introduction of the pessary is simple and generally easy. The patient reclining on her side or back, as in labour, the physician, having previously anointed or lubricated his hand and the pessary, takes hold of the latter, and, by a moderate and equable pressure, passes it through the vulva into and up the vagina, until it exerts decided pressure against the *os tincæ*. When the circular and flattened pessary is to be used, it must be introduced edgeways, and so soon as it enters the vagina, receive an oblique direction ; and, finally, turned so that its concave surface shall

present to, and be in contact with the *os tincæ*, and the convex point downwards into the vagina. If the vagina be very large, or the instrument too small, the latter is apt to be protruded, and fall out during the effort of expelling the feces, when the patient is at stool; to obviate which she should give some support with her fingers to the pessary at this time.

Of late years there has been increased opposition to the use of the pessary, the greater part of which resolves itself into ignorance on the part of the physician, as to the circumstances under which it is proper and the conditions for its continuance, and into carelessness on the part of the patient, in wearing the instrument too long and not renewing or cleansing it at proper intervals. Objections ranged under these two heads might be accumulated against any mode of practice and use of agents, either therapeutical or surgical. In laying stress on the pathological condition of the uterus, which I believe to be chiefly concerned in prolapse, I certainly indicate no partiality for the employment of the pessary; but, on the other hand, I cannot go the length of some who reprobate its use as either nugatory or mischievous.

Influenced by a mistrust or dislike of the pessary, many members of the profession and some amateurs peeping at its domain have busied themselves with devising various fashions of belt and pad for the support of the abdominal muscles and the perineum. Some of these, by the wrong direction of the anterior or hypogastric pad, are calculated more evidently to press the uterus downwards than to remove the weight of the abdominal viscera from the organ. When so constructed as to meet this last indication, the utero-abdominal supporter, as it is termed, does, in cases of relaxed abdominal muscles and pendulous belly, undoubtedly give considerable relief, and enable the woman affected with prolapse to move about with ease and comfort. As a means of cure, I cannot, from any evidence that has reached me either in my own patients or those of brother practitioners, say anything in the way of commendation.

In all cases of prolapse great care ought to be taken to inculcate the use of those measures, which are calculated to give tone to the system and to improve the general health.

Ovaritis—Oophoritis—Inflammation of the Ovaries.—Inflammation of the ovary is a disease of more frequent occurrence than is generally supposed by medical writers and practitioners. It is divided into acute and chronic; but more frequently the two states exist together. The symptoms, and, of course, the diagnosis, are by no means clear; and it is owing to this difficulty, that the disease often goes on until it has acquired an ascendency that renders it intractable to remedies. Most commonly but one ovary is the seat of inflammation.

The *anatomical characters* of ovaritis have been, of late years, described with considerable minuteness by M^me^ Boivin and M. Dugès, under four stages or degrees; which I shall not repeat in this place. It is sufficient for us to know, that the ovary is at first slightly increased in size, is redder, and more injected and firmer than natural, and afterwards its vesicles are swollen, so that it is, sometimes, as large as a hen's-egg, assumes an oval and somewhat flattened form, and becomes infiltrated with a yellowish or violet-coloured serosity. Finally, the enlarged ovary is softened, and diffluent at its centre, or it may be in part or in whole converted into pus, and blended with the effusion from the peritoneal surface. In some cases, ovaritis is characterized by a number of purulent cavities in contiguity to each other. These small tumours form a congregation

which makes up a large swelling, of the size of the fist according to some, of that of a child, or even a man's head, according to others.

The enlargement of the ovary protrudes the uterus from its place, and presses on the bladder and rectum, and the vessels and nerves of the pelvis; and even renders it perceptible above the superior strait of the cavity. Adhesions to the neighbouring organs, into which the matter of ovarian abscess is discharged, are often seen, as to the rectum and vagina, the neck of the uterus, and even the Fallopian tubes and the bladder. There are examples even of the abscess passing along the round ligament, and presenting itself at the crural arch or inguinal ring. Montault cites a case in which the ovarian abscess on one side opened into the colon, in the left iliac region, and one on the other into the cæcum, the latter of which opened externally, and made an artificial anus.

Induration is another form in which ovaritis terminates; and in this state it may remain comparatively latent for a length of time.

The *progress* and *termination* of ovaritis may be in part inferred from the description of its anatomical characters. It ends in resolution, and more frequently, in suppuration,—sometimes in chronic induration and enlargement, approaching to a scirrhous nature. Cancer, though rare, has been seen. Inflammation of the ovary, when resulting from suddenly suppressed menstruation, or leucorrhœa, or occurring in dysmenorrhœa, or associated with and a consequence of, metritis, will generally subside with the restoration of the suppressed secretion, or removal of the phlogosis, of the previously affected organ—after, be it understood, however, a suitable treatment.

Suppuration is indicated by irregular chills and night sweats; and a softening and fluctuation of the tumour. At this time the patient complains of numbness, cramps, and œdema of the lower extremity of the side corresponding with the affected ovary.

Symptoms.—We sometimes meet with well-marked symptoms of acute ovaritis in an attack of dysmenorrhœa, as described by Dr. Rigby. The patient complains of severe shooting pains deep in the iliac region of the side affected, and behind the crural arch; the part of the groin corresponding to the situation of the ovary being painful on pressure, with a sense of throbbing, fulness, and heat. She is unable to bear the erect posture, from the skin of the part being now put upon the stretch, producing considerable pressure upon the inflamed organ. Ovaritis is attended with much irritability of the uterus, as well as of the bladder and rectum; the degree in which the last two organs are affected, depending, in a great measure, upon how far it is the anterior or posterior portion of the ovary which is most affected; thus, where the anterior half is the seat of inflammatory action, the pain extends to the bladder, with much irritability of this organ, and even strangury. On the other hand, if the posterior half of the ovary be chiefly affected, the pain is deeper-seated and extends backwards to the rectum, with tenesmus, and other irritation of that bowel. When enlarged by congestion or inflammation, the ovary can be distinctly felt by the finger in the rectum, projecting like a knuckle at the side of the uterus, and intensely tender under the touch. Fever is generally present, and the patient is often annoyed with nausea and vomiting.

The enlargement of the ovary may, as already stated, be so great as that the tumour shall rise above the superior strait of the pelvis, and, in some cases, extend to the iliac and the lumbar region, and, sometimes, even

reach the linea alba and umbilicus. In figure, this tumour is of an elongated oval, and takes an oblique direction; it is hard, dull on percussion, and very painful. On introducing the finger into the vagina, the uterus will be found to be depressed, and, pushed to one side, and, sometimes, in a state of antiversion or of retroversion.

Chronic ovaritis, in its chief phenomena, resembles so much the acute that it is not easy to draw the line of diagnosis between them. We shall probably be correct in assuming that the various degenerations of the ovary, such as hardness, softening, and encysted suppuration, are the results of chronic inflammation of the organ. Acute is, however, as I stated before, apt to supervene on the chronic state.

Causes.—The most frequent causes of ovaritis are, inflammation, great physiological excitement, and disorder of the uterus, as pregnancy, the puerperal state, suppressed lochia or menstruation, inordinate coition, and metro-peritonitis. In some instances, contusions or blows on the lower part of the abdomen have caused the disease.

Treatment. — The treatment of ovaritis is not based on very well-defined principles, nor can it be said as yet to be deduced from a large number of accurately observed and recorded cases. Coming on insidiously, not indeed without symptoms sufficiently marked, but which are referred to common and temporary uterine disorder by the patient herself, this disease has often made progress before recourse is had formally to medical advice; and then—shall we make the admission—the diagnosis is not always made with the precision that could be desired to guide the physician to the use of remedies which are intended to influence directly the diseased ovary.

In general, the treatment is the same as that of other phlogosed organs, with the modifications depending, at times, on the secondary or symptomatic character of ovaritis, as where it follows suppressed menstruation or accompanies dysmenorrhœa. In its simple acute form and early stage, recourse should be had to the lancet, with the like intention as in the phlegmasiæ generally; and the farther effects of sanguineous depletion to be obtained, if the pain, heat, and fever persist, by the use of leeches, applied to the hypogastrium or to the iliac region, the vulva, the inside of the thigh, or to the anus. Dr. Rigby, it will be remembered, gives a preference to the last-mentioned spot, in ovaritis associated with dysmenorrhœa and congestion of the pelvic viscera. In one case, he had leeches applied inside the rectum, by means of a speculum of course, so that they were directly over the inflamed ovary.

In continuation of the antiphlogistic treatment, recourse will be had to laxatives and enemata of a soothing nature, the warm bath or warm semicupium, antimonials with opium, and calomel similarly combined. M. Velpeau speaks highly of flying blisters, or successive vesications, in the region of the ovary. Dr. Rigby insists, as I told you when treating of dysmenorrhœa, on the superior efficacy to all these remedies, of friction with tartar-emetic ointment, carried to the extent of producing a slough.

In the chronic variety of ovaritis we may still employ leeches, under circumstances to be determined by the constitution of the patient and the duration and intensity of the symptoms. Laxatives with narcotics, and the latter with blue mass, iodide of potassium, and antimonials, in such doses as not to distress the stomach, aided by external application of mercurial, or iodide of potassium, or tartar-emetic ointment, and warm

bathing, or sometimes the cool shower-bath, will constitute the chief additional features in the treatment.

Gonorrhœal Ovaritis.—To this form of inflamed ovary our attention has been mainly directed by M. Ricord, who compares it, not inaptly, to the gonorrhœal orchitis in the male subject. The inflammation of the vagina extends to the uterus, and thence along the Fallopian tubes to the ovary.

The *treatment* is analogous to that of orchitis succeeding gonorrhœa, viz.: antiphlogistic, and the use of the warm hip-bath, fomentations to the hypogastrium, and warm and emollient injections *per vaginam* and *per anum*.

Tumours of the Ovaries.—Ovarian tumours are divided, like uterine ones, into the non-malignant and the malignant. Of the first, the fibrous are those chiefly seen. As resembling so closely in structure fibrous tumours of the uterus that they are not discernible from these latter, they need not detain us long in reference to their morbid anatomy or histology. They occasionally attain an immense size. The *symptoms* chiefly proceed from their mechanical interference with adjoining pelvic organs, and chiefly the rectum and bladder. With increase of growth, there may be abatement of the disorders of these parts and an extension to the higher viscera. The tumours are slow to take on inflammation, and unless they do, they give rise to little constitutional disturbance or functional sympathy. The *treatment*, in the first stage, while the tumour presses upon the rectum and bladder, will be directed to palliate the disorders of these organs by the use of laxative enemata and the catheter. If inflammation should arise, it will be counteracted by antiphlogistics; but on the tumour itself we do not hope to produce an impression, and therefore let it alone.

Malignant or *cancerous tumours* of the ovaries are, I took occasion to state to you before, next in frequency to those of the uterus. The *causes* of this form of disease are not well known. The importance that might be attached to pregnancy and labour must be greatly diminished by a knowledge of the fact that these tumours have been met with in the virgin state.

Until softening begins, there are no very characteristic symptoms of malignant ovarian tumour. After this change, we must expect severe pain and rapid deterioration and exhaustion of the system; and we may now recognise the description of Dr. Seymour, who remarks: "The malignant form of the disease may be recognised, during life, by the want of nutrition and broken health of the patient, the uneasiness and rapid growth of the tumour, the simultaneous enlargement of glands in other parts of the body, and the occasional occurrence of lancinating pains in the parts. The latter symptom is not constant. The pulse is quick and feeble, and as the disease proceeds, there is hectic fever, and often aphthæ of the mouth, with an inexpressible sense of debility."

The *treatment* of these tumours, unless in their early and forming stages, is purely palliative, and even this is of the simplest kind; being chiefly confined to the use of mild aperients, warm bathing, fomentations, and narcotics.

Ovarian Dropsy.—Not infrequently dropsy of the ovary is designated by the generic term, ovarian tumour,—owing to its circumscribed though often extensive limits and resistance under pressure. Unlike other forms of dropsy, that of the ovary seldom originates from any source but the

organ itself; and it is encysted, and this not in one but in many cysts, so that it has been appropriately called *multilocular cystic dropsy*. The cysts are simply small and pediculated bags containing serum, attached to the surface of the ovary, or to the broad ligaments, or to the Fallopian tubes. There is a variety which we can hardly call ovarian, comprising dilatation and dropsy of the Fallopian tubes themselves, caused by infiltration and filling up of the canals. Another variety consists of a single cyst, attributed to an accumulation of fluid in one or more of the Graafian vesicles.

In still further contrast with other kinds of dropsy are the curious facts that, in the ovarian, different cells of the same tumour are filled with different fluids, and intermixed with the secretions are fat, hair, and imperfectly organised teeth. The hypothesis that would attribute these formations to conception, the effects of which were afterwards interrupted and rendered imperfect, is shown to be erroneous by the fact, that the like formations are found in virgins where the hymen was entire, and in the anterior mediastinum of a boy.

Causes.—Amidst the discrepant opinions still held respecting the relative liability of married and single women to ovarian dropsy, it would seem from the cases collected by Mr. Spafford Lee that the married are the most liable. Of 136 cases, 99 had been married and 37 only were single. The most frequent cause this writer believes to be referable to labour; and next in frequency are the sudden suppression of the menses, and the excitement of the sexual act. Ungratified sexual instinct he regards as the most frequent cause among the unmarried. The duration of the disease varies from one year in 38 cases, to four years in ten cases, sixteen years in 5, and thirty years in 1.

Symptoms and Diagnosis.— An uneasiness or deep-seated pain and swelling in one of the groins, a sense of weight and bearing down in the pelvis, a throbbing pain at the anus, and a *burning* sensation in the hip of the affected side, are complained of. Constipation and hemorrhoids, not unusual symptoms of uterine tumour, are met with in this disease; so, also, are varicose veins and œdema of the limbs. Examination *per vaginam* shows the uterus to be healthy; but pressure on the posterior and upper part of the vagina gives pain. The remote or sympathetic disorders would seem to indicate pregnancy. Tympanites may accompany the first rise of the tumour into the abdomen.

When the tumour is still in the pelvis, it may be confounded with retroversion and retroflexion of the uterus. Examination will show the *os uteri*, in the case of ovarian tumour, to be in its proper position, looking backwards; the body of the uterus forward and movable with the uterine sound. In retroversion, the *os uteri* is forcibly thrown forwards and upwards; the womb is fixed and painful.

The use of the uterine sound, recommended by Dr. Simpson, of Edinburgh, will aid us in the diagnosis. By fixing the body of the uterus with the sound, and by elevating, depressing, or bringing forwards the handle of the instrument, both the anterior and posterior portions of the fundus may be felt through the integuments with the left hand above the pubis. By pushing the uterus from side to side, we are enabled to act upon the ovaries, and to determine, by the impulses communicated to the hand, whether the tumour be on the right or the left side, and to form a tolerable idea, in certain cases, whether it be free or attached.

Stress has been laid on the lateral situation of encysted dropsy, and its beginning in one of the iliac regions; but in some instances the tumour advances rapidly towards the mesian line, and takes a middle position, even before the attention of the patient has been particularly directed to the new growth. A step towards the important point of ascertaining the *nature* of the tumour may be made, by microscopic examination of the fluid removed by paracentesis,—as we are told by Dr. John Hughes Bennett (*Edinb. Med. and Surg. Journ.*, also *Ranking's Abstract*, Vol. III.). Flocculi are seen in the fluid composed of numerous epithelial cells, similar to those nucleated epithelial cells which cover the delicate lining membrane of the cysts. This fluid accompanying encysted ovarian disease, cannot well be confounded with that in inflammatory or passive dropsies.

The diagnosis between ovarian dropsy and ascites, and pregnancy, is thus stated by Mr. Lee :—

"In ovarian dropsy the patient has generally the enjoyment of good general health; the abdomen is tense; the bulging is more to one side; no borborygmi are heard; percussion elicits a *dull* sound in front, a clear sound in the lumbar regions. The tumour is sometimes smooth; at others irregular. Fluctuation is often obscure, and not observed in the lumbar regions. The vagina is elongated, and the os uteri is tilted to the side on which the disease is.

"In ascites, the aspect is generally that of ill health. The abdomen is not usually tense; and the greatest prominence varies with the posture. When the patient is supine, percussion elicits a clear sound in front, a dull one in the lumbar regions.

"Ovarian dropsy may be accompanied by many signs of pregnancy, but may be distinguished by the disease commencing on one side; by the regularity of the menstrual discharge; by the absence of the œdematous state of the areola and enlarged follicles before mentioned; and by examination, which detects the uterus to be small and movable, with the os and cervix natural. The two states may, however, be conjoined, when the diagnosis will of course be complicated."

Menstruation and conception have taken place in ovarian tumours of the encysted kind, when only attacking one ovary.

Treatment.—The only radical cure consists, either in the entire removal of the encysted tumour or in the obliteration by adhesion of the sides of the cyst. The annals of medicine contain several examples of cure by the latter process, brought on, however, with few exceptions, by accident, and this, mostly, a bruise or some violence done to the ovary. The fluid has escaped into the cavity of the peritoneum, and in some instances has been absorbed without fatal results from the peritonitis induced by the effusion. Tapping and injection of the cyst with iodine, have been practised by Dr. Allison, of Spencer Town, Indiana, with entire success. (*Philadelphia Medical Examiner.*) Suppuration of the cyst has been followed by a cure. But the number of cases under these several heads is collectively very small indeed, compared with that of those attacked with the disease.

Of late years a great number of cases of surgical operation, by excision of ovarian dropsical tumours, has been recorded. The conclusions from these cases, 114 in all, are clearly, and according to my present belief, accurately, put forth by Mr. Lee; and I shall terminate this lecture by repeating them in his own words :—

"1st. That from the difficulty arising in the cure of this disease, the

operation of extraction of the cyst has been proposed and performed 114 times, of which number 74 have recovered and 40 died, making the average mortality one in three nearly.

"2d. That of these 114 operations, in 24, or rather less than one in five, the operation was obliged to be abandoned, either from extent of adhesions, from the tumour being a uterine or omental one, or from there being no tumour at all, proving indisputably the *difficulties of the diagnosis*.

"3d. That in the 90 cases where the tumour was removed, nearly one died to three recoveries.

"4th. That the diagnosis of ovarian tumours is very obscure as regards adhesions and the character of the tumour; thus adhesions existed in 46 of the 81 cases where the fact is mentioned.

"5th. That where adhesions existed, the mortality was greater, being 1 death in $2\frac{1}{4}$.

"6th. That the principal recorded causes of death, where it took place soon after the operation, are hemorrhage and peritonitis.

"7th. When death takes place in consequence of the operation it is very rapid. Of 30 patients, 14 died within thirty-six hours, and 25 [16?] within a week.

"8th. That the character of the disease is of importance with regard to its mortality. In the case of hard tumours the mortality was more than 1 in 2. Of the 16, 9 were cured, 7 died. In 5 the tumour was not removed. When the tumour was composed partly of fluid and partly of solid matter, viz., in 65 cases, 44 were cured, 21 died, and in 14 the tumour was not extracted, making the mortality less than 1 in 3. So that encysted dropsy is more favourable for the operation than hard tumours of the organ.

"9th. That as regards the mortality of the two operations, in 85 cases where the major operation was performed, 50 were cured and 35 died, making the mortality 1 to $2\frac{1}{2}$; in 23 where the minor operation was performed, 19 were cured, and 4 died, making a mortality of 1 in 6.

"10th. That in one of the cases operated upon the tumour was malignant, but that encysted dropsy is not malignant in the ordinary sense of the word."

LECTURE LXXIX.

DR. BELL.

ANEMIA AND CHLOROSIS—Why spoken of here and in connexion with each other—Anemia—A new term—The disorders it expresses—Division—Its distinctive histological traits—changes in the blood and especially the red globules—sometimes a buffy coat—Anatomical characters—*Symptoms*—*Progress*—*Diagnosis*—Peculiar colour of the skin—Arterial sounds may coexist with plethora—To ascertain whether it is idiopathic or symptomatic—*Prognosis*—*Causes*—Has been epidemic—Hemorrhage the most direct cause—*Treatment*—based on the pathology of the disease—Complications of visceral disease require a modified treatment—Main condition to rectify the digestive apparatus—Neuralgia with anemia—Passive hemorrhages—Puerperal anemia—Preferences for particular chalybeate preparations—The main point is to give iron.

ALTHOUGH the morbid states of which I am now about to speak, are not strictly Diseases of Females alone, yet considering their greater frequency

of occurrence in the female than in the male, and that chlorosis, especially, is supposed by many pathologists to depend on, or be associated with, a peculiar condition of the uterus, the present would seem to be the most appropriate time for bringing them to your notice. I connect anemia with chlorosis, because, in all their essential features and means of cure, they bear a close resemblance to each other.

Anemia or *anæmia*, and in still stricter philological rule, anhæmia (from α, the privative, and αιμα, blood), a term introduced of late years by M. Andral, was not intended by him, nor is it, although now generally adopted, to be taken in its literal sense, but merely as expressing a series of grave functional disorders and distress, depending on a deficiency of red blood.

Anemia may be caused by the large and rapid detraction of blood from the vessels, as by hemorrhage and inordinate bloodletting, or by imperfect and scant elaboration of chyle into blood, constituting defective hematosis. In the former case it may sometimes be preceded by plethora, in the latter it often is so by some organic obstruction or chronic inflammation. Anemia has been divided into idiopathic and symptomatic, according as the change in the blood constitutes the entire disease, or as it is the symptom of some disorder of a particular organ. There are, also, a general and a local anemia; an instance of the latter is found in the flaccidity, want of healthy hue, and weakness of a limb or of limbs long kept at rest by a special apparatus for surgical purposes.

The distinctive *histological* trait in anemia is, not merely a diminished supply of blood, for there is not always uniformity in this respect, but a diminution of the red globules, or of hemato-globulin. When the anemia has been suddenly induced by hemorrhage or excessive bloodletting, the proportion of fibrin is also diminished. Simultaneously with the loss of the red globules, the proportion of which falls from 127 parts in a thousand, the average, to 60, 50, 27, and even 21, there is an increase of the serum, to the extent of 915, its common proportion being 790. The quantity of water is of course increased, and a state of the blood is produced, to which the term hydremia (hydræmia) has been given. It is not easy, indeed, to separate anemia from hydremia, as a decrease in the solid constituents of the blood is usually produced by every loss of this fluid.

The clot, if it forms at all, is small, soft, and diffluent; the fibrin, after it has been separated by whipping, is not tough and firm, but soft and viscid, and in the same state as it occurs in the chyle. In hydremia the serum is usually transparent, and contains only a small quantity of colouring matter, and probably only a slight amount of salts. In the living subject, a fact noticed by Borsierus and explained by M. Andral, is presented in the appearance of a clot of some firmness, sometimes covered with a buffy coat, owing to the quantity of fibrin in the blood at this time remaining the same, and of course being, proportionately, in excess. In our diagnosis of anemia, this fact and its explanation are all-important, in order to prevent a repetition of bloodlettings, which have, doubtless, before now, been directed and repeated on the strength of this appearance of the clot, and the supposed inflammation of which, it was always received as the sign.

Dr. Geddings (*Balt. Med. and Surg. Journal*, 1836) states, that in his examination of subjects dead of the country or remittent fever in South Carolina, he found the blood in the heart and great vessels, either scarcely coagulated, or else of a clear red or dirty greenish-looking hue, almost

entirely devoid of solid or colouring constituents, and which could not be coagulated either by heat or by nitric acid.

When anemia has been of long duration, the heart and large vessels are in a measure collapsed ; all the tissues are flaccid, pale, and exsanguineous; the lungs are light and crepitant ; and serous infiltrations are common in the cellular tissue of the limbs, and even in the cavities of the serous membranes.

Death in some instances results from coagulation of blood in the sinuses of the brain, a fact mentioned by Dr. Williams (Principles of Medicine), and confirmed in a case reported by Mr. Pierce (Lancet, 1845).

The *symptoms* of anemia are well marked. The soft parts of the body are flaccid, the skin is of a yellowish hue, resembling white wax after it has been long exposed to the light and air. Almost of the same hue are the conjunctivæ, and the mucous membranes of the mouth and of the genital organs: no capillary ramification is visible, and the sub-cutaneous veins are shrunken and almost empty,—their course being scarcely visible or designated only by pale violet streaks. The heart is of its normal size, perhaps, at times, smaller than common ; its sounds are sometimes clear and distinct; the impulse on occasions active, but more commonly feeble, and distinguished by a bellows sound. Auscultation of the principal arteries, the carotids and crural, for instance, with the stethoscope, apprises us of a simple and continuous bellows sound ; sometimes it is a modulated hissing or humming sound, resembling that given out by children's toy called the devil, and hence M. Bouillaud's designation of this sound *bruit de diable.* These abnormal sounds of the arteries are invariably produced whenever the quantity of globules is much diminished. M. Andral never found them wanting when these latter were less than 80.

Anemic subjects are liable to palpitations, and experience great oppression, attended, at times, when they walk, with syncope ; their pulse is generally small and frequent. They are quite sensible to the cold, suffer from anorexia and caprices of appetite ; digestion is painful, and constipation quite common. The urine is pale and of little density. For the most part they are tormented with headache and neuralgic pains, in the temples, face, stomach, chest, or limbs. Vertigo and singing in the ears are often complained of. There is, in anemia, indifference to everything and inability to engage in any intellectual labour ; sometimes amaurosis, at other times strange visions, hallucinations, and even delirium. The least exercise is irksome and painful ; the face is puffed ; eyes languid and surrounded with a blue circle. Finally, at a more advanced period, there is infiltration of the limbs, and the serum even finds its way into the great serous cavities. Andral assures us, that notwithstanding the impoverishment of the blood, the body preserves its common temperature.

In both sexes the genital organs usually participate in the general atony. In females menstruation is scanty, difficult, and painful, or even entirely wanting. On the contrary, in some cases, there is an excessive flow of the menses, amounting even to menorrhagia, or a supplementary hemorrhage, such as epistaxis. These discharges, which always aggravate the morbid state of the patient, are of the passive kind.

The *progress* of anemia will, of course, be influenced by the circumstances under which it is developed. When caused by hemorrhage its induction is rapid, and termination may be sudden. Occurring from a depraved condition of the assimilating organs, it may last for months and even years. Relapses are common.

Paleness, languor, and cardiac disturbance are among the first symptoms of anemia. Occasionally, however, the disease is introduced by intestinal disorder, such as acute colic or diarrhœa, or by extreme pain of the loins and limbs.

Anemia may terminate in death; some die from syncope; some are carried off by convulsions, quite a common occurrence in exsanguineous subjects; while others, again, sink under an intercurrent disease, comparatively slight in itself, and which would be easily resisted if they had more blood.

The *diagnosis* of anemia is easily made, unless we were to attempt to separate it by any very distinctive characters from chlorosis—an attempt made, every now and then, but without, as it seems to me, much success. There is, however, a serious organic affection of the heart with which anemia is sometimes confounded. Mistake here is the more to be deprecated, as both our prognosis and treatment are different in the two cases. The peculiar yellowish, waxy colour of the skin, the small size of the heart, the arterial sounds, and the disorders of the digestive and nervous systems, are sufficiently indicative of anemia. But this latter sometimes coexists with organic disease of the heart; a state which we have reason to dread when the dulness on percussion is extensive, and when the bellows sound is heard at both beats. It will be most prudent to suspend the diagnosis until, by an appropriate treatment, the symptoms proper to anemia are removed.

We commonly regard anemia as contrasted with and the opposite to plethora; but this latter may prevail to a certain extent without hyperemia or excess of blood, and in such a case it may be blended with anemia. Every now and then you will meet, in practice, with subjects of a fair and even florid complexion, who become exhausted with the least detraction of blood, and in whom the slightest hemorrhage rapidly develops all the phenomena of anemia, from many of which, such as palpitation and nervous disorders, they had suffered antecedently.

The most difficult point, after all, in completing the diagnosis of anemia, is to ascertain whether it is idiopathic, or symptomatic of some visceral lesion. For this purpose it will be necessary to study carefully all the functions, and to explore the condition of all the organs, as well as to observe the order of succession and march of all the symptoms.

The *prognosis* of anemia is not alarming, unless it be kept up by an incurable disease, or the debility be excessive and accompanied with frequent syncope.

The *causes* of anemia are various; some depending on sex, age, and constitution,—so that females and young persons generally are more liable to it than adult men, and those of a lymphatic temperament more than others differently constituted. Other causes are found, as chronic visceral disease, and especially tubercles of the lungs and intestines, Bright's disease, cirrhosis, diseases of the spleen, and cancer. Among external causes are enumerated paludal exhalations, low, damp, and badly ventilated and dark localities. The union of these, with moral depression and insufficient food, have produced the disease in a large number of persons at the same time; constituting an epidemic, as in the mines of Anzen, in the beginning of the present, and in those of Scheminitz, in Hungary, in the last century.

The more direct cause of anemia is hemorrhage, particularly that from

the stomach, bowels, or uterus. Considering the frequency of exposure to uterine hemorrhages by the female, from menorrhagia, and in the puerperal period, — an exposure from which the male is, of course, entirely exempt, we can readily understand the greater liability of the former than of the latter to anemia; and we shall be the more disposed to admit the convenience, if not absolute propriety, of placing this disordered state of the functions in the class of diseases of females. Repeated and injudicious bloodletting will come in for a share in the etiology of anemia; so, also, does prolonged intermittent fever.

In the preceding succinct sketch of anemia, I do not place anything new before you, and so far I am not required to refer to any writer on the score of discovery or originality; but there is another kind of merit, that of lucid and terse description and narrative, for which, with the exception of an occasional fact and reflection interposed, I am indebted to M. Grisolle (*op. cit.*), whom I have closely translated on the present occasion.

The *treatment* of anemia must be based on its pathology. Thus, if it have resulted from hemorrhage, we must acquire a control over this latter; if from intermittent fever, we must arrest the periodical returns of disease; and if connected with or maintained by organic lesion of some viscus, we must either remove or mitigate its deteriorating influence—as a preliminary, in all these several cases, to a special treatment of the anemia itself. The problem is not, by any means, so easy of solution as might at first appear. When the system is weakened by excessive hemorrhage, and the proportion of red globules is quite small compared to the natural standard, the plain indication would seem to be, the administration of nutritive food to supply the pabulum for blood, and of a chalybeate to increase the hemato-globulin, or red globules, the constituent chiefly wanting; and this is, in fact, the course which you will often find it your duty to direct. You must not, however, overlook the fact, that although hemorrhage is often the result of inflammatory or hyperemic congestion, and is also its natural means of cure, yet that it may do this incompletely, and if the original centre of afflux and irritation still persist, there will ensue, with the restoration of the fulness of the bloodvessels of the organ, a return of the congestion and danger, of which fresh hemorrhage is not always the greatest. Will you, in the state of renewed congestion under the analeptic, and especially chalybeate treatment, anticipate the return of hemorrhage by bloodletting? There are cases, particularly where the brain is threatened, in which this practice may be necessary; but as a general rule you must rely on derivatives and counter-irritants, — such as purging and pustulation by tartar emetic or croton oil, and in passive cases vesication by blisters.

The same conditions, with suitable modifications of means, are to be attended to when there is visceral disease associated with anemia. A few leeches may be required on the suffering organ; but you will rely more on resolutives or deobstruents, with purging and counter-irritants, so that this part of the treatment shall be carried on concurrently with the use of chalybeates. In glandular obstructions, for example, we may sometimes employ mercury, still oftener iodine, together with iron. If there is congestion of the spleen, or intermittent fever, or both united, quinine will be freely administered in union or alternation with some preparation of iron.

Throughout the whole course of the disease, the main conditions for the restoration of the patient to health are, giving tone to the digestive

apparatus by its appropriate nutritive stimulants, and also by medicinal tonics, of which iron, in some form, must be the preferred article. This, the first and important step to active hematosis, will be followed by placing the patient in the most favourable circumstances for breathing a pure and dry air, and for taking moderate exercise. Without good nutriment, air and exercise will merely excite and cause indirect debility; and without air and exercise, repletion with substantial nutriment will cause local plethora, perhaps congestion and feelings of oppression.

The skin, so important an auxiliary and almost substitute to the lungs, is to be invigorated, in anemia, by frictions, the warm, then the tepid, and finally, as the patient acquires vigour, the cold bath, or, what will be safer, sea-bathing or the shower-bath.

Neuralgia attacking various parts has been mentioned to you among the symptoms of anemia. The chalybeate treatment is here doubly indicated; both on account of its directly beneficial action on the nervous system, and of its alterative power over the blood, the impoverishment of which is of itself so frequent a cause of neuralgic pains and convulsive movements.

In the passive hemorrhages which are apt to occur in anemic subjects, our chief reliance for permanently good effects must be on chalybeates; although, at the moment of attack, if the discharge be considerable, we ought not to be backward in employing active astringents, both of the vegetable and mineral kingdoms. Exhausting hemorrhages in parturition have been pointed out by Dr. Channing (*New England Quarterly Journ. Med. and Surg.*), in a very forcible manner, and with the illustration of highly interesting cases. In the subject of one of these, which resulted in death in the third week, the textures were, some of them, dry and pale: the blood was small in quantity, pale, liquid, uncoagulated. Every organ was found in a healthy state. The patient took freely of solid meat, decoctions and juices of animal food, and alcoholic and vinous stimulants. Iron was not administered, from a belief that "the application of drugs was hardly necessary," while "the appetite was good and the stomach and bowels disposed of the ingesta readily and healthily." A bright pink colour of the veins is described by Dr. C. as one of the diagnostic symptoms of the disease.

Dr. Bennett (*N. Y. Journ. Med., July and Sept.*, 1847) calls attention to a certain morbid state, which he conceives to be peculiar to females who are either pregnant, or in conditions consequent on pregnancy. One of the varieties of manifestation of this morbid state is the "Sore Mouth," of which I have already spoken under the title of *Stomatitis Nutricum;* and the other of puerperal anemia, which often shows itself about the sixth month of pregnancy, particularly in those women who have borne children in rapid succession, as well as during the period of lactation. The *anemia* and sore mouth are often combined, and both of them depend upon defective hematosis, as already explained.

Of the preference to which particular preparations of iron may be entitled, I shall speak when describing the treatment of chlorosis. I would remark, however, at this time, that, provided the stomach be not offended or oppressed by the article, it does not matter much which of them is given. The main point is to introduce iron into the system, and this end can be accomplished by a great number of the preparations of the metal, both of officinal and extemporaneous prescription.

LECTURE LXXX.

DR. BELL.

CHLOROSIS—Little meaning, in derivation, of the word chlorosis—More peculiarly a disease of women—Its chief pathological feature—loss of red globules—*Causes*—Chlorosis occurs in both sexes—Frequent connexion between this disease and disorder of the uterus—The relation not of effect and cause—Precise organic changes not known—*Symptoms*—Derivable from impoverishment of the blood—Complications of other diseases with chlorosis—Cardiac and vascular symptoms—Dr. Latham's observations—Conditions for the production of chlorosis—Period of life when it most occurs—*Treatment*—General outlines—Different preparations of iron—Their use in combination or alternation with iodine—Excellent effects of chalybeates—Paramount importance of fresh air, exercise, and pleasing occupations.

CHLOROSIS. — How little significative of this disease is its Greek derivation, we have proof in the very same word being used to designate a chemical substance; chlorosis and chlorine being both of them derived from χλωρος, *green*. This is not a solitary example of a symptom, one might almost say an accidental occurrence in a disease being used for the disease itself. Jaundice, dropsy, hemorrhage, are examples to the same purport.

Chlorosis is more peculiarly, though not exclusively, a disease of women. For a long time its origin was attributed to derangement or suspension of the uterine secretion, or the menses; an error this, not uncommon in medical as it is in common logic, of mistaking an effect or accompaniment for a cause. A truer and more physiological explanation is presented in the primary differences between young persons of the two sexes in the composition of their blood. A greater proportion of crassamentum and of iron is found in the blood of young men than of young women. Now, as these are component parts which give the blood its crasis and colour, much of its nutritive and stimulating properties, a deficiency in them will be followed by a train of diseases, marked chiefly by debility of all the functions, both organic and animal. This is precisely the state of things in chlorosis. Young females suffer the more readily by a diminution of these active principles of the blood, from the fact of their having less to spare than those of the same age in our own sex. Fædish (*Journ. de Conn. Med. Chir.*, t. iv., p. 216) has exhibited the contrasted results of analysis of the blood of a healthy young man and of a healthy woman, by which it appears that the red globules, fibrin, and iron, were in greater proportion in the former than in the latter; and next, he has shown, from analysis of the blood of chlorotic females, that it contains less of these elements than the blood of females in health. MM. Andral and Gavarret tell us, that the standard proportion of globules in 1000 parts of healthy blood may be taken as 127. M. Andral in his Hematology makes the proportions to range from 110 to 140. In chlorotic subjects they have found it to fall as low as 38.

We must qualify these results so far as to admit, on the faith of analysis by Becquerel and Rodier, that the chief difference is in the water and red globules, the first being in larger and the second in less proportion in the female. These gentlemen have, also, analysed the blood of a chlorotic

man, in which the proportion of red globules or blood corpuscles — hemato-globulin — was in the second of three analyses, made at intervals of four weeks, 77·2: the fibrin being a little above the healthy mean, or 3·4.

The chief *causes* of this impoverishment of the blood, or defective hematosis, have been already described under the head of anemia. They are, disordered digestion, from deficient or improper food, want of suitable exercise in the open air, and sedative moral causes; and, also, at times, chronic inflammation of some important viscus, as of the liver, spleen, lungs, or digestive canal. Its symptoms are readily recognised in the paleness, we should call it rather the discoloration, of the skin and mucous membranes, puffiness of the face and of the feet and ankles; dyspepsia, in all its varieties, with depraved appetite, gastralgia, constipation, and after a while diarrhœa; nervousness, hysteria, melancholy, fickleness, muscular debility; neuralgic pains, usually of an irregular nature. There is sometimes augmented, sometimes diminished action of the heart; the ventricular impulse being at one time greater, at another less than in health. The second sound of the heart is louder than natural: there is bellows-sound in the great vessels, and particularly in the carotids. The pulse is more frequent than natural; the skin hot and dry; thirst considerable; respiration panting on the slightest movement. Menstruation is painful and irregular, deficient or wanting, and the discharge pale: there is fluor albus, sometimes menorrhagia, and generally sterility.

After this general view of the etiology and leading symptoms of chlorosis, it will not be out of place to dwell a little on some of those features which embarrass us in reaching a definite pathology of the disease.

The very fact of chlorosis showing itself in individuals of both sexes, ought to preclude the hypothesis of its being either dependent on or necessarily coincident with any particular condition of the uterus or derangements of its function, such as amenorrhœa, leucorrhœa, and dysmenorrhœa. That these, particularly the two first, are concomitants, sometimes preceding, sometimes following, the first attack of chlorosis, is a matter of observation; but that they have a distinct causative relation to it cannot be demonstrated. It is easy, however, to understand why females possessing an additional organic apparatus, in the uterus and its appendages, should, on this account, be more liable to the form of anemia termed chlorosis than males are, since we know that prolonged disorder of any important viscus will give rise to anemia. By peculiarity of structure, therefore, as well as by greater nervous impressibility and less rich endowment of hemato-globulin, females are predisposed, in a particular manner, to the impoverishment of the blood, which constitutes the main we may say characteristic feature of chlorosis.

Under what precise circumstances of organic change this deterioration of the blood takes place, pathologists are not by any means agreed. Allusion has just been made to the presumed share of the uterus in this etiology; and its unsatisfactory nature briefly exhibited. According to another view, the primary derangement is in the sympathetic nerve, by which the functions of assimilation, including more especially digestion and hematosis, are impaired, and chlorosis results. Plausible as this hypothesis may seem, at first, we soon discover that a similar one may be advanced to account for various other diseases besides the one in question; and that, therefore, it wants the necessarily restricted application. Cholera,

for instance, may be presumed to consist in a derangement of the functions of the sympathetic nerve, but yet we cannot regard it as identical with chlorosis, nor do these two belong to the same class of diseases of the blood,—the latter coming under the head of *spanæmia*, the former of *heterochymeusis*. (See *Simon's Animal Chemistry*, vol. i.)

Unable to trace satisfactorily the morbid phenomena of chlorosis to an organic lesion, prior to that by which hematosis becomes imperfect, we must content ourselves with a study of the symptoms directly derivable from the impoverishment of the blood. These are, a low degree of animal heat, diminished activity if not prostration of the brain and nervous system generally, also of the muscular, cardiac, pulmonary, intestinal, and uterine functions, together with the characteristic hue of the tegumentary membrane.

The urine, in this disease, is usually pale, and slightly greenish, of low specific gravity, and of a mildly acid reaction. There is an absolute and relative diminution of urea and uric acid, and an increase of the fixed salts. If, as is not infrequently the case, leucorrhœa be associated with chlorosis, the urine is more or less turbid in consequence of the mixture of the morbid product with it: in these cases a little albumen is generally observed. The quantity emitted in 24 hours amounts to about 34 ounces. In the majority of cases, the iron given for the cure of the disease is partially carried off by the urine; sometimes, without any apparent reason, it is absent from urine, in which it is found on the preceding and succeeding days. The saliva becomes more watery as the disease advances.

The complications of various disorders with chlorosis also merit attention. Of these, as well remarked by Sir Henry Marsh, in his excellent paper on chlorosis (*Dub. Quart. Journ. Med. Science*, vol. ii., 1846), "there is none more frequent, none more disturbing to the regular course of treatment than the various neuralgic affections and local pains with which many chlorotic patients are affected. There is an intimate connexion between chlorosis and hysteria: — none are more disposed to become chlorotic than those who are hereditarily or constitutionally predisposed to hysteria."

Chronic pneumonia and chronic bronchitis are met with in ch'orotic subjects. These persons are, also, often much afflicted with gastric and intestinal flatulence,—the result of a copious and continued secretion of gas, similar to that which so frequently occurs in hysteric patients. The frequency of obstinate constipation in chlorosis, led Hamilton to a belief of its being the cause of the disease. Sometimes, so firmly impacted are the feces in the rectum as to require mechanical means for their removal. The tendency to serous effusions, particularly in the general cellular tissue, is a matter of familiar observation; and the predisposition to effusion in the serous cavities is also laid by chlorosis.

It has been said that chlorosis differs from anemia in the infrequency of hemorrhage in the former compared with its frequency in the latter; but this position cannot be fully carried out. Menorrhagia of the passive kind is associated with if not a direct cause of chlorosis; and hematemesis is not by any means a rare affection in the latter disease.

In the complication of chlorosis with amenorrhœa, the uterus and ovaries are chiefly affected, by their being imperfectly developed and slow in being called into functional activity, owing to the want of the stimulus of red blood.

Phthisis pulmonalis is the least common complication with chlorosis, but it is the most fatal. It is not easy to say how far the two diseases have had a common origin, when they thus occur in the same subject, or to what extent chlorosis contributes to that deterioration of the functions generally which ends in phthisis.

The symptoms which are most common, and cause often the greatest solicitude, and from a misapprehension of the true nature of which errors in practice have occurred, in chlorosis, are the cardiac and vascular ones, —palpitation with the production of peculiar sounds,—perceptible by applying the stethoscope over the heart and along the course of the great arteries, particularly the sub-clavian and carotid, and even the jugular veins. As explanatory of a very curious and important point in pathology, and as bearing directly on the subject now before us, I shall introduce to your notice the remarks of Dr. Latham, in his highly valuable lectures, recently re-published in Philadelphia.

"Certain endocardial murmurs yet remain to be noticed, which are quite distinct, pathologically, from all these. Synchronous with the systole of the ventricles, audible in the præcordial region, and extensively diffused through the arteries, resembling the bellows-sound, and so having the commonest quality of endocardial murmurs, not distinguishable by the ear from those which proceed from mechanical impediment to the passage of blood, yet themselves springing from a different cause, they form a class by themselves, and a most important class it is.

"I allude to the cases in which there is an unnatural sound, both endocardial and arterial, and yet no change of structure in the heart and arteries, but a change in the relative proportions of the constituent elements of the blood.

"The one general fact with which the sound is constantly associated is an impoverishment of the blood, or the state in which its red globules are deficient, and its serum is in excess.

"Now this impoverishment of the blood would seem to stand to the endocardial murmur in the relation of a cause from observation of their constant coincidence merely; and much more so from the observation that upon removal of the first the second always ceases. In proportion as under proper medical treatment the blood becomes richer, and is made to abound more in red globules, the murmur waxes fainter and fainter in the heart and arteries, until it is finally altogether inaudible in both.

"But if this endocardial and arterial murmur be really owing to an impoverished state of the blood, one would expect to find that the simple abstraction of blood to a large amount would produce it at any time in a healthy person. And so it will. We are not indeed accustomed thus to bleed healthy persons purely for the sake of experiment. But healthy persons sometimes become the subjects of such treatment in the case of accidents and injuries, and in the first access of acute inflammation; and then we take advantage of the occasion for learning the effect of the experiment beyond the purpose for which it was instituted. And so we find that, if in a healthy man we carry bleeding far enough to blanch the surface of the body, we create an audible systolic murmur in the præcordial region, and diffuse it through the arteries.

"Now this murmur is prominently characteristic of certain forms of disease; and, knowing how we can produce it at will, we should expect to find nature producing it exactly or nearly in the same way. Profuse

or protracted menorrhagia, by the time it has blanched the skin, has this murmur for its sure accompaniment. Here is direct loss of blood. Chlorotic anemia has the same. Here is no direct loss of blood, but, what is tantamount to it, a defect or failure of the assimilatory functions, whence the mass of blood is not replenished in due proportion to its expenditure upon the uses of the economy.

"Generally accompanying the endocardial and arterial murmur, when it is owing to anemia or an impoverished blood, there is another sound quite different in kind, and formed neither in the heart nor in the arteries, but traceable to the same pathological condition.

"In following the murmur from the heart along the aorta and the subclavian artery, and then above the clavicle, when you reach the carotid you find a new sound superadded to it. You perceive the bellows-murmur coming and going with distinct whiffs, and keeping time with the systole of the heart in the neck as in the chest; but in the neck you perceive, moreover, *a continuous hum*, like that which reaches the ear from the hollow of a marine shell. This is a thing so evident, that it was noticed and described, and variously speculated upon by those who first practised auscultation. But their speculations were wide of the mark. Whence or how it arose no one could tell, until the sagacity of Dr. Ogier Ward traced it to the veins, and showed it to proceed from the movement of the blood within them.*

"The vein which offers itself most readily to the application of the stethoscope, and admits all the easy experiments which serve to certify the fact, is the internal jugular. Place the instrument upon the neck by the side of the trachea, and pretty close to it, and at the same time rest your finger upon the space between the angle of the jaw and the mastoid process; and when your ear has caught a continuous humming sound, and listened for a while and made sure of it, then press your finger firmly down upon the vein, and the sound, if it be the true venous murmur, will immediately cease; then raise your finger, and, if it be the true venous murmur, it will immediately return.

"A little management and address are needed to find this venous murmur, and then keep it within hearing when you have found it. I have seen it found by accident, heard for a minute, and then lost and never heard again. The instrument has been laid carelessly upon the neck and the murmur has been audible immediately; and then, in expectation of making it heard to more advantage, the neck has been put upon the stretch, the chin raised and the head thrown back, or turned far round to the opposite side, whereupon the murmur has ceased. Then the neck has been relaxed, the head brought forward, and the chin inclined towards the sternum, but the murmur has not returned. The truth is, a very free current of blood is essential to the production of the venous murmur. A slight degree of pressure upon the vein will alter its character, and pressure very far short of that which would arrest the current of blood will abolish it altogether. And thus the neck being put upon the stretch, the muscles, which lie parallel with the vein and across it, are made to exercise pressure enough upon it to interfere with the free current of blood, and to stop the sound; or the neck being relaxed, the vein and the integuments get folded together, and so pressure is produced

* Med. Gaz., vol. xx., p. 7.

in another way, and this equally stops the sound. Try different degrees of pressure upon the internal jugular vein with the stethoscope when the venous murmur is distinctly audible, and you will find how lightly you must hold the instrument to keep it constantly within hearing, how inconsiderable an amount of pressure will obliterate it, and how each degree short of that which obliterates it will give it sundry varieties, and make it musical.

"Now these murmurs, whether appertaining to the heart and arteries or to the veins, which have their origin in the quality of the blood that circulates with them, furnish an eminent example of the highest degree of comprehensiveness both for knowledge and for use, which can belong to the idea of a symptom.

"Where these murmurs are, there a countless variety of other symptoms is found in company with them, pointing to all organs of the body, and giving notice that the functions of all are going wrong; the surface pale and cold, palpitation and dyspnœa, appetite perverse, digestion imperfect, nutrition insufficient, secretions scanty and unhealthy, pain everywhere, and a shattered nervous system and an enfeebled brain. Such a portentous crowd of symptoms strike the observation at once. But what they all mean we cannot tell, until we take one single symptom for their sole and sufficient interpreter. The murmur which is at the same time endocardial and arterial and venous is comprehensive of them all, and includes the knowledge of them all, inasmuch as it points directly to their one common source, even the impoverished blood. And further, this same murmur not only contains the knowledge of all the rest, but it is the single representative of them all as an indication of treatment. Standing, as it does, for the sign of impoverished blood, we treat what it denotes, and nothing else. But in so doing we treat inclusively every error of function throughout the body which proceeds from it."

The conditions for the *production* of chlorosis are stated by Sir H. Marsh to be, a particular period of life, when the frame has nearly reached its full development, and a particular condition of constitution which he denominates struma. In no instance has he met with a case of spontaneous chlorosis, except in a member of a family upon each of whom the characteristics of the strumous diathesis have been unequivocally impressed. But this writer admits that, occasionally, he has observed chlorosis to have arisen, as it were spontaneously, and without the intervention of any one of the usually assigned causes, and that, too, within a very short period of time. He has noted cases in which the transition from a state of apparent health to that of fully formed chlorosis, has not occupied more than a week or ten days.

As relates to the period of life in which the disease shows itself, we may admit that it appears early, in its uncomplicated state; but in connexion with menstrual suppression it may, as Dr. Ashwell justly remarks, be met with at any period.

Among the predisposing causes, there is one which Sir H. Marsh believes to be entitled to particular attention. It is, the instinct of attachment, or, as it is termed by phrenologists, adhesiveness, when crossed in its manifestations by the sudden and rude disruption of a long-cherished and perhaps concealed attachment. This is a more frequent cause of the disease than ungratified sexual desire, on which some writers have laid so much stress in the etiology of chlorosis.

Treatment.—It has been very justly said, that chlorosis is the dominant pathology of women; a fact to be constantly borne in mind when treating their disorders, which are not the immediate effect of the puerperal state. Very analogous are the various symptoms, or I ought to say, repeating the language already used, series of disorders, indicating chlorosis, to those in chronic splenitis, and in anemia as it is met with in our own sex; and analogous, I might say identical, is the treatment in these diseases—chlorosis, chronic splenitis, and anemia. The leading indication is to restore to the blood its lost iron and globules—its colouring and stimulating elements. We fulfil this by the regular and prolonged use of chalybeates, generally combined with purgatives, — often with vegetable bitters. Bearing in mind the possibility of some important organ suffering under congestion or chronic inflammation at the same time, we shall not refuse to remove this local disease by the customary remedies — a few leeches or scarifying cups, and, unless there be phlogosis of the digestive mucous membrane itself, by free purging. But these measures are not to interrupt, or more than very temporarily suspend, the main treatment by chalybeates; nor must you be misled by the troubled circulation, the intense throbbing and noise in the large arteries, and the hurried and panting respiration, the frequent and sometimes full pulse, into a belief that these are symptoms of phlegmasia, or of febrile state with inflammation, calling of themselves for depleting remedies.

There will be some danger of your being deceived by certain appearances of inflammation, so as to direct a wrong treatment, unless you are made aware of the peculiarities of chlorosis, in these respects. Occasionally, for example, blood drawn from subjects labouring under this disease, exhibits a buffy coat, which is owing to a relative, not actual, excess of fibrin, which itself arises from the great diminution of the red globules. And, again, the very feebleness of the heart's action may give rise to an accumulation of blood in the capillary and venous tissue of an important organ, as the brain, for instance, and symptoms of cerebral congestion, terminating even in coma.

By the state of the digestive canal, more than by that of any other organ or apparatus, shall we be guided as to the time most appropriate for beginning the use of chalybeates, and the extent to which they are to be carried, as well as their combination with purgatives. If diarrhœa prevails, we remove it, and diminish if possible the morbid sensibility of the gastro-intestinal mucous surface, before we give the iron. Constipation being present, we shall combine with the chalybeate purgatives,—selecting, of these, rhubarb and aloes, in preference. If the stomach is in a state of atony, we give aromatics and bitters in addition; never overlooking the vast importance, during this time, of suitable nourishment, which, while it furnishes abundant chyle, ought neither to stimulate unduly by its composition, nor to oppress by its bulk. In order to render this course useful in promoting hematosis, the patient must at the same time enjoy the advantages of pure air, and moderate, quite moderate, exercise, until this can be taken more freely without the danger of causing congestion and inflammatory action in the locomotive apparatus, or in some important viscus.

In selecting the preparation of iron, it is better to begin with the weaker, as a *tentamen* of what the patient will bear, and then gradually to advance to a stronger one; increasing after a while also its dose. By

the English practitioners and by ourselves here at home, the carbonate is generally preferred; and, assuredly, its effects are every way encouraging, when we can get the patient to take it in adequately full doses; but we cannot deny that it is often difficult to accomplish this; as even by its bulk it is repugnant to their tastes and oppressive to their stomachs. I have used, on the recommendation of MM. Trousseau and Pidoux (*Traité de Therapeutique et de Matière Médicale*, t. i.), the tartrate of iron and potassa, as milder in its immediate, and fully as remedial in its subsequent and remote effects, as the heavy carbonate, or the more stimulating sulphate. It may be given in a dose of from ten to thirty grains, dissolved in a glass of simple carbonated or Seltzer water; or if first partially dissolved in a small quantity of water, and then mixed with ginger or similar agreeable syrup, it is taken without the least repugnance or complaint, on the score of taste, by the patient. If the pill form be preferred, the sulphate of iron will be used, and the more so if, at the same time, it is desired to act on the bowels by purgatives. Equal parts of aloes and of the sulphate made up with the medium of a little Castile soap in four-grain pills, of which two are to be taken twice or thrice a-day, will answer a very good purpose.

A predominance of nervousness with neuralgia will justify the addition of narcotics, as hyosciamus, belladonna, or stramonium, to the chalybeate. The compound mixture of iron is, also, a good preparation in such cases. Hemorrhages occurring in the course of chlorosis do not necessarily forbid recourse to, or the continuation of, the use of iron. It is now well known to pathologists, that hemorrhages of some duration or frequent renewal, produce an impoverishment of the blood,—a thin, watery state of this fluid,—in fact, chlorosis in women and anemia in men. It is also well ascertained that this condition of the animal economy predisposes to hemorrhages of another kind, or the passive, in which there is an oozing of coloured serum from the relaxed vessels, in place of a projection of blood from morbidly dilated and ruptured ones. To remedy these secondary hemorrhages we have no resource so available as iron. I have entirely and permanently cured troublesome and repeated uterine hemorrhages by the administration, for a short period, of the chlorided tincture of iron.

Some remarks on the details of the *treatment* will conclude what I have to say on the subject of chlorosis at this time. It has been already stated to you that our chief reliance is on some preparation or other of a chalybeate; special attention being paid throughout to the digestive apparatus, by quickening and otherwise amending its sluggishness of function. If, from peculiarities of constitution, or complications with other diseases, iron cannot be taken, or if it be, and the quantity is too small to produce any effect, we must try some other tonics. Of these, Sir H. Marsh, who speaks after large experience and careful observation, places more reliance on bismuth, carbonate of ammonia, and the salts of Peruvian bark, than on any of the other substitutes for iron which are usually prescribed. The injurious effects of iron are, throbbing and pulsations of the vessels of the head, headache, vertigo, and sometimes epistaxis. Intoxication and even delirium have been caused by it.

Of the various chalybeate preparations for the cure of chlorosis, there are none so good as those furnished by nature in different mineral springs; but as access to these is prevented by domestic and other circumstances, the patient must have recourse to some one, or even a succession, of the

pharmaceutical forms of iron. In addition to those already mentioned in an early part of this lecture, you will learn that the metallic iron as well as the oxides and different salts, have been prescribed.

M. Raciborski speaks of them under two divisions: the first comprising the metallic and the oxides; the second, the salts composed of the protoxides and the peroxides, each of these, respectively, combined with a mineral acid or a vegetable acid. He thinks a preference is due to three preparations, viz.: 1, the metallic iron, procured by exposing the oxide to a stream of hydrogen gas; 2, the lactate of iron; and 3, the protocarbonate of iron, which last forms the basis of Vallet's pills. These are made by precipitating the protocarbonate of iron in a saccharine solution which has been subjected to boiling; the precipitate is then washed with boiling water and sugar, and made up into a mass with honey, which is placed in a sand bath and subjected to evaporation, so as to reduce the mass into a pilular consistence.

Blaud's pills have acquired a high reputation in France, and by many practitioners they are relied on almost exclusively for the cure of chlorosis, —as far as this is confined to chalybeate remedies. They consist of equal parts of sulphate of iron and subcarbonate of potassa, each finely powdered, separately, and then intimately mixed. The compound is to be beaten into a mass with tragacanth mucilage. Twelve grains form two pills. The dose is at first two pills, three times a-day, the quantity to be increased after every third day by one pill, until the twelfth day, after which six pills are to be taken, morning, noon and night, until the cure is completed.

By M. Derouet Boissiere, a chalybeate bread has been proposed: it is made with the addition of carbonate of iron to the dough. The hospital physicians and others in Paris have spoken highly in favour of this ferrugino-dietetic compound.

The acetated tincture of iron, introduced into practice by the late Dr. Percival, of Dublin, is commended by Sir H. Marsh as a valuable medicine; given in asses' milk, or in cow's milk, divested of its curd [whey?], it may be easily taken and long persevered in. The following formula has been found suitable by the last-named gentleman in many cases:— Water of the citrate of ammonia, three drachms; syrup, a drachm; citrate of iron and quinine, from one to three grains. Mix, for a draught to be taken twice or thrice daily.

Considering the large proportion of the chlorotic, who are of a strumous habit, or actually affected with scrofulous disorder, we can readily understand the value of iodine in their case, and particularly of the combination of this medicine with iron, as in the iodide of iron. Reference has been already made to the administration of iron and quinine conjointly, in the shape of citrate of iron and quinine. This salt consists of four parts of the citrate of iron, and one part of the citrate of quinine. Dr. Meigs (Jefferson College) speaks in favourable terms of the union of citrate of iron with sulphate of quinia, as in the following formula:—Take of citrate of iron, 2 drachms; sulphate of quinia, ½ drachm; water, 1 fluid ounce. Mix, and direct from 20 to 30 drops for the dose, in syrup and water. (*Colombat,—Diseases, &c., of Females.*)

Dr. Marsh has often prescribed with excellent results, bark, iron, and ammonia, conjointly, in the following manner:—Decoction of Peruvian bark, ten drachms; tincture of bitter orange-peel, one drachm; syrup of ginger, one drachm; bicarbonate of ammonia, fifteen grains. Mix. To

be taken two, three, or four times daily, in effervescence, with half an ounce of lemon-juice. In cases which require a mild aperient in co-operation with the chalybeate, he has found the following powder particularly useful:—Bicarbonate of soda, fifteen grains; tartaric acid, ten grains; dried sulphate of iron, from one to five grains; powdered white sugar, half a drachm. This powder should be kept in a dry place, dissolved in a wine-glassful of water, and swallowed while effervescing.

The effects of the chalybeate treatment in simple chlorosis are as distinct as they are delightful to the practitioner, scarcely less than to the patient herself; whose bright eye, improved and, at times, florid complexion, and animated expression and carriage, attest the favourable change wrought in her whole system. With the altered colour of the feces, which become almost black under the influence of iron, you ought to be familiar. This medicine is, also, capable of producing an alteration in the aspect and properties of the urine.

A perseverance in the chalybeate treatment aiding abundant nutriment, will bring about a condition of the blood, the very reverse of that which existed when chlorosis was present; and in place of anemia there will be hyperemia.

The complications of other diseases with chlorosis have been adverted to before; and their treatment will be identical with those occurring in anemia.

Let me again, in conclusion, enforce the paramount importance of fresh air, exercise both in-doors and out, varied in every possible way, and pleasing occupations and pleasing appeals to the feelings,—in the treatment of this disease.

LECTURE LXXXI.

DR BELL.

PERITONITIS.

PERITONITIS—Its divisions.—ACUTE PRIMARY PERITONITIS—*Symptoms*—Pain, decubitus on the back, frequency of pulse, great thirst, anxious expression of face—Fatal symptoms—Favourable ones—Persistence of pain and a dragging sensation even in convalescence—*Latent* peritonitis—*Partial, or circumscribed* peritonitis—*Hemorrhagic* peritonitis—Other varieties—*Diagnosis*—Peritonitis to be distinguished from gastritis, enteritis, hepatitis, and from rheumatism, neuralgia, and hysteria, and from colic—*Morbid Anatomy*—Concrete albuminous layer—the chief anatomical character—The blood in peritonitis—*Causes*—*Treatment*—Free venesection—leeching—laxatives—warm bath and fomentations—simple cold drinks—mild emetic—opium—blister or croton oil—calomel and opium—friction with mercurial ointment—In the second period, mild stimulants and tonics may be required—Indications for their use—Their real effects.

PERITONITIS, from Περιτοναιον, peritoneum, and *itis*, indicating inflammation, ought, in strict philological accuracy, to be *peritonæitis*, as it has, in fact, been written by Lynch, in his inaugural thesis, at Edinburgh, in 1799, *De peritonæitide puerperarum.*

The peritoneum, besides investing the inside of the abdominal muscular parietes, serves for a coat to the chief abdominal viscera, and covers, in

a measure, the uterus and its appendages, as well as the bladder; hence its diseases come naturally enough before us for our consideration after those of the different organs just mentioned have been discussed. Peritonitis ought, therefore, more appropriately to have been the subject of a lecture before anemia and chlorosis, than subsequently; but the transposition, as now made, will not be a very great solecism in nosology, even if its divisions and arbitrary distinctions were of more importance than you have been taught by me to attach to them.

Of more value by far is the separation first made by Bichat, of inflammation of the peritoneum from that of the subjacent viscera, with which it had been previously confounded. He showed, that peritonitis is as much entitled to a distinct study and its classified phenomena, apart from gastritis and enteritis, as pleuritis is from pneumonia.

The divisions of peritonitis are into *general* and *partial*, as regards limits; *idiopathic* or *primary*, and *symptomatic* or *consecutive*, as regards origin; *puerperal*, as respects complication; and *acute* and *chronic*, as indicative of intensity and duration. To these some writers add infantile peritonitis and erysipelatous peritonitis; which, although without actual necessity on the score of natural division, give artificial aid, for the arrangement of phenomena which might not otherwise find a place. The title of *tuberculous* peritonitis is more properly called for than these, as you will discover in the progress of our observations on the entire subject; and we may even admit, although the examples of its occurrence are very few, a *hemorrhagic* peritonitis.

Acute Primary Peritonitis. — In beginning, as ought always to be done in treating of diseases, with the simple before proceeding to the complex phenomena of peritonitis, I must premise that the variety of simple or idiopathic acute peritonitis is far from being a common disease, compared with the other varieties of inflammation of the peritoneum.

Symptoms. — Shivering and a chill are often the precursors of febrile reaction and abdominal pain, with which peritonitis is ushered in. But the principal symptom in the order of occurrence, intensity and duration, is a pain, of an acute kind, which, beginning at one or other of the iliac fossæ, or at the epigastric region or umbilicus, is soon diffused over the whole abdomen. The pain is sharp, pungent, and, sometimes, as if the parts were twisted or torn: it is increased by pressure, under which, at times, it is so intolerant that the weight of a poultice or fomentation, or even of the slightest bed-covering, cannot be borne; and it is necessary to give support to this latter by bent hoops fastened together, or similar contrivance. Farther aggravation of suffering in this way is caused by straining to vomit, or in the act of defecation, or even of urinating, and on the slightest movements made by the patient to change his posture in bed; and hence for the most he remains motionless on his back, with his knees somewhat drawn up, the better to relax the abdomen. Accompanying the pain there is often a sensation of burning heat. The abdomen is, at first, sometimes tense and rather retracted, but of its natural size: after the second, sometimes even the first day of the disease, it becomes tumid and resonant under percussion, owing to the disengagement of air in the intestines. Soon, however, this sound is replaced, in the more dependent parts, as the hypogastric and lumbar regions, by dulness and accumulation of a sero-purulent fluid. Friction sounds, analogous to those met with in pleurisy, have been noted in peritonitis, but they should

be regarded as of rare occurrence in the simple acute variety of the disease.

During the early period, and when the pain is so violent, the patient is harassed by vomiting, at first of a watery fluid mixed with mucosities, but more frequently of bilious matter of a yellow or green colour. His dread of bringing this on makes him refrain from taking fluids to allay the burning thirst with which he is tormented. The tongue is white and furred, or, on occasions, humid, and the lips are dry. Constipation is generally present, in consequence of the extension of the inflammation to the muscular coat of the intestines. The pulse is at first small, frequent and resisting, and acquires, with increased febrile reaction, more fulness. The expression of the face is that of great suffering, anxiety, and depression; *grippée*, as French writers describe it: the eyes are sunken; the skin is pale or livid; the muscles contracted and drawing up the features towards the forehead. A somewhat similar appearance is produced in a healthy man by exposure to intense cold. The breathing is hurried, short and interrupted, as the chest cannot be dilated, owing to the imperfect descent of the diaphragm, which the patient instinctively tries to prevent as much as possible, since it cannot fail to produce pain in the abdomen when it contracts at all. Hiccup is often added to the other distressing symptoms.

Progress and Termination. — With the increase of the local disorder there is, also, aggravation of the general symptoms: the pulse is increased in frequency, and its beats, which now exceed 120 in a minute, are small and weak: the nausea is almost incessant, and vomiting at shorter intervals: distress and anxiety are greater, and delirium not infrequently supervenes: the meteorism is, also, greater: but, as it increases, the pain is observed to diminish, and, finally, to cease altogether. So far from being encouraged by this circumstance, however, if we note its concurrence with augmentation of the expression of the features already described, so as to approach to the Hippocratic, and a small threaded pulse, and ejection as if by regurgitation, rather than vomiting of the fluid, from the stomach, we see evidences not to be mistaken of approaching death, which, in fact, after a short struggle terminates the scene. For the most part the patient expires in the possession of his mental faculties.

This result may be reached in seven, in four, or in three days, and even in twenty-four hours.

When acute peritonitis takes a more favourable turn by terminating in resolution, the symptoms before enumerated gradually abate in violence: the pulse loses its frequency; the stomach is more composed; the pain less; the expression of the face not so anxious and suffering. Even after effusion has taken place into the abdominal cavity, the fluid may be absorbed and health be restored; although a termination of this kind, under such circumstances, is seldom met with. Beginning convalescence is rarely marked by a decided crisis: the progress to recovery is slow, and it is, now and then, retarded by pain or dragging sensation in particular parts of the abdomen, which is increased in certain attitudes, and interferes with regular digestion, probably in consequence of the adhesion of some of the convolutions of the intestines by their peritoneal or serous surface. These inconveniences may terminate in time, either by absorption of the intervening false membrane, or by yielding of the cellular connexions. When persistent, the adhesions have proved a cause of ileus; and if they have taken place between the uterus and adjacent parts, they

must interfere with the requisite development and rise of the organ in pregnancy, and thus, as Mme. Boivin has pointed out, will cause abortion. In some cases, in fine, acute peritonitis passes into the chronic form of the disease.

Before leaving the subject, you must be apprised of an important fact connected with the symptomatology of peritonitis, even in its acute state, although it is more apt to be seen in the chronic variety. I allude now to the occurrence of the disease in a *latent* form—the *peritonitis larvalis* of Alibert. There is, in such a case, little or no pain on pressure. Sometimes it may be elicited by pressing, in different directions, on the middle of the abdomen and on each side. At all times, the pressure ought to be with the extended hand, and while it is made with the palm, the fingers should both press and grasp, compress, in fact; and during the process the countenance of the patient watched,—for his features will undergo a slight contraction indicative of pain, to the expression of which he would fail to give verbal utterance, even if he did not deny its existence. Attention should be paid, likewise, to the habitual *decubitus* of the patient, to observe whether there is complete recumbency, or whether he draws his legs up. A frequent pulse will, also, excite suspicion when there is an absence of symptoms of pulmonary disease.

Partial or *circumscribed* peritonitis is occasionally met with,—and especially in the pelvic and the hypochondriac regions. On such an occasion, the patient may suffer from pain, tumefaction of the part, and inflammatory fever,—but commonly in less degree than in general peritonitis; nor do we meet with the sinister expression of countenance (*face grippée*), nor the same degree of gastric distress and disorder. It is in this variety that we may expect to hear the friction sounds before mentioned; as the resistance calculated to produce them is met with by the rubbing of two portions of peritoneum over each other,—when one of them covers a solid body, such as the liver or spleen, or an encysted ovary. Partial may be converted into general peritonitis; but more frequently it terminates favourably, by resolution, and, in some rare cases, by the passage of the effused fluid, which was circumscribed by adhesive inflammation of the borders of the two diseased surfaces, into some other organ, and its escape externally, — as through the intestine or the abdominal parietes.

Circumscribed peritonitis is caused in some instances by tumours of the iliac fossæ, arising from cæcitis or partial colitis, with accumulations in the cæcum or in the sigmoid flexure, in which the inflammation extends from the mucous to the serous coats of these parts of the great intestine. When occurring after perforative ulceration of the cæcum or of the appendix vermiformis, it comes under the head of secondary or consecutive peritonitis, of which I shall soon speak.

Hemorrhagic peritonitis has been noticed by different observers of late years. We do not mean to apply the term to cases in which the effused fluid contains sanguinolent matter; but to those in which blood, in quantity too, has been found in the cavity of the abdomen after death from peritonitis. In a case recorded by M. Andral, sub-acute peritonitis supervened on articular rheumatism and ended fatally; and in another the inflammation of the peritoneum was latent and masked by chronic pleurisy, which, to all appearance, was the fatal disease. After death, in addition to white granulations covering the peritoneal surface, there was a layer of coagulated blood some lines in thickness.

Gangrenous peritonitis is merely a termination of the disease consecutive to inflammation and gangrene of a part subjacent to the peritoneum, as in phlegmonous enteritis owing to strangulated intestine.

Bilious peritonitis has been admitted by some authors; but on insufficient foundation. The same remark applies to *ataxic* and *adynamic* varieties. Modifications in the features of the disease giving a predominance at one time to derangement of the hepatic system, at another to that of the nervous, grow out of the temperament and prior state of the patient, without our having the right to assume the existence of original difference in the character or intensity of the inflamed peritoneum itself.

Diagnosis.—Acute peritonitis may be confounded with inflammation of one or more of the abdominal or pelvic viscera, with rheumatism and neuralgia, and with hysteria. From the former class it is generally distinguishable by the greater diffusion and severity of the pain, and by this latter being more superficial. We are generally able to localise, as it were, the disease of a subjacent viscus by careful palpation and scrutiny of its symptoms. In gastritis, for instance, the pain is chiefly confined to the epigastric region: the irritability of the organ and the thirst and call for cold drinks are greater than in peritonitis: the tongue is loaded in the centre, but is of a bright red at the tip and sides. So, also, in enteritis, the pain is more regional and not so much exasperated by pressure; nor is there so much irritability of stomach, nor such aggravation by motion of the abdominal muscles or of the body generally, as in peritonitis. From metritis and cystitis it is distinguishable by means of topical examination of the uterus and bladder, and in the case of inflammation of the latter, by the presence of dysury and the vesical tumour. Diaphragmatic peritonitis may give rise to jaundice, and so far impress us with a belief in the existence of hepatitis; but a careful observation of the symptoms of the latter disease, and an absence of hepatic tumour or of tenderness distinctly referable to the liver, will dispel the illusion. In all these cases, we must take into consideration the prior health or bodily state of the patient, and note whether if there really be peritonitis, it is not, as it will be found to be in the majority of cases, secondary to the inflammation or other lesion of some one of the abdominal viscera. Rheumatism, when it affects the abdominal muscles, may be mistaken for peritonitis,—the more readily as it is attended with the same pain on pressure and motion; but it is distinguished from the latter disease by the pain being felt principally at the origin and insertion of the muscles in the false ribs and the spine of the ileum. The swelling of the muscles in rheumatism is defined and partial,—forming a contrast with the diffused tumefaction in peritonitis. In some cases of hysteria, especially when this is associated with intercostal neuralgia and spinal irritation, there is exquisite tenderness of the abdomen under the slightest pressure. I have visited a patient, a female in advanced life, who uttered loud cries when I leaned my hand with the smallest effort on almost any part of the abdominal surface, and particularly on the epigastric region, while she at the same time made efforts to vomit, and complained greatly of nausea. Examination of the interspinal spaces of three or four of the dorsal vertebræ showed in this case that there was great irritation of the spinal nerves at this region, and led to an appropriate treatment for its cure. Under such circumstances as these, we must be guided by the antecedent history of the case, as well as by the symptoms actually present. We shall find in hysterical and

neuralgic cases, that the pain comes on suddenly and often ceases as suddenly, to return, perhaps, very soon again and go through a similar phase. There is, also, absence of fever, although the pulse may be excessively quickened and the respiration laboured; but these symptoms are also often of short duration, and may be suspended even by the visit, or at any rate conversation, of the physician with the patient or her friends in the sick-room. Colic is distinguished from peritonitis by pressure giving relief to rather than increasing the pain; also by the suddenness of the attack and the absence of pyrexia in the first of these two diseases.

The *prognosis* in acute peritonitis is always discouraging; the probabilities being in favour of a fatal termination. One of the most decidedly favourable signs is the ability of the patient to resume and remain in a sitting posture without pain. It proves that the peritoneum can now bear the weight of the bowels. Other evidences of amelioration of the disease were specified under the head of progress and termination.

Morbid Anatomy of Acute Peritonitis. — If an examination be made of a subject in whom death took place within twenty-four hours from the attack, the peritoneum, we are told, will be simply injected, red, dry to the touch, and shining. But even at this early date, careful inspection enables us to see, on several parts of the membrane, an extremely delicate layer of serous concrete albuminous matter binding together the folds of the intestine. This secretion is the true anatomical character of peritonitis; and it is the more evident and the adhesion of the intestinal folds to each other and to the abdominal parietes is the greater, the longer the period of the inflammation. If the peritonitis have lasted two or three days, there will be found in the peritoneal cavity a variable quantity of a seropurulent fluid, mixed with a quantity of white, opaque, or of yellowish and greenish flocculi. In some rare cases, the effused fluid consists, as I have already stated, of blood. There is but little change in the physical characters of the peritoneum itself: sometimes it is a little more easily torn than natural, and more readily detached from the intestines, but it is never thickened, contrary to what is often asserted by systematic writers, nor ulcerated or subjected to gangrene, except under peculiar circumstances, and these showing a consecutive lesion. When separated carefully from the albuminous concretions found on its surface, it is found to have preserved its transparency; and, different from what might have been believed from observation made on first exposing the peritoneal cavity, if we detach the subjacent cellular tissue, the peritoneum fails, with some slight exceptions, to exhibit any vascularity; thus showing that the colour which seemed to belong to the membrane itself, is due to a sanguineous congestion of the delicate capillary vessels beneath (*Grisolle*). Anterior, however, to the coming on of the inflammation, marked by vascular injection and albuminous deposit, there is a low degree of inflammatory action, manifested by the secretion of a serous fluid, which in itself may be a means of relief of the morbid excitement of the serous membrane, and when, as is at times the case, it is absorbed, the disease disappears without farther injury.

The blood in peritonitis is in a state of hyperinosis, that is, with more fibrin than it has in its normal condition, and with a decrease of corpuscles. After venesection, the quantity of fibrin and of the solid constituents generally, is diminished.

Causes.—Idiopathic peritonitis may occur at all ages, even, as we shall

soon see, in intra-uterine life; but under what circumstances precisely, as regards causative relation, we cannot well understand. Sudden exposure to cold, the suppression of hemorrhage, metastasis of gout and rheumatism, have been known to act as determining causes. Histories are recorded of its epidemic visitations, and especially in armies. The reference to the occurrence of peritonitis in connexion with military movements, suggests the important additions made towards a better knowledge of this disease, and especially in its chronic form, by the indefatigable Broussais; as we read in his admirable work on *Chronic Phlegmasiæ*, some of the richest materials for which were furnished in his military life as army physician in Germany and Italy.

Treatment.—To be effectual, the appropriate remedies must be early used; and of these, venesection is by all admitted to rank the foremost. When the pulse presents any degree of resistance, and the patient has not been exhausted by prior disease or treatment, from 16 to 20 ounces of blood ought to be taken from the arm at once, and even a still larger quantity, until a decided impression is produced by diminishing the force of the pulse and the intensity of the pain. Recourse will again be had to the lancet after the period of a few hours, if there be a recurrence of the bad symptoms; the quantity of blood then to be taken depending on the object which the practitioner proposes to himself to be accomplished. Thus, if there be a call, in his opinion, for a strong impression of a sedative nature, which the first operation failed to produce, he will draw blood to an extent little if any short of the first venesection; but if he merely desire to continue the reduction already procured, or to abate a moderate morbid reaction, repeated smaller bleedings, at short intervals, will suffice. Contributing powerfully to this end will be the application of leeches, to the number of one hundred and fifty to two hundred, on the most painful regions of the abdomen; their bleeding to be favoured by light cataplasms or fomentations if these can be borne. The repetition of local bloodletting after this fashion, will be indicated by the persistence or renewal of the pain and soreness, under the supposition that the inflammatory action of the heart, manifested by a tense or resisting pulse, has been reduced by venesection. Generally speaking, the imitation of hemorrhagic discharge, by leeching or cupping, is a great and often indispensable resource in membranous inflammations; and serves us, especially in mixed or reduced conditions of the circulatory system, in better stead than general bloodletting. In the sub-acute or chronic forms of disease, the choice is by no means an important one, and experience, as well as theory, is in favour of the local detraction of blood.

The warm bath, at a temperature of 96° to 98° F., if the patient, without much aggravation of pain, can be placed in it, is a valuable adjuvant to bloodletting: to be of service, it ought to be continued for an hour at a time, and to be followed by careful drying and rubbing of the skin of the limbs and chest, so as to increase the capillary circulation in these parts. In place of the bath, fomentations are recommended; but, without proper attention to obviate their undue pressure, and to preserve the requisite heat in them, as well as to guard against the fluid dripping from the cloths and trickling from the sides of the abdomen on the bed, little good can be expected from this remedy, and it may be actually injurious.

The drinks should be mild and mucilaginous, slightly acidulated, cold and even iced; and taken in small quantity at a time. While we depre-

cate recourse to active purgation in acute peritonitis, we should, however, endeavour to procure a fecal evacuation from the bowels, so as to make sure that they are not unduly distended, and a source of additional tension and consequent irritation of the now inflamed peritoneum. For this purpose, we give simple enemata, or a mild laxative; or a few grains of calomel, followed, if need be, by castor oil, will meet the proposed indication. The continuance of the vomiting of bilious matters and a bitter taste in the mouth, with furred tongue, will justify the use of a mild emetic, such as ten to fifteen grains of ipecacuanha, which, although it increases for a short period the movements of the diaphragm and abdominal muscles, and of course causes pressure on the peritoneum, has a subsequently soothing effect and tendency to bring on perspiration and give relief in this way. These desired effects will be farther and more completely obtained by the use of opium, in frequently-repeated doses, until the narcotic effect is obtained. More especially is this medicine of service soon after venesection, or the other modes of bloodletting before described.

After a reduction of vascular excitement by the lancet and leeches, should the pain and abdominal soreness still persist, we have recourse to a blister, an earlier use of which would, however, as Pemberton judiciously remarked (*A Practical Treatise on Diseases of the Various Viscera*) many years ago, and as subsequent observations have clearly proved, be decidedly hurtful, and would serve only to aggravate the disease. The vesicated surface once established with the conditions just indicated should be kept discharging, at first by emollient cataplasms and afterwards by some stimulating ointments, such as of savin or cantharides. If objections are made to vesication, a good substitute offers itself in the assiduous friction of the abdomen, at short intervals, with croton oil and oil of turpentine, until a copious eruption and rubefaction are established.

Great and not undeserved stress is laid on the exhibition of calomel combined with opium, in acute peritonitis, after adequate bloodletting has been premised. Five grains of the former and one grain of the latter, is to be given every three or four hours, with the effect of abating the force of the inflammatory process, preventing plastic exudations on the peritoneal surface, and soothing pain. As part of this treatment, inunction of the abdomen with mercurial ointment, to be renewed every four hours, should be practised; or if there be a vesicated surface, we are to employ dressings of the ointment. Persistence in the mercurial course is demanded until the disease is subdued, or salivation takes place, which latter effect will often be a precursor to the former. If valid objections apply to the use of mercury, and especially to its being pushed to the extent of causing ptyalism, tartar emetic is entitled to some confidence, not only on the score of analogy, from its salutary operation in phlegmasiæ of other serous membranes, as in pleuritis, for example, but also of successful trials of it in peritonitis. More especially is this modification proper in strumous or scrofulous and granular peritonitis, to which I shall soon direct your attention. When we administer the tartar emetic at these times, it ought to be in large doses, as a contra-stimulant, and in union with opium.

In the first period of the disease, the treatment, it will be seen, is decidedly antiphlogistic, and consistently with it all stimulating substances, nutrimental or of other kinds, should be withheld. In addition to drinks,

all that is required for food will be some of the farinacea in a fluid and dilute state, such as rice-water, thin gruel, arrow-root or sago. But after a decided impression has been produced on the disease by depleting remedies, and nervous symptoms complicate those of the circulatory apparatus, and when the patient complains of a sensation of sinking and great prostration, with a cool, cold or clammy skin, the moderate use of stimulants, such as weak wine and water, weak wine whey, sago flavoured with wine, and vegetable soup, may be allowed with advantage: their use to be discontinued or suspended if the tongue becomes drier and the skin hot and dry with increased frequency of the pulse. If it be a pulse of irritability merely, these moderate stimulants, to which camphor may be usefully added, will diminish its beats and give it more fulness, and, with its expansion, even more softness.

In the second period of acute peritonitis, and after depletion has been carried to the desired extent, and calomel fails to produce its anticipated results, the pain being still violent and the fever assuming more of a nervous or typhoid character, a trial may be made of the oil of turpentine, as strenuously recommended by some practitioners in metro-peritonitis and in puerperal peritonitis. Quinine may be had recourse to at the same time in combination with calomel and opium. In reference to the use of stimulants and tonics in peritonitis and in the phlegmasiæ generally, we cannot regard them as a means of even indirect reduction of the inflammation, but rather of sustaining the strength during the struggle, and preventing prostration and collapse that might otherwise prove fatal.

LECTURE LXXXII.

DR. BELL.

Infantile Peritonitis in Infants—The disease is met with in the fœtus—Is a cause of abortion—*Peritonitis in newly-born infants*—Morbid anatomy—Complications—*Symptoms*—Rapid course of the disease—*Causes*—Erysipelas the most frequent—*Treatment*—*Erysipelatous peritonitis*—To be afterwards described.—CHRONIC PERITONITIS—Not merely a sequence of the acute form—Its complications—Tubercles the most common—*Symptoms*—Insidious approach of the disease—First noticeable symptoms, indicative of indigestion with pain—Important modification of chronic peritonitis without pain—Appearance of the abdomen—Effusion, signs of—Hectic symptoms—Pulse variable, but generally frequent—Nausea and vomiting—Peculiar appearance of the feces—Countenance—*Progress and Termination*—Coexistence with pleurisy quite common—Signs of improvement—Fatal termination—*Diagnosis*—*Prognosis*—Generally unfavourable—*Causes*—Strumous habit and lymphatic temperament—*Morbid anatomy*—Ascitic effusions and false membranes—*Tubercles* in the great majority of cases—*Treatment*—Indications, to remove irritation and to keep up the general strength—Mild antiphlogistics—Counter-irritants—The blue pill—Quinine—Bland, nutritive food, air, and moderate exercise—Chalybeates—Resolutive and deobstruent remedies—Mercury as a sialagogue, and iodine.

Acute peritonitis in infants, although not specifically different from that of adults, merits a somewhat separate notice, on account of the risk of its being overlooked, and also of the recency of its history. The disease is most common very soon after birth; and is not rare even in the fœtal state. Dr. Simpson, professor of midwifery in the Edinburgh University, has pointed out peritonitis as one of the most frequent causes of death of the fœtus during the latter months of pregnancy. He gives eighteen cases of acute peritonitis, of which nine came under his own observation,

the characteristic features of which were noticed in children still-born or dead some time before delivery, or who expired immediately after birth. The causes are referable to the mother and to the fœtus itself. The first have not been satisfactorily ascertained; although Dr. Simpson is disposed to lay considerable stress on syphilis as a cause. He believes that those children of syphilitic mothers that die in the latter months of pregnancy, may yet be shown to have perished under attacks of peritoneal inflammation. As respects the second set of causes, we are not more enlightened than in the case of the first. In some instances, peritonitis in the fœtus would appear to be directly induced by morbid physical conditions of the abdominal viscera, and by irritating fluids accidentally applied to the peritoneal surface itself. This disease in the fœtus is a not infrequent cause of abortion (*Edinb. Med. and Surg. Journ.* vols. l., li.).

For the best, indeed almost the only detailed description of *peritonitis in newly-born infants*, we are indebted to M. Thore (*Archiv. Gén. de Méd. Aout, Septemb.*, 1846). This writer has observed sixty-three cases of the disease (in a thousand *post-mortem* examinations). The morbid changes of structure were redness of the peritoneum, in twenty-seven of the entire number of cases; this only presented itself when the disease was of short duration. In all but seven cases, there was effusion in the abdominal cavity, either of bloody serosity, with false membranes, or of purulent serosity in which there were numerous fibrinous flocculi. M. Thore did not see in a single instance the thick creamy matter of a greenish-yellow colour, resembling true phlegmonous pus, observable in children of a more advanced age and in adults. The false membranes were chiefly formed on the liver and spleen; but they rarely were so far organised as to form adhesions. The mucous membrane of the intestinal canal was generally pale and of good consistence. The most frequent complications were pleurisy and inflammation of the lungs, which were met with in a third of the cases. Inflammation of the umbilical vein occurred in five cases.

The *symptoms* consist in a rapidly-formed and extensive meteorism, and a peculiar prominence of the umbilicus, which M. Dugès thinks is almost pathognomonic. There is usually great sonorousness of the abdomen, except when dulness is caused by the effused fluid. Tenderness on pressure is constantly present. Vomiting is of such frequent occurrence as to be a symptom of great value: the fluid ejected was generally of a grass-green. Constipation is a common symptom. The tongue presents nothing peculiar. The pulse is always frequent; sometimes its beats are 200 in a minute.

The course of the disease is often very rapid; the termination in some cases having occurred in fifteen hours from its first appearance.

Causes.—The disease declares itself from birth, but rarely appears after the first fortnight. The spring season seems most to predispose to it: but of the different presumed causes the puerperal constitution is regarded as of the greatest consequence, although for obvious reasons the question could not be determined by M. Thore; the subjects of his observations being all children in the Foundling Hospital. Among the evident causes were erysipelas of the abdominal integuments and disease of the contained viscera. The connexion between erysipelas and peritonitis was manifested in the fact, that in twenty-seven cases of the former disease, peritonitis was present in seventeen. Inflammation of the umbilical vein is also a very frequent cause. We may sum up, as follows, the coexistence of other diseases with infantile peritonitis,—if we may not positively regard

some of them as causes. Erysipelas in 16 cases; umbilical phlebitis in 4; the two combined in 1; pneumonia in 10; pleurisy and pleuro-pneumonia in 9; muguet or pultaceous stomatitis in 9; enteritis in 5; leaving but nine cases out of the sixty-three without complications. The connexion between infantile erysipelas and peritonitis must not be regarded in the light of a recent discovery. Underwood, as I have stated in my lecture on Erysipelas, declares, that upon examining several bodies of children who had died of this disease, the contents of the belly have been frequently glued together, and their surface covered with inflammatory exudations, similar to those found in women who have died of puerperal fever. Dr. Robert Lee mentions analogous cases.

Treatment.—The remedies recommended by M. Thore, are suggested from analogy rather than the result of experience. They consist in rigid prophylaxis, as in attention to the state of the cord, both at the time of applying the ligature and subsequently, and especially to watch the first appearance of ulceration or of erysipelatous redness. Should the mother be the subject of secondary syphilis, or of a puerperal affection, it is advisable to place the infant with a wet-nurse. The more strictly curative method, M. Thore suggests, will be, to order two to four leeches to the umbilicus, mercurial inunction, warm bath, fomentations, and, if the case prove obstinate, blisters to the abdomen. These remedies are all of them used in common peritonitis, and, with the exception of the first, merit a full trial in the present disease. Considering the age of the subject, only a few days old, and the tendency to erysipelatous inflammation, if it has not already existed, in the cord, we may well doubt the propriety of leeches to this part. A safer place, if they must be applied, would be to the epigastric region.

Erysipelatous peritonitis, although not constituting a fixed variety of inflammation of the peritoneum, merits, notwithstanding, a separate notice; the more so, indeed, from the very irregularity of its occurrence and the complications which it necessarily implies. We have just seen the connexion between erysipelas and peritonitis in infants. I shall soon direct your attention to the appearance of this double inflammation, as assuming an epidemic character in adults, and especially in puerperal women: but as this, like metro-peritonitis, or coexisting inflammation of the uterus and peritoneum, and phlebitis, in which inflammation of the veins of the uterus is associated with that of the peritoneum, and in some cases, again, with metritis also, constitutes a complication, I shall postpone my remarks until I shall have treated of chronic peritonitis.

Chronic Peritonitis.—It would seem to be quite in order to notice chronic after acute peritonitis, if we regard the former as an effect, or rather a continuation, of the latter; and so in some instances it is; or even if we could suppose that in these cases of gradual formation the difference between them and acute ones was only in time and intensity of symptoms. This is, also, true to a certain extent; but there are yet other, and the most numerous too, in which there is a new and important element in their pathological features, by which they are distinguished from those of simple acute peritonitis. I refer now to tuberculous or scrofulous deposits on the peritoneum. Except what can be gleaned from our knowledge of the prior diseases and the constitution and temperament of the patient, we are not able, however, to pronounce, from the symptoms of the peritonitis itself, whether we have before us a case of simple or of tuberculous inflammation of the peritoneum. Still, much may be learned from a study

of the prior state of weakened health and associated disorder of the patient, in framing our diagnosis.

A good description of chronic peritonitis is given by Pemberton, who wrote about fifty years ago, and who expresses his wonder at the disease having been so cursorily noticed by writers up to that time, and at its not having "been hitherto considered in any separate discussion. I wonder the more," he adds, "at this circumstance, since I do not regard it as a complaint of very uncommon occurrence." The author was quite correct in this last remark; for chronic occurs more frequently than acute peritonitis; and the former presents itself oftener, also, as a primary affection of gradual approach than as consecutive to the latter. I may repeat, also, the remark already made in a less direct manner, that this chronic inflammation of the peritoneum is complicated, for the most part, with tubercles, and occasionally cancerous tumours of the abdomen.

Symptoms.—Unfortunately, the early symptoms of this disease fail to attract the attention either of the patient himself, or of the friends near him: or, if noticed, they are mistaken for those of common dyspepsia or temporary disturbance of the alimentary canal, which will either disappear by time, or be removed by some slight remedies, among which aromatics and spices are not forgotten. The first symptoms are obtuse, sometimes slight, pricking pains of the abdomen, which may last for some days, and then disappear for a period, to return again in the same manner. Colic, and alternation of diarrhœa and constipation, are also met with; and difficult digestion, succeeded finally by languor, wasting of flesh, and the loss of healthy hue of skin and of strength. In a very important modification of the disease, as remarked by Dr. Abercrombie, there is no complaint of pain; the patient merely speaks of a feeling of distention, with variable appetite and irregular bowels, and at the same time he becomes progressively emaciated. In other cases, again, there has been no actual pain, but a feeling of tenderness which gave rise to uneasiness on pressure, or when any part of the dress was tight over the abdomen. Sometimes the pain is referred to a particular part of the abdomen; in a young patient of mine recently under treatment, it was always in the hypogastric region and accompanied with considerable tenderness on pressure. The abdomen presents itself to us under two different aspects, varying with the stage of the disease, and some other not fully appreciated causes. In one, there is increased fulness and projection, particularly at the umbilicus, with some degree of tension and hardness: in others, a kind of resistance to the fingers, which has been not inaptly called doughy; and in some, again, a feeling, on palpation, of fluctuation — differences depending on the degree of tympanites of the bowels, or of effusion into the abdominal cavity. Pemberton tells us, and the observation deserves to be repeated, that he has "more than once observed the skin and abdominal muscles to sit loosely upon the peritoneum, which has given a sensation to the touch as of a tight bandage underneath, over which the skin and muscles may be said (as it were) to play."

In chronic peritonitis, with effusion, the sign pointed out by Dr. Beatty, of Dublin, as available in the acute form, to test the presence of coagulable lymph, merits notice. It is a remarkable sensation communicated to the hand when applied over the umbilicus and its neighbourhood, resembling that of a grating and rubbing together of two uneven and rather dry surfaces, and made more distinct by ordering the patient to make a full inspiration, thereby causing the abdominal parietes to move more

freely over the surface of the tumour. By the application of the stethoscope, a loud and distinct friction sound was audible, extending over a space of about five inches in diameter, with the umbilicus for a centre. Dr. Beatty believed, and his opinion has been confirmed by subsequent observations of Dr. Spitall, that the sensation to the hand is observable only in cases where one at least of the opposed surfaces is adherent to a solid resisting body. Farther proof of the accuracy of this view of the subject is given by Dr. Stokes (*Diseases of the Chest*, p. 479), who showed that in twelve cases collected by him into a tabular form, nine presented an organic tumour.

In the other condition of the abdomen in chronic peritonitis, there is a flattening towards the umbilicus, and hardness and resistance under pressure. This state generally follows absorption of the effused fluid, and is therefore consequent on that of tumefaction.

Febrile excitement of a hectic character is common, but far from universal, in chronic peritonitis; and from the pulse, little can be inferred. I have, in some cases, found it to be natural; in others, to impart a slight vibration to the fingers; and in others, again, very small and compressible. In most instances, however, it is of increased frequency. In the case already referred to, of a little girl aged eight years, in whom the disease manifested itself fifteen months ago, there was, for six months, an evening exacerbation, which ended in a cold, clammy sweat. Even now, when all the symptoms of abdominal disease have disappeared, and she has gained flesh and strength, and recovered her usual vivacity, she still has these evening sweats—short, indeed, in duration, but retaining their first character.

In a majority of those who are afflicted with chronic peritonitis, we meet with nausea and frequent vomiting of dark green matter; the tongue white and loaded, and, in more advanced stages, is sometimes of a red colour, and, as it were, glazed. The stools are green, slimy or fetid, but, as Dr. Gregory (*Med. Chir. Transact.* vol. ii.) observes, when the disease has existed for six weeks or two months, they will be found to consist of a whitish or whitish-brown matter; "nor do the evacuations differ more in quality than they do in quantity from those in health. The quantity passed in twenty-four hours, and that without the aid of medicine, is often enormous." In some cases dysury is present.

The expression of countenance is analogous to that in acute peritonitis, already described, and furnishes, at a glance, a not imperfect index of the disease. The extremities are cold, and sometimes affected with œdema. Sciatica, of an obstinate nature, caused by compression on the sciatic nerve, has been noticed by MM. Chomel and Grisolle.

Progress and Termination.—Chronic peritonitis pursues a slow march, but varying in its periods from two months to two years; usually progressive until its fatal close. Its average duration has been estimated at seven months. For the most part, the patient dies emaciated and greatly exhausted; but in some cases—and I have seen such both in the very young and in the adult subject—acute supervenes on chronic inflammation of the peritoneum, and the slower termination is thus interrupted. On occasions, too, pneumonia or pleurisy, with effusion, occurs, and gives rise to death. Consecutive acute peritonitis from perforation, has also carried off subjects of the chronic disease.

If we speak of its termination uncomplicated by other diseases, we find that this may happen by resolution; at least the inflammation is subdued

and the effused fluid is absorbed. In such cases there is a gradual improvement in the condition of the intestinal canal and of the fecal evacuations, diminished frequency of pulse, and a better appetite. Abdominal distention, the last symptom remaining, gradually subsides, and fluctuation can no longer be detected. The next fashion of termination is in a circumscribed collection of the effused fluid, and the last is in death.

Diagnosis.—This is not easy, until the disease is so far advanced that the pain becomes constant, and there is tension of the abdominal parietes, and enlargement of the cavity, with some fluctuation. Partial chronic peritonitis is almost always consecutive to a cancer of some viscus, as of the stomach, uterus or kidneys, or abscess of the iliac fossæ.

The *prognosis* in chronic peritonitis is unfavourable,—to such a degree that some allege there is no hope. This is an extreme and not accurate conclusion. I might, perhaps, mistrust my own experience of an adverse kind, strong as are my convictions on the subject, were it not sustained by the observations of Abercrombie, Marsh, and others. Still, it must be confessed, that the proportion of recoveries is small, and these chiefly in the cases where there has been no serious complication with diseases of other organs, or of tubercles of the peritoneum.

Causes.—Unless where chronic is a sequence of acute peritonitis, the causes of the former are seldom very obvious. Cold, and protracted intestinal irritation, are sometimes specified. In the *tuberculous* form, which is by far the most frequent, occurring in subjects of a strumous habit or lymphatic temperament, the disease may be developed under any of the common causes of disease. I have seen it follow chronic cutaneous eruption (*psoriasis*) in an adult subject. Women are more liable to chronic peritonitis than men, and young subjects more than those in advanced life. The strumous form is most common between early childhood and puberty, and in them it is often complicated with enlargement and inflammation of the mesenteric glands. Chronic peritonitis has been shown by Dr. Simpson to be, as well as acute peritonitis, a disease of intra-uterine life.

Morbid Anatomy.—The structural lesions in those dead of chronic peritonitis are, effusions into the abdominal cavity, new formations of an albuminous kind, and adhesions between different parts of the peritoneum. Ascitic effusions are met with in the smaller number of cases,—only one in ten of the whole (*Grisolle*). The fluid is at times white, opaque and purulent, more frequently serous, with flocculi intermixed. The anterior portion of the peritoneum, that lining the muscular parietes, is adherent to the omentum and small intestines. Often, on opening the abdominal cavity, none of the viscera are visible, and this is especially so with the intestinal canal, owing to the false membranes that cover it. These may be either thick and consistent, of a greyish or brown colour, or soft, lacerable, and amorphous in appearance. On removing them, we see the intestinal canal beneath, and more particularly the small intestines retracted towards the vertebral column, and adherent and glued, as it were, to each other. So close, at times, is their adhesion, that it is impossible to separate them. The intestine itself is found to be diminished, both in its length and in its diameter; and its coats are thin to atrophy. In some rare cases, the false membranes are organised and converted into a dense laminated cellular tissue, which in points has undergone the fibrous and cartilaginous transformation.

The peritoneum is often considerably thickened. The usual change

in chronic inflammation of this membrane, is the formation of tubercles, either on the peritoneal coat of the intestines, which is most commonly the case, or on the false membranes. These tubercles vary in number; sometimes slightly dotting the serous surface; at others in large number and agglomerated in different degrees of development, from a miliary state to complete softening. They are, also, met with in the internal or mucous surface, where they give rise to ulcerations. An occasional effect of these latter is perforation, followed by effusion of stercoral matter into the peritoneal cavity, unless the opening should happen to be covered by false membrane. The rapidity with which tuberculous matter may be developed on false membrane, in masses or granulations, may be inferred from the fact, that such matter has been found in individuals who have sunk under the disease after an illness of forty days. Tubercle would seem to be the chief anatomical element in chronic peritonitis; and this to such a degree, in the opinion of M. Louis, that he declares he has only seen this disease in tuberculous subjects. Similar morbid changes are met with in the mesenteric glands, sometimes antecedent, sometimes subsequent to tuberclization of the peritoneum. I have myself seen the concurrence of tubercle in the lungs and in the peritoneum, in a young subject eight years of age, who had in infancy been a sufferer from protracted diarrhœa, and subsequently from caries of the vertebræ and spinal curvature. There is good reason to believe, however, that the formation of tubercle is subsequent to that of the false membranes, and hence that it would be incorrect to assume this heterologous growth as the cause of the peritonitis, rather than an epiphenomenon.

Treatment.—Without admitting that this can only be purely palliative, on the plea that it is instituted without the hopes of cure, you must not be so sanguine as to promise a satisfactory termination in the majority of cases submitted to your care. To abate, and, if possible, to remove, the irritation of the peritoneum, and to keep up the general strength by improving the hematosis, are the chief indications. With this view, when the pain is urgent and continued, a few leeches to the part will give relief, aided by the warm bath, warm fomentations, eruptions brought out by croton oil, or rubefaction by turpentine, &c., and, in some instances, vesication, or a seton. The bowels are to be regulated by mild laxatives, if there be constipation, or the chalk mixture, if diarrhœa be present. I have procured considerable mitigation of pain and general distress by wine of colchicum with camphorated mixture, and also by weak solution of tartar emetic with a little laudanum, at intervals of three or four hours. The most encouraging results, however, were procured by the blue pill, twice a-day, alone or conjoined with a narcotic extract. In cases where the disease was periodical in its paroxysmal attacks, and there was evening fever and sweat, I have given, with manifest advantage, the blue pill at night, and sulphate of quinia in the morning. According to the state of the bowels would be the necessity or not of adding a minute proportion of opium to the pill or laudanum to the solution of the quinia.

To meet the second indication, we must give bland, nutritive substances for food, making our selection according to the digestive ability, and, if possible, appetency also, of the patient. Variations both in quality and quantity will be required with the changing features of the disease. For some days, there is considerable febrile irritation, and this is followed by aperyxia and great languor, cold skin, &c. Of course the dietetic treatment will vary in these two periods. The enjoyment of fresh

air should, if possible, be procured, especially for young subjects of a strumous habit; and hence they should be withheld from close chambers in which many sleep by night, and close apartments, as school-rooms, by day. Contributing to the end proposed will be some chalybeate. That which I have used, in late times, with excellent effect, is the citrate of iron and quinine.

There are yet other remedies in the treatment of chronic peritonitis not referable to either of the heads just described. They are supposed to have a resolutive or deobstruent character, and to set up a new action in the system. The chief of these remedies are mercury, as a sialagogue, and iodine. The strongest testimonials in favour of the mercurial treatment, are furnished by Sir Henry Marsh, in the *Dublin Journ. Med. Science*, vol. xxiii. It is carried out by inunction through the skin,—a scruple or half a drachm of mercurial ointment to be rubbed in, at intervals of four or six hours, until it acts perceptibly on the system. In many instances, this gentleman noticed "a marked subsidence of the symptoms, a copious secretion of urine, and a diminution of the abdominal distention, to have been coeval with the first perceptible effects of mercury upon the constitution." The irritability of the digestive mucous membrane, in chronic peritonitis, often forbids the use of mercury internally: when used in this way, the best preparation is the *pulv. hydr. cum cretâ*.

In some cases, the combination of mercury and iodine, by adding three grains of the proto-iodide of mercury to a scruple or half a drachm of fresh lard, has produced more rapid and salutary effects than the pure mercurial ointment. I have directed the blue pill, and at the same time the ointment of the iodide of potassium, with satisfactory result. The internal use of this last medicine, in solution, with the addition of carbonate of potassa, or *liquor potassæ*, is also very serviceable.

LECTURE LXXXIII.

DR. BELL.

Erysipelatous Peritonitis in adults—Peculiarity of effusions in—*Symptoms*—Relation of peritonitis to erysipelas—*Treatment*—*Metro-Peritonitis*—Circumstances of occurrence of this complication—*Symptoms* vary with the part of the uterus affected—*Treatment*—Different according as the disease occurs in the unimpregnated or the puerperal state.—PUERPERAL PERITONITIS—*Puerperal Metro-peritonitis*—Fever accompanying it—The puerperal—Numerous causes of predisposition and complication in the puerperal state, explaining great diversity of symptoms of puerperal peritonitis—*Anatomical characters*—Coincident inflammation of the uterus and its appendages—*Softening* or *putrescence* of the organ—Abscess in the cellular tissue—Inflammation of the lymphatics—Inflammation of the veins (phlebitis)—Their change of texture—Secondary abscesses in the different viscera—*Symptoms*—Time of appearance of puerperal peritonitis—*Progress and Termination*—The peritonitis sometimes latent—Attention to particular symptoms; above all the pulse—Rapid march—Signs of amendment—*Complications*—Metritis, phlebitis, lymphangitis, ovaritis, inflammation of the Fallopian tubes, pleurisy—*Diagnosis*—Characteristic symptoms—*Symptoms*—Inflammation of the uterine appendages—Inflammation of the symphisis pubis—Phlebitis—*Prognosis*—Unfavourable—*Causes*—Epidemic influence and contagion—Individual predisposition—Disease may attack puerperal women in the most different states of constitution and system—Erysipelas—Alleged vitiation of the blood and other fluids—*Treatment*—Divided into the *prophylactic* and the *curative*—Chief means of prophylaxis—Curative treatment—Considerations in case of doubt as to the plan of cure—The antiphlogistic treatment the most reliable—Circumstances under which it is best—Venesection—leeches—emetics—laxatives—calomel and opium—Treatment of the erysipelatous or

adynamic variety—Moderate evacuations—mild stimuli—nutritive substances—Reference to works on the subject.—CONSECUTIVE or SECONDARY PERITONITIS—*Causes*—The chief one, intestinal perforation—*Morbid Anatomy*—*Symptoms*—*Diagnosis*—Some cases have been mistaken for poisoning—*Prognosis*—*Treatment*—Opium in large doses the chief resource.

THE present would seem to be an appropriate time for a few remarks on *erysipelatous peritonitis*, as it presents itself in older subjects than those of the infantile class. Dr. Abercrombie has some very interesting cases and observations bearing directly on this subject, in his *Pathological and Practical Researches*, &c. He notices the general termination of this affection in the effusion of fluid, without much, and often without any, of that inflammatory and adhesive exudation which is so prominent a character of the disease in its more common form. The effused fluid is in some cases a bloody serum or sanies, seldom mixed with pus or combined with false membranes; and in these respects resembles closely the characters of the effusion described by M. Thore, in his cases of infantile peritonitis, in which erysipelas was a prominent pathological element.

The *symptoms* are sometimes slight and insidious; but sometimes very severe;—differences not uncommon in simple acute peritonitis. The direct relation which the inflammation of the peritoneum, in the variety now under consideration, has to erysipelas, is proved by the history of cases given by Gordon, Abercrombie, Alison, Nunneley, and others, in Great Britain, and not a few writers in our medical journals in the United States, particularly of late years, when describing epidemic erysipelas. Erysipelas of the leg, for example, has subsided after six or seven days, and in the course of another day, the patient, a lady, aged fifty years, is seized with acute pain in the region of the stomach, which, after a short time, moved downwards, and settled with great severity in the lower part of the abdomen and around the umbilicus. Death ensued in little more than twenty-four hours from the attack. In another case, erysipelatous inflammation of the throat will be followed by peritonitis, and death in forty-eight hours from the coming on of the attack.

The *treatment* of erysipelatous peritonitis ought to be, in the main, antiphlogistic, — but not carried out with the same freedom as in the simple form. Blistering should soon follow venesection,—and emetics will constitute a useful form of medication. Calomel and ipecacuanha, and mercurial inunction, are entitled to some confidence. In the stage of collapse, quinine, with the diffusible stimuli, have been given with advantage; but, when effusion has taken place, and false membranes formed, little can be anticipated from this mode of treatment.

Metro-Peritonitis. — The next important complication of peritonitis is that coexisting with inflammation of the womb, or metro-peritonitis. For the most part, the inflammation of the peritonitis is secondary to that of the uterus and consequent upon it. The circumstances under which the associated inflammations occur, are, 1, after operations on the uterus, as by the application of caustics, injections into the uterine cavity, and ablation of the neck for cancer; and 2, after protracted and complicated labours. In these cases, the inflammation of the uterus extends to the peritoneum; but the peritonitis that ensues becomes often the more serious of the two phlegmasiæ, masks the symptoms of metritis, and leads to a fatal termination.

In addition to the symptoms of metritis, which were described to you on a former occasion, such as pain behind the pubes, extending to the

groins and sacrum, a circumscribed ball or tumour in the hypogastric region, and often dysury, you will meet with acute pain, on pressure, of the hypogastric region, which soon extends over the abdomen, and is associated with the symptoms of peritonitis so recently detailed, that I shall not repeat them here. The symptoms derived from the inflammation of the uterus, will vary according as the neck or fundus is phlogosed, and according as the mucous membrane or the muscular parietes is affected. In this latter case, in puerperal subjects, the muscular tissue becomes softened, and is torn by the slightest efforts. When metro-peritonitis occurs after delivery, we do not, for obvious reasons, find the same degree of tension of the abdomen that would present itself when the disease followed traumatic lesions of the uterus, as partial ablation of the organ for cancer, &c. There are scarcely any diagnostic symptoms of puerperal metritis separate from peritonitis. Commonly, the prostration of strength is still greater and the lochia are more fetid than in peritonitis.

The *treatment* of metro-peritonitis, in the class of cases just referred to, as in those after operations on the organ, or other traumatic causes, should be decidedly antiphlogistic. Venesection, leeching, the warm bath, fomentations and mild enemata, with opium and calomel, are the chief remedies. In the double inflammation of the uterus and peritoneum, occurring after delivery, although the indications in the very beginning of the first stage are nearly the same, viz., to abate or remove at once the intense phlogosis, yet the state of the system generally, owing to the attendant circumstances and usual effects of labour, are such as to require caution and important modifications. But here I pause, and ask leave to take an additional designation of peritonitis, that will serve to fix attention on a particular period, during which metro-peritonitis is of most frequent occurrence, and is, at the same time, associated with phenomena of a various and somewhat contradictory character. The designating term is *puerperal.*

Puerperal Peritonitis — *Inflammation of the peritoneum attacking women after childbirth.*—If I were to extend the term and say *Puerperal Metro-peritonitis*, it would probably designate, with proper accuracy, the state of the parts (uterus and peritoneum) chiefly affected, and which, taken in connexion with the period when they are affected (the puerperal), would indicate the course of inquiry to be pursued for an elucidation of the entire subject, including the fever with which this double inflammation is so often accompanied, and which has so generally received the name of puerperal or child-bed fever. Unfortunately, the general symptoms were studied before the local ones, and physicians and accoucheurs had accustomed themselves to speak of a child-bed as a kind of typhous fever, depending on a particular taint or constitutional disturbance. Although a better knowledge now prevails, and it has been ascertained that there are, in nearly all the cases of this fever, decided organic lesions, and these mainly of the uterus and peritoneum, yet the old creed still retains a certain hold on a no small number of medical men, who receive the new facts as pathological curiosities rather than indispensable elements for the formation of opinion and as a guide to practice.

It seems to me that desirable latitude of interpretation of the entire series of phenomena in puerperal fever may be allowed, without an abandonment of a belief in its organological origin and development, if we bear in mind the facts, that acute peritonitis will display symptoms varying not a little with the prior state of the patient, as regards health or disease, plenitude or exhaustion, nervous energy or nervous debility; that it will vary, also,

according as it is simple or associated with erysipelas, or sporadic or epidemic, and as it occurs in close and illy-ventilated hospitals, or in private houses. Admit these contingencies, which are all of ready occurrence; some separately, some conjointly or in alternation, and you will not be surprised to find striking differences in the physiognomy of the disease, especially in the secondary or constitutional features, as great, in fact, as between a simple phlegmasia and typhus,—between a synocha and a malignant fever. But when you take into view the organic complications so common in puerperal peritonitis, such as metritis, phlebitis, and inflammation of the uterine appendages, you must be prepared for a still more diversified symptomatology,—a range which will include every the most minute feature supposed to be characteristic of puerperal fever. I might, if it were necessary for conviction, refer to pneumonia, for example, and ask you to compare, as regards its constitutional symptoms, its febrile part, the sthenic with the typhoid, as they present themselves, the first in a simple form, in an individual previously in full health, the second, in one of a broken-down constitution, either through age or excesses; or to compare the sporadic with the epidemic variety,—and then to report your observations of the very diversified features of the disease under these circumstances. Would you not be inclined, if you were to forget, or had been ignorant of its organic origin, to suppose some special causes depraving the blood, deteriorating the general system and producing symptoms which could not be the product of mere inflammation? But we have not yet noted all the circumstances of predisposition to explain why the supervention of inflammation of any organ or tissue, in the puerperal female, cannot fail to be attended with symptoms of a diverse and complicated nature. Her vascular system has been for months in a plethoric state, and her heart tasked to extraordinary duty; her nervous system has been excited and irritable; all her viscera have been more or less displaced and compressed: her uterus is still engorged and extremely sensitive to every impression; it has been compressed between the slowly protruding fœtus and the bones of the pelvis, perhaps by instruments or needless and rough manipulations, or it has been irritated by portions of adherent or retained placenta and coagula of blood. It may be, moreover, that, owing to the loss of blood during the progress of labour, or immediately after delivery, the state of plethora is replaced by those of anemia and debility, with a morbid susceptibility to be dangerously affected by even hygienic agents, ever so slightly augmented in quantity or suddenly applied. Need we wonder that inflammation of a uterus thus predisposed to take on morbid action should, on occasions, be lighted up, and that it should extend to its investing and so long distended peritoneum, a membrane, you will remember, continuously spread over the adjoining viscera of the abdomen, which have, also, themselves been compressed, and have had their circulation interfered with. The great wonder is, that the uterus and peritoneum should escape at all from the impending inflammation with which, in the puerperal state, they are constantly threatened. Once occurring, you can easily see how peritonitis should disturb, in an unusual degree, the sanguiferous and the nervous system, which, for some time preceding, have been subjected to high excitement and perturbation,—and now only respond to this new source of irritation in an unequal and irregular manner, and with a number of anomalous symptoms, anomalous, at least, if we insist on measuring them by the one standard, either of sthenic inflammation or of typhous debility.

Anatomical Characters of Puerperal Peritonitis.—These are nearly the same as in simple acute peritonitis; if we except the less marked redness and more limited inflammation of the peritoneum, in the variety now under notice. Even in these respects, there is no uniformity, for although in some cases the inflammation is restricted to the membrane in the pelvic cavity, and the iliac fossæ, and that lining the anterior parietes of the abdomen, yet in others it is diffuse, extending over the peritoneum which covers the intestines and the other sub-diaphragmatic viscera. The effusion is generally more abundant than in the simple variety: it is commonly opaque, turbid, and flocculent. There is less lymph and formation of false membrane in puerperal than in common peritonitis. The intestines are always much dilated with gas, and are diminished in length—facts observed repeatedly by M. Grisolle, at the Hotel-Dieu, in the year 1835.

Concomitant with inflammation of the peritoneum in the puerperal state, but by no means in degree corresponding with it, are changes in the body of the uterus itself and of its appendages. Sometimes the proper tissue of this organ is red, injected, infiltrated with pus, and lacerable; at other times it is the seat of an alteration which has been termed *softening*, or *putrescence*, or there is abscess in the cellular tissue of the broad ligaments; or, in fine, the ovaries are red, softened, and infiltrated or filled with pus. But these lesions are not so frequent as the ones now to be described, and which are met with during seasons of puerperal peritonitis, or puerperal fever, in most of the subjects attacked. The sub-peritoneal cellular tissue of the uterus is infiltrated with a small quantity of white or yellowish pus; and still oftener we see, on the surface of the organ, ramified lymphatic vessels, varying in size from that of a thread to a crow-quill. They are tortuous and enlarged at intervals, so as to be sometimes mistaken for small abscesses. These vessels, filled with concrete fluid pus, of a white, yellowish or greenish colour, are chiefly directed towards the superior angles of the uterus and at the insertion of the Fallopian tubes, where they are the most numerous. They are seen, also, at the neck and on the internal face and in the substance of the organ, in the broad ligaments, along the ovarian vessels, and in the cellular tissue of the lower pelvis, especially laterally and posteriorly, as we can assure ourselves by carefully raising the peritoneum. M. Grisolle, whose description I have followed, says, that he has never been able to trace the course of these vessels higher up than the superior strait; in some rare cases he has seen them enter ganglions which were swelled and red, or completely converted into abscess. He adds, that others, viz., MM. Tonnelé, Nonat, Velpeau, and Berrier-Fontaine, have traced them into the receptaculum of Pecquet, and some even the whole length of the thoracic duct. No small difference of opinion exists respecting the origin of the pus in the lymphatic vessels. Some, such as MM. Tonnelé and Nonat, believe, that this liquid is the product of inflammation of the lymphatic vessels themselves. Others, and M. Grisolle is on their side, assert, that the pus which fills the vessels has been absorbed by them from that effused in or under the peritoneum and in the cellular tissue of the pelvis, sometimes in the uterus itself and its appendages.

Frequently, in puerperal peritonitis, the uterine veins are affected with inflammation (phlebitis) which, in some instances, extends downwards to the hypogastric, iliac and femoral veins, and upwards along the vena cava to the hepatic veins. In these cases, there is injection and con-

densation of the cellular membrane in which the veins are imbedded, thickening, induration and contraction of the coats of these vessels, and the deposition of lymph, mixed with pus and coagula of blood, within their cavities. It is only when uterine phlebitis has been present, that we meet with abscesses in the lungs, liver, spleen, kidneys, muscles, and even brain, and purulent collections in the joints: in more than the half of such cases M. Grisolle has observed pleurisy, either simple or double.

Symptoms. — Peritonitis may show itself during labour; but this is a rare occurrence. It usually appears between the second and fifth days after delivery, and is ushered in with a chill and abdominal pains; commonly the former, but sometimes the latter taking the precedence. Intermittent chills have been frequently observed. The pain beginning almost always in the hypogastric region, or in one of the iliac fossæ, soon spreads to the umbilicus, and becomes diffused over the whole abdomen, which is tumid and inflated. The pain is sometimes paroxysmal, like that of labour.—Armstrong mentions a sensation on pressing the abdomen, as if hard bands or cords were passed completely round it. The uterus is generally enlarged and painful. Nausea, sometimes hiccup, almost always vomiting of yellow or green bilious matter, are met with: there are, also, constipation, and more frequently a diarrhœa, with yellowish discharges coming on at the second day of the disease. The thirst is intense; the tongue, for the most part, is moist, and covered with a whitish coat, "a thin, moist, or cream-like film," "as if it had been recently rubbed or dusted with a very fine whitish powder;" but as the disease advances, it often becomes dry and rough, or somewhat furred. Respiration is hurried and short, and the patient is often teased with a short dry cough: the pulse is sometimes hard and resisting; but in a majority of cases, soft and compressible, and in some, small and wiry: it is always of great frequency, varying from 110 to 160 beats in a minute. The skin is dry and hot, sometimes moist, or even covered with profuse perspiration. The face, at first, exhibits a circumscribed redness and an excited expression, which is soon converted into one of wildness and anxiety: the features become contracted; the eyes are sunken, and have a livid stripe under them; and the lips are pale and parched. The lochia are either suppressed, or flow in less abundance; although, in some cases, there is no deviation in their discharge. The secretion of milk does not take place, if the peritonitis have come on before the milk fever; but, if afterwards, the secretion is less and the breasts are shrunken. There is often a suppression of urine or troublesome micturition. If the disease still persists, there is an aggravation of all the symptoms similar to that described under the head of simple acute peritonitis: the pulse becomes excessively accelerated; the skin is bathed in a viscous sweat; the face is pale and earthy; the features are more and more contracted; the lips livid and tremulous. Delirium is of frequent occurrence, and coma closes the scene; but many retain the possession of their intellect to the last, and in most of them, the abdominal pain is diminished, or ceases entirely, one day or more before the fatal termination.

Progress and Termination.—Puerperal peritonitis, as remarked by Armstrong, sometimes creeps on in a very insidious manner; the abdominal inflammation being masked by an oppressive languor, and a diminished sensibility of the nervous system, a state such as might be expected after the extraordinary tension and excitement during labour, — yet in such

cases the disease may generally be detected by the great frequency of the pulse, accelerated respiration, an uneasy sensation at the pit of the stomach, and shrinking when pressure is applied over the abdomen, even although previously little or no complaint of pain had been made. The march of the disease is usually rapid; in some cases extraordinarily so, since they have run their course in ten hours. That there must have been progressive through latent disease anterior to the violent exhibition seems probable, from the appearance of extensive and numerous organic lesions met with on dissection, and which could indicate a more remote period for their origin. The fatal termination is generally between the sixth and ninth days. Sometimes it is preceded by an extraordinary calmness of manner and expression of the patient, amounting even to cheerfulness, and a conviction in her own mind that she is about to recover. When the issue is favourable, the amelioration is of earlier date, and is indicated by subsidence of pain and meteorism, and diminished frequency of the pulse.

Complications.—These vary with the epidemic. Sometimes there is metritis, often phlebitis, lymphangitis, ovaritis, inflammation of the Fallopian tubes, &c. The best account of these is given by Dr. Robert Lee, in his essay on "Puerperal Fever and Phlebitis," and in his "Lectures on the Theory and Practice of Midwifery," to either of which works I refer you. Inflammation commencing in the uterine branches of the hypogastric veins, by extending to the iliac and femoral veins, invariably gives rise to all the phenomena of phlegmasia dolens in puerperal women. The coincident occurrence of pleurisy with puerperal peritonitis, has been already mentioned. This complication is only announced by a greater dyspnœa than common, and by a pain at the scrobiculus cordis; seldom by a stitch in the side. Percussion and auscultation would give the same results as in ordinary pleurisy, did the suffering and debility of the patient allow of these means of exploration, by her sitting up in bed.

Diagnosis. — When the symptoms heretofore enumerated are present, there can be no doubt of the disease: but not infrequently it begins in a very insidious manner, and we are then required to watch minutely every deviation from the normal state. There may be a chill preceding the milk fever, and yet unattended by any serious consequences; but when the chill comes on within twenty-four hours after delivery, or following the milk fever, it too surely announces peritonitis. Meteorism, even when unaccompanied by pain on pressure, should excite suspicion. Above all should frequency of pulse be watched, as of itself nearly indicating the value of the other symptoms. Pain may be produced by the retention of coagula of blood in the uterus, or by constipation; but when accompanied by a regular pulse we need have no fears of peritonitis.

"Inflammation of the uterine appendages being generally combined with peritonitis to a greater or less extent, it is often difficult to establish a diagnosis between these varieties of uterine inflammation. The pain is generally less acute than in peritonitis, and is principally seated in one or other of the iliac fossæ, extending from them to the loins, anus and thighs. On pressure, the morbid sensibility will be found to exist chiefly in the lateral parts of the hypogastrium. The constitutional symptoms, at the commencement of the attack, do not materially differ from those which mark the accession of peritonitis, being often accompanied with strong febrile action, which speedily subsides, and is suddenly followed by pros-

tration of strength, and other changes, which characterize inflammation of the muscular and mucous tissues of the uterus."—*Lee*. Peritonitis may be confounded with inflammation of the symphisis pubis, but in the latter the pains are fixed in the diseased articulations, and are increased by even the slightest motion of the lower limbs.

As I may not be able to return to the subject of *uterine phlebitis*, I will repeat the brief summary of the prominent symptoms of this formidable affection, as given by the author just quoted: "When the veins alone are inflamed, the peritoneal and muscular tissue remaining unaffected, there is often either no pain, or only a dull pain, with a sense of weight in the region of the uterus, and no other local symptom by which the disease can be recognised. The uterus, too, may return to its usual reduced volume, or nearly so; and it is only on the accession of the constitutional symptoms, viz., rigors, prostration of strength, rapid, feeble pulse, low, wandering delirium, attacks of vomiting and diarrhœa, with brown, parched tongue, and ultimately rapid and destructive inflammation of the eyes, and purulent deposits in the substance of the lungs, that the existence of this insidious and dangerous affection can be determined. If the substance of the uterus be affected, this organ remains above the brim of the pelvis, large, hard and painful on pressure, as in puerperal peritonitis."

Prognosis.—This is always discouraging. Puerperal peritonitis is one of the most fatal diseases to which the human frame is subject, and the cure of which can hardly be hoped for, unless it is circumscribed. It is especially destructive when it prevails epidemically and among hospital cases, out of which hardly one in twenty recovers. The nearer the epoch of parturition, the greater the danger. Of all the symptoms enumerated, those derived from the pulse must chiefly guide us in the prognosis; and hence, however favourable may be the appearances of the case in other respects, if the pulse still retains its frequency, we have reason to fear a fatal result. A small, quick pulse, which beats more than 120 in a minute, contracted features, vomiting of green matters, cold sweats, great tympanitis, are signs of the worst augury.

Causes.—We are not accurately informed of the influence of the seasons in the production of puerperal peritonitis; but it would seem from the observations made, that the disease is most common in cold and wet weather. It attacks, in preference, women who are delivered in hospitals, and often prevails epidemically. General experience has shown that it is most common and fatal among puerperal women who are much crowded together, or with other patients in large hospitals, or otherwise deprived of fresh air. Still, it must be confessed, that all due hygienic precautions have not served as a protection against the disease. This leads us to an inquiry into other and more general causes; and of these epidemic influence and contagion have been the ones most accredited. The former, although its nature is not known, cannot be denied, in the absence of other assignable causes, and taking into view the rise, increment and decline of the disease in a particular locality. Even if contagion were admitted as a cause, and the evidence in favour of this mode of transmission of the disease is exceedingly plausible, if not convincing, we must still suppose an anterior predisposition, such as an epidemic constitution, to explain why it is that contagion being present, the disease should not always spread, or, when spreading, that it should decline and cease, notwithstanding the continuance of this cause. Causes of individual predisposition, if not directly exciting ones, have been found in the depressing

passions, defective nutriment, and the privations incident to poverty; also in violence to the uterus, as by the introduction of the hand or forceps, retention of the placenta, or its separation by artificial means. Uterine hemorrhages also come in for a share in the etiology of puerperal peritonitis. Primiparous females, or those giving birth to a child for the first time, are more liable than others to the disease. But whatever value we may attach to these, as occasional causes, it cannot be denied, that women, in a still larger number of cases, suffer without the intervention of any of them, and without an evident or explicable cause. Gordon (*A Treatise on the Epidemic Puerperal Fever of Aberdeen*) explicitly declares, that puerperal fever "was not peculiar to any particular constitution or temperament, but promiscuously seized women of all constitutions and temperaments; for the strong and the weak, the robust and the delicate, the old and the young, the married and the single, those who had easy, and those who had difficult labours, were all equally and indiscriminately affected." Hey (*A Treatise on the Puerperal Fever, &c., in Leeds*) states, in what would seem to some to be the language of paradox, that puerperal fever most frequently occurred within the range of his experience after the most easy and natural labours.

The frequent connexion between puerperal peritonitis, and, as we have seen, also, infantile peritonitis and erysipelas, has induced several writers to attribute the disease to this latter, and certainly not without great plausibility. It would be more correct language to say, that the diffused inflammation which, when it attacks the surface of the body is called erysipelas, becomes, when located in the peritoneum, peritonitis, and when it occurs in women in child-bed, gives rise to puerperal fever. Some pathologists and writers on the subject are disposed to regard peritonitis as a symptom merely of puerperal fever, and to suppose that this latter itself depends on a vitiation of the fluids and particularly of the blood. This, it seems to me, is assuming effect for cause, and inverting the order of the morbid phenomena which constitute the disease. But, even admitting to the full extent of actual occurrence, the changes in the blood, these are neither so great nor so distinctive as to explain the febrile phenomena, nor is the occasional introduction of pus in the veins and the lymphatics a fact on which we can rest a fixed pathology of puerperal fever; knowing, as we do, that these lesions are not seen at all in numbers of the worst cases of the disease.

Equally unsatisfactory is the once prevalent notion that suppression of the lochia and of the secretion of milk are causes of peritonitis. The suppression is by no means a uniform event in the subjects of the disease, and when it does occur, it is an effect, not a cause.

Treatment.—This is *prophylactic* and *curative.*—The prophylaxis will consist in placing a female in the most favourable hygienic circumstances, not only during and after labour but before this process is begun. More especially is it important, that, during the period immediately succeeding delivery, she should breathe a pure air of a mild and uniform temperature, and be kept in a state both of bodily and mental quiet: the bowels are to be rendered soluble by enemata and gentle laxatives; and, when required, the urine drawn off by a catheter. The posture should be one of entire and persistent recumbency,— a deviation from which is not required by any of the natural calls; as these can be gratified by the use of a bed-pan, or in cases of extreme debility, the evacuations must be received on sheets

folded for the purpose. The flow of the lochia, especially if they be fetid, is to be favoured by regular vaginal injections of warm water. In case of complication or delay in the passage of the fœtus, or from retention of the placenta, or from uterine hemorrhage, all needless or rough manœuvres should be carefully avoided. The food should be of the simplest and blandest kind, and all stimuli, especially of the alcoholic class, rigidly withheld, unless specifically, and in measured dose, directed by the physician in attendance, who will certainly not think of prescribing them as part of the prophylactic treatment, whatever may be his practice in this respect in certain low forms of metro-peritonitis itself. Most truly has it been said by Dr. Robert Lee: "a puerperal woman ought to be as careful of herself for nine days after delivery, as an individual who is recovering from an attack of continued fever, or inflammation of some important viscus. While the uterus can be felt above the brim of the pelvis, and the lochial discharge continues to flow, the most fatal consequences may result from exposure to fatigue or cold, and the slightest imprudence in diet."

The women in lying-in-hospitals should be in small numbers together. Better, indeed, if each woman, during the period of her confinement, could have a room for herself, however small; and in every instance extreme pains should be taken to secure the requisite ventilation. The experience of the past, as far as deducible from hospital statistics, shows that, with all the attention paid to the comfort of the patient by the nurses, and all the skill and tenderness of the physicians, the mortality is greater in proportion than among the subjects of the disease at their own houses, however scant the accommodations and indifferent often the attendance. Would it not, therefore, be the most humane course for the managers or directors of hospitals to expend the money, now appropriated or allowed for the lying-in department, on the applicants for this charity at their own houses, by making little additions to their furniture and clothes; or if some of these poor women had no houses, by renting rooms for their reception; and procuring for all the regular services of the hospital accoucheur or other qualified physician.

The *curative* treatment of puerperal peritonitis, when we hope to acquire a decided and early control over the disease, must be antiphlogistic. But there are seasons of epidemic visitation of this disease, and individual cases of uterine complications, such as metritis, with softening of tissue, or phlebitis, in which this method of treatment must be pursued with great circumspection, and confined to nearly a cooling regimen and laxatives. The great difficulty consists in ascertaining how far the symptoms of nervous prostration, and those resulting from disturbance of the nervous system generally, are primary, or are a mask, as it were, to the inflammation of the peritoneum. In cases of doubt it will be safer for the medical attendant to act under the belief that he is called upon to subdue violent peritonitis rather than to mitigate the violence of a puerperal fever, which may exist, we are told, without peritonitis, and result from a vitiation of the fluids and nervous disorder. Leaning to the belief of his having to deal with intense and rapidly destructive inflammation, he will abstract blood early and largely. In so doing, he may be mistaken; at any rate, his position is soon ascertained by the decided effect of the use of the lancet, and if there ensue great prostration and no farther symptoms of phlogosis, he can adopt the recuperative method. He will quiet by opium and camphor, and

the recognised narcotics,—he will give nutriment in a fluid state, and even some diffusible stimulus, such as wine whey: he will have recourse also to moderate counter-irritation of the skin, by friction and rubefacients, it may be to slight pustulation and vesication. All this he can do, and with good effect, to create a rally of the functions which may have been excessively prostrated by the disease and the bleeding. But if, on the other hand, he fails to bleed from timidity and a false belief that in case of doubt prudence requires such abstinence, and there be really violent phlegmasia of the peritoneum, can he, after the use of stimulants and cordials, recover his ground by venesection? By no means: the period for action is past, and the patient now sinks, with all the symptoms of uncontrollable debility added to those of inflammation. The omission to bleed, when bleeding is required, is as legitimate a ground for self-reproach and critical censure, as the bleeding out of season and when not justified by the actual circumstances of the case. I make these remarks from a fear that some of our brethren entertain erroneous ethical notions on such occasions as the one now before us, and that while they would deprecate recourse to measures which subsequent experience might show to be wrong, they would view with ready leniency the refusal to employ means which the same kind of experience might teach to be right. Equally adverse to humanity and justice, is rashness or timidity. It is probable that more lives have been lost in the sick-chamber and on the field of battle by the latter than by the former infirmity.

Generally speaking, in most sporadic cases, or those of occasional occurrence, and where the subjects are scattered over a region of country, or have not suffered from previous deterioration of health in town, bloodletting is proper and necessary at the beginning of puerperal peritonitis,—and of the mode venesection is the best at this time. From twenty to twenty-four ounces of blood should be drawn, from a large orifice, while the upper part of the body of the patient is raised by pillows, with a view of making a more decided impression, even by an approach to syncope. I have found, in some well-constituted women, that a single bleeding in this way would be followed by a rapid subsidence of the pain in the abdomen, and particularly at the hypogastrium and fundus of the uterus, and diminution of the frequency of the pulse,—in fine a solution of the disease. But, in general, we must expect some persistence of the symptoms, with sometimes little or no diminution. It then becomes a question whether the venesection should be repeated, or blood should be drawn by leeches applied to the lower part of the abdomen, or the hypogastric and iliac regions. In many cases we have no choice, the lancet being the only means at our disposal; but when good leeches can be procured in abundance, their use is attended with decided benefit. They are to be applied in the same manner as directed for simple acute peritonitis; but, unless at the very outset of the disease, not with the same freedom. With a view to quiet the disturbance of the nervous system, and to expand the cutaneous capillary tissue, opium, in a tolerably full dose, should be administered, either alone or in combination with ipecacuanha, according to the extent of inflammatory excitement still remaining. In slighter cases of puerperal peritonitis, opiates and the application of cataplasms or fomentations will often suffice to remove the unpleasant symptoms. It was the practice with some physicians, among others of the eminent Chaussier, who was for a long time the accoucheur in chief of the *Maternité*,

at Paris, to direct small doses of Dover's powder, at intervals, and emollient cataplasms over the region of the uterus, to all patients recently delivered.

If a decidedly favourable impression is not made on the disease by bloodletting and opium, within the first twenty-four hours of the treatment, it will be advisable to act on the stomach by an emetic of ipecacuanha, and on the bowels by calomel, followed by the infusion of senna. Although we may not attach that importance to the use of emetics which many French practitioners have done at different times, yet they often give great relief to the nausea and vomiting, and are followed by perspiration and diminution of pain and fever. Armstrong cites the observations of Mr. Wolf, on the appearance of the alvine evacuations, as furnishing one of the best diagnostics in puerperal fever, and to ascertain which he was in the habit of giving a brisk purge, so soon as the disease seemed to be formed. Mr. Wolf inferred the existence of a violent attack when the stools were of a dark colour, somewhat resembling coffee grounds, very copious, and of the consistence of thick gruel, and of a fetid smell. He was accustomed to rely on purgatives as the chief remedial means, in puerperal fever, and observed frequently that hard scybala have only been discharged when the stools were becoming natural towards the end of the disease.

It will be sufficient for me to refer, for further details, to the treatment laid down for the cure of simple acute peritonitis, which is, for the most part, applicable to solitary or occasional and uncomplicated cases of puerperal peritonitis. Among the remedies, calomel, or calomel and opium, or calomel with tartar emetic, or Dover's powder, merit our confidence, in doses repeated every two or three hours. It has been remarked, that the mouth is rarely affected by the administration of calomel at this time. We continue the use of the calomel, in doses of five grains, until there is a marked subsidence of abdominal pain and fever, and then give it every six hours in less quantity. Our object in administering it is to relieve congestion and inflammation and as an anaplastic opposed to the formation of albuminous concretions and false membranes.

In epidemic puerperal peritonitis, and especially in that of the erysipelatous kind, and in hospital cases, there is generally a predominance of adynamic and typhous symptoms, with a soft and easily compressible and very frequent pulse, forbidding the use of the lancet, and, at the most, barely allowing of the application of a few leeches over the uterus, followed by emollient cataplasms. Some reliance is still placed on the calomel practice, even in these cases; and in them is recourse most appropriately had to the oil of turpentine, carbonate of ammonia, and other diffusible stimuli, internally, and terebinthinate rubefacients and vesication externally. A mild emetic and laxatives are worthy of trial also. The oil of turpentine is given in a dose of ʒiij., with the same quantity of syrup. Diarrhœa is a troublesome and obstinate accompaniment to this low form of puerperal peritonitis. It ought, in the beginning, to be treated by a mercurial purge, or calomel, followed by castor oil, and afterwards by calomel with chalk, chalk-mixture, and lime-water. Dr. Smyth, of London, tells of the good effects of sugar of lead for the suppression of diarrhœa, and great amelioration of the puerperal peritonitis. His prescription is,—acetate of lead, twelve grains; powder of opium, three grains; confection of roses sufficient to make six pills, one to be taken every four hours; and after a time, as the symptoms subside, one every

six or eight hours. After due evacuation of the alimentary canal, and while continuing the calomel and the sugar of lead, light nourishment, and even animal broths and wine whey, are required in the adynamic variety of puerperal fever. Even when the pain and concomitant symptoms call, of necessity, for the use of leeches to prevent disorganising inflammation, moderate stimuli and nourishing food may not improperly be given contemporaneously. Remission, or other abatement of febrile excitement, with a little cleaning of the tongue, as the disease advances, would suggest the use of quinia, or an infusion of Peruvian bark, and certain aromatics. Stimulants and tonics serve to maintain the functions under distressing depression, and may contribute indirectly to a restoration to health, but they can have little or no effect on the phlegmasia if it be still progressive.

I shall conclude this brief outline of the subject of puerperal peritonitis, by directing your attention to a volume in which it is discussed in its various bearings with considerable ability and practical experience. It is entitled the "History, Pathology and Treatment of Puerperal Fever and Crural Phlebitis:" it comprehends the valuable treatises of Gordon, Hey, Armstrong, and Dr. Robert Lee, with a good introductory essay by Dr. C. D. Meigs, of the Jefferson Medical College. It may be, and indeed has been, objected to these gentlemen, especially the first three and the last, that they are too much biassed in favour of free bloodletting; and that this practice has not been found to be as successful in London, and other large cities, and, above all, in hospitals, as it was in their hands. I cannot, however, but believe, that their statements will be found more nearly to represent the state of things which will come under your observation in different parts of the United States, when you are called upon to encounter puerperal peritonitis or puerperal fever, than does the clinical practice in the various lying-in hospitals,—in which various distressing and deteriorating causes operate on the constitutions of the patients, which you will not see, or if you do, it will be with greatly diminished effect, in your private practice.

Consecutive, or Symptomatic Acute Peritonitis. — If we except peritonitis, as it occurs in the puerperal state, the primary or idiopathic variety is not a common disease. It is doubtful, indeed, whether puerperal peritonitis can be regarded as primary, in many instances. Apart from this, however, most of the cases which are called primary are, in fact, traceable to a lesion of some viscus, or of the abdominal parietes. Thus, for example, the peritoneum is sometimes inflamed at an advanced period of cancers of the uterus, stomach, intestines, and liver, owing to the passage of a small quantity of the cancerous matter, or ichor, getting into contact with the serous membrane. Voluminous aneurisms of the aorta and iliac arteries have also given rise to peritonitis, sometimes owing to the permanent irritation of the peritoneum, caused by these tumours, and, more rarely, owing to the escape, into the peritoneal cavity, of blood, through a small aperture or laceration of the parietes. I have seen one case of this kind, in which the blood escaped from an aneurism of the aorta in the thorax, and found its way down between the crura of the diaphragm into the left side of the cavity of the peritoneum.

For the most part, however, symptomatic peritonitis is caused by the rupture of an abscess or cyst, or by the perforation of one of the hollow organs in the abdominal cavity. Of all the organic changes which give

rise to peritonitis, by far the most frequent is the perforation of the intestine in the centre of an ulcer, supervening on the typhoid affection or fever. Sometimes, from nearly similar structural lesion in the large intestine, the accident is met with in phthisis pulmonalis. Perforation of the appendix vermiformis is every now and then a cause of peritonitis. In a case recently occurring in this city, the rectum was the seat of perforation just above the part where the peritoneum is reflected from this intestine.

The *anatomical characters* of secondary are not materially different from those of primary acute peritonitis, except in some changes which have taken place at the orifice of the serous or peritoneal face of the perforation of the intestine, and the presence of the fluids or other matters that may have escaped into the peritoneal cavity. When there has been perforation of the stomach or intestines, gas is found, which, when the peritoneum is opened, suddenly escapes with some degree of force. Sometimes the quantity of foreign matters from the intestine is so small as to be barely discernible, except in a slight yellow hue of the false membranes. But, even in cases in which there is no deviation from the appearances of primary peritonitis, you ought, considering the infrequency of this latter disease, to examine with great care both the parietes of the abdomen and all the serous surfaces of the organs contained in the cavity, and especially the appendix vermiformis. It is not enough, for this purpose, to inspect each convolution, but you must, also, practice insufflation of the whole intestine under water; without which precaution very minute perforations might escape your notice. Nor must the gall-bladder be overlooked in the general exploration, both with a view of detecting a perforation of its coats, or a transudation through it, by a kind of exosmosis, and escape of bile into the peritoneal cavity.

In some cases, the escape of the contents of the intestine or of the stomach into the peritoneal cavity is prevented, just as the opening is about to take place through the serous membrane, by the closure of the orifice with coagulable lymph and its subsequent organization; or a partial and very circumscribed peritonitis may take place which, by its adhesions, prevents the escape of the contents of the intestine. Perforating ulcers of the digestive tube sometimes open directly on the solid viscera, which may serve to prevent the escape of its contents, until adhesive inflammation forms between the perforated peritoneum and the viscus with which it was in apposition.

Symptoms and Diagnosis.—The symptoms are, for the most part, the same as of simple acute peritonitis; but some of them have a more precise or diagnostic value, as indicating probable cause. These are, the sudden coming on of violent and excruciating pain of one particular part of the abdomen, with considerable tenderness on pressure, chills, great and rapid sinking of strength, and collapse of the features, nausea and vomiting, pulse small and very frequent, coldness of the skin, and sometimes cold sweat bedewing it. After a short period, the abdomen becomes inflated and tympanitic. In some cases, a state of calm succeeds to these violent symptoms, and the patient fancies that he is about to recover. The duration of the disease is from twenty hours to three days. In the case following perforation of the rectum from an ulcer, the individual had been out of doors in the morning, attending to his professional duties, and even performed a surgical operation; and it was not until dinner time (2 o'clock) that he made any complaint, nor until the afternoon that he was induced

to take some medicine. Towards evening the symptoms assumed a graver character, and by midnight he was dead ; having expired when, in the opinion of more than one friend in the room, he was believed to be asleep. The following case, related by Dr. Abercrombie, will also show the suddenness of termination of secondary peritonitis :—

" A young woman, aged 18, had been affected for about six months with variable appetite, and occasional pain in the stomach, which made her frequently sit with her body bent forward, and her hand pressed upon the epigastric region. Little notice was taken of the attacks, as she was going about, and otherwise in good health ; and for some weeks previous to the attack now to be described, her appetite had greatly improved. On the 26th November, 1824, while in a room by herself, late in the evening, she was heard to scream violently ; and when a person went into the room, she was found unable to express her feelings, except by violently pressing her hand against the pit of the stomach. When she was soon after seen by Mr. M'Culloch, she was moaning as if in extreme agony, but was unable to speak ; the pulse was 86 and very weak ; she could scarcely swallow ; but soon after vomited the contents of the stomach, which seemed to be merely food which she had recently taken. Various remedies were employed without relief. She continued with every appearance of extreme suffering, and unable to speak, till 7 o'clock in the morning of the 27th, when she said the pain was considerably easier, but was still very severe in the pit of the stomach, and was extending downwards over the abdomen. The abdomen was now becoming distended, and when I saw her about 3 o'clock in the afternoon, it was distended to the greatest degree and very tense. The pulse was extremely feeble ; she was scarcely able to speak, but her countenance was expressive of extreme suffering. Nothing afforded the smallest relief, and she died about two in the morning, 29 hours from the attack.

" *Inspection.*—The cavity of the peritoneum was distended with air, and likewise contained upwards of eight pounds of fluid of a whitish colour and fetid smell. There was slight but extensive inflammatory deposition on the surface of the intestines, producing adhesions to each other, and to the parietes of the abdomen. On the upper part of the small curvature of the stomach near the cardia, there was a small perforation of a size which admitted the point of the little finger. Internally, this opening communicated with an ulcerated space on the mucous membrane, about the size of a shilling, with slightly thickened and hardened edges, and a considerable perpendicular loss of substance. The stomach, in all other respects, was entirely healthy."

As if to baffle all our diagnostic indications, there are, however, cases in which the disease pursues nearly a latent course, and in some cases the patients have outlived the introduction of even large quantities of foreign substances, and an opening for their discharge through the umbilicus.

In a medico-legal point of view, secondary peritonitis from spontaneous perforation of the stomach or intestines possesses considerable interest, owing to the fact that criminal prosecutions have been instituted against the members of the families of persons who have been cut off suddenly by this disease, under a suspicion that their death was caused by poison.

Treatment.—This must be confined to a prevention of a fresh issue of the contents of the stomach or bowels into the peritoneal cavity, and procuring the formation of circumscribing and protecting adhesions. With

this view, we can have no hopes from the remedies recommended in the other varieties of peritonitis, some if not most of which would be mischievous, such as emetics, purgatives, or indeed any remedy that would subject the patient to the least motion. The condition for cure is, entire rest of the parts, so as to allow of the closure of the orifice by coagulable lymph, or by adhesions between it and the opposing peritoneal surface. For the accomplishment of our purpose in this way, opium, in large doses, seems to furnish the only probable means of saving life. Drs. Graves and Stokes have succeeded by the opium practice, in some cases which are on record. The two following are full of interest on this point :—

"In the first case, in which the symptoms of perforation had existed for two days, and the patient was in almost complete collapse, the use of sixty drops of the black drop in the twenty-four hours, was followed by most singular improvement : the pulse had become full and soft, the extremities warm, and the countenance had lost the Hippocratic expression. The patient could bear pressure on the abdomen, which the day before was exquisitely painful. The same treatment being continued for twenty-four hours longer, *every symptom of abdominal inflammation had subsided :* the belly was natural and the pulse good. At this period the mildest possible saline laxative was exhibited, which produced four evacuations, followed by an immediate return of the symptoms of peritonitis, under which the patient rapidly sank. On dissection, we found universal peritonitis, but the intestines were everywhere agglutinated together, except in the left iliac fossa. The perforation existed in the cæcum, and was small ; and the mucous membrane of the ileum and colon was but little affected.

"The interest of this case consists, first, in the decided advantage derived from the use of the opium ; secondly, in the danger it shows to result from anything that excites the peristaltic action of the intestine ; and thirdly, in the verification of the diagnosis of perforation, and the evidence of a process of cure having commenced.

"In the next case, the disease was of three days' standing, and it supervened suddenly from a hypercatharsis, produced by an over-dose of Glauber's salts. The patient was apparently in the last stage when the opium treatment was commenced. He was ordered a grain of opium every hour. Next day the symptoms were decidedly improved, and though he had taken twenty-four grains, he had not experienced the slightest coma, headache, or delirium. The same plan of treatment was persevered in, the daily doses of opium being gradually diminished until the tenth day, when the convalescence being completely established, the remedy was omitted. During this time, diarrhœa set in for three or four days severely ; this was treated by the application of a few leeches to the anus, and the use of anodyne enemata. The patient took in all one hundred and five grains of opium, exclusive of that in the injections, without experiencing any of the usual effects of this remedy in large doses."—*Dr. Stokes*, Art. *Perforation of the Serous Membranes—Cyclopædia of Medicine.*

END OF THE FIRST VOLUME.

Philadelphia, 293 Market Street,
Oct., 1848.

STANDARD WORKS

ON

ANATOMY, MEDICINE, SURGERY,

AND

The Collateral Sciences,

PUBLISHED BY

ED. BARRINGTON & GEO. D. HASWELL,

MEDICAL

BOOKSELLERS AND PUBLISHERS

WITH THE TESTIMONY OF THE PRESS.

Orders for any of the books mentioned in the accompanying Catalogue can be executed by the principal Booksellers and Druggists in the United States.

If physicians will furnish the direction of their P. O., Catalogues of B.& H.'s publications will be sent to any part of the United States, gratis.

WORKS ISSUED

IN THE

SELECT MEDICAL LIBRARY—NEW SERIES.

The works comprised in either of the years, as below, can be had at the subscription price of $5.

1841.

Bell's Dictionary of Materia Medica.

Aretæus on the Causes and Signs of Disease.

Schill's Outlines of Pathological Semeiology.

Lectures on Diseases of the Uterus. By Waller, Lisfranc, and Ingleby.

Millingen's Aphorisms of Insanity.

Underwood on the Management and Diseases of Children.

1842.

Thompson and Twining on Diseases of the Liver and Spleen.

Dick on Indigestion.

History, Pathology, and Treatment of Puerperal Fever. By Gordon, Hey, Armstrong, Lee, and C. D. Meigs.

Blundell on the Principles and Practice of Midwifery.

1843.

Pilcher on the Structure, Economy and Diseases of the Ear.

Andral on the Diseases of the Chest.

Andral on the Diseases of the Abdomen.

Aran's Practical Manual on Diseases of the Heart.

1844.

Evanson and Maunsell's Practical Treatise on the Diseases and Management of Children.

Nunneley on Erysipelas.

Lee's Theory and Practice of Midwifery.

Bampfield on the Curvature and Diseases of the Spine.

1845.

Christison's Treatise on Poisons in relation to Medical Jurisprudence, Physiology and the Practice of Physic.

Colles's Lectures on the Theory and Practice of Surgery.

Heberden's Commentaries on the History and Cure of Diseases.

1846.

Tamplin on the Nature and Treatment of Deformities.

Fordyce's Dissertations on Fever, with an Introduction.

Coley's Practical Treatise on the Diseases of Infants and Children — including Surgery.

Latham's Lectures on Clinical Medicine (*comprising Diseases of the Heart*).

BULLETIN OF MEDICAL SCIENCE.

FOR 1843-4-5-6, 4 VOLS.

At $1 per vol. in half sheep binding.

☞ *Both of the above publications have been discontinued.*

ANATOMY.

New Edition.] Professor Samuel D. Gross, M.D.

ELEMENTS OF PATHOLOGICAL ANATOMY.

By Prof. SAMUEL D. GROSS, M.D.,

Professor of Surgery in the Louisville Medical Institute, Ky.
Late Professor of General Anatomy, Physiology, and Pathological Anatomy in the Medical Department of the Cincinnati College.

Illustrated by 50 *Coloured Plate figures, and* 250 *Engravings on Wood by the first artists.*

1 super-royal 8vo. vol., extra sheep.

"We recommend it as the most complete, and, on the whole, the least defective compilation on the subject in the English language." — *Brit and For. Med. Jour.*

"The useful every where appears as the actuating motive and aim in its preparation."—Buff. Med. Journ.

"That a second edition should now be called for, considering the size and cost of the work, and on a subject which comparatively few practitioners are sufficiently industrious and pains-taking to investigate, is certainly flattering to him.—*Phil. Med. Exam.*

"It is a noble volume, both by its intrinsic merits, its pictorial illustrations, and the entire mechanical execution."—*Bull. of Med. Science.*

"That it will henceforth be regarded as a standard work, and introduced into the library of every physician of the interior who aims either to educate his pupils thoroughly, or keep himself informed on the improvements of this essential branch of medical and surgical science, we cannot doubt." "Evidently it has been a labor of love on the part of the author, rather than a task; and he was fortunate in securing publishers who seem to have entered into his own spirit. The mechanical execution of the work is deserving of the highest praise.'—*West. Journ. of Med. and Surg.*

"This second edition is from the press of Barrington and Haswell, in a mammoth 8vo. of 822 pages illustrated by very accurate and very elegant drawings, some of which are colored to vie with nature in delicacy of tints."—*Bost. Med and Surg. Journ.*

"It is the most complete and useful systematic work on Pathological Anatomy in the English language. The colored engravings and woodcuts are exceedingly well executed, and the entire getting up of the work does much credit to the enterprising publishers.

"We regard it as one of the most valuable works ever issued from the American press, and it does great honor alike to the author, and the country of his birth."—*N. Y. Journ. of Med.*

"We have spoken in high terms of it because it possesses real and desirable excellencies."—*Phil. Med. Exam.*

"We can strongly recommend his 'Elements of Pathological Anatomy' to the attention of the pathological inquirer."—*Amer. Med. Lib. and Intel.*

"It is altogether the most complete exposition of Pathological Anatomy in our language."—*Amer. Journ. of Med. Sciences.*

"We recommend the work to our readers, as one calculated to advance the subject upon which it treats. We trust the work may enter extensively into the hands of the profession, and that they will bestow on it careful consideration."—*West. Lancet.*

"The book may be read with advantage, * * * it proves him a man of industrious habits, and anxious to diffuse a taste for this department of medical science."—N. O. Med. & Surg. Journ.

"We commend it to the attention of the profession as one of the best extant upon the subject on which it treats."—*S. Journ. Med. and Pharm.*

"The author has conferred an important service on his countrymen."—*Med. Chir. Rev.*

DISSECTOR'S GUIDE.

Edward J. Chaisty, M.D.

THE LONDON DISSECTOR, OR GUIDE TO ANATOMY:

For the Use of Students.

Comprising a Description of the Muscles, Vessels, Nerves, Lymphatics, and Viscera of the Human Body, as they appear on Dissection: With Directions for their Demonstration.

By EDWARD J. CHAISTY, M.D.

REVISED AND CORRECTED.

1 vol. 12mo. muslin.

"Although there are several of these dissecting-room companions, there is not one in the whole catalogue that wears better, from its intrinsic value, than the old London Dissector. With the improvements of this excellent edition, carefully revised, it will prove a very economical as well as certain assistant; and it therefore commends itself to the student."—*Boston Med. and Surg. Jour.*

New Work.] John Neill, M.D.

OUTLINES OF THE ARTERIES,

With short Descriptions: Designed for the Use of Medical Students.

With Coloured Engravings.

BY JOHN NEILL, M.D.,

Demonstrator of Anatomy in the University of Pennsylvania; Physician to Wills's Hospital; Lecturer on Anatomy; Member of the Philadelphia Medical Society, etc., etc.

"This book should be in the hand of every medical student. It is cheap, portable, and precisely the thing needed in studying an important, though difficult part of Anatomy."—Boston Med. and Surg. Journ.

"Its chief excellency, however, is its mode of reference, in which it differs from the usual method of numbering the different vessels, and referring to their numbers in the accompanying explanation."—Med. Exam.

"The drawings are very distinct and well coloured. The idea of this work was a happy one, and, we trust, for the benefit of students, that the author will extend it to the veins, nerves, &c."—Amer. Journ. of Med. Sciences.

"As a help to the Medical Student, we can cheerfully recommend it"—*W. Lancet.*

Extract from a Letter of Prof. Webster, dated GENEVA, Oct. 13*th*, 1845.

"I have examined it, and think it a very useful work, so much so that I shall recommend it to my class, and adopt the arrangement in my description of that system."

"We recommend every Student of Medicine to purchase a copy of this work, as a labor-saving machine, admirably adapted to refresh the memory, with knowledge gained by lectures, dissections, and the reading of larger works."—N. Y. Jour. Med.

"This work is from the pen of a Philadelphia anatomist, whose familiar knowledge of the subject has been aided by the press, the result of which is a volume of great beauty and excellence. Its fine execution commends it to the student of Anatomy. It requires no other recommendations."—West. Journ. of Med. and Surg.

"The delineations are good, and the plan pursued by the author, of placing the names upon the arterial trunks, economises the time of the student."—*S. Journ. Med. and Pharm.*

—

New Work.] By the same Author.

OUTLINES OF THE NERVES.

"This volume is as beautiful as it is useful,—one in which both author and publishers have united their efforts for the especial benefit of the student, to whom a more acceptable work could not be offered, for facilitating an adequate acquaintance with the elements of neurology. Like that on the arteries, it has the distinctive recommendation of the names being affixed to the trunks and ramifications of the nerves, and in this way, of saving a deal of trouble and time, and of impressing them more firmly on the memory.

"The engravings are in the best style, and the paper and type correspond; and yet, notwithstanding these evidences of what might seem luxurious indulgence in tasteful decoration, the volume is sold at a price which would be thought extremely low for one made up in the commonest fashion, and with the crudest pencil sketches."—Bulletin of Med. Sciences.

"We would advise every student of Medicine to procure it, while studying this portion of anatomical structure."—N. Y. Journ. of Med.

"Enabling the student to identify the individual nerves in almost any part of the body, without additional assistance."—Boston Med. and Surg. Journ.

"In the plates delineating the origin and course of the nerves, the student will find a clear and beautiful exhibition of this portion of anatomy."—*West. Journ. Med. and Surg.*

"The difficulty of following a demonstration, so often complained of by students, can, we think, no longer exist with such a guide as this."—*Phil. Med. Exam.*

"To obtain this general knowledge of the nervous system, the student will find Dr. Neill's work of great value."—*West. Lancet.*

"It deserves all the commendation we bestowed upon its predecessor, and will prove a most useful aid to the student commencing the study of the Nerves."—*Am. Jour. of Med. Sciences.*

—

New Work.] By the same Author.

OUTLINES OF THE VEINS AND LYMPHATICS.

"We admire the plan of the work and think it well calculated to facilitate the progress of the student of medicine."—*Missouri Med. and Surg. Journ.*

"We think it a very useful work for medical students, for whom it is chiefly designed, as being well calculated to facilitate their studies, and to obtain a clear and concise view of the Nervous and Lymphatic Systems."—*N. Y. Journ. Med.*

"Like its predecessors, this work is a convenient aid to the student."—*Am. Journ. Med. Sc.*

"Medical students would do well to obtain it.—*Buff. Med. Journ.*

"It will be found to fulfil well the object for which it was published."—*South. Journ. Med. and Pharm.*

PHYSIOLOGY AND HYGIENE.

ANIMAL ŒCONOMY.

John Hunter.

OBSERVATIONS ON CERTAIN PARTS OF THE ANIMAL ŒCONOMY.

By JOHN HUNTER, F.R.S., Etc.

With Notes, by RICHARD OWEN, F.R.S.]

1 vol. 8vo. sheep.

John Bell, M.D.,

ON REGIMEN AND LONGEVITY:

Comprising

MATERIA ALIMENTARIA, NATIONAL DIETETIC USAGES, AND THE INFLUENCE OF CIVILIZATION ON HEALTH AND THE DURATION OF LIFE.

By JOHN BELL, M.D.

Fellow of the College of Physicians of Philadelphia.—1 vol. 12mo.

CLIMATE.

Sir James Clark

ON THE SANATIVE INFLUENCE OF CLIMATE.

1 vol. 8vo. half sheep.

"It is unnecessary to say anything of this work, as its value is too well known to the profession to require any fostering at this period. The present edition is greatly superior to its predecessors."—*Western Lancet.*

"For amount of information, variety of details, and important instruction relative to the interesting subject to which it is devoted, we believe this work is unequalled. It has been reprinted in an elegant cheap form."—*Gazette.*

PATHOLOGY.

Geo. Freckleton, M.D.

OUTLINES OF GENERAL PATHOLOGY.

By GEO. FRECKLETON, M.D.

Fellow of the Royal College of Physicians, &c.

John Hunter.

A TREATISE ON THE BLOOD, INFLAMMATION, AND GUNSHOT WOUNDS.

By JOHN HUNTER, F.R.S.

With Notes, by James F. Palmer,

Senior Surgeon to the St. George's and St. James's Dispensary, &c., &c.

1 vol. 8vo. sheep.

Wm. Thomson, M.D.

HISTORICAL NOTICES ON THE

OCCURRENCE OF INFLAMMATORY AFFECTIONS OF THE INTERNAL ORGANS

AFTER EXTERNAL INJURIES AND SURGICAL OPERATIONS.

By WM. THOMSON, M.D., Etc.

James Macartney.

A TREATISE ON INFLAMMATION.

By JAMES MACARTNEY, F.R.S., F.L.S., Etc.

F. Magendie, M.D.

LECTURES ON THE BLOOD,

AND ON THE CHANGES WHICH IT UNDERGOES DURING DISEASE.

By F. MAGENDIE, M.D.

M. Gibert.

CHANGES OF THE BLOOD IN DISEASE.

TRANSLATED FROM THE FRENCH OF M. GIBERT,

By JOHN H. DIX, M.D., M.M.S.S.

1 vol. 8vo. half sheep.

"The treatise of M. Gibert is elaborate, and exhibits a very good view of the relations of the blood to the morbid conditions of the system."—*Western Lancet.*

"This is one of the best treatises on the changes of the blood in disease. It has been elegantly translated from the French by Dr. Dix, of Boston, and is published for a mere trifle, by the enterprising firm of Barrington & Haswell, of Philadelphia. It is a most valuable addition to a medical library."—*W. Gazette.*

CONSTIPATION.

John Burne, M.D.

A TREATISE ON THE CAUSES AND CONSEQUENCE OF HABITUAL CONSTIPATION.

By JOHN BURNE, M.D.,

Fellow of the Royal College of Physicians, Physician to the Westminster Hospital, etc

1 vol. 8vo. half sheep.

"For some interesting cases illustrative of this work, the author is indebted to Dr. Williams, Dr. Stroud, Dr. Callaway, Mr. Morgan, Mr. Taunton, Dr. Roots, Sir Astley Cooper, Sir Benjamin Brodie, Mr. Tupper, Mr. Baller, Dr. Paris, Mr. Dendy, Dr. Hen. U. Thomson," &c.—*Preface.*

HYSTERIA.

Thomas Laycock.

AN ESSAY ON HYSTERIA.

BEING AN ANALYSIS OF ITS IRREGULAR AND AGGRAVATED FORMS.

INCLUDING HYSTERICAL HEMORRHAGE AND HYSTERICAL ISCHURIA.

With numerous Illustrative and Curious Cases,

By THOMAS LAYCOCK,
House Surgeon to the York County Hospital.

1 vol. 8vo. half sheep.

ÆTIOLOGY.

Aretæus

ON THE CAUSES AND SIGNS OF ACUTE AND CHRONIC DISEASE.

FROM THE GREEK,

By T. F. REYNOLDS, M.B., F.L.S., Etc.

1 vol. 8vo. sheep.

"The correct detail of symptoms, the nervous style, the graphic delineation of disease, displayed in this author's work, the poetic and quaint fancies scattered throughout, give a certain value and interest, that may fairly excuse an attempt to reinvest part of them in a vernacular garb."

"We certainly have no hesitation in recommending this curious volume to the notice of our readers. Its price is a mere trifle."—*New York Lancet.*

SEMEIOLOGY.

Professor Schill.

OUTLINES OF PATHOLOGICAL SEMEIOLOGY.

TRANSLATED FROM THE GERMAN OF PROFESSOR SCHILL,

With Copious Notes,

By D. SPILLAN, M.D., A.M., Etc.

1 vol. 8vo. sheep.

"The signs of disease exhibited by the principal tissues and organs, are treated of in a succinct and comprehensive manner, by Dr. Schill, and as a work of daily reference to assist in distinguishing diseases, it cannot be too highly commended."—*Balt. Journ.*

"An elegant and accurate translation of a very ingenious and instructive work. We do not know any other source from which we can so easily and profitably obtain all that is really useful in the semeiology of the ancients; and the erudite translator and editor has so very creditably supplied the deficiencies of the author's *abrige* of the labours of modern workers, in this most important department of modern science, that we can in good conscience commend the book as one of unequivocal merit."—*New York Lancet.*

MATERIA MEDICA AND THERAPEUTICS.

John Bell, M.D.

A PRACTICAL DICTIONARY OF MATERIA MEDICA:

Including the Composition, Preparation and Uses of Medicines; and a large number of Extemporaneous Formulæ: together with important Toxicological Observations.

ON THE BASIS OF BRANDE'S DICTIONARY OF MATERIA MEDICA AND PRACTICAL PHARMACY.

By JOHN BELL, M.D.,
Lecturer on Materia Medica and Therapeutics, &c., &c.

1 vol. 8vo. sheep.

"Dr. Brande's is an excellent work, and with the retrenchments, additions, and alterations of Dr. Bell, may be regarded as one of the most valuable works on the Materia Medica we now possess. It has an important advantage over many of the treatises on this subject, in giving a large number of prescriptions for the administration of the principal articles. This renders it especially valuable to the young practitioner."—*Balt. Jour.*

James Johnstone, M.D.

A THERAPEUTIC ARRANGEMENT AND SYLLABUS OF MATERIA MEDICA.

By JAMES JOHNSTONE, M.D.,
Fellow of the College of Physicians, and Physician to General Hospital, Birmingham.

Small vol. 8vo.

"This book cannot but be particularly useful to those who intend to lecture or write upon the Materia Medica; as well as to the students for whose particular use it is prepared."—*Brit. and For. Med. Rev.*

Henry Clutterbuck, M.D.

LECTURES ON BLOODLETTING.

By HENRY CLUTTERBUCK, M.D.

1 vol. 8vo. half sheep.

A. Turnbull, M.D.

THE MEDICAL PROPERTIES OF THE NATURAL ORDER RANUNCULACEÆ, ETC.

By A. TURNBULL, M.D.

THEORY AND PRACTICE OF MEDICINE.

Just Published.] Bell and Stokes.

LECTURES
ON THE THEORY AND PRACTICE OF PHYSIC.

By JOHN BELL, M.D.,

Lecturer on Materia Medica and Therapeutics; Member of the College of Physicians, Philadelphia, and of the American Philosophical Society, etc., etc.; and

WM. STOKES, M.D.,

Lecturer of the Medical School, Park Street, Dublin; Physician to the Meath County Hospital, etc., etc.

Fourth Edition, much enlarged and improved. 2 vols. 8vo. sheep.

"It is unnecessary to speak of the character of this work, as it is one with which the medical profession of this country are sufficiently acquainted. The present is the fourth edition, which has been carefully revised, and enlarged by the addition of new and useful matter."—*Buffalo Med. Jour.*

"Dr. Bell has the gratification of knowing, from the rapid sale of the former edition, that his great labor has been rightly appreciated by the profession, and that Bell and Stokes's Lectures now rank among the standard works of the day."—*Med. Ex.*

"This improved edition is in two heavy octavos, containing 1760 closely-printed pages. Dr. Bell has added, with his own prolific pen, over fourteen hundred of them, which gives it a strong claim to the title of an American treatise. The preface shows that industry, a crowning virtue in all departments of life, has been conspicuously displayed in this very learned effort. Having on former occasions spoken with a cheerful commendation of the united labors of the authors, it would be supererogation to proceed farther, and we therefore close these brief observations on a deserving publication, with the expression of a hope that a discerning professional public may patronize it, and profit by it too."—*Boston Med. and Surg. Journ.*

"We cordially recommend such of our readers as have not yet supplied themselves to procure a copy of the present edition of these lectures, for we feel confident that they will never regret the time as lost, that they may devote to their perusal. The work is gotten up in the usually neat and appropriate style of the enterprising publishers, and printed on good paper and clear type."—*N. Y. Journal of Medicine.*

"Our favourable opinion has already been expressed, and we will only add, that our estimate of their excellence has been heightened by repeated examinations. For all the qualities which the student or practitioner can desire in a work for study and reference, these lectures may be safely recommended, as comprising as much as could be brought within their limits of sound opinion and judicious practice."—*West. Jour.*

"With such additions and improvements, we consider the work one of the best of its kind with which we are acquainted."—*Maryland Med. & Surg. Journ.*

"The work has now assumed the form of a quite complete system of medicine, equally valuable as a text-book to the student, and a book of reference to the practitioner." "We know of no book of the kind which we would more readily place in the hands of a student, or to which we would more readily refer the practitioner, for a hasty investigation of a subject."—*New Eng. Quart. Jour.*

"It would be rather late in the day to attempt to pass judgment upon a work which has already received its stamp from the profession."—Charleston Med. Journ.

Alex. D. Galt, M.D.

PRACTICAL MEDICINE:

Illustrated by Cases of the Most Important Diseases.

EDITED BY JOHN M. GALT, M.D.,

From the Papers of ALEXANDER D. GALT, M.D.

For many years an extensive practitioner in Williamsburg, Va.

1 handsome vol. 8vo. sheep.

New Edition.] Fordyce.

FIVE DISSERTATIONS ON FEVER.

BY GEORGE FORDYCE, M.D., F.R.S.

Second American Edit. 1 vol. 8vo.

"The publishers have done an acceptable service to the profession in republishing them, and so enabling all who wish to store their libraries with standard authorities to possess themselves of a well printed copy, which is also enriched with an introductory chapter by the American Editor."—Phil. Med. Exam.

"It is hardly necessary to commend this work to the attention of Students and Practitioners, since it is generally admitted that in the description of the phenomena of fever, Fordyce has not been excelled by any writer before or since his day."—Buffalo Med. Journ.

"The dissertations which compose the work of Dr. Fordyce on Fever, are, of all his writings, those which in an especial manner have established his reputation for sound medical views."—S. Journ. Med. and Pharm.

"In a word, the work is entitled to take its rank among the classics in Medicine." — *West. Journ. Med. & Surg.*

"It will be found replete with information of the most practical character." — *Ills. & Ia. Med. Journ.*

Henry Holland, M.D.

MEDICAL NOTES AND REFLECTIONS.

BY HENRY HOLLAND, M.D., F.R.S.,

Fellow of the Royal College of Physicians, and Physician Extraordinary to the Queen.

New Edition.] William Heberden, M.D.

COMMENTARIES ON THE HISTORY AND CURE OF DISEASES.

BY WILLIAM HEBERDEN, M.D.

New and Handsome Edition, 1 vol. 8vo.

"This medical classic composes the October No. of Bell's Select Medical Library, and will be welcomed by every reader."—West. Journ. of Med. and Surg.

"All who admire sound clinical knowledge; all who wish to obtain unadulterated facts collected at the bed-side, and untinctured with speculation or theory, will not fail to avail themselves of this masterly production of the renowned Heberden."—N. Y. Journ. of Med.

"Now regarded as one of the classic productions of the profession.—*New Orleans Med. and Surg. Journ.*

Davidson and Hudson's

ESSAYS ON THE SOURCES AND MODE OF ACTION OF FEVER.

"The volume before us abounds in details of a highly instructive kind, and manifests a vigorous and healthy tone of investigation, which, even in its indirect effects, cannot but be beneficially felt by the American reader."--*Bulletin of Med. Science.*

"Dr. Davidson evinces an intimate acquaintance with the subject which he treats, and embodies in his essay a large amount of valuable matter. The subject is one of intrinsic interest, and will well repay the student for the time and labour devoted to its examination."—*Western Lancet.*

S. H. Dickson, M.D.

ON DENGUE:

ITS HISTORY, PATHOLOGY, AND TREATMENT.

By S. HENRY DICKSON, M.D.,

Professor of the Institutes and Practice of Medicine in the Medical College of S.C.

1 small vol. 8vo. muslin.

John Macrobin, M.D.

INTRODUCTION TO THE STUDY OF PRACTICAL MEDICINE:

Being an Outline of the Leading Facts and Principles of the Science.

1 small vol. 8vo. half sheep.

"Dr. Macrobin's work is largely made up of the *principles* of medicine, embracing the pathology and etiology of disease, and may therefore be esteemed a *nucleus* around which the student may, with advantage, gather a more extended system."—*Western Lancet.*

INDIGESTION.

Robert Dick, M.D.

DERANGEMENTS, PRIMARY AND REFLEX,

OF THE ORGANS OF DIGESTION.

By ROBERT DICK, M.D.,

Author of "A Treatise on Diet and Regimen."

1 vol. 8vo. sheep.

"It is the fullest, most comprehensive, and decidedly the best account of derangements of the digestive organs that we have encountered. While it embraces all that is important or interesting to be found in the writings of other authors, it contains much original information, which the physician will find of great practical usefulness."—*Western and Southern Medical Recorder.*

"We recommend this volume most warmly to the attention of our readers."—*London Lancet*, No. 937.

"This volume may, in fact, be denominated with no small degree of propriety an encyclopedia of dyspeptic disorders, and we unhesitatingly commend it, as the most useful and comprehensive treatise on this class of diseases with which we are acquainted."—*N. Y. Lancet.*

"We have perused this work with pleasure and instruction. It is decidedly the best compilation in the English language on the extensive class of disorders and diseases comprehended under the term dyspepsia, united with a very large proportion of original matter, both in the form of able comments on other writers, and practical information derived from the author's own experience."—*Med. Chir. Rev.*

EPIDEMICS OF THE MIDDLE AGES.

I. F. C. Hecker, M.D.

EPIDEMICS OF THE MIDDLE AGES.

From the German of I. F. C. HECKER, M.D.,

TRANSLATED BY R. G. BABINGTON, M.D., F.R.S.

NO I. — THE BLACK DEATH IN THE FOURTEENTH CENTURY.

"Hecker's account of the 'Black Death,' which ravaged so large a portion of the globe in the fourteenth century, may be mentioned as a work worthy of our notice, both as containing many interesting details of this tremendous pestilence, and as exhibiting a curious specimen of medical hypothesis."—*Cyclopædia of Practical Medicine.*

NO. II. — THE DANCING MANIA.

"Medical History has long been in need of the chapter which this book supplies; and the deficiency could not have been remedied at a better season. On the whole, the volume ought to be popular; to the profession it must prove highly acceptable, as conveying so much information, touching an important subject which had almost been suffered to be buried in oblivion, and we think that to Dr. Babington especial thanks are due for having naturalised so interesting a production. The style of the translation, we may add, is free from foreign idioms: it reads like an English original."—*Lond. Med. Gaz.*

TETANUS.

Thomas Blizard Curling.

A TREATISE ON TETANUS.

BEING THE ESSAY FOR WHICH THE JACKSONIAN PRIZE WAS AWARDED.

BY THOMAS BLIZARD CURLING,

Assistant Surgeon to the London Hospital, etc., etc.

1 vol. 8vo. half sheep.

"This book should be in the library of every surgeon and physician. It is a valuable work of reference. It does not pretend to originality, for originality on such a subject was not wanted. But a compendium of facts *was* wanted, and such a compendium is this volume. We cannot part from Mr. Curling without thanking him for the information we have received."—*Med. Chir. Rev.*

INSANITY.

I. G. Millingen.

APHORISMS ON THE TREATMENT AND MANAGEMENT OF THE INSANE,

WITH CONSIDERATIONS ON PUBLIC AND PRIVATE LUNATIC ASYLUMS, POINTING OUT THE ERRORS IN THE PRESENT SYSTEM.

BY I. G. MILLINGEN, M.D.,

Late Medical Superintendent of Lunatic Asylum, Hanwell, Middlesex, etc.

1 vol. 8vo. half sheep.

"Dr. Millingen, in one small pocket volume, has compressed more real solid matter than could be gleaned out of any dozen of octavos on the same subject. We recommend his vade mecum as the best thing of the kind we ever perused."—*Dr. Johnson's Review.*

CHEST.

New Edition.] Wm. Stokes, M.D.

A TREATISE ON THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE CHEST.

By WM. STOKES, M.D., M.R.I.A., Etc.

Second Edition, with an Introduction and Numerous Notes,

BY THE AMERICAN EDITOR.

1 vol. 8vo. sheep.

"Altogether this is one of the most useful of the publications that have recently issued from the press,—one that should be studied by every man who presumes to treat the class of diseases on which it is written. It is delightful, indeed, to contemplate the sound pathology and rational therapeutics which it inculcates;—so different from the swelling egotism, the groundless assertions, the illogical conclusions, and often empirical treatment, recommended in some of the modern works on these and other important medical subjects."—*Med. Examiner.*

"The present edition has been much enriched both by the author and editor. No inconsiderable part of the book is made up of Dr. Bell's notes, and it now constitutes one of our most useful treatises on the diseases of the chest, characterized by sound pathology and rational therapeutics."—*New York Journal of Medicine.*

"So well-known are the writings of Dr. Stokes, that no effort of the medical press in this country is necessary to increase their circulation. Young practitioners would find this volume a pathological guide, which they would be unwilling to part with when made familiar with its intrinsic value."—*Boston Med. and Surg. Journ.*

G. Hume Weatherhead, M.D.

A PRACTICAL TREATISE ON THE PRINCIPAL DISEASES OF THE LUNGS.

CONSIDERED ESPECIALLY IN RELATION TO THE PARTICULAR TISSUES AFFECTED, ILLUSTRATING THE DIFFERENT KINDS OF COUGH.

By G. HUME WEATHERHEAD, M.D.,

Member of the Royal College of Physicians, Lecturer on the Principles and Practice of Medicine, and on Materia Medica and Therapeutics, etc., etc.

1 vol. 8vo. half sheep.

New Edition.] W. W. Gerhard, M.D.

THE DIAGNOSIS, PATHOLOGY, AND TREATMENT OF DISEASES OF THE CHEST.

By W. W. GERHARD, M.D.,

Lecturer on Clinical Medicine in the University of Pennsylvania, etc.

1 vol. 8vo. sheep. 2d edition.

"We would say, by all means study this volume."—*Buff. Med. Journ.*

"A series of clinical lectures—concise, lucid, and eminently instructive. We have no more able expositors of diseases of the chest than Dr. Gerhard, and any work of his on these important subjects is certain of grateful acceptance by his professional brethren."—*New York Lancet.*

"Dr. Gerhard certainly stands at the head, in this country, of those who have devoted their attention to affections of the chest."—*S. Journ. Med. Pharm.*

"This is the best refutation of the charges which are constantly made against physical exploration in medicine, by those who appear to imagine that science can never advance beyond the point at which they ceased to learn."—*Am. Journ. Med. Sciences.*

"Indeed, without aiming to be invidious, we may not inaptly designate Dr. Gerhard as the Louis of America."—*N. O. Med. and Surg. Journ.*

"A work from his pen on the Diseases of the Chest will be accredited as the highest authority on that subject."—*West. Journ. Med. and Surg.*

"The production before us embraces, not only the spirit of all the best and latest essays on the class of diseases considered in it, but also the most recent researches of the author."—*Boston Med. and Surg. Journ.*

"It is the production of one who has enjoyed extensive opportunities for studying the disease it embraces, and presents strong claims to professional confidence."—*Philad. Exam.*

"To our readers, therefore, we recommend the book of Dr. Gerhard as the fullest and most judicious manual, in relation to the diseases of the chest, which they can procure."—*Western and Southern Recorder.*

"This ought to be the student's handbook, to be read and thumbed, and its contents well mastered, before more extended reading and investigations, either direct or collateral, are attempted."

"These lectures constitute a useful and practical digest of the existing knowledge of the diseases of the chest (lungs and heart)."—*Bulletin of Medical Science.*

Charles J. B. Williams, M.D.

LECTURES ON THE

PHYSIOLOGY AND DISEASES OF THE CHEST;

INCLUDING THE PRINCIPLES OF PHYSICAL AND GENERAL DIAGNOSIS,

Illustrated by an Exposition of their Physical Signs.

WITH NEW RESEARCHES ON SOUNDS OF THE HEART.

By CHARLES J. B. WILLIAMS, M.D.

Fourth edition, *in preparation*. 1 vol. 8vo. sheep.

"Evidently written by a man thoroughly acquainted with his subject."—*Lancet.*

"We strongly recommend this work to the attention of auscultators."—*Med. Chir. Rev.*

"I gladly avail myself of this opportunity of strongly recommending this very valuable work."—*Dr. Forbes's Translation of Laennec.*

"Of all the works on this subject, we are much inclined to prefer that of Dr. Williams."—*Med. Gazette.*

DISEASES OF THE HEART.

T. A. Aran.

A PRACTICAL MANUAL

ON DISEASES OF THE HEART AND GREAT VESSELS.

Translated from the French, By WILLIAM A. HARRIS, M.D.

"This is an excellent epitome of a large and important class of diseases—especially as to diagnosis."—*Med. Chir. Rev.*

"The Treatises of Senac, of Corvisart, of Laennec, of Bertin, of M. Bouillaud, of M. Gendrin, and especially the excellent work of an observer whom death has prematurely removed from the field of science (Dr. Hope), have been our principal guides."—*Extract from the Preface.*

"This work, though issued under the modest title of a manual, is yet so comprehensive as to afford minute instruction on every point of which it treats."—*Phil. Med. Ex.*

"We do not know of any production in which so much positive knowledge has been compressed within moderate limits, and yet clearness of description presented, as in this manual."—*Bulletin of Med. Science.*

"We hope this manual, comprising, as it does, a summary of what has been published in more elaborate works, will be extensively read, and that the study of it may lead to a more correct appreciation of the character of these diseases."—West. Jour. of Med. and Surg.

"The present treatise will prove of great value, as it really contains all that is well known on this most difficult yet important branch of pathology and therapeutics."—West. Lancet.

New Edition.] P. M. Latham, M.D.

LECTURES ON SUBJECTS CONNECTED WITH CLINICAL MEDICINE.

AUSCULTATION AND SEMEIOLOGY.

By P. M. LATHAM, M.D.,

Physician extraordinary to the Queen, and late Physician to St. Bartholomew's Hospital.—1 vol. 8vo. sheep.

"It is classical in style, replete with facts, rich in illustration, sound in doctrine,

and a legitimate product of the Hippocratic school of observation."—*N. Y. Journ. Med.*

"Containing valuable matter presented in a highly agreeable manner"—*Buffalo Med. Journ.*

"They contain clear, concise, practical views of semeiology, and of the value of symptoms, in the diagnosis and treatment of disease, which are not to be found in any other single work."—*South. Journ. Med. and Phar.*

"The volume before us consists of fifteen lectures on various subjects—all deserving the greatest consideration. The first is 'On the Education of Medical Men,' and presents the clearest and soundest view of the subject we have ever read."

"The chapter on the Doctrine of Symptoms, embrace auscultation and the various physical signs of disease, and ought to be studied by all who aspire to a knowledge of these subjects."—*Medical Examiner.*

"We consider this publication well deserving of that patronage which men of enlarged professional views should bestow upon works of the first character on practical medicine."—*Boston Med. and Surg. Journal.*

New Work.] P. M. Latham, M.D.

LECTURES ON SUBJECTS

CONNECTED WITH CLINICAL MEDICINE,

Comprising DISEASES OF THE HEART.

By P. M. LATHAM, M.D.,

Physician extraordinary to the Queen, and late Physician to St. Bartholomew's Hospital.—1 vol. 8vo. sheep.

"It is a deeply reflective volume, replete with results indicative of close observation, and abounding with hints and directions which cannot fail to give a strong and beneficial impulse to the study of cardiac disease."—*Brit. and For. Med. Rev.*

"He has long devoted especial attention to diseases of the heart, and his labours have contributed in no inconsiderable degree to the great precision which late investigations have given to the diagnosis of the different pathological lesions of that organ."—*Buff. Med. Journ.*

"We gladly seize this opportunity of expressing our cordial approbation of these Clinical Lectures. We know of no work where the reader will find so clear and easily intelligible a view of a difficult practical subject—the Diagnosis of Diseases of the Heart—as in Dr. Latham's two volumes. His interspersed remarks, too, on many questions of general pathology, stamp him as one of the most enlightened writers of the day."—*Medico-Chirurgical Review.*

"No one who wishes to get new and clear notions of the tendencies and relations of diseases of the heart, will fail to study these Lectures; he will find in them much that no other work upon the subject contains, and what is even better, much that will move him to observe more closely, and ponder more earnestly, what is going on within his own experience."—Amer. Journ. Med. Science.

"One of the most remarkable works which has, for a long time, been presented to the profession; a work full of original remark, abounding in correct analysis, just reasoning, clear and lucid expositions of doctrine, and judicious practical teachings."—South. Journ. Med. Pharmacy.

"We close our meagre notice here, although it is neither adequate to the merits of the author, nor a just measure of our appreciation of them. We commend the book most heartily to our readers, as one of high value, and not less pleasing than valuable."—*Western Journal.*

"These have all been illustrated by the able and experienced author in a most interesting and lucid manner, so that hereafter no work will be regarded as more essential in studying diseases of the heart than this of Dr. Latham."—N. Y. Journ. of Med.

"Resemblances are noticed, concurrences pointed out, and deductions natural and obvious are drawn, so that the reader is made to comprehend the philosophy as well as the facts of the science."—Phil. Med. Exam.

"Throughout the whole work, we meet with the evidences of the deepest reflection, and of the most philosophical caution and acumen in weighing and analysing facts."—Lond Med. Gaz.

John Marshall, M.D.

PRACTICAL OBSERVATIONS
ON DISEASES OF THE HEART, LUNGS, STOMACH, LIVER, ETC.

OCCASIONED BY SPINAL IRRITATION:

AND ON THE NERVOUS SYSTEM IN GENERAL, AS A SOURCE OF ORGANIC DISEASE.

Illustrated by Cases.

By JOHN MARSHALL, M.D.

1 vol. 8vo. half sheep.

Thomas Nunneley.

A TREATISE ON THE
NATURE, CAUSES, AND TREATMENT OF ERYSIPELAS.

By THOMAS NUNNELEY,

Lecturer on Anatomy, Physiology, and Pathology in the Leeds School of Medicine, Surgeon to the General Eye and Ear Infirmary, &c., &c.

1 vol. 8vo. sheep.

"Nothing short of a perusal of the entire book will do justice to the author or reader."—*Western Lancet.*

"The work in its entireness is one which will be accounted necessary to every physician's library"—*Western Journ. of Medicine and Surgery.*

"Did our space allow, it would be both interesting and profitable to enter into a full analysis of this work; but we would advise our readers, one and all, to purchase it, and thus judge of its value from a personal examination of its pages."—*N. Y. Jour. Med. and Collat. Sciences.*

"Mr. Nunneley contends, and we think with success, that puerperal fever and erysipelas are one and the same disease, modified by the seat of the inflammation."—*N. Orleans Med. Jour.*

CLINICAL MEDICINE.

Just Published.] Graves and Gerhard.

CLINICAL LECTURES.

By ROBERT J. GRAVES, M.D., M.R.I.A.,

Professor of the Institutes of Medicine in the School of Physic, Trinity College, Dublin.

Third American, from the Dublin Edition, with additional Lectures and Notes,

By W. W. GERHARD, M.D.,

Lecturer on Clinical Medicine to the University of Pennsylvania, Physician to the Philadelphia Hospital, Blockley, &c.

1 vol. 8vo. sheep.

"The present beautiful volume is constructed with all the latest improvements introduced by Dr. Graves, and which Dr. Gerhard, with accustomed skill, has taken care to shape and adapt to the condition of things in this country, so that the possessor of this treatise will actually have an embodiment of all that is modern in the science to which it is devoted."—*Bost. Med. and Surg. Jour.*

"In the volume before us, a series of clinical lectures by Dr. Gerhard is given, and forms a most appropriate and acceptable addition to those of Dr. Graves. Between these two distinguished physicians we can trace many points of resemblance. We find in both the same professional zeal, — the same powers of close and correct observation, — the same discriminating tact, — the same disregard of idle theory, — and the same decision in the application of right principles. No student or practitioner should be without this volume. *It is in itself a library of practical medicine.*"—*N. Y. Lancet.*

"No practitioner of medicine should be without it, since there is scarcely a disease to which the human frame is liable which does not receive in it some illustration, direct or incidental; and as a guide to practice, especially when difficulties arise, it will be found a most useful work for reference.—British and Foreign Review.

G. Andral's

CLINIC ON DISEASES OF THE ENCEPHALON.
" " " ABDOMEN.
" " " CHEST.

Either of the works can be had separate,—each forming a distinct volume.

Three vols. 8vo. sheep.

"The '*Clinique Medicale*' is *the* great work of its distinguished author. It is an immense storehouse of invaluable information in pathology and therapeutics. No medical library can be complete without it; and every physician with the smallest pretensions to scientific attainment, or who is desirous of discriminating disease accurately, and of treating it skilfully, should study its pages by day and night."

"Andral's extensive researches in pathology entitle all his works to the careful consideration of the profession; and all must agree that this great philosopher has enriched the science with many important truths, derived from that fruitful source, clinical observation and induction."—*Western Lancet.*

SURGERY.

New Work.] Abraham Colles.

THE COURSE OF LECTURES ON SURGERY,

Delivered in the Royal College of Surgeons in Ireland,

By the LATE ABRAHAM COLLES, M.D.,

For Thirty-four years Professor of Surgery in the College.

From notes collected and repeatedly revised by

SIMON M'COY, ESQ., F.R.C.S.I.

"Even without the precious impress of Mr. Colles's name, any practical man looking over these pages would at once perceive that he was reading the doctrines of a master in the art."—*Brit. and For. Med. Rev.*

"We feel assured that no medical library in the kingdom will long remain devoid of these volumes."—*Dublin Hospital Gazette.*

"These Lectures contain much valuable and practical matter."—*Med.-Chir. Rev.*

"We have no hesitation in affirming that they constitute a better body of surgery than is to be found in any volume which has been offered to the American profession in so accessible a form."—*Western Journ. Med. & Surg.*

"We have concluded our perusal of these lectures with a very high opinion of the judgment and surgical acumen of the late Professor Colles, and can confidently recommend the work as one replete with sound doctrines and practical facts."—*Lond. Med. Gaz.*

"The volume before us is evidently the work of a man of accurate observation and extended experience: not the closet production of a compiler who has acquired his knowledge of diseases only from the recorded observations of others."—*N. Y. Journ. of Med.*

"They are characterized by great vigor of thought, with a singular simplicity of expression, which will fix the attention of the most careless reader.

"Those who wish to study surgery, stripped of its technical verbiage, must read these lectures as they fell from the lips of this distinguished Irish professor."—*N. O. Med. an Surg. Journ.*

Sir Astley Cooper, Bart.

PRINCIPLES AND PRACTICE OF SURGERY.

By FREDERICK TYRRELL, Esq.,

Fifth American, from the last London Edition. 1 vol. 8vo. sheep.

Professor Gross, M.D.

AN EXPERIMENTAL AND CRITICAL INQUIRY

INTO THE

NATURE AND TREATMENT OF WOUNDS OF THE INTESTINES.

By SAMUEL D. GROSS, M.D.,

Professor of Surgery in the Louisville Medical Institute.

Illustrated by Engravings. 1 vol. 8vo. muslin.

"We look on them as the most important body of facts of the kind yet published."—*Brit. & For. Med. Rev.*

"We consider it a valuable contribution to our literature, and as worthy of the high reputation of the author."—*Philad. Med. Exam.*

"We dismiss the 'Experimental Inquiries,' fully persuaded that the valuable truths with which they abound, will be the best recommendation to the medical public."—*N. O. Med. Jour.*

New Edition.] Liston and Gross.

ELEMENTS OF SURGERY.

By ROBERT LISTON,

Fellow of the Royal College of Surgeons in London and Edinburgh, Surgeon to the Royal Infirmary, Senior Surgeon to the Royal Dispensary for the City and County of Edinburgh, Professor of Surgery in the London University, etc., etc.

Edited by SAMUEL D. GROSS, M.D.,

Professor of Surgery in the Louisville Medical Institute. Author of Elements of Pathological Anatomy, etc., etc.

Fourth American, from the last London Edition, with upwards of one hundred and sixty illustrative Engravings. 1 vol. 8vo. sheep.

"We must not forget to mention that the volume is rendered still more attractive by the addition of numerous wood engravings (some of them introduced by Dr. Gross), all finely executed. These will be found of very considerable advantage to the student, materially assisting him in comprehending the explanation of morbid structure. Another admirable feature, is the printing of the notes in type of the same size as that of the text. This obviates almost entirely whatever objections can be alleged against foot-notes."—*Western Jour. of Med. and Surg.*

"We are here presented with a republication of Mr. Liston's admirable and much praised work on Surgery, which has been subject to the alembic of a critical and learned friend, Dr. Gross. He has added 'copious notes and additions,' such as the progress of surgery in the United States demands in order to meet the wants of the surgeon; and has bestowed unwearied pains to adapt it to the present condition of things. It is modern in every respect, since it contains the latest improvements, and the very last discoveries, in the domain of operative surgery, both here and in Europe. The execution of the book is good; the paper firm, and well secured in the binding. The plates are uniformly well executed, and the impressions distinct."—*Boston Med. and Surg. Jour.*

"In another essential feature this edition is greatly improved. With the principles is taught also with it the practice of surgery; and both morbid structure and operations are doubly described; first by the author and editor, and next by the graver of the artist."—*Bull. Med. Scien.*

"Mr. Liston's reputation as a clear, accurate, and scientific surgical writer, is so widely known and admitted, that formal panegyric is quite unnecessary. Dr. Gross has discharged his duties as editor, with all the sound sense, accurate discrimination, and experienced judgment which all who knew him expected. The additions and notes are indeed profitable and interesting; and our only regret is, that they are not still more numerous than they are. The volume is inscribed to Professor Parker, of the College of Physicians and Surgeons in this city,—the beauty of its typography, and 'getting up,' will be readily taken for granted by all who know the publishers—and the illustrative engravings are executed in a style very creditable to American art."—*N. Y. Lancet.*

"Mr. Liston has seen much, thinks accurately, and speaks independently. From a volume written by such a man, more really valuable practical instruction is to be derived than from all the books that were ever compiled."—*Western and Southern Med. Recorder.*

"It embraces all the principles of surgery, which the work on the operations does not."—S. Journ. of Med. and Pharm.

"Few living authors are better qualified for expounding the principles of surgical science, and the evidences of these attainments are abundant in the work before us."—*Philad. Examiner.*

"The additions to this work by Dr. Gross are numerous and interesting, and increase its usefulness and completeness.

"This is a work of established reputation. It has gone through two editions in Great Britain, and the same number in this country. The additions of the American edition are copious, and add materially to the value of the work."—*Amer. Jour. Med. Sciences.*

"The author is bold and original in his conceptions, accurate in deductions, plain and concise in style; a combination of good qualities not often found united in a single volume. The notes and additions by Prof. Gross, are well arranged and judicious, supplying some evident deficiencies in the original work. It is no mean praise, that this treatise has so readily found its way into the hands of the profession."—*Western Lancet.*

John Hunter.

LECTURES ON THE PRINCIPLES OF SURGERY.

By JOHN HUNTER, F.R.S.

With Notes, By JAMES F. PALMER,

Senior Surgeon to the St. George's and St. James's Dispensaries, etc., etc.

With Plates, 1 vol. 8vo. sheep.

"We cannot bring our notice of the present volume to a close without offering our testimony to the admirable manner in which the editor and annotator has fulfilled his part of the undertaking. The advancements and improvements that have been effected, up to our own day, not only in practical surgery, but in all the collateral departments, are constantly brought before the reader's attention in clear and concise terms."—*Brit. & For. Med. Rev.*

Just Published.] R. W. Tamplin.

LECTURES ON THE

NATURE AND TREATMENT OF DEFORMITIES,

Delivered at the Royal Orthopædic Hospital, Bloomsbury Square.

By R. W. TAMPLIN, F.R.C.S.E.,

Surgeon to the Hospital.

1 vol. Royal 12mo., with numerous Illustrations.

"They constitute a work both original and useful. Mr. Tamplin, if we are not greatly mistaken, will be generally admitted to have performed a useful task well, and to have made substantial additions to the treatment of deformities without any parade or self-laudation." — *Bulletin of Med. Science.*

"To those numerous members of the profession desirous of making themselves acquainted with the most recent and approved principles of treating a class of diseases which have hitherto been considered to fall within the special domain of quackery, we cordially recommend Mr. Tamplin's valuable lectures.—*Lond. Med. Gaz.*

"Embracing the latest improvements in apparatus, and the best method of curve." —*Philad. Examiner.*

"We do not hesitate to recommend it above any we have seen, to those who desire a correct and accurate knowledge of the deformities of which the author treats."—*N. O. Med. and Surg. Journ.*

"We strongly recommend our professional friends generally, and especially such as reside in the country, to have a copy of it beside them."—*Med. Chir. Rev.*

"All those extreme and violent measures and operations that have discredited this branch of surgery in the public mind are here discountenanced."—*Illi. and Ind. Med. and Surg. Journ.*

"This work is practical in the strictest sense of the word, being confined to facts and illustrations of principles, furnished in a plain, brief, and systematic style."—*S. Med. and Surg. Journ.*

"Their collection into a separate volume is a just tribute to their intrinsic merit, as well as to the high character of their author."—*St. Louis Med. and Surg. Jour.*

"The author is a sound, *practical* man, and in these lectures he gives us the result of a large experience in one of the best conducted and most valuable charities of London; a charity devoted exclusively to the treatment of deformities."—*Buffalo Med. Journ.*

VENEREAL.

John Hunter, F.R.S.

TREATISE ON THE VENEREAL DISEASE.

With Notes, By Dr. BABINGTON.

With Plates. 1 vol. 8vo.

"Under the hands of Mr. Babington, who has performed his task as editor in a very exemplary manner, the work has assumed quite a new value, and may now be as advantageously placed in the library of the student as in that of the experienced surgeon."—*Brit. & For. Med Rev.*

"The notes, in illustration of the text, contain a summary of our present knowledge on the subject; the manner in which these notes are constructed is at once clever and perspicuous; and the modes of treatment prescribed, spring from a right apprehension of the disease. We would recommend to the reader th note on the primary venereal sore; the note itself is an essay in every word of which we fully concur."—*Med. Gaz.*

GUMS.

George Waite.

THE GUMS:

WITH LATE DISCOVERIES ON THEIR

STRUCTURE, GROWTH, CONNECTIONS, DISEASES, AND SYMPATHIES.

By GEORGE WAITE,

Member of the London Royal College of Physicians.

THE SPINE.

New Edition.] R. W. Bampfield.

ON CURVATURES & DISEASES OF THE SPINE,

INCLUDING ALL THE FORMS OF SPINAL DISTORTION.

By R. W. BAMPFIELD,

One of the Surgeons to the Royal Metropolitan Infirmary for Diseases of Children.

Edited by J. K. MITCHELL, M.D.,

Professor of the Practice of Medicine in Jefferson Medical College of Philadelphia, &c.

"The very best treatises on spinal diseases and their treatment extant."—*Med. Ex.*

"We heartily recommend this book to all who feel an interest in the matter, and especially in these days of degenerating specialties."—*New York Journal of Med.*

"The treatise is a very valuable one, and we cheerfully recommend it to the profession."—*N. Orleans Med. Journ.*

THE EAR.

George Pilcher.

A TREATISE ON THE STRUCTURE, ECONOMY, AND DISEASES OF THE EAR.

BEING THE ESSAY FOR WHICH THE FOTHERGILLIAN GOLD MEDAL WAS AWARDED BY THE MEDICAL SOCIETY OF LONDON.

By GEORGE PILCHER,

Late Lecturer on Anatomy, Lecturer on Surgery at the Theatre of Anatomy and Medicine, Webb St., Borough, and Senior Surgeon to the Surrey Dispensatory.

First American, from the second London edition, with Notes and numerous Illustrative Plates. 1 vol. 8vo. sheep.

"The perusal of this work has afforded us much pleasure. A work was wanted to place the whole subject within the grasp of all persons who chose to devote some little exclusive or particular study to the diseases of the ear, and this has fairly and well supplied the place."—*Med. Chir. Rev.*

"Mr. Pilcher is an experienced, well-informed, and able practitioner, and his treatise on the ear deserves to be ranked amongst the best which have appeared upon the interesting, but too generally neglected, department of surgery to which it relates."—*Maryland Med. and Surg. Journ.*

"This is a most valuable treatise, illustrated with elegant plates, is a standard work, and must have a great sale in its present form. It tells all about the anatomy and diseases of the ear."—*N. Y. Herald.*

TEETH.

John Hunter.

A TREATISE ON THE TEETH.

By JOHN HUNTER.

With Notes, by THOMAS BELL, F.R.S.

With Plates. 1 vol. 8vo. sheep.

"The treatise on the teeth is edited by Mr. Bell, a gentleman accomplished in his art. Mr. Bell has studied his subject with the greatest minuteness and care; and in appropriate notes at the foot of the page corrects the author with the air of a gentleman, and the accuracy of a man of science. The matter contained in these short notes forms an ample scholium to the text; and without aiming at the slightest display of learning, they at the same time exhibit a ready knowledge on every point, and an extensive information both of comparative anatomy and pathology."—Med. Gaz.

Just Published.] Fox & Harris.

THE NATURAL HISTORY
AND
DISEASES OF THE HUMAN TEETH.

By JOSEPH FOX, M.R.C.S.L.
Lecturer on the Structure and Diseases of the Teeth, at Guy's Hospital, &c.
First American from the Third London Edition.
Remodeled, with an Introduction, and nearly two-thirds of additional matter,
By CHAPIN A. HARRIS, M.D.,D.D.S.
Prof. of Pract. Dent. and Dent. Pathol. in Baltimore Coll. of Dent. Surgeons, &c.
Illustrated with Thirty Plates. 1 vol., super-royal, 8vo. sheep.

"On the whole, considering the vast amount of practical information it contains, the judicious arrangement of its subjects, and last, though not least, the great number of valuable engravings, many of which are not to be met with elsewhere, it is a work which we think every dental student, and especially practitioner, should possess. The plates alone are worth the price of the book."—*Am. Journ. of Dental Science.*

"The known character of this work, together with the reputation of the American Editor, renders it unnecessary for us to say anything in its favour, except that the engravings are executed in the best manner, and the paper and type correspond; and though far superior to, it is sold at about one-third the price of the English edition."—*Dental Intelligencer.*

"The present edition comes forth with the advantages of a careful revision, and the sanction of a distinguished teacher and practitioner of the dental art. That these additions are judicious, we need no better guarantee than the known competency of the editor."—*Phil. Med. Examiner.*

"One of the best English works extant, and so acknowledged, has undergone such beneficial alterations as to be superior to its former condition, and better calculated to subserve the interest of those who seek instruction from its erudite pages."—*Boston Med. and Surg. Journ.*

"Its intrinsic scientific worth, the number and beauty of the engravings, and the paper and typography, altogether entitle it to rank among the first, if not the very foremost of the many works issued of late years on the anatomy and diseases of the teeth, and their curative treatment."—*Bulletin of Med. Science.*

"The additions of Dr. Harris have brought it up to the state of science at the present day. It is a work calculated to be of incalculable advantages to the physician as well as the dentist."—*N. O. Med. and Surg. Journ.*

"We regard any commendation as almost needless, for the Editor's name is a sufficient passport to the confidence of all those engaged in this department."—*West. Lancet.*

"Its size, paper, type, and pictorial illustrations place it in the first class of American books, relating to dentistry. * * * Dentistry, both as an art and science, must advance in our country, under so judicious and industrious a culture."—*West. Journ. Med. and Surg.*

"The Plates accompanying it are faithful to nature. We recommend the work before us."—*S. Journ. Med. and Pharm.*

MINOR SURGERY.

New Edition.] Henry H. Smith, M.D.

MINOR SURGERY:
OR, HINTS ON THE EVERY-DAY DUTIES OF THE SURGEON.
By HENRY H. SMITH, M.D.,
Lecturer on Minor Surgery, Fellow of the College of Physicians, etc., etc.
Illustrated by 227 Engravings. 1 vol. 12mo.
Second edition, much enlarged.

"And a capital little book it is . . . Minor Surgery, we repeat, is really Major Sur-

gery, and any thing which teaches it is worth having. So we cordially recommend this little book of Dr. Smith's."—*Med. Chir. Rev.*

"This beautiful little work has been compiled with a view to the wants of the profession in the matter of Bandaging, &c., and well and ably has the author performed his labours. Well adapted to give the requisite information on the subjects of which it treats."—*Med. Examiner.*

"The directions are plain, and illustrated throughout with clear engravings."—*London Lancet.*

"It is a most excellent book."—*Buff. Med. Journ.*

"One of the best works they can consult on the subject of which it treats."—*South. Journ. Med. and Pharm.*

"A work such as the present is therefore highly useful to the student, and we commend this one to their attention."—*Am. Journ. of Med. Sciences.*

"No operator, however eminent, need hesitate to consult this unpretending yet excellent book. Those who are young in the business would find Dr. Smith's treatise a necessary companion, after once understanding its true character."—*Boston Med. and Surg. Journ.*

"No young practitioner should be without this little volume; and we venture to assert, that it may be consulted by the senior members of the profession with more real benefit, than the more voluminous works."—*Western Lancet.*

"We venture to predict for this little volume a successful career, for we have here a *means* adapted to an *end*." "Here are furnished to the student all the various inventions and modifications of bandages and apparatus, more especially by the American Surgeons, Physick, Dorsey, Gibson, Barton, Coates, Hartshorne, and N. R. Smith."—*N. Y. Jour. of Med.*

"We have no hesitation in asserting, that it is an excellent, we were going to say indispensable, aid to all those who wish to qualify themselves for the practice of surgery."—*Bull. of Med. Science.*

MIDWIFERY AND DISEASES OF WOMEN.

New Work.] Robert Lee.

LECTURES ON THE THEORY AND PRACTICE OF MIDWIFERY.

DELIVERED IN THE THEATRE OF ST. GEORGE'S HOSPITAL.

By ROBERT LEE, M.D., F.R.S.,

Fellow of the Royal College of Physicians, London; Physician to the British Lying-in Hospital; and Lecturer on Midwifery at St. George's Hospital.

Illustrated with numerous Wood Engravings. 1 vol. 8vo.

"Dr. Lee's former reputation for large practical knowledge of obstetrics is fully sustained in the present work." "The style is plain and clear, and the facts and cases are presented with due succinctness. One important feature is the introduction of tables of the results of certain operations, as of craniotomy, and of certain diseases of the puerperal state, as puerperal fever; which constitute a statistical basis for future observations and a present support for active and available practice."—*Bulletin of Medical Science.*

"Dr. Lee is too good and sensible an author to be reviewed. He should be read. He has already, though but a young man, become illustrious by his earlier works."—*Philad. Med. Exam.*

"We can cheerfully commend it to the notice of students of medicine."—*Western Lancet.*

"It is the production of a highly cultivated and practical mind, and has been elaborated with a degree of judgment and care which must render the Lectures a valuable record of professional learning and experience."—*Western Journal of Med. Sciences.*

"While they are well adapted for the instruction of the student of midwifery, the Lectures of Dr. Lee may be consulted by the young practitioner with much satisfaction and profit. The wood engravings, by which the text is accompanied, are well

executed, and communicate a very accurate idea of the subjects they are intended to illustrate."—*Amer. Jour. Med. Science.*

"Every passage will indicate in the author a discriminating, practical mind, enlightened by learning, and extensive observation." "It is a store-house of facts from which the student may enrich his mind, and to which the practitioner may apply to refresh his memory."—*Western Jour.*

"The aim of the publishers was to give to the profession one of the very best systems of midwifery in the language for the least money — to place a volume of unquestionable excellence within the reach of every medical man in the country. They have been successful."—*Ibid.*

"The present production of Dr. Lee will always rank high, as the offspring of a vigorous mind, stored with all the *learning* relating to the subject, and enriched with the results of the most extensive experience." — *N. Orleans Med. Jour.*

"I shall take advantage of the present occasion to refer you to that charming volume, 'Lectures on the Theory and Practice of Midwifery, by Robert Lee, M.D., F.R.S., &c., &c.," a book which I could desire to be in the hands of every one of my pupils, as I look upon its author as the ablest man in all England, in this part of science and practice.—*Meigs's Letters on Female Diseases.*

James Blundell, M.D.

LECTURES ON THE PRINCIPLES AND PRACTICE OF MIDWIFERY.

By JAMES BLUNDELL, M.D.

Edited by Charles Severn, M.D.

1 vol. 8vo. sheep.

"The eminently fluent and agreeable style — the large and accurate information — the great experience, and original mind of Dr. Blundell, have secured for him a very enviable reputation as a public lecturer. It is impossible to read these lectures without being delighted — it is equally impossible to avoid being instructed. Were these discourses more generally diffused and studied here — were their sound and judicious directions recollected, and their salutary cautions observed, we would hear of fewer cases of malpractice. This work forms a complete system of midwifery, with the diseases of the puerperal state and of the infant."—*N. Y. Lancet.*

Robert Gooch, M.D.

AN ACCOUNT OF SOME OF THE MOST IMPORTANT DISEASES PECULIAR TO WOMEN.

By ROBERT GOOCH, M.D.

1 vol. 16mo.—Second Edition.

"Calmly and clearly he investigates all the phenomena of a disease, and simply registers precisely what is essential."—Bost. Med. and Surg. Jour.

Robert Gooch, M.D.

A PRACTICAL COMPENDIUM OF MIDWIFERY,

Being the Course of Lectures on Midwifery, and on the Diseases of Women and Infants delivered at St. Bartholomew's Hospital,

By the late ROBERT GOOCH, M.D.

PREPARED BY GEORGE SKINNER,

Member of the Royal College of Surgeons, London.

1 vol. 8vo. sheep.

PUERPERAL FEVER.

Gordon, Hey, Armstrong, Lee, and Meigs.

THE HISTORY, PATHOLOGY, AND TREATMENT OF PUERPERAL FEVER AND CRURAL PHLEBITIS.

By Drs. Gordon, Hey, Armstrong, and Lee.

With an Introductory Essay

By CHARLES D. MEIGS, M.D.,

Professor of Obstetrics and the Diseases of Women and Children in the Jefferson Medical College, Philadelphia.

1 vol. 8vo. sheep.

"We have peculiar satisfaction, in announcing the publication of this very judiciously arranged series of treatises, on one of the most important and interesting diseases, which demand the attention of the physician." "Dr. Meigs's Introductory Essay is concise and judicious, and will be read with profit. He speaks in the highest terms of commendation of Dr. Gordon's invaluable treatise — a treatise which cannot be too generally diffused and studied. Altogether this volume presents the most acceptable and useful compend of the doctrines and practice of the best authorities, with regard to 'Puerperal Fever,' with which we have ever met."—*N. Y. Lancet.*

"We are pleased to see the republication of these valuable monographs upon Puerperal Fever. As they are all of them Essays founded upon an extensive observation, and contain a very large number of recorded cases, they must always be valuable." — *New England Journal of Medical Science.*

"Taken in connexion, the treatise it comprises presents an invaluable mass of facts in relation to Child-bed Fever, without an acquaintance with which no one can, with propriety, be considered fully qualified to undertake its management."—*Journal of Medical Science.*

"If it were in my power, gentlemen, to put into the hands of every member of the class, a copy of Barrington and Haswell's volume, I would not take the trouble to write this letter; for I believe, that a study of that volume alone—I don't say merely the reading of it, but a careful study and a conscientious examination of that volume alone—is enough for a man's education on the subject of child-bed fever, whether sporadic or epidemic."—*Meigs's Letters on Female Diseases.*

UTERUS.

Waller, Lisfranc, and Ingleby.

LECTURES ON THE FUNCTIONS AND DISEASES OF THE WOMB.

By CHAS. WALLER, M.D., Bartholomew's Hospital.

ON DISEASES OF THE UTERUS AND ITS APPENDAGES.

By M. LISFRANC, La Pitie Hospital.

ON DISEASES OF THE PUERPERAL STATE.

By J. T. INGLEBY, Edinburgh.

1 vol. 8vo. sheep.

"We can very cordially recommend them as affording a concise and practical exposition of the pathology and treatment of a most important class of diseases, and which cannot be too attentively studied."—*N. Y. Lancet.*

"The present volume contains a short and succinct practical account of the principal morbid states either of the functions or the structure of the womb, the best methods of distinguishing them, and the means which experience has shown to be the most effectual in removing them. The reader will find that he obtains, in a small compass, a distinct view of the nature and treatment of each disorder."—*Edinb. Med. and Surg. Journ.*

TOXICOLOGY.

Robert Christison, M.D.

A TREATISE ON POISONS

IN RELATION TO MEDICAL JURISPRUDENCE, PHYSIOLOGY, AND THE PRACTICE OF PHYSIC.

By ROBERT CHRISTISON, M.D., F.R.S.E.,

Professor of Materia Medica in the University of Edinburgh, &c., &c.

"We cannot but hail with satisfaction a new edition of this standard classical book. Its merits are too well acknowledged for it to be necessary to say anything further in its behalf. Wherever Toxicology is known as a science, Professor Christison's Treatise is received as an authority of the greatest weight." — *Lancet.*

"It has, for a long period, been in the hands of barristers, who have not failed to make a good use of it in the cross-examination of medical witnesses; and we believe there are few medical men who venture into the witness box on a trial for poisoning, without having at least consulted it respecting some point on which their evidence is likely to be impugned."— *Lond Med. Gaz.*

"Such is a most imperfect sketch of this most valuable work. It would be an acquisition to any medical library, and we think particularly so to our friends in this part of the world." — *New Orleans Med. Journ.*

"The First American from the Fourth Edinburgh edition of this unsurpassed work has appeared. The American profession will have within their reach the ablest treatise in the language on the subject of poisons." — *Western Journal.*

"The work of Professor Christison being recognised, by common consent, as the standard authority on this subject, it is unnecessary to do more than announce its publication."— *New York Journal of Medicine.*

"It would be a work of supererogation, at the present day, to speak of the merits of this work. It has long and justly been regarded as one of our standard authorities." — *Med. Exam.*

"Dr. Christison's is a very superior guide for the general practitioner and student." — *Med. Chir. Rev.*

"A work abounding in original observations and opinions, exhibiting the science of Toxicology in its present advanced state, and entitled therefore to take the first rank in its class, is what might have been looked for from his pen."—*West. Jour. Med. Sciences.*

"We are free to say that it is the best book on the subject in the English language."—*Western Lancet.*

"This book is of the very highest authority on the subject of poisons, and may be said to exhaust it."—*Western Law Library.*

"The author has, with singular industry, brought within the compass of a single volume, every variety of useful information and illustration connected with the subject. It is an invaluable addition to the Library of the Advocate." —*Am. Law Library.*

"It has now deservedly become a standard authority in courts of law; and, on all difficult questions connected with toxicology, it is a work for reference to judges, barristers, and medical practitioners."—*Brit. and For. Med. Rev.*

Extract from a letter of Chief Justice Taney, dated BALTIMORE, July 28, 1845.

"The whole subject is clearly and well arranged, and the symptoms, effects, and tests of different poisons very fully and plainly stated. Accept my thanks for the book. It cannot fail, I think, to be generally consulted and approved by those who, from professional duty, or any other motive, may be called upon to investigate the difficult, and often painfully delicate subject, of which it treats."

Extract from a letter of Judge Story, dated CAMBRIDGE, April 18, 1845.

"I return you my sincere thanks for your kindness in presenting me with a copy of Professor Christison's Treatise on Poisons. It appears to me to be a most valuable and important work on the subject, and full of interest, not only to the medical profession, but to lawyers. I have rarely examined any book with more satisfaction; and I shall certainly recommend it to be purchased for our Law Library at Cambridge, as eminently deserving a high rank for the students of Medical Jurisprudence. Nor can I doubt that it will receive the general patronage of the public."

BARRINGTON & HASWELL'S

DISEASES OF CHILDREN.

New Work.] James M. Coley, M.D.,

PRACTICAL TREATISE ON THE DISEASES OF CHILDREN.

By JAMES M. COLEY, M.D.,

Member of the Royal College of Physicians in London, &c.

"We can recommend this work as the production of a diligent and experienced investigator in a difficult path of the curative science. The diagnosis of diseases of children requires the exercise of all our perspective faculties, and every aid which the experience of others can suggest; and Dr. Coley seems generally well fitted for consultation on this subject through the medium of the pages which lie before us."—*London Lancet.*

"We are agreeably impressed with its comprehensive and practical character."—*Buff. Med. Journal.*

"As regards treatment it is simplified to a degree which we cannot but admire."—*Ills. and Ia. Med. and Surg. Journ.*

"It will prove a useful reference to the general practitioner."—S. Med. and Surg. Journ.

"It is the most thorough treatise hitherto published in this country on the diseases to which it relates."—West. Journ. Med. and Surg.

"A well written and valuable Treatise on the Diseases of Children."—*W. Lancet.*

"Of the whole book, it may be said, with justice—*multum in parvo.*"—St. Louis Med. and Surg. Journ.

"We are, on the whole, pleased with Dr. C.'s work; it embraces the results of a long life devoted to the practice of medicine, and displays a considerable amount of research and observation."—*N. Y. Journal of Medicine and Surgery.*

Evanson and Maunsell.

PRACTICAL TREATISE ON THE DISEASES AND MANAGEMENT OF CHILDREN.

By RICHARD T. EVANSON, M.D., Professor of Medicine, — and

HENRY MAUNSELL, M.D.,

Professor of Midwifery in the College of Surgeons, Ireland.

Edited by D. F. CONDIE, M.D.

From the Fourth Dublin Edition. 1 vol. 8vo. sheep.

"The second chapter embraces the Management and Physical Education of Children. This chapter ought to be printed in gold letters, and hung up in the nursery of every family. It would save many lives, and prevent much suffering."—*Medico-Chirurg. Rev.*

"As this Practical Treatise on the Diseases of Children has before been made known to the medical public, we dare not suppose it a new thing to any intelligent practitioner in this country; still, there may be those who do not own a copy—and to such there is nothing ungenerous in saying we wish that they may always have it in their power to consult such authority."—*Boston Med. and Surg. Journ.*

"The present edition is enlarged, and in its present form constitutes one of the best works on the subject in our language."—*Philad. Med. Exam.*

Michael Underwood, M.D.

A TREATISE ON THE DISEASES OF CHILDREN.

WITH DIRECTIONS FOR THE MANAGEMENT OF INFANTS.

By the late MICHAEL UNDERWOOD, M.D.

By S. Merriman, M.D., and Marshall Hall, M.D., F.R.S., Etc.

WITH NOTES, BY JOHN BELL, M.D., ETC., of Philadelphia.

From the Ninth English Edition, with Notes, 1 vol. 8vo. sheep.

J. L. Ludlow, M.D.

A MANUAL OF EXAMINATIONS

UPON ANATOMY AND PHYSIOLOGY, SURGERY, PRACTICE OF MEDICINE, CHEMISTRY, MATERIA MEDICA, OBSTETRICS, ETC.

TO WHICH IS ADDED A MEDICAL FORMULARY COMPRISING NEARLY 500 OF THE MOST RECENT AND APPROVED PRESCRIPTIONS.

Designed for the Use of Students of Medicine throughout the United States.

By J. L. LUDLOW, M.D.

Second Edition, Revised and Enlarged.—1 vol. 12mo.

"In this 'Manual of Examinations' the questions are clearly put, and, with few exceptions, well and distinctly answered." "The Manual will be found to be equally available at the three schools in Philadelphia, as at the two in New York, or those of Louisville, Lexington, and Cincinnati, or of Charleston, Augusta, and New Orleans, not to mention the numerous *confreries* for teaching down East."—*Bull. Med. Science.*

"We have no hesitation in saying, that Dr. Ludlow's Manual is decidedly the best, both in relation to comprehensiveness and general accuracy, that has yet been published in this country."—*Western Lancet.*

"Dr. Ludlow discovers a minute knowledge with all the leading departments of professional lore, which he imparts agreeably. He is careful to be exact, without being redundant in any paragraph."—"There is an admirable conciseness in them, and a degree of exactness, that gains upon the reader as he proceeds from elementary anatomy to the medical formulary at the close."—*Boston Med. and Surg. Jour.*

"Between all the classes whose comfort the *Student's Manual* is designed to promote, we should think it would obtain not a little currency."—*West. Journ.*

"It will greatly aid in retaining the numerous points connected with the different branches."—*Western Lancet.*

Harlan — Gannal.

HISTORY OF EMBALMING,

AND ON PREPARATIONS IN ANATOMY, PATHOLOGY, AND NATURAL HISTORY;

Translated from the French of Gannal, with Notes and Additions,

By R. HARLAN, M.D.

Thomas J. Pettigrew.

ON SUPERSTITIONS

CONNECTED WITH THE

HISTORY AND PRACTICE OF MEDICINE AND SURGERY.

By THOS. JOSEPH PETTIGREW, F.R.S., F.S.A.,

Doctor of Philosophy to the University of Göttingen, &c., &c.

"The book will prove instructive, not only on account of the extensive learning which it displays, but the numerous and curious facts which it develops."—*N. Orleans Med. Jour.*

"Mr. Pettigrew's book is amusing to such as are inclined to smile, and instructive to those who are willing to reflect."—*Med. Chir. Rev.*

"From the follies of the past we may derive wisdom for the future, and there is much in the volume before us that may be profitably used for this purpose."—*Med. Exam.*

"It is the common-place book of a literary physician, with a running commentary, giving a unity and continuity to the mosaic."—*Brit. and For. Med. Rev.*

"We do not know of pleasanter reading, either for the physician in the between-whiles of professional labour, or for the general reader who loves to study human nature in its external and often eccentric workings."—*Bull. Med. Science.*

"We heartily commend this little work to the curious of all classes of readers."—N. Y. Journ. Med. and Collat. Sciences.

"We take leave of his book, from which we have derived not only entertainment but instruction."—*West. Journ.*

Jas. W. Dale, M.D.

IS MEDICAL SCIENCE FAVOURABLE TO SCEPTICISM?

By JAMES W. DALE, M.D. of Newcastle, Del.

Thomson and Twining.

DISEASES OF
THE LIVER AND BILIARY PASSAGES.

By WILLIAM THOMSON,
One of the Physicians of the Royal Infirmary of Edinburgh;

AND CLINICAL

ILLUSTRATIONS OF THE LIVER AND SPLEEN.

By WILLIAM TWINING,
Surgeon of General Hospital of Calcutta, &c., &c.
1 vol. 8vo. sheep.

"The work before us is an excellent compilation on the subject of hepatic affections, functional and structural; and as such, it is infinitely more valuable to practitioners and students than any original essay, however ably executed. We cannot do better, therefore, than strongly recommend the work as the best in the English language on the important subjects of which it treats."—MEDICO-CHIRUR. REV.

John G. Malcolmson, M.D.

CLINICAL REMARKS ON SOME CASES OF
LIVER ABSCESS PRESENTING EXTERNALLY.

By JOHN G. MALCOLMSON, M.D.,
Surgeon Hon. E. I. C. Service, Fellow of the Royal Asiatic Society, &c.

JOHN HUNTER'S WORKS.

Comprising his Lectures on the Principles of Surgery; A Treatise on the Teeth; Treatise on Venereal Diseases; Treatise on Inflammation and Gunshot Wounds; Observations on Certain Parts of the Animal Economy; and a full and Comprehensive Memoir.

Each of the Works is edited by men of celebrity in the Medical Science, and the whole under the superintendence of
JAMES F. PALMER,
Of the St. George's and St. James's Dispensary. 4 vols. 8vo.

This is the only complete edition of the works of the distinguished physiologist ever published in this country.

"One distinctive feature of the present edition of Hunter's works has been already mentioned, viz.: in the addition of illustrative notes, which are not thrown in at hazard, but are written by men who are already eminent for their skill and attainments on the particular subjects which they have thus illustrated. By this means, whilst we have the views of John Hunter in the text, we are enabled, by reference to the accompanying notes, to see wherein the author is borne out by the positive knowledge of the present day, or to what extent his views require modification and correction. The names of the gentlemen who have in this manner assisted Mr. Palmer, are guarantees of the successful performance of their task."—MED. GAZ.

Drewry Ottley.

THE LIFE OF JOHN HUNTER, F.R.S.

By DREWRY OTTLEY.

"In the summing up of Mr. Hunter's character, Mr. Ottley exhibits equal judgment and candour."—BRIT. AND FOR. MED.

G. R. B. Horner, M.D., U.S.N.

MEDICAL AND TOPOGRAPHICAL OBSERVATIONS UPON THE MEDITERRANEAN.

AND UPON

PORTUGAL, SPAIN, AND OTHER COUNTRIES.

By G. R. B. HORNER, M.D., U.S.N.
With Engravings. 1 vol. 8vo. half sheep.

"An uncommonly interesting book is presented to those who have any disposition to know the things medical in Portugal, Spain, and other countries," and "will doubtless be read, also, with marked satisfaction by all who have a taste for travels."—BOST. MED. AND SURG. JOUR.

LIST OF WORKS

SUPPLIED AS

SELECT MEDICAL LIBRARY

EXTRAS—BY MAIL.

BARRINGTON AND HASWELL will furnish the following Works as *Extras;* they are stitched in *thick paper covers, with strong elastic backs;* they can be sent by mail, charged as Periodicals.

To the name of each work is stated the selling price; so that any gentleman desirous of having one or more *Extras*, will, by remitting a note (or order payable in Philadelphia), be furnished, by return of mail, with whatever he may select, to the amount.

N.B. Those Works comprised within brackets are bound in one volume, and must be ordered as one Extra.

Tamplin on the Nature and Treatment of Deformities	$1 12
Fordyce's Dissertations on Fever, with an Introduction	2 00
Coley's Practical Treatise on the Diseases of Infants and Children—including Surgery	1 75
Latham's Lectures on Clinical Medicine, 2d series—The Heart	1 75
Ludlow's Student's Manual	1 60
Pettigrew's Superstitions Connected with the History and Practice of Medicine and Surgery	45
Lee's Observations on the Principal Medical Institutions and Practice of France, Italy, and Germany, &c. With an Appendix on Animal Magnetism and Homœopathy Johnstone's Syllabus of Materia Medica Latham's Lectures on Clinical Medicine, 1st series	1 35
A Treatise on Tetanus. By Thomas B. Curling Bouillaud on Acute Articular Rheumatism in general. *Translated from the Freneh*, by James Kitchen, M.D.	80
Practical Observations on Diseases of the Heart, Lungs, Stomach, Liver, &c. By John Marshall, M.D., &c. Weatherhead on Diseases of the Lungs	80
Smith's Minor Surgery	1 60
Davidson and Hudson's Essays on the Sources and Mode of Action of Fever	60
Macrobin's Introduction to the Study of Practical Medicine	45
Sir James Clark on the Sanative Influence of Climate	60
Changes of the Blood in Disease. By M. Gibert	45
Sir Charles Bell's Institutes of Surgery	2 00
Epidemics of the Middle Ages, by Hecker	60

Bampfield on Curvatures of the Spine. Including all the Forms of Spinal Distortion $1 00

Nunneley's Treatise on the Nature, Causes, and Treatment of Erysipelas 1 25

Williams's Principles of Medicine. Comprehending General Pathology and Therapeutics 1 25

Lee's Theory and Practice of Midwifery. Illustrated with numerous Engravings 2 00

Turnbull's Treatise on the Medical Properties of the Natural order Ranunculaceæ, &c., &c.
The Gums; their *Structure, Diseases, Sympathies,* &c. By George Waite
An Essay on Dew, &c. By W. C. Wells, F.R.S. . 1 50

Collins's Practical Treatise on Midwifery 1 25

Evanson and Maunsell on the Management and Diseases of Children. With Notes, by D. F. Condie, M.D. 1 50

Edwards on the Influence of Physical Agents on Life; with observations on Electricity, &c. 1 00

Horner's Necrological Notice of Dr. P. S. Physick
Is Medical Science Favourable to Scepticism? By Dr. Dale, of Newcastle, Delaware
On Dengue, its History, Pathology, and Treatment. By Prof. Dickson of S. C. . 30

Freckleton's Outlines of General Pathology 75

Urinary Diseases and their Treatment. By R. Willis, M.D., &c. . . 1 25

Andral's Medical Clinic: 3 vols. 8vo.
Diseases of the Encephalon, 1 vol. 1 50
Diseases of the Abdomen, „ 1 50
Diseases of the Chest, „ 1 50

Aran's Practical Manual on Diseases of the Heart and Great Vessels. 1 vol. 18mo. 75

A Treatise on the Structure, Economy, and Diseases of the Ear. By George Pilcher. With numerous illustrative Plates 1 50

Lectures on Bloodletting. By Dr. Clutterbuck 75

Medical and Topographical Observations upon the Mediterranean. By G. R. B. Horner, Surgeon U.S.N., &c. *Illustrated with Engravings* . . 1 00

Magendie's Lectures on the Blood 1 25

Holland's Medical Notes and Reflections 1 25

Army Meteorological Register for the years 1826, 1827, 1828, 1829, and 1830
Hints on the Medical Examination of Recruits for the Army. By Thomas Henderson, M.D., Assistant Surgeon U. S. Army, &c. . 50

Bell and Stokes's Practice 4 75

Gerhard on the Chest. New Edition 1 75

Stokes on the Chest. " " $2 00

Macartney on Inflammation 60

Burne on Habitual Constipation — its Causes and Consequences . . 85

Esquirol on Mental Diseases
An Essay on Hysteria. By Thomas Laycock . 1 00

Clinical Remarks on Liver Abscess. By John G. Malcolmson, M.D.,
Thomson's Notices of Inflammatory Affections of the Internal Organs
after External Injuries and Surgical Operations . 45

Gooch's Practical Compendium of Midwifery 1 00

Gooch on Diseases of Women and Children 1 25

Graves's Clinical Lectures. *With Notes and Fifteen additional Lectures*, by W. W. Gerhard, M.D. 2 50

Elements of Surgery. By Robert Liston. Edited by Samuel D. Gross, M.D., Professor of Surgery. 1 vol. 8vo. 2 50

The History, Pathology, and Treatment, of Puerperal Fever and Crural Phlebitis. By Drs. Gordon, Hey, Armstrong, and Lee; with an Introductory Essay by Charles D. Meigs, M.D. 1 vol. 8vo. 1 50

Derangements, Primary and Reflex, of the Organs of Digestion. By Robert Dick, M.D. 1 vol. 8vo. 1 50

Diseases of the Liver and Biliary Passages, by William Thomson. And Clinical Illustrations of the Liver and Spleen. By William Twining. 1 vol. 8vo. 1 60

A Treatise on the Diseases of Children, with directions for the Management of Infants; by the late Michael Underwood, M.D. From the ninth English edition, with notes by S. Merriman, M.D., and Marshall Hall, M.D., F.R.S., &c. With notes, by John Bell, M.D., &c. 1 50

Lectures on the Functions and Diseases of the Womb; by Charles Waller, M.D., Bartholomew's Hospital
On Diseases of the Uterus and its Appendages; by M. Lisfranc, La Pitie Hospital,
On Diseases of the Puerperal State; by J. T. Ingleby, Edinburgh, 1 vol. 8vo. . 75

Aphorisms on the Treatment and Management of the Insane by J. G. Millingen, M.D. 62

A Practical Dictionary of Materia Medica. By John Bell, M.D. 1 vol. 8vo. 1 75

Outlines of Pathological Semeiology. Translated from the German of Prof. Schill. 1 vol. 8vo. 1 00

Aretæus on the Causes and Signs of Acute and Chronic Disease. From the Greek. 1 vol. 8vo. 50

Blundell's Lectures on the Principles and Practice of Midwifery. Edited by Charles Severn. 1 vol. 8vo. 2 00

Christison on Poisons 2 50

Colles's Surgical Lectures 1 50

Heberden's Commentaries 1 25

Neill on the Arteries. Coloured Plates 85

——— Nerves. Plates 85

——— Veins and Lymphatics. Coloured Plates. . . . 85

——— Arteries, Nerves, Veins and Lymphatics . . . 2 00

WORKS IN PREPARATION.

On the Diseases of Females: With special reference to their Hygienic Prevention and Treatment. By John Bell, M.D.

In this work, the author will take pains to point out the hygienic measures required for the prevention of the diseases to which, by her anatomical and physiological peculiarities, the female is liable, independently of the merely sexual organs. The differences in the nervous system, state of the blood, &c., indicate the necessity of differences, or, at any rate, notable modifications in both her physical and medical treatment. From birth, her future destiny and exposures, as mother, ought to receive more attention, in reference to the laws of hygiene, than has hitherto been given to the subject. The relative frequency of the diseases of the sex in different periods of life, and the value of particular modes of treatment, will be tested as much as possible by statistical returns; thus correcting the fluctuations of opinion and the obtrusions of hypothesis.

A Medical Lexicon, or Concise Explanation of the Various Terms used in Medicine, Surgery, the Collateral Sciences, &c. By J. Livingston Ludlow, A.M., M.D. Author of the Student's Manual of Examinations.

Principles and Practice of Medical Jurisprudence. By John Bell, M.D.

The Physiology, Hygiene, and Pathology of Persons engaged in pursuits requiring intense Mental Application. By D. Spillan, A.M., M.D., &c., &c.

Clinical Lectures on Syphilitic Diseases. By Richard Carmichael, M.R.I.A., President of the Medical Association of Ireland, &c.

A Course of Lectures on those Diseases of the Brain which affect the Mind, and produce Insanity. Delivered in Paris, by M. Baillarger, Physician to the Hospital Salpetriere.

Connelly's Lectures on Insanity.

Practical Commentaries on the Treatment of Dyspepsia in all its forms: By Robert Dick, M.D.

NATIONAL LIBRARY OF MEDICINE
NLM 03192903 3