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, 1842.

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L. S. Haynes
1843

LECTURES

ON THE

THEORY AND PRACTICE

OF

PHYSIC.

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AND

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SECOND EDITION.

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IN TWO VOLUMES.

VOL. I.

Philadelphia:

ED. BARRINGTON & GEO. D. HASWELL.

NEW YORK — J. & H. G. LANGLEY: CHARLESTON, S. C. — WM. H. BERRETT.
RICHMOND, VA. — SMITH, DRINKER, AND MORRIS.
LOUISVILLE, KY. — JAMES MAXWELL, JR.

1842.

[Entered, according to act of Congress, in the year 1842, by Barrington and Haswell, in the clerk's office of the district court for the eastern district of Pennsylvania.]

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PREFACE

TO THE SECOND EDITION.

It was not without some misgivings that I undertook, two years ago, to edit the Lectures of Doctor Stokes,—fearing that my additions might not enhance the value of this gentleman's labours, and knowing that adequate scope was not allowed me for separate efforts. The rapid sale of a large edition of our joint work has, however, reassured me on these points, while it has imparted fresh desire to contribute a fuller share on my part than was required of me on the former occasion. In order to preserve a harmony, in one respect at least, between the British and American portions of the present edition, I have continued the lecture style throughout.

By the large additions which it has received, the work is now made to assume the character of a System of Medicine more than heretofore; at least, the circle of the most important and violent diseases, those which constitute the chief outlet to human life, is in a great measure complete. It consists at present of the following classes of diseases:—I. *The Digestive System;* II. *The Biliary Apparatus;* III. *The Spleen and Pancreas;* IV. *The Urinary Apparatus;* V. *The Respiratory Apparatus;* VI. *The Heart;* VII. *The Nervous System;* VIII. *Fevers.* Of these classes, the third, fourth, fifth, and sixth, are contributed for the first time, and constitute large and material improvements in the present edition. To the first class, or the Diseases of the Digestive System, my additions, both on the score of number and detail, have been considerable. It may, perhaps, be alleged, that to one of these, *Epidemic Cholera*, I have allowed disproportionate space; but, if the extent of its range—diffusion over the whole earth, its mortality—equal to the destruction of millions in a few years, the suddenness of its invasion, and the rapidity of its progress, leaving often little time for study or counsel, be considered; and if, also, we bear in mind the fact, that, numerous as have been the separate publications on this dread malady, there is no one to which we can refer for anything like a complete history of its pathology and medical treatment, or of the hygienic considerations of cause and prophylaxis, it will, I hope, be conceded that the task which I have attempted, however imperfectly executed, was becoming the requirements of the case. The disease may again appear among us, and it will be, of course, desirable

that the practitioner called upon, in the emergency, should be apprised of his true position, as regards the benefit which may be expected from any remedy or particular plan of treatment. If not encouraged by the success of his predecessors, it will be his duty not to repeat their vain trials, and not to expose himself to their failures by the same mistakes and deficiencies.

In preparing the lectures on the Diseases of the Respiratory System, I have incorporated much valuable matter derived from the work of Dr. Stokes on the *Diagnosis and Treatment of Diseases of the Chest*, besides that which appears in a lecture form, as directly from him, but, also, taken from the work just mentioned. On this last point, an explanation, if not apology, is due to Dr. Stokes, — not for any change of his language or train of argument; for the text, with the exception of a few words, has not been altered, but for my arranging in *quasi* lectures some of the matter which he published in a volume, without his having previously presented it in this shape. The only difference, however, between the originally printed matter and that which I have introduced formally as from Dr. Stokes, is in its receiving the division and headings of lectures. Perhaps less objection will be found with this innovation, as there was not even a division into chapters in the work on Diagnosis and Treatment of the Diseases of the Chest.

The class of Fevers has not been treated so much *in extenso* as precedent would have warranted; but by withholding commonplace literature, and the mystical disquisitions of the past age, without, however, yielding too much to the arithmetical affectation of the present, and by steadily bearing in mind the wants and expectations of the American practitioner for information respecting the fevers of the United States and analogous climates, rather than those of European hospitals, camps, and jails, less disappointment will, it is hoped, be felt at my abbreviations on this head. I have curtailed to some extent my former lectures on Congestive Fever, but have still retained those distinctive features which imparted to them that interest in the minds of the physicians of the South and West, which I was sanguine enough to anticipate when I first took up the subject. Let me, in conclusion, exhort them to send back to us in the city, in return for our issues, full and carefully prepared histories of their fevers; for a complete elucidation of the nature and treatment of which they must not look to the hospital statistics nor collegiate teaching of Europe, without the aid which it is in their power so amply to supply.

JOHN BELL.

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LECTURES

ON THE

THEORY AND PRACTICE OF PHYSIC.

LECTURE I.

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 lecturer, 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 cotemporaries; 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 knowledge, 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 connection between the theory and the practice of medicine.

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* [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. — B.]

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 enlarged 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 twofold; 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 greater 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 he 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 way, 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 an 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 had 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 place 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 widwifery, 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, but 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; and 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 various 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 connection 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 vegetable 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 connection 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 appearance, 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 tympanitis. 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 threefold 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 function, 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; the 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 medicine? 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 connection 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 of animal magnetism.

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

"*After so many vacillations 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 comparing 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 connection 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.

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 unanalogous 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 noncomplication 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 a 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 accompanied 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, hepatisation, 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 typhus 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 typhus 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 an 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 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 miasm 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. Disease 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

* [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.]

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, too, 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, tympanitis, 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 of the individual. All these causes tend to produce a great variety in the disease, and an extensive modification of the sympathetic 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 also 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

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* [The physiological explanation consists in the fact of the nervous supply to the ileum, coming from the sympathetic; a fact of importance, which should be borne in mind 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.]

combined with irritation of the bronchial mucous membrane. Lastly, we have the varieties which depend on different 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 dyspepsy in adults, and in children with cholera and diarrhœa — Remedies, general and local — Importance of hygienic measures — Ulcerous stomatitis — Pultaceous stomatitis, or muguet — Its pathology — Treatment.

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 regions. This proceeding is in conformity with an affinity between these regions 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 there is so frequent a connexion between the inflammation and irritation of the stomach and the upper cavities already mentioned, that 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 are 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 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 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. 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 and spreads to the lips, which tumefy, excoriate, crack, and frequently become the seat of *herpes labialis.* Often it accompanies inflammation of the stomach or bowels, but rarely causes fever in very young infants, whereas this is a common addition 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 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, says M. Andral, 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 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 simplicity of 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 badly nourished and with 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 chronic 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 are described of aphthous stomatitis, 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 day.

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 with, 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*,) 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 will 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 muciparous follicles of the mucous membrane of the mouth are invisible in their ordinary state, and remain hidden in the thickness of the membrane, and compensate by their infinite number for the smallness of their size; but when they begin to inflame and tumefy, they appear on the internal surface of the lips and cheeks, on the pillars of the velum and the palatine arch, on the inferior surface and lateral parts of the base of the tongue, under the form of small white points, sometimes exhibiting a coloured spot in their centre, slightly prominent, and often surrounded by a slight inflammatory circle. These follicles are either isolated, and few in number, or multiplied and spread over every part of the mouth. Sometimes they may be felt with the finger, when they are not sufficiently distinct to be seen. They

often do not stop at the mouth, but spread to the œsophagus, stomach, and intestinal tube." (Billard — *Treatise on the Diseases of Infants, Dr. Stewart's Translation.*)—The follicular points enlarge, preserving still their primitive circular form; and from their central aperture there soon issues a white matter, which, being squeezed by the surrounding epithelium, itself soon beginning to ulcerate, there is an exudation of white puriform matter over all the parts.

Numerous aphthæ and their proximity soon allow of the spreading of the excreted curdy matter so as to form a continuous coat of greater or less thickness, as already mentioned. 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; 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, exhale a small quantity of blood, which concretes under the form of a slight brown scab, mistaken, says Billard, by some authors, for a gangrenous eschar.

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 deprivation of their mother's or nurse's milk, are cooped up together in hospitals, and deprived of fresh air, and illy attended to in the means for preserving a clean and fresh 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 advanced, and the little patient become weaker and more emaciated, will confirm the accuracy of this remark.

Reference has been before made to some of the symptoms accompanying aphthæ. Those most marked are produced by the 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. (Gardien, *Traité Complet d'Accouchemens.*)

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, 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, f℥ss; Sacchar. albi, ℥ij. 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, and 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, arrow root, 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 controul, 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 controling 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 will be acted on by castor oil, or rhubarb and magnesia; sometimes with chalk mixture, and at other times again with 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 in gastritis, or in 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 watery cold 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 muriated tincture 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 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 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, 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. Nor do 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, and to be noticed with the other symptoms and the treatment hereafter.

4. *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 any other. It is peculiarly a disease which attacks, in preference, infants soon after birth, and those 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 membrane; 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 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 membrane exhibits 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 sus-

tained 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. 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, 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 fluid chloride of soda, to which, on occa-

sions, in this, as well as in 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.

LECTURE IV.

DR. BELL.

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 — Gangrenous stomatitis — As a result of other kinds of stomatitis, and as a separate disease — Different opinions as to its violence and danger — Two stages 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.

IN continuing my observations on the different kinds of sore mouth, with inflammation, I shall in this lecture 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. Its seat is commonly on the gums, 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 grayish-white, irregularly rounded, it afterwards extends by the running of these together, and their becoming gray, 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 awhile, detached to be replaced by others. 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 observes (*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 this 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; there are, also, headache, restlessness and vigilance. 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 than adults. 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. 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.

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 wiih 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. 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. Preferably, 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 as 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 we use the iodine topically, we should, with no small reliance in its therapeutical virtues, direct its administration internally. With this view we 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, of from five to 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 capillary circulation is feeble, and the tissues prone to disorganization, owing to their lax temperament and imperfect and depraved nutrition.

6. *Gangrenous Stomatitis.* — This kind of stomatitis corresponds more nearly with gangrenous aphthæ than with gangrene of the mouth (*cancrum oris*), or gangrenous erosion of the cheek; 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, and it is frequently spoken of and described in this light; as, for example, by Andral (*Cours de Pathologie Interne*). 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 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 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 tissue. 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 dissolve into 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 this is the gangrene of the mouth, properly so called, in which, with M. Baron, 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. (M. Billard, *op. cit.*)

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 the 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. In illustration of the effects of debilitating causes, may be mentioned the great proportion, at times, of children congregated in an asylum who are 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 greatest 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. When gangrene is formed, a fever of irritation is generally developed. It is aggravated by loss of rest, want of nourishment, and probably by putrid matter finding its way to the stomach. To this latter cause, Dr. C. 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. 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 of the gums. If it should occur in a child in whom the second dentition had commenced, the consequences would be very serious, and might result in the loss of the teeth for the remainder of life.

Treatment.—Before prescribing, we ought to be aware that the prognosis in gangrene of the mouth is unfavourable, as we might suppose from the class of subjects who are chiefly affected, and the gravity of the disease itself, as well as of its complications. If fully apprised, as we ought to be, of the antecedents of this disease, intermittent or remittent fever, or bowel disease, we must address ourselves earnestly and early to all the means adapted to alter this morbid condition; and whilst doing so, to modify at once the func

tions 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 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 with 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 attacks 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 mercury also not unfrequently. 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 hartshorne 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 Dr. 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 fifteen 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 stomatites 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 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 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 in 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 V.

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. — 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.

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 γλωσσα, the tongue.

Glossitis, though a term strictly applicable to partial inflammation of the tongue, induced by bruises from foreign bodies, or com-

pression 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 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—Philadelphia Edition.

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 of the mouth, dribbles out continually from the angles of the mouth. Sometimes the sides of the tongue are studded

with small ulcers, of a grayish 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 impediment to 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 diphtherite, 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, or variola, 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 reappearance in, these or analogous parts. Iu 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 cloths, or a sponge saturated with warm water frequently applied to the bleeding surface. If any difficulty be experienced on 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 skin. 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 powerful 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 their administration. For the purpose of counter-irritation hot pediluvia, or if there be a tendency to perspiration the warm bath, will be good adjuvants 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 at length was 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, 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 to 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 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 also 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 termination 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 generally, 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, another and remote organ, the testicle in males and the mamma or external parts of generation in females, becomes, 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 retransferred from the genital organ to the gland, a change which may be followed by a second metastasis from this latter to the former.

Treatment. — The remedial means, in general, are quite simple in parotitis. 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 to this part, 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 as are adapted to the original disease.

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.

A variety of parotitis once quite common, in connection 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 a 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 has given rise.

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, as it is 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 heterogenous 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 of the excitement of both the

nerves and bloodvessels 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 reaction 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 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 consequence 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 we cannot either be 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.* 1833-4) 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. and de Chir. Prat.*) 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 also 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 diseases 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 may be greater necessity for removing this resistance, and renewing 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, if 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 before we are called, 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 and 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 matter in them, 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.

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 must not 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 must 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; and 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 those 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 derivation to the bowels and increasing the natural secretions, than have recourse to repellent remedies of any description.

The warm or 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 the child be puny, and without suffering from fever or phlogosis, and its teething slow and painful, in addition to the cutaneous disorder, 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 overfed, 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. All that is necessary often 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 overfeeding 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 it was laid aside the disease was almost entirely well, 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 so 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 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, 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 young of the mammalia which are not born with a hairy covering adequate to their wants in this particular. It is only in the young 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 irregular muscular exercise by which the nervous and vascular systems 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 reflexion 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 VI.

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.—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 cause—Change of voice after extirpation of tonsils.

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 squianancy. 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 are conveyed of the seat of affections of the throat, 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 designation is that 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 esophagus, and analogous 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, although the subjacent muscular and other tissues perform somewhat different offices. 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 mucous surface inflamed, but also in their intensity, origin, and complications with other organic diseases. Often slight and of small moment, they are also often 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 in the latter relation, 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 generally 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. — 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 in some instances 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 was quite recently related by Dr. Caspar Morris, and is 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 was 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 esophagus 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. Gen. de Med.*, Oct. 1841,) a case analogous to that of Dr. Morris, the chief feature of which I have just detailed to you. The subject was forty years of age, 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 any appreciable swelling of any part of the throat which was visible: 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 in 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 was short, dry, and wheezing cough. Though a man of courage and energy, he 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 sixteen 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, and to prolong the inter-

vals between the fits of suffocation, during which 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 he 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 hazel-nut, 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 esophagus: 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 procuring 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 are formed behind the deep cervical aponeuroses, and spreading more towards the thorax, offer 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 of the pharynx and the esophagus, may acquire so great a size as to induce suffocation. Many examples of this nature, under the name of *retro-pharyngeal* or *retro-esophageal 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 esophagus; 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 Desault (*Œuvres Chirurgicales*, par X. Bichat, 2e partie, 1798, p. 256). M. Vernois records a case similar to that which has been detailed, in its nature and fatal termination, 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.

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 were 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 *Pharyngitis*, but

in giving 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 interesting that 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 of the throat 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, more or less abundant, of stringy mucus. The membrane covering the tonsils is coated with a grayish layer. If the inflammation extends into the nasal cavities along the Schneiderian membrane, the voice is affected, becomes nasal, and there is 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 on awaking 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 a 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 resolu-

tion; 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 pressing 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 this 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 also careful not to speak lightly of the disease, nor hazard a favourable prognosis without some qualifying considerations.

Treatment. — In the milder and common cases of angina, rest in a medium temperature, abstinence from exciting food, and restriction to and 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 result, 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 is 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, and the compound colocynth pill. 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 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 *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.

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

ment of these bodies. The remark just made respecting *palatitis* and inflamed uvula, is applicable to this 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 swallowing 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 earache.

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 are as great as ever. Inspection at this time shows that the abscess is pointing, or by a 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 contraindication 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, however, 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, as 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 the 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 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 rosum*, 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 but 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 sometimes 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.

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. Fahenstock. 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 phlogisis 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 by the naked eye, if the mouth be opened and the tongue depressed, and even touched with a probe. 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, altogether associated, more particularly if the uvula enters into 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 reëstablished.

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, once 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 modification of the voice is of a peculiar kind, — a hissing or whistling sound.

LECTURE VII.

DR. BELL.

Angina Membranacea—The simple and the malignant varieties.—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 — 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.

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 parts 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, 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 runs its course with rapidity to often 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 esophagus, 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 contraindication in weakness of habit or from special exposures, and the symptoms of febrile excitement are considerable, we also 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 of malignant angina.

Angina Membranacea Maligna. — *Cynanche* vel *Angina Maligna. Putrid*, or *Ulcerated*, or *Gangrenous Sore Throat* — *Diph-*

therite ou Angine Gangreneuse of French writers — *Secondary Croup.*

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 diseased states which it is intended to designate are not by any means of such modern date. Few epidemic 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, conjoined 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 the disease 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 venerated 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.

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, 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 endemial, as in parts of France, (Touraine and Picardy,) and epidemical, and of its prevailing chiefly in most 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 were 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 this 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 on the mucous membrane, the engorgement of which, with dark blood in patches, visible when the membrane is detached, is cited as farther evidences to the same point.

Symptoms. — Angina maligna, *diphtheritis*, (from διφθερα, skin,) as it was first called by M. Bretonneau, of Tours, or the secondary croup of Dr. Stokes, 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 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 membrane beneath, the redness greatly augments 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.

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 when the laryngeal symptoms are not very intense, and which destroys the patient, even 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.

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, esophagus, larynx, trachea, and even the divisions of the bronchi. M. Guersent has seen it extend into the frontal sinus, and M. Bretonneau once on the concha of the ear. Sometimes, the exudation is found in the stomach, with an interruption of continuity, however, on the esophagus. 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. 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 consequence 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. According to Mr. Bretonneau it is decidedly contagious, and especially when combined with scarlatina, which is one of its most frequent complications. We must regard as diphtheritis 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 an-

ginose symptoms were most predominant. But whilst admitting this complication, it is a refinement beyond the facts, it seems to me, to believe that all epidemic anginas are really 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 diphtherites are one and the same disease, as affirmed by the French pathologist just named.

In admitting that angina membranacea maligna, or diphtheritis, is the same disease with cynanche maligna or angina, and that the identity of scarlatina simplex with scarlatina anginosa and scarlatina or angina 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 esophagus, 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 scarlatina or angina maligna, on the other hand, cases occur in which, on the clear testimony of Huxham, Fothergill, and Heberden, there are deep ulcerations, the consequence of gangrenous eschars, which cannot be confounded with any crust or coat formed and spread in 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. Rillet and Barthez, (*Archiv. Gen. de Med.*, 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 — often without ulceration, sometimes 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 Gen.*, 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 is 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 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, to which I have already referred, the proportion of adults attacked was greater than 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.

Termination. — The mortality from 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 to fourteen days, although the imminent danger is over in half the time.

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 those 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 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 pneumonia is complicated with the angina, will be benefited 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 diseases, 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, but slight pain of the throat, and the voice nearly extinct, bloodletting, either general or local, is clearly contraindicated, 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 class 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 carrying out consistently the course 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 con-

joined 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 these 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 teaspoon. 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.

Before I conclude the 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, and circulation, and innervation so interfered with, that neither good chyle is formed, nor is the blood 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 unnaturally cold, 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, possessed of some stimulant property, without 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 delirium, 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 bowels should be acted on by enemata, at first laxative, afterwards saline, and, as the strength sinks, terebinthinates.

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, the chlorides will be entitled to the preference in the variety of disease now under notice.

LECTURE VIII.

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 connection — 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 dif-

ferent 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.

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 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 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 connection. 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

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

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: — Intolerable 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, 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 esophagus 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 connection 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 connection 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 healthful condition of the tongue, and diseased appearance of the tongue with a healthful 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 a 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 versâ.* 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.*

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* [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 epigastric heat and tenderness, was 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 dyspepsic 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 this individual. A circumstance worthy of notice, in his case, is, that, when he

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, 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

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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.]

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 sunk 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 Medicale* 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 similates 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 cases are certainly those

* [Unless we are fully acquainted with the precursory symptoms and the admitted cause, 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 cases which might be related, I remember, very distinctly, that 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 of convulsions. The mother of the patient thought 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

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 readmitted 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.

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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 observations, 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 sighing and croaking death around its cradle, it revived, and ultimately recovered its health.

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.]

LECTURE IX.

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 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 collectively 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 susceptibility 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, extraordinary 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 doubtful, 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 in 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 examination; 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 poison, 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 these 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 cotemporaries, never think of reapplying 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.

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

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* [I have, in some cases, after venesection and leeching, given calomel with advantage in gastritis: — its action on the duodenum, liver, and large intestine, 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.]

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 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 their immediate effect; see how the first one has agreed with the stomach before you venture to give any more. Patients labouring under this dis-

* [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.]

ease 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 tablespoonful 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, in 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 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.*

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* [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.]

LECTURE X.

PATHOLOGY AND TREATMENT OF GASTRITIS—Application of blisters—Emetics can be seldom used in acute gastritis—Hæmatemesis 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 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.*

* [Not only in primary gastritis, but, also, 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 in 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

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 consequence of this is 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 this principle, 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

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of fevers 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. 1841.

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 an 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 occur-

* [Mr. 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-tenth to one-twentieth. — B.]

ring in a person who, previously to the attack, exhibited nothing capable of accounting for the hematemesis. Here, then, we have an 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 principle 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

* [In my own practice, 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 drunk by the common people, and in greater proportion by females, under the name of cordials, are, to my knowledge, frequently causes of gastritis, both acute and chronic. — B.]

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, of 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 dia-

gnosis; 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 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,

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* [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.]

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. I 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 XI.

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.

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 dys-

pepsia, 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 diseases 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 these 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.*

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

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* [This course, so conformable with reason and experience, and so readily understood by the attentive inquirer, is, however, the most difficult to be carried out in practice. Our patients will take evry 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 doctor 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. It will be found with this, after all, as with many other prejudices of the people, that they are but the reflexion 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 advisers. — B.]

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 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

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* [Salts are often singularly unfriendly to the stomach of a dyspeptic. Rhubarb and soap pill, or rhubarb and carbonated magnesia with a little cinnamon or ginger well mixed, 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 melasses and water for occasional drink, will tend to the same end. — B.]

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 benefited 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 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 seemed 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 produced 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

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

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 antiplogistics 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 forwards 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.

Friction with croton oil — Attention to diet during convalescence — Organic disease of the stomach — Principles of treatment — Diet and attention to the bowels — Duodenitis — Inflammation of the jejunum.

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.

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 submucous 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 Medicales*,) 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.

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 connection which exists between inflammation of the duodenum and jaundice. In treating of the sympathies which depend upon continuity of surface, Bichat refers to the connection 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 connection 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.

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.

LECTURE XII.

DR. BELL.

Dyspepsia.—Temperaments and Constitutions most liable to the disease—Habits of life inducing it—Concomitant diseases—of brain, liver, skin, lungs, 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 reflexions—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 horrors 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 the particular classes of cases.

Causes and Concomitants. — Dyspepsia, 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 purely 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, we have reason to believe, exists where the digestion is very slow, but without 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. 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 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. Imperfect 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.

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 transitions from these, in which the heat was excessive within doors, to 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 up to chronic gastritis,—which are produced by impeded functions 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 not a viscus that does not suffer in every imaginable degree by this means, and the stomach more, if we except perhaps the lungs, than any other. In maritime exposures, and particularly if easterly winds are prevalent, 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, even for it, 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, or observation of morbid phenomena, prepares 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 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 up to confirmed phthisis pulmonalis, the 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 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, it alone will not indicate the actual condition of the stomach. Nor 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 for the radiation of 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.

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 *Clinique Medicale*, as translated by Dr. Spillan, p. 871.

"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 submucous 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 spoonsful 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 reflexions 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 force chymifaction is accomplished, that we cannot appreciate all the causes which prevent its going on.

"On the other hand, the sympathetic connections 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? And 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 suspended, for this sole reason, that other organs of nutritive life (small intestine, lungs, liver, etc.) 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, who has given us an admirable paper on dyspepsia in the *Amer. Journ. of Med. Sciences*, vol. xxv and xxvi. "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 flatu-

lent — 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, the Professor 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 slight 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 juxta-position 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 overpopulated 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.—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. I shall not detail the symptoms which have been so well described by Cullen, and since his time by every writer on Practical Medicine.

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 the 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 a belief 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, 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 or 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 minutest dose, would seem to be still preferable to the nux vomica. 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.

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 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.

Cardialgia. — Akin to pyrosis is *anorexia humoralis* or *pituitosa* of the nosologists, 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 and pyrosis, nor 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. They all 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 Médicine Pratique*, T. II.), 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 more an evidence of the morbid sensibility of this region of the stomach than of any peculiarly acrid qualities in the fluid secreted. Sometimes it is manifestly acid, at other times neutral. 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 morbid secretion, with but little exaltation of the nerves of animal life or 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.

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 and 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 authorise 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.

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, sometimes 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 it a little subcarbonate 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 contraindicated 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, 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 sulphat 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. "Its effects are to heal the putrescent eructations characteristic of this form; to allay the sensation of heartburn; to restore the secretions along the whole intestinal canal, as is proved by the production of healthy, easy, soluble, bulky stools. I am not certain that I know one laxative that is a safer. surer, and more gentle restorer of irregular and morbid intestinal action, than the substance I now introduce to your notice. Its good effects, moreover, are not confined to the intestinal tract. It restores, 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 melasses, jelly, or a solution of gum.

LECTURE XIII.

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 characterised 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. This last is sometimes a termination, also, of common inflammatory dyspepsia.

Gastrodynia is marked not only by a pain in the stomach but by the 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, distention of the abdomen, feeling of suffocation, 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, sometimes even symptoms of hysteria in men supervene. Or the patients may feel restless and unquiet, or be seized with a fit of depression, or of ungovernable impatience or anxiety. These symptoms generally terminate with digestion, but 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 in 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 con-

founded with gastritis and gastro-enteritis. Sometimes the two diseases attack at the same time, and then it is not easy to unravel the 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 appear 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 parched 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 the pains in the former dart, as they sometimes do, through the chest and impede respiration, and are accompanied with cough.

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 even 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 was 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. In such persons, moral causes, as anxiety, jealousy, morbid indulgence of senti-

ment, &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 the beginning of this 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.

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; 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, 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, wil give a lull to the symptoms. A draught of hot water, camphor mixture, water of ammonia, I have found, each, on occasions, 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 an alleviation or removal of pain; and this is proposed to be brought about generally by stimulants, antispasmodics, 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 to even 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 stomach 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 farther 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. 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 this medicine 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. 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.

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, subcarbonate 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, *Traité de Therapeutique et de Matière Medicale*, T. II., p. 776.) The observations of Odier of Geneva, on the subnitrate of bismuth in pains and cramps of the stomach, recorded in 1786, (*Journal de Médécine*,) 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, as we learn from the French writers, 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 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 overfeeding 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 suffering 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 Autenreith, Rueff, and others, in this disease. For Rueff's practice, see Amer. Journ. of Med. Science, May, 1837. By this 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 this 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 to desist for a while from its use after a month.

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 and a little opium,—or if the bowels are torpid and the secretions unhealthy, blue mass and a little aloes should be combined with the former. When the 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, we ought to regard 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 to have 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, or 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 coldness 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 previously; 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, hyoscyamus with aloes and soap, in pill. A tumblerful of hot water, with a teaspoonful 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 corn bread agrees better with the stomach than 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 tablespoonfuls 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 tablespoonful 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 so often 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 keeping up 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; the addition of oil and of mustard, and still more of egg, renders it of more 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.

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 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 distention 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.

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 under-toned 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. 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 XIV.

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 the 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 pathological student. 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 of 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 diffuseness: 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 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. His pain or uneasiness, distention, 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 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 disease will manifest itself generally by a sense of weight and uneasiness, sometimes of pain in the right hypochondrium, extending sometimes 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 sickle. 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, 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 rectum. 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 eva-

cuations from the bowels, and relief is even experienced as soon as the upper portion of the bowels 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 lightly 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 is 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, was on what I then termed 'Hepatic Rheumatism.' At that time I attributed, as is still too much the case, to the liver, that which 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 by 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 in 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, there be much heat and dryness of the mouth, and 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 beneficial 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 to 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 teaspoonful 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, or of lettuce or 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 some simple food, in small quantity, 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 tablespoonful, two or three times a-day.

As useful aids towards a cure, we may occasionally have recourse to nitric, 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— 1, to the diet of the invalid; 2d, to the preserving an open state of the bowels; and 3, to the 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 overloaded 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, by means of senna with some adjunct, such as salts or cream of tartar, of feces of a dark and pitch-like appearance and consistence. 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 this 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 overfulness 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 occasionally 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 gallstones, 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 connection 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 overspreads often the mucous coat of the intestines in malignant cholera. In the disease before us, the disordered state of the follicles occurs in two ways; first, in which the 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 of their virtues.

Strumous Dyspepsia, as defined by Dr. Todd, is that form of dyspepsia 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 overcharged, 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 extremely subject to chilblains, even sometimes in summer. Diseases of the skin and eyelids, and abscesses of the cellular tissue, still farther 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; in men, a disposition to hemorrhoids is 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, 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 ʒij.
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, 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 accom-

paniment 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 discourses 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 uses 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 hypochondriaism. 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 XV.

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.

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 typhus 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 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 situation 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

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

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 submucous tunics 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 disease, 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 intestines 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 discovered 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 typhus 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. It alluded to the discussion which has arisen as to the question whether 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 tympanitis, 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 antispasmodics; we see it in painter's 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 in 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 case 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 ulcerations 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 take 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, per-

haps, 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 tympanitis, 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.

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 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 mesenterica 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, and 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 XVI.

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 superstruction 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 frequently 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

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*[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, subsequently, a return of the disease for a period of seventeen years past. — B.]

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 have 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 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.*

* [I have given with advantage, in ileitis, the blue mass in small doses, say three grains three times a day; and have found warm fomentations by stupes and cataplasms on the iliac region serviceable. — B.]

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, 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 add greatly 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 more 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.

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, tympanitis, low delirium, and subsultus tendinum. In the course of two or three days diarrhœa come 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 XVII.

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 the 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 authorized 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 that 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 possesses 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 behoves 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, 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

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* [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., p. 409–19. — B.]

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 diarhœa 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

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* [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 is 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.]

ulceration. I find I have not brought up any 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 turpen-

* [I have found, very generally, this form of diarrhœa to be more controlled by change 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 called 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 a drink of mucilage of gum arabic. — B.]

tine 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 for ever in the opinion of the patient. Now this is not an uncommon case. I have seen several 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.

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 typhus 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 sympathizes 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 mamillated, as it were, and it is stated on the label that the process of cicatrisation 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 submucous 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 XVIII.

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 typhus 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 of 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 in 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 result 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

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* [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.]

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 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 authorized 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, 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 may 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. Whenever 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 antispasmodic, 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.

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 fever-

ishness 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 sixteen 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.

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 asafœtida, 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. [For further details on this point see a subsequent ecture. — B.]

LECTURE XIX.

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—ipecacuanha—diaphoretics.—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. The testimony furnished by Dr. Cheyne in Dublin, 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, on this account, the more 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 ilium 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 distention 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, with flat, retracted belly, and dry skin; the tongue of a slate colour, glossy, and morbidly clear, as if skinned; the stools 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 had 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 ilium, 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.

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 London 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. Geddings's paper on *Follicular Gastro-Enteritis*, in the *Baltimore Med. and Surg. Journal*, Vol. I.

Causes. — 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? Complications of this nature are more apt to occur in endemic dysentery under the operation of local causes — as of cold, dampness, and moisture after high heat, 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 itself or by excess causing dysentery, I may adduce the instance of the Prussian army which invaded France, in 1792, and had advanced into

Champagne, 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 have proved of bad quality. The effect of weather is shown in the fact of its 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. 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 dies at no distant period afterwards. (*Memoire 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 threefold 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.)

The attempt to trace a community of malarious origin of dysentery with intermittent fever, 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, does not come within the scope of investigation into the etiology of either the 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, but 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 a 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 females, resembling the *phlegmasia dolens* in all respects, but in its connection 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 exhibited uneven, rough, and granulated spots, surcharged with blood; and others of a deep red colour, depending on bloodvessels ramifying in an arborescent 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 intestines were fluid, and of a yellowish-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 our therapeutical 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, shreds of lymph, lumps of a sebaceous substance, with 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

presenting 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 dysentery occurs. In general it 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 (p. 200), will suffice. Symptoms of inflammation of the intestine will indicate 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 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, &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 opinions 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 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 it 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 pediluvium, 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; and that it 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 ipecacuanha 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 to it, 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 thus 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 well-boiled, thin 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 the subacute 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: 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.

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: —

℞. 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 (ferracyanuret 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, or 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.

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 variety 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 will be 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.

Although the anatomical lesion characteristic of dysentery, 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 predominate; 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 in order to allay 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 was supposed to have the double action of an emetic and an astringent, and as such 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 reasonings 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 day-light 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 modification of the above views, as far as respects the ipeca-

cuanha practice, Mr. Martin's views (*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 M. 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 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. Macnab, 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."

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.

I ought not to conclude these remarks on the treatment of dysentery without specific allusion to the use of opium in large doses, from an early day, in this disease. 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 about eleven years ago 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 reappearing 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 subacute 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: even this mode of administration is not adapted to every stage of dysentery, but rather 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.

There are cases in which the disease 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 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.

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 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 fruits 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 dysentery, particularly when it is associated with fever.

LECTURE XX.

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 (XII), with directing your attention to this derangement under the head of *Dyspepsia with Gastric Morbid Secretions* (p. 150–2). 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 the first part 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 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 fluids—the second characterised 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 gave 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 peritonitis. Another effect may be the disease now under consideration, and a flux of the mucous membrane of the digestive passages. In supposing 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, as is 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 disorganized, 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 then 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 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 here, 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 treatment, 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, p. 203, 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 disease, 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 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 patients. 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 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 reflexion, 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 in 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 meet 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 both palatable and congenial 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 Tubularis*. 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 phenomena, 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 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 them 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.

In a former Lecture (XIV), when describing, after Dr. Todd, the symptoms of *follicular duodenal dyspepsia*, p. 172–3, I mentioned the quantities of mucus discharged in various morbid states and forms—sometimes 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 also are quite common in dysentery; and in all these circumstances the augury from their appearance, though sometimes, 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 it 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 alter 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 *hydrargy. 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 XXI.

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.—*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.

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 enlargement 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 to singularly 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, extent, and connexions of each viscus and tissue of the digestive canal with other viscera and tissues. 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, and its appropriate and 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 function 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 further 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 than elsewhere: there are, 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 subse-

quent 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 either 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 *Tuphlo-Enteritis*. 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 on the part is made.

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 irritable stomach and ejection of food soon after taking it, accompanied with pain or uneasiness or 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 sensations 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 and 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 antispasmodic is had recourse to, when the real means of relief would consist in relieving an overloaded 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 passages of gallstones, 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 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, less understood still, 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.

I must here supply, in part at least, an omission in my lecture on dyspepsia, among the causes and associated phenomena of what I stated was spinal irritation. But I forgot, when detailing the treatment of dyspepsia, to direct your attention to the fact of gastrodynia, or at least of violent muscular pain of the intercostal and abdominal muscles associated with that of the stomach, being not unfrequently controlled and removed by applications to the spot on, and more commonly one side of, the vertebræ, where tenderness was felt on pressure. A few leeches to this spot, or a small blister kept running for a few days, or where the abdominal pain is less urgent an irritating liniment rubbed in, will often give wonderfully prompt and even occasionally entire relief of all the distressing symptoms.

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 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 full 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 sulphates 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 is 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, or so combined with articles from other classes that their operation will be adequate, but without 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 bedtime, or the following prescription: —

℞. Extract. Colocynth, compos.,
Extract. Hyosciam. āā. ʒss.
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, to purgative medicines. With aloes, or gamboge and blue mass, it makes a convenient combination in the present case. In prescribing this 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 final 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, 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 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. When the stomach is not disordered by their use, stewed fruits, 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 melasses, or drink of melasses 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 antispasmodic like assafœtida, can be added, as in the following: —

℞. Pulv. Aloes,
G. Myrrhæ, āā. ʒss.
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. ʒi.
—— Aloes, ʒss. 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, cold douche on the abdomen, is found to be quite successful in Italy and some other parts of the continent. Violent and prolonged exercise are injurious.

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 intestine, 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 as a means of relief. Exasperated as the com-

plaint 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, as 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, still following 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, and 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 VIII., p. 106–7, 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 prepared 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 motive power of a portion of the cerebro-spinal axes, 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 con-

trolling and modifying the nervous apparatus more particularly disordered, may, it is true, be 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 hominy or grits. After a while, or where 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, one 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 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. XIV., p. 174), 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 membrane 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 XXII.

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.—INFLAMMATION OF THE CÆCUM—Its varieties.—*Stercoral Cæcitis*—Symptoms and treatment.—*Acute Cæcitis.—Inflammation of the peri-cæcal tissue.*—Perforative ulceration of the cæcum and of the appendix vermiformis—Causes—Symptoms—Prognosis—Treatment.—*Chronic inflammation of the cæcum*—Its causes, complications, and cure.

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 relations as well as its 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 where 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."

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 in 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 farther 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 enema 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 ene-

mata, 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 furnish 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 past, 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.

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 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.

Stercoral Inflammation of the Cæcum. — So far 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 be 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 following case 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 were 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."

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. 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, enemata of tobacco, as used for hernia, and as successfully employed by Dr. O'Bierne in dysentery. 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. 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 increased 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.

Until of late years inflammation of the cæcum and its appendix, as a separate disease, has engaged but little attention. Dr. Burne, and Dr. Albers of Bonn, are our chief guides on the subject — the former in an article on the *Inflammation and Perforative Ulceration of the Cæcum and of the Appendix Vermiformis Cæci* in the Medico-Chirurgical Transactions, — the latter on *Inflammations of the Cæcum.** To these, for reference, I may add Dupuytren (*Leçons Orales*), Ferral on *Phlegmonous Tumours in the Right Iliac Region* (Edinb. Med. and Surg. Journ. vol. xxxvi.), American Cyclopedia of Practical Medicine, &c. (Art. *Abdomen* — Abscess of, by Dr. Hays), and M. Grisolles — *Histoire des Tumeurs Phlegmoneuses des Fosses Iliaques* (Arch. Gen., 1839).

Acute Inflammation of the Cæcum begins in the mucous membrane during the progress of dysentery and enteritis; but sometimes it arises idiopathically and unconnected with any other complaint. In the latter set of cases, the inflammation is usually rapid and intense. Its symptoms 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 intestine constitutes the phlegmonous dysentery of authors.

With respect to the pain which accompanies inflammation of the cæcum, it deserves notice that this 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 sympathize 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' knowledge, extended longer than seven days.

* An analysis of this last is contained in the Medico-Chirurgical Review for April, 1840, and from it I draw on this occasion.

Inflammation of the cellular tissue round the cæcum or peri-cæcal tissue — perforative ulceration of the cæcum and of the appendix vermiformis. 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. 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 epigastrium, 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 around 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.

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. 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.* 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 strength of 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 *peri-cæcal* suppurations are most frequent, perhaps it is that of youth."

M. Meniere (*Archiv. Gen. de Med.*, t. xvii., p. 213) supposes that adults and the male sex are most liable to this disease. 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.

Dr. Burne remarks: The peculiarity in the organisation 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 lodgement 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 characterised 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.

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 subacute or chronic form, and require several weeks for its removal, notwithstanding the original exciting cause shall have passed away.

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 subacute, 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, 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 pointing in the right lumbar or inguinal region.

As regards the tumour which occurs in the right iliac fossa, Dr. Burne assigns the following as its causes: — 1. Collection of fecal matter in the cæcum. 2. The presence of any crude undigested substance, of worms, concretions, or other foreign bodies. 3. Inflammation of the cæcum resulting from the irritation of the above. 4. Chronic disease of the cæcum. 5. Abscess from perforative ulceration either of the cæcum or of the appendix.

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.

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 cæcitis may be pretty well inferred from the description 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 bloodvessel 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 preëxisting irritation of this part by hemorrhoids.

"If notwithstanding these measures the peri-cæcal 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.)

Chronic Inflammation of the Cæcum.—This form of cæcal disease is less common as an effect of prior acute inflammation than as primary and of slow and insidious approach, and as being 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 subacute 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 to 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 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 subsequently 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.

LECTURE XXIII.

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 diseases.—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

* In the sixth volume of Dr. Chapman's Medical and Physical Journal, Dr. Beezeley gives an account of a case of *Schirrous Tumour of the Cæcum.*

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 not 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 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 by another or motor set to contraction. 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 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 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, on 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 when they come on in other regions in a more frank and violent manner.

The chief diseases of the rectum are, *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, local, and 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 without 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.

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 by 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 as follows: 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 just 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 pains-taking 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. M. Begin (*Dict. de Med. and 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 are 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. 285, vol. ii.), from a light red to a deep purple, and they often acquire the magnitude of a common almond. 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 Hospit. Rep.*, vol. v., p. 152.) 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 accidental 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.

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. 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 darker 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 retained 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 lodgement 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 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 secre-

tions, 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 is common enough, 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 common; and that 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 hemorrhoidale*, 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 hemorrhoidale*, 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 to 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 may become 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 leucorrhœa from a similar irritation of the vagina and uterus; all of which are tempora-

rily 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, and after fissures the rectum becomes tumid and relaxed, allowing of the ready escape of blood without defecation, and also the partial escape of fecal matter, which is insinuated into the sides of the fissures, or lodged in little sacs remaining after the hemorrhoidal paroxysm, and forming stercoral abscess, or even stercoral fistula.

LECTURE XXIV.

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 stopping 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—External and 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.—*Spasmodic stricture*—*Fissures*—*Carcinoma* of the rectum—Treatment, palliative.—*Neuralgia*—*Preternatural pouches or sacs.*—*Blenorrhagia*—*Pruritus Ani.*

Treatment.—If we bear in mind the pathology of hemorrhoids, and especially of the causes by which the disease is induced, and of the symptoms 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 venesec-

tion, 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 that in 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 either exhaust and bring on anemia, or 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 the 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 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 its 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 enemata 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 fruits, 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 and 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 their professional advisers ought to impress on their minds 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 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 frequency or regularity 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 or 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 contraindications 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. As a substitute for these latter, 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 characterised 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 sul-

phate of zinc respectively. 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, of course, 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 — occasionally discharges of blood with few or no tumours, and these of small size, or tumours commonly indolent but occasionally becoming painful; 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; and, conjointly with their administration, the hygienic means for obviating constipation, already mentioned in treating of colonic dyspepsia, should be sedulously used. They are, fortunately, of such a nature, — vegetables and fruits, — 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. For the turpentine a few spoonfuls of common gruel will suffice. These 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 original 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 of 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 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 antiperiodic, 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 ingredi-

ents 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 or 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, being in hot rooms, seated on soft cushions, 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.

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 looses 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 a 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 advice, 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 turpentine and balsam copaiba 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, as 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 be restricted even in 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.

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. 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 with internal soft piles for twenty-five or thirty years, 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 when 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 in 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 retained 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.

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.

I have enlarged the more on the subject of hemorrhoids, because, 1, it is a common, and a troublesome, and a nasty disease; 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 feces 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 Mr. 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 examina-

tion 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 Mr. 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 Mr. 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 cicatrisation will be promoted by the occasional application of nitrate of silver."

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 apparently 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.*) 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 of the attachments of the rectum to adjoining parts, there is less resistance offered by the intestine to 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. Cyclopedia 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, abscess, 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.

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, alike exempt 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 Mr. 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 hyoscyamus. 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 of 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.

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 a 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 semilunar; 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, Mr. Colles, (*op. cit. Rep.*, vol. v., p. 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, Mr. 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. Mr. 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 Malformations, 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 pas-

sage or lodgement 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.

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*." The disease is more frequent in females than in males. Extreme emaciation and hectic irritation are induced by the prolonged continuance of the disease, which, after attaining a certain height, seems to remain stationary.

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; blue mass with hyosciamus; cicuta; salines to procure semiliquid discharges; iodine with sarsaparilla; arsenical solution, but with great reserve, and watching its effects on the stomach. If not positively contraindicated 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.

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. Mr. Colles (*op. cit.*) does not believe that a perfect cure of organic stricture of the rectum has been effected by any plan of treatment hitherto employed.

Spasmodic Stricture of the Rectum, or, more appropriately, we ought to call it, spasmodic stricture of the *anus*, is usually accompanied with much pain, and fissures and ulcerations between the folds of the anus. 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 perinæum, 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." This morbid state is often associated with hemorrhoids, and not unfrequently results from constipation. 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 *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 as-

cending 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 evacuation 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 produce the most serious effects. The same objections do not apply to their use in ointment, pomade, or suppository. In additionto 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.

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 structure. Of late years a very important addition to our *Armamsenarium Medicaminum* in the treatment of this disease, is 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 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,) have 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, depending on the slow inflammation and condensation of the cellular tissue round the anus, with fissure, 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.

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 a harassing, painful, and seldom curable disease. It may consist either of the schirrous tissue or encephaloid matter. Its chief seat is the subcellular 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 peritoneum, or outwardly, and cause a fistulous opening into the intestine. Occasionally the arteries are destroyed, and hemorrhage follows: the nerves remain 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 mercurials 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 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 it 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 turpentine. 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 surface. 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 alternation or combination; and also occasionally drinks of vegetable dococtions, 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 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 XXV.

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 gene-

ral 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 flatulency: 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 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 digestive 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 the 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 characterised 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, including the saturnine 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 it follows the taking of unripe fruit, crude vegetables, and certain meats: but when the disease 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 period 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 away.

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 palpation of the abdomen, to try and determine the particular part of the intestinal canal which suffers most, and in which there is 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 equalizing 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 of assafœtida, oil of turpentine, and some of the balsams, are indicated. Enemata of a similar nature are sometimes called for, where the distress through 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, and 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 noviciate 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 for 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 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 at this time a collection of symptoms, some of which are indicative of a paroxysm of atonic colonic dyspepsia, others manifesting a state of things very analogous to stercoral inflammation of the cæcum, — described in former lectures (pp. 246, 265). 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 referrible 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 indication of cure in this variety of colic is — 1, to procure the evacuation of the impacted feces; and, 2, to prevent their undue accumulation. But the means are not as simple nor as 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 the 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, and 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 melasses. Much flatus and distention being present, an 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, ℥ii.; 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. XXII., p. 242) and of the treatment of cæcitis (p. 265), 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. You will find in the lecture to which I have just directed your attention, one passage that requires some explana-

tions and qualifying remarks. It is that in which, after recommending leeching of the part, tartar emetic by the mouth and *per anum*, I add, "and finally, if need be, enemata of tobacco, as used for hernia, and as successfully employed by Dr. O'Bierne in dysentery." The question of the propriety of employing tobacco in this disease is too important to be dismissed thus brief. In favour of the practice we have, it is true, 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 effect from a free use of this powerful remedy." Even the cautious and sceptical 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.

Resuming my sketch of the treatment of stercoraceous colic, I have to direct your attention to a state of things of very probable, I may say common, occurrence, not adequately dwelt on by writers or 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 his self or 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 table-spoonful, 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 venesection, 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 began 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 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 running 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 action 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, or 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 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 an external exciting cause, as in the quality of the mother's milk at a particular time in the twenty-four hours, rather than to an internal 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 the feet of the child being carefully covered 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 XXVI.

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 any elaborate account of *bilious colic*, the dangerous character of which entitles it, however, to a careful study. First, as respects the name which, although certainly not a proper pathological one, we can hardly see any harm now in retaining, 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, either by sleeping in the open air or under open windows indoors. 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*.

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 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. In a short time, together with the expression of anxiety and suffering displayed in the face, 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 was 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 stimulating enemata, as of an infusion of senna with salts, castor oil with turpentine and assafœtida, repeated until the bowels are freely evacuated, and at any rate until fecal matter ceases to be discharged. 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; and in place of the laudanum or opium, as before recommended, 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 against 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 tranquilize 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 reëstablished 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 his patient is now clear of disease, and only requires rest and simple farinaceous diet for his restoration, or that he sees before him merly 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, 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 in 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. 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, as indicated at the beginning of these remarks, are 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 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 I, in common with all others whose mode of treating the disease resembles that just described, owe to this 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, to give

strong purgatives when the milder do not operate. This error is, however, redeemed by his subsequent remark; that where, either through 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 demands it, omitting both bleeding and purging, he recommends 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 using much exercise on horseback — a remedy which he extols as very successful in most chronic diseases.

Emetics 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 an emetic, 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 the 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 counterstimulant 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 ab-

dominal 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 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 tranquilized 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 of stimulating liniments or sinapisms to the same part and also to the extremities, and of 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 particularly his feet, against dampness and cold; to avoid all 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.

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 endemial 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 endemial. 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," say 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 innervation 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 are 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 to 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 produces 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 to 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 flatulency; 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 symp-

toms 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 Medicine, &c.*, 2me edition.

The Devonshire colic and that of Poitou need not be described, exhibiting as they do phenomena identical with those just detailed. In connection 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 fruits, 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 others of the 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 bellyache, 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 in other varieties of the disease, both by the mouth and *per anum*. Of the purgative clysters, one of the simplest or 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 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 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 kind of colic now under consideration. Acting on the hint furnished by Hillary in the 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 properly 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 XXVII.

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 lecture before the last, 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 will 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 belly-ache; 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 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, and the disease terminating 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; but often it deviates little from the healthy state. Pain or local disease is not referrible, 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 think, more frequently met with in *cholera infantum* than in any other one disease induced by causes not acting primarily by 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 a not 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 membranous, 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 preëxisting 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 the 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 dissection after death from which 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 had 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 arriving 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 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 portions of intestine, some lines in length, and whose structure was accurately ascertained by dissection, having been found, after their 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, characterise the advanced disease, and indicate the existence of inflammatory action in the invaginated bowel."

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 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 treat-

ment 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 antispasmodic 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, to 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 found 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, that the infusion of senna and salts has had this effect very entirely. Even Epsom salt 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 me. 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 or wine of 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, but which are attended with more risk than the ones already mentioned in ileus, 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 antispasmodic 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 (p. 315), 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 this and some 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 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 and 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 she 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, had he 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 semiconcrete 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 marks of disease, 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 XXVIII.

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 thus, 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 characterised 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 volatilized 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 volatilized, 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 scrutinizing 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 connection 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

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* [Prior to the development of 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 conjunctivæ; 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.)—B.]

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 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 connection 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 of the abdominal aorta are unusually distinct. The pains 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.*

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* [*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 separate. 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.

Arthralgia is, with the exception of colic, the most frequent result of lead poisoning. The liability of workers in lead to contract this affection 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

In the third form, the chief force of the poison seems to be directed against the brain and spinal chord. 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 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 stertorous 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 a case which presented the other

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redness, heat, or 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. p. 510. — (*Brit. and For. Med. Rev.*) —B.]

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, characterised by paralysis of the muscles of animal life.* It is remarkable that this paralysis seems to be principally a paralysis of motion, and that the power of sensation is seldom or never

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* [*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 attack suddenly, and rapidly attains its fullest extent, though occasionally it is preceded by a slight numbness.— (*Bell's Practical Dictionary of Materia Medica*, from *Brit. and For. Med. Rev.*)

It might have been stated, in connection 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 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.]

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 in great agony. Dr. Thomson explains all this in a very satisfactory way. He shows that the solution of 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 drams 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 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 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 produced 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 XXIX.

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 characterised 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 *neuroses*, 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 phenomenæ.

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 intus-susception of the intestines. 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 while 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 characterise 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 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 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

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* [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, to paralysis of the respiratory muscles, or to some accidental complication with disease foreign to those originating from lead. — B.]

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 antispasmodic 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.*

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* [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 in this way, with the addition of cups on the abdomen, calomel, and castor oil and turpentine, with opiates occasionally, there has been no return of the disease for nearly nine years, although the person has been regularly engaged in his trade ever since.

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

After the violent symptoms have been subdued, the next thing you have to consider is, whether there is any paralytic affection, and how this is to be treated. If the disease be severe or of consi-

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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 inconvenience to the digestive organs. In a dose of a drachm and a half to two drachms, the alum arrested the farther 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. 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 have recourse to the purgative plan. The dispute between M. Gendrin and M. Tanquerel was, I find, still continued in the French medical journals in the last year.

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 another. 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

derable 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

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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.]

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 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 reap-

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* [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, paint-

pear 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 Charité*, which has more cases of this disease than any similar institution in 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

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ers 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.]

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 tinfoil, on which the metal is rubbed. Artizans 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 in-

terrupted and indistinct. He was occasionally free from spasms 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 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 improvement 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 XXX.

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 ρεω, I flow; which is, literally, *bile-flux*. Trallianus, again, supposes it to be derived from χολας, intestine, and ρεω; or *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 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, sometimes is 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 matters 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 at first was 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 esophagus; 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 climates, unless it assume 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 observation 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 for 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 the divisions into *bilious*, *flatulent*, and *spas-*

modic, 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 the occurring from a combination of causes produced or measured by particular seasons, it is not uncommon in northern Europe and America, as described by 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.

Seat of the Disease. — The first effects of this irritation are 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 for a short time, is now arrested, and the disease continues to manifest its violence, not owing to excess, nor, it may be said, to deficiency of bile; but 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 those occurring in bilious colic after a subsidence of the disease, as I pointed out to you at the time (p. 321), 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 tissues 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 characterising 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 any attempt to give a hepatic pathology to cholera, by enabling us to point out congested and otherwise morbid conditions of the liver. These are, indeed, met with, 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 in one direction to the stomach, 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 that he met with many instances of it during the prevalence of pernicious intermittents among us. (*Lecture on Cholera Morbus*, Am. Jour. of Med. Sciences, vol. vii. p. 297.)

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 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 of 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 tranquillized. 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 of any kind taken into the stomach, and indeed in all circumstances, 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 liniments, &c., to 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 admirable 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 of 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, is that 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, shall also meet 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 cálomel, 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 the 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 XXXI.

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.—CAUSES. The special cause unknown—Predisposing and modifying causes, in weather and season; low situations; poverty, destitution, and vice of the inhabitants; bad food; watery fruits and vegetables; intoxicating drinks; sudden debility of the nervous system; fear; great and unusual exposure to atmospherical extremes and changes—*Atmosphere 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.

IT WAS reserved for our own time to present a counterpart of those

dreadful pestilences which devastated the world in the latter period of the Roman empire, and afterwards in the middle or barbarous ages of Christendom. Many a reader of history must have felt his amazement at the extent and violence of those visitations abate 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 proofs 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. But, 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, we were reduced to a level with the people of the barbarous ages, we shall soon discover, after a proper comparison, that our arts and sciences, and the social influences of our religion and institutions, have 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 moments in setting forth some data for a comparison of this nature. I shall draw them 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. 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 deadly 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 grave-yard. In Norwich, about the same number perished. In Venice, there died 100,000. In Lubec, 90,000. In Florence, the same number. In the East, is 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 high 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. (See Hecker *on the Black Death.*)

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 fact 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 idle and not over-cleanly monks.

Our motives for introducing here the narrative of the awful plagues in the reign of Justinian, and in the first part of the fourteenth century, are to show our readers that mankind have suffered more on former occasions from the visitations of disease, than, of late years, from the dreaded scourge of cholera; and also, that they may be made aware of 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 90,000 citizens of Florence, nearly 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. Petersburgh also, with nearly 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, we find the cholera to have shown 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 here, 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. Petersburgh 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 was its theatre 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 reappeared 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. 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 since then it has 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.

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 this 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 succession 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 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 Basorrah 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 reappeared 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 a 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 all 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 southwest, 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. Archangel and St. Petersburgh, the first on the White Sea, the second on the Gulf of Finland, were both the seats of the disease in the same month (June), 1831, while Valogda, directly in the line of water or commercial communication, was 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, 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 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' 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 Peninsular. It reached Pekin in about the same time that it attacked Muscat, the former being twice the distance of the latter. 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 Peninsular of India, while it occupied twenty years to compass the globe."

Causes. — 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 cannot hitherto 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 subjection to evident 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 exclusive 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. Petersburgh, 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 ill-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.

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. Petersburgh; 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 a 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 fruits 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 a habitual beverage, they are little short of poison when thus 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 imperiously such an exposure, additional circumspection is to be exercised, in the manner of living, in other respects, and 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 season, 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 unusually 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.

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.*

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 13th 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.

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. Graves is entitled to more conspicuous mention. 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, as 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. Petersburgh, 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, by 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 communica-

tion. 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. 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 for very irregular conduct, for which they had been censured. 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 region of 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 generally 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 seaman'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 the 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.

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. 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.

Dr. Holland (*Medical Notes and Reflections*) has suggested another cause, viz., the generation of insect swarms, which, in their migration, gave the course of cholera. 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 reappearance 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 "that man, the peculiar recipient of this cause of disease, is also the principal agent in its diffusion."

LECTURE XXXII.

DR. BELL.

SYMPTOMS—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; 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—Analogy between cholera and pernicious or malignant intermittents—Torti cited—The lecturer's case of comatose intermittent—Urea in the blood, an alleged cause of the consecutive fever.—PROGNOSIS—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.

SYMPTOMS. — I shall speak of these under the heads 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.

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 rather to present 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. Faintness 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 cæliac 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 the 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, jactation, 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 a dead substance. *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 in-

stantly 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 had 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 in 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 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 state of 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 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 seems unquestionably 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 term 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 cho-

lera. 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 according as 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. These 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 discharge have set in.

In a great majority of the reports of the 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 consistency 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. 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 and consistence 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 precisely 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 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

* "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 obsreved. For about three weeks the child was in a state of incoherence."

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 congestions, 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, 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.

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 the Salpetrière 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 further corroborated in the following extracts from two letters published by Dr. Negri, an intelligent Italian physician, residing in London. They go to show the great resemblance, if not identity, between the malignant cholera and the pernicious fevers, described by Torti, more than 120 years ago.

"Speaking of the character of those fevers, Torti says, 'the pernicious intermittent, more especially that wearing the tertian form,

kills about the beginning of the paroxysm, when it is accompanied with violent bilious vomiting and purging of bilious humours, equally vicious both in quality and quantity, being sometimes clear, at others coloured, and occasionally of inspissated greenish bile; to which vomiting and purging are added, hiccup, a hoarse, sonorous voice, hollowness of the eyes, pain of stomach, small sweat upon the forehead, weak pulse, and cold or livid extremities: in one word, all the symptoms which usually mark *cholera morbus;* from which, however, this, as it were, *choleric affection*, is to be distinguished; since it is a *mere symptom* of the fever, the period of which it follows, *as a shadow does a body.*'"

Torti describes a "*febris perniciosa cholerica*," in which the patient becomes nearly exhausted, "universally chilled, lies supine, with a pulse almost abolished, sunken eyes, and difficult breathing." Dr. Negri also quotes from Mercatus, physician to the King of Spain, who describes a pernicious tertian, presenting the same symptoms as cholera, and frequently lapsing into a pernicious fever. The following passage from Morton, quoted by Dr. Negri, is also to the point.

"Among the innumerable symptoms attending these fevers there is none which may not rise to a great height, endangering the life of the patient, so that *typhus fever* (marked in its stages, of cold, heat, and sweating) supervenes, rendering it impossible to be distinguished by the *urine, temperature, pulse*, or indeed any other means; but, concealed under the appearance of cold, vomiting, diarrhœa, *cholera morbus*, colic, or other disease, not unfrequently misleading the physician."

Torti, as well as Morton, exhibited bark as early as possible, and in large quantities; and this practice is recommended by Dr. Negri, from experience of its good effects in the paludal fevers of Italy. Dr. Negri comes to the conclusion "that the *malignant cholera of our days* belongs to the same class of diseases which was seen by Mercatus in Spain, Torti in Italy, and Morton in England." He suggests the administration of bark in large doses and early in the disease.

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. I can recall, he continues, many instances of malignant yellow fever, and of the malignant typhus which formerly prevailed as an epidemic in our Alms-house, presenting symptoms approaching very closely to those characteristic of the period of cholera. So strongly was I struck with this resemblance, when I, for the first time, saw this disease, on entering the cholera shed in Montreal, that I exclaimed to my associates — this is the typhus of our Irish emigrants in the Alms-house. In yellow fever I have repeatedly witnessed the patient in possession of his senses, pulseless, the entire surface cold, and bathed in cold perspiration; the hands and feet shrivelled and sodden; the stomach highly irritable; vomiting frequent, and dejections copious. The discharges are, however, entirely different. In cholera, the serous and watery fluids are effused and discharged; in yellow fever it is the colouring matter and the globules of the blood, forming the black vomit and melænic stools. The result is the same—prostration and exhaustion of the circulating forces, absence of pulse, and failure of the vital functions, attended with nearly similar symptoms."

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 (*op. cit.*) : —

Age.	Deaths.	Ratio to population.	Age.	Deaths.	Ratio to population.
under 1 year	4	1 in 604	between 40 & 50	159	1 in 46
between 1 & 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 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. 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 was much greater among women than men in England; but the entire results do not manifest such a disproportion. In Philadelphia the proportion was, according to Dr. Jackson (*op. cit.*), 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 parts 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*, p. 81, 86, 90–1.) 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, adds (*Climate of the United States and Its Endemic Influences*): — "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, counting for something. In and around Paris the proportion of cases of disease among the military was 25.66, while that among the inhabitants generally was 22.75 *per cent.* In India it was observed that the disease was more fatal to the Bramins than to Rajpoots; to Rajpoots than to the lower castes; and to Mussulmen 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 in the former was 338, in the latter 1927. The ratio of coloured people to the white population is 1 to 14⁷; that of cases of the coloured people to the white number of cases, 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, as one to one and a half. 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.

Though not a comparison between different races, 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 admissions 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 mor-

bid 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 marks of general restlessness and tossing of the head. After these follow often all the symptom 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.

"The period of convalescence from the severer forms of cholera has been usually protracted, and several weeks have elapsed before the patient has regained his usual health: but as the subjects of the disease have, in the great majority of cases, been persons with broken-down constitutions, the tardiness of recovery cannot fairly be attributed to any peculiarity in the malady distinguishing it from others of equal constitutional disturbance; digestion continues imperfect: the bowels are liable to be disordered from slight errors in diet: and, in some instances, chronic diarrhœa of great obstinacy has supervened. In fact, great caution is requisite to prevent a return of the original disease.

"When the patient dies with these symptoms, it is generally within from two to six days from the commencement of the attack.

"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 lodging 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. Casimir Perrier, the prime-minister and favourite of Louis Philippe, died from this disease. 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 onset of the worst symptoms indicates speedy death; such as excessive coldness of the body, blue skin or cyanosis, and 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 deli-

rium 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 fonnd insensible."

Post Mortem Appearances. — These were of two kinds: — 1, the adventitious or occasional, though common; 2, the peculiar, and, in a great measure, universal. 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. A singular and, to the inexperienced, a terrific trait, witnessed in some of the bodies after death, was automatic muscular movement. 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. Dr. Griffin relates a case of a man who died in collapse, and over whose face a blanket as usual was thrown until the body should be removed to the dead-house. Some time elapsed before this was thought necessary, when the surgeon in attendance observed the blanket stirring. He and the nurses, now watching the result, "saw the blanket gradually lifted, and the hand of the man moving with a tremulous motion, until it rested above the head. Soon after, the leg at the same side was lifted up with the same quivering movement, and slowly crossed over the other, and subsequently it was brought back again. The surgeon after this took the hand that was laid above the head, and placed it on the breast where it was before; but it was once more lifted up, and deposited above the head. There was little or no movement afterwards. The body showed no other sign of vitality all this time, and was in fact perfectly dead." None of the faces, as this writer had just before remarked, have the calmness observable in a short time after death by ordinary disease, but each exhibits some peculiar expression of the pestilence, or of the

agony with which it closed. "One, with pale and dragged features, looks as if he died after a violent struggle in some bloody combat; another has a quieter yet painful expression, as if the hand of the assassin had laid him suddenly low; a third seems to have sunk under some painful and protracted illness; a fourth, resting against the wall in a corner, stares at you with glistening eyes, as if an insane consciousness lit up life again, and he was angered at your scrutiny." This last, in the experience of Dr. Griffin, is the expression of the features of drunkards, "which usually remained very much the same as it was before death; the eyes continued open and glistening, and the body maintained the position it had been lying in, however different from that in the last moments of existence."

Another phenomenon, not more unexpected than the one just narrated, is the sudden increase of the temperature of the body after death, particularly if this event occurred in the stage of collapse. In one instance the temperature of the body two hours after death was noted at 105° F. (*London Lancet*, 1832.) Commonly this extra heat is lost when cadaveric rigidity comes on.

I may mention, in this place, that which would have come in more appropriately when inquiring into the question of the contagiousness of cholera, viz., that dissections of subjects dead of the disease were, I believe, 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*, p. 345.)

Internally the adventitious or occasional alterations in the viscera are, as noticed in India, engorgement of the lungs, or an excessive collapse of these organs, so as to leave the cavity of the thorax nearly empty; congestion, or a lacerable state of the liver; gall-bladder filled with viscid, pitchy bile, or nearly empty, and gall duct impermeable; mucous membrane of the bladder and uterus coated with a whitish coloured fluid. In the head, appearances of congestion, and even of extravasation, were frequently observed. Under this division of appearances may be ranked collapse or spastic constriction, and at other times distention into bags or pouches of the intestinal tube. The stomach was frequently thickened and contracted, and the small intestines full of hard knots, from one portion being forced into another. In many, particularly of such as died early, the stomach and intestinal canal were found

full of muddy fluid, without the slightest marks of inflammation. In others, the vessels of their inner coats were turgid, sometimes highly inflamed, ulcerated, and gangrened; these appearances were more common in the bowels than in the stomach.

A quite common, but yet not an essential appearance, is the intestinal canal being full of a muddy fluid, and its inner surface lined with a clayey substance of the same nature. The quantity of this earthy-looking stuff was sometimes so large as in a manner to plaster the villous coat, and to leave a thick sediment on passing through the sheet in which the body was wrapped. A soft and pulpy state of the mucous membrane was often seen after this matter was removed.

In Russia, or at least in Moscow, the following appearances were noted by Dr. Keir, in those dead of cholera. The extremities in general were more or less hard and contracted, and the skin of the hands and feet corrugated; the features sunk and ghastly. The bloodvessels of the brain, as well as of its membranes, were more or less turgid, especially towards its base. Fluid was found effused between the convolutions of the brain and in the ventricles. The bloodvessels of the vertebral column and spinal marrow were more or less loaded with blood, which was sometimes effused between its arachnoid and pia mater; partial softening of the substance of the chord was sometimes met with, and marks of inflammatory congestion in the larger nerves. The lungs were generally gorged with blood. The stomach and intestines were frequently found to be contracted to a considerable degree, but in limited extent. A whitish or yellow fluid matter, resembling the evacuations, was frequently found in different parts of the alimentary canal. In some cases, both stomach and intestines bore marks of congestion, and of a sub-inflammatory state, varying from dark coloured spots, of small extent, to several inches, affecting the whole internal circumference of the intestine; the colour of these parts varied considerably, from dark coloured venous congestion, to light coloured, rose coloured inflammation. The liver was generally pretty full of dark coloured blood; the gall-bladder frequently much distended with tenacious, ropy bile, of a dark yellow or green colour; the gall-ducts sometimes contracted, at others not.

In Poland, M. Brierre de Boismont reports that subjects of cholera exhibited after death a thick, pale, yellowish-white mucus, and whiter colour in the lower than the upper part of the intestinal canal, and frequently conjoined with a watery, serous-like fluid, containing small white flakes diffused through it. The same matter was seen in the esophagus, the bladder, and, sometimes, also the bronchial tubes. Occasionally none could be found, which was the case when the patient died very quickly, or in a few instances where signs of violent inflammation were found in the internal membrane of the alimentary canal. The stomach, at times, contained a black matter like altered blood. This organ usually presented patches and lines of a livid-red tint, and the villous coat was

red and easily detachable. The outer coat of the intestine was of a rosy colour, and its inner coat presented partial injection — patches of redness, sometimes dark, and almost of a gangrenous appearance — enlargement of the mucous crypts — and a peculiar doughiness when handled. The spleen was often congested. The gall-bladder filled with dark bile, but the liver was commonly in a healthy state.

The lungs were sometimes much gorged, sometimes very little. The vessels within the head were usually much gorged, the brain sometimes soft, and, often, natural, and its cavities distended with a little serosity. In the spinal canal it was usual to find watery or gelatinous effusion, or extravasation of blood, and still more generally great congestion of vessels, both of the membrane and of the chord itself.

In France, where the zeal and ability manifested in the pursuit of morbid anatomy are so conspicuous, we may expect to find greater minuteness in the specification of organic changes, although there was probably not a single new feature in the disease itself, nor of anatomical lesion different from those that were actually present elsewhere. The peritoneum was found to be quite dry, and in general the serous membranes were in the same state, and with little or no serous effusions in their cavities. But a gluey matter has been sometimes discovered, particularly in the peritoneum, which it covers with a fine layer, so minute as not to be readily seen, until we gradually separate two portions or folds of intestine which were previously in contact. We then see this matter stretched out in the shape of fine filaments. Externally, the digestive tube was observed to be very much injected, and of a rose or violet tint. The surface of the mucous membrane, particularly of the small intestines, was deeply injected with various ramifications and arborizations. Dilatation and contraction in several parts of the intestinal canal and intus-susceptions were met with, as they had been so commonly in India. A turbid fluid, similar to that discharged by vomiting and stool, was found in the digestive cavity. In the stomach, besides this fluid, there was usually a considerable quantity of glairy mucus, more or less adherent to the membrane; and sometimes, in place of it, a creamy matter, similar to that which lined the small intestines. This last is adherent, and resembles, when scraped off by a scalpel, grains of rice burst in boiling; another more fluid portion, consisting of a muddy serum, like whey not strained, or a mixture of a decoction of rice. A reddish fluid has also, like the grains of rice, been noticed by some French writers as common in the intestines, both large and small, of a dark red, or verging very often to a chocolate colour.

The lungs were often flaccid and collapsed, and sometimes congested at their posterior part. Any lesions in the liver, spleen, and pancreas, may be regarded as accidental. The kidneys were noticed to be usually injected with black blood; but unaltered in

their tissue. The pelves and ureters were empty; but a creamy, viscid matter could be squeezed from their *tubuli uniriferi.*

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 some, 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.

In Great Britain, the visceral alterations were analogous to those already detailed — contractions of the stomach and bowels; these organs, often injected and inflamed in patches, and the mucous membrane, even when white, was softer than natural; their fluid contents same as before-mentioned. As had been noticed elsewhere, the mucous membrane of the intestines was more vascular, and often minutely injected as if with size and vermilion. The lungs were frequently much engorged, and in six or seven out of twenty-four cases examined by Dr. Craigie at Edinburgh, he found calcareous concretions in the lungs, and generally could trace them to branches of veins. He also relates, that a doughy state of the centre of the lungs was often found in the bodies of those cut off by cholera. This lesion, in connexion with bronchial induration, explains, he thinks, the difficult and oppressed respiration which precedes the fatal event. The brain was sound in consistence and colour, but when divided it presented numerous circular apertures of considerable size, and transverse fissures, which freely effused generally a dark coloured blood. The part most conspicuous for these sanguiferous apertures and fissures was, as in other cases, the *corpus striatum* and the anterior part of the optic thalamus in each hemisphere. (*Edinburgh Med. and Surg. Journal*, January, 1833.) Next to the brain and lungs, Dr. Craigie tells us, the kidneys partook most of the general distention of the vascular system. "The external cortical or granular substance was always much darker than natural, and, not only when divided, effused blood from circular apertures and linear fissures, proceeding from the outer to the inner margin, but at the latter, where it unites with the tubular part, presented numerous large vessels emitting dark coloured, semifluid blood. The tubular or internal cones were also much darker in colour than natural; and only when well washed or macerated acquired their usual tint and appearance. The papillæ, when pressed, emitted always a small quantity of a milky, dirty-looking, opaque fluid, which appeared to be albuminous urine. This fluid, however, I have expressed from the renal papillæ of persons dead of other diseases." In another part of his paper, Dr. Craigie observes, that the organs most frequently and remarkably diseased in both sexes and at all ages, were the kidneys. In these are witnessed every gradation and variety almost of the morbid

changes delineated by Dr. Bright. Similar observations were made by Dr. Mackintosh (*op. cit.*).

In the United States the *post mortem* observations in cholera were the same as those made elsewhere; and I am not aware of any new feature in the occasional organic changes having been noticed. Of the peculiar and distinctive it is different, as I shall soon have occasion to mention. Respecting the appearances already described, they must be regarded as chiefly indicative of, or effects caused by, the early period of cholera, and death in a state of collapse. Most of them are referrible to the disorder of the circulation, by which the venous system becomes singularly full and congested, and the arterial always uniformly empty, and, as it were, collapsed. That this venous congestion or accumulation of blood in the veins of the organs exerted little influence in deranging function or in causing the disease, we are allowed to infer from the little deviation from the healthy state of the cerebral functions, although the brain and its membranes exhibited the same venous accumulations as the other organs. There must have been a change in the vitality of the economy, anterior to that in the vascular system or in the blood itself, a removal of which was followed promptly by a return of this system and its contained fluid to health.

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 charaeter of typhous or remittent fever, so did the state of the organs correspond with that observed in these diseases.

To my designating certain appearances of organic alterations as adventitious in occurrence, it may be objected, that alterations of the gastro-intestinal mucous tissue are recorded as present in cholera subjects in all countries in which it appeared, and that they ought to be regarded as essential and fixed features. But this is not so; for, although common, as I have admitted them to be, they were not of universal and constant occurrence. Mr. Scott tells us, that in some cases the whole intestinal tube presented a blanched appearance, both internally and externally; and, again, that the duodenum and jejunum were often perfectly healthy. Sanguineous congestion and even active inflammation are stated to have been more common in the bowels than in the stomach; but, on the other hand, instances were very numerous where no such indications were detected. Mr. Corbyn (*A Treatise on the Epidemic Cholera*, &c.), in recapitulating the morbid appearances found in cholera subjects in India, says, that slight traces of inflammation were

occasionally observed in the alimentary canal; but, in most instances, no mark of increased vascular action was perceptible. At Moscow, both the stomach and bowels were frequently of a paler colour than natural, as well internally as externally; but neither thickening nor condensation from inflammation, nor ulceration, destruction of substance, nor abscess, was present in any of the dissections witnessed by Dr. Keir. But it is not necessary for me to adduce additional specifications of a fact everywhere admitted; viz., that in many instances there was no trace of inflammation of the gastro-intestinal mucous membrane, and even where it had a deep suffusion, commonly in patches, this was the result of venous congestion, which, like that in the other organs, furnished no great, certainly no fatal, impediment to the discharge of function.

LECTURE XXXIII.

DR. BELL.

Post Mortem Appearances in subjects dead of cholera—The occasional yet common ones mentioned in the last lecture—*Peculiar and distinctive ones*—Change in the blood—emptiness and contraction of the bladder—whitish fluid in the intestines—exudation on intestinal mucous surface—development and other changes in the follicular glands—*psorenterie*—Dr. Horner's observations—a vesicular eruption on the entire surface of the digestive tube—exfoliation of epidermic and venous lining of the tube—Great number of the gastro-intestinal mucous follicles—*Changes in the fluids*,—in the blood,—in the secretions from the bowels—Special pathology of cholera—Analogy to poisoning—Two orders of functions affected—Experiments by injection of poisons into the veins—Dr. Namias's experiments with cholera blood—Organs and tissues simultaneously affected—respiratory, digestive mucous, and cutaneous—*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.

Having in my last lecture described the occasional, and in some respects, common *post mortem* appearances of the organs in subjects dead of cholera, I now proceed to place before you the *distinctive*, and as one must say, *essential organic features* of the disease.

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 blood vessels, and is not 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.

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., p. 151-2).

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 as 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 as the exudation on the pleura and peritoneum or effusion into the cavity of the chest and abdomen do in pleurisy and peritonitis. 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.

As we have seen that there is nothing pathognomonic in the injective appearances, or occasional and even frequent congestion and inflammation of the intestinal tube, we must prosecute our inquiries farther, and endeavour to ascertain whether there is not a more uniform organic change in some other system than the vascular. Let us, therefore, see what the amount of evidence is, tending to show a uniform lesion in the glands of the intestines. If I adduce the testimony only of those who have made their observations on cholera subjects in Europe and the United States, it must not be inferred, that the organic changes about to be described were confined to these regions; but, that the inspection of the tissues was made with more care, and with more minute anatomical knowledge on the part of those who have recorded their observations. A very frequent alteration in the digestive canal, says M. Andral (*op. cit.*), is

that which consists in a development of the glands of Brunner. This alteration is not always of the same nature. Sometimes it consists of an eruption of small miliary vesicles, white and semi-transparent, which are spread over the whole mucous membrane of the small intestines. These vesicles are extremely numerous, and appear to be filled with a liquid. At other times we meet with true patches, having a dark and depressed centre; and seemingly filled with dense matter. On some occasions, in fine, we meet with true ulcerated patches, a change chiefly observable when the cholera has reached the period of reaction, and assumes the typhoid form. Venous congestion and follicular eruption; these, in the opinion of M. Andral, are the sole changes in the digestive canal, which, in all other respects, preserves its common properties. Is the mammelated appearance of the mucous membrane of the stomach, noticed by MM. Louis, Andral, and others, and its effacement by pressure, with the discharge of a white opaque fluid, connected with a morbid state of the muciparous glands of this organ? MM. Serres and Bouillaud have also observed the multitude of white or slightly grayish granulations, with a hemispherical projection, disseminated over the mucous surface of the stomach and small intestines. The follicles of Brunner, in fact, distended by a white turbid fluid, are three times their natural size. M. Serres says, that they are so numerous and developed in the small intestines, that the whole mucous membrane seems as if made up by them; their number decreases towards the large intestines. M. Bouillaud remarks, that it is not uncommon to meet, at the same time, with a similar lesion on the clustered follicles or patches of Peyer; and, after speaking of the extent of "this hypertrophy, this species of erection of the follicles of the mucous membrane of the digestive tube," he adds, "this gastro-intestinal eruption, sometimes distinct, at others confluent, imitates, to a certain extent, the variolous eruption in its first stage." He repeats the calculation of M. Lebut. by which the whole number of follicles in the alimentary mucous membrane is estimated to be forty-two thousand. (*Am. Journ., ut supra.*) So far from our accusing M. Lebut of exaggeration, we shall soon see that, in his estimate, he falls far short of the reality. MM. Serres and Nonat believe the eruption to be tumefied papillæ, and designate it by the term *psorenterie*. They found it to occupy one-half or two-thirds of the intestinal canal, beginning at the end of the ileum, where it is always larger and more confluent. Once they saw it as high up as the duodenum, the free margin of the *valvulæ conniventes* of which it had reached. Of the like tenor are the observations of Dr. Mackintosh (*op cit.*), as when he says, "The mucous follicles were generally enlarged, and Peyer's patches, so rarely seen in adult age, were seldom wanting; they were large, elevated, soft, and spongy, and sometimes slightly ulcerated." Dr. Craigie (*op. cit.*), found that the agminated glands were always rather distinct, sometimes elevated or injected, or red-

dened; and the isolated glands were also perceptible in the shape of miliary granules of the size of pin-heads.

Doctor Wm. E. Horner, 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*, Doctor 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."

The proof of the soundness of these views must depend primarily on the correctness of the demonstrations of healthy structure made and described by the author. Into the details of this subject I cannot be expected to engage just now: but some of the chief points indicated by Dr. Horner may be briefly stated. He tells us, that "the mucous coat of the alimentary canal, in a healthy state and successfully injected, appears to consist almost entirely of a cribriform intertexture of veins; these veins being commonly empty at death, present themselves as a soft, spongy texture, which gives rise to the ordinary description of its sensible condition as a velvety layer." Beneath this interlacement of veins, is the arborization of arterial and venous capillaries. The meshes of the first "*superficial venous layer*" are exceedingly minute and vary, in a characteristic manner, in the stomach, small intestines, and colon. The epidermis is also demonstrated, by Dr. Horner, to line the intestines and to cover the superficial venous layer; and it forms, as I infer from his rather circuitous description, by its folds, the villi of the small intestines; "none exist either in the stomach or colon, for these we have only the venous mesh." In cholera, it is the exfoliation of this epidermic and venous lining which constitutes one of the important organic changes in this disease, and which itself gives rise to important functional derangement.

The follicles of the stomach and intestinal canal are estimated, by Dr. Horner, from data which he places before the reader, to amount to no less a number than *forty-six millions, eight hundred and ninety-six thousand*, of which the stomach possesses about

a million and three hundred thousand, and the colon nine millions six hundred thousand. Within the circuit of every anastomosis of veins a follicle is formed. The follicles appear "like puncta lachrymalia disseminated by thousands over every square inch." The surface on which this vascular and follicular structure is spread presents, "in the aggregate, an area of about thirteen square feet, the size of a small breakfast-table, whose morbid derangements constitute the essential features of cholera." Dr. Horner thinks, that the anatomy of the muciparous system requires more exact attention than it has hitherto received, in order that we may be able to distinguish between that part which is really glandular, and the foramina or follicles now under consideration. These latter, he is disposed to believe, are absorbent rather than secreting bodies. The secreting process is performed by the glandular bodies proper, viz., the glands of Brunner, or *glandulæ solitanæ*, scattered over the mucous membrane of the small intestines, viz., the duodenum, at all ages, and in the continuous intestine down to the ileo-cæcal valve, particularly in infancy; and the glands of Peyer, or the *glandulæ agminatæ*, situated in the length of the ileum, and constituting about thirty groups or patches.

Dr. Horner's observations led him to a conclusion stated at the outset of this summary of his views; and which, as he tells us, had been reached before by Corbyn in India, and Girardin and Gaimard in Russia; viz., that the existence of a layer of coagulable lymph on the surface of the digestive canal is diagnostic in cholera. They add, that this layer is sometimes traversed by very fine capillary vessels, which are remarked principally at the points that adhere the most strongly to the membrane of the intestine. The inspissated layer, more or less adherent to the intestinal mucous surface, and described commonly by writers on cholera as mucus, is intimated by Dr. Horner to be more likely of the nature of coagulable lymph. I have already adverted to their probable mistake.

The last anatomical character of cholera, as stated by Dr. Horner, is a *copious vesicular eruption*, entirely distinct from the tumefaction of villi, muciparous glands or follicles, and pervading the whole canal. The form of this eruption is that of a spherical vesicle, commonly from one-eightieth to one-hundredth of an inch in diameter, with parietes transparent and empty in a dried state. "This vesicle," says Dr. Horner, "lies upon the surface of what I have designated the superficial venous layer of the digestive canal, perfectly distinct from the follicles; that is to say, having for its base the venous portion between the follicles." The vesicles are chiefly seen at the base of the *valvulæ conniventes*, and are there closely disseminated, with scarcely an interval between them; but they decrease in frequency towards the summit of the *valvulæ*.

I have already spoken of vesicular eruption (*psorenterie*) in 1832, by M. Serres and Nonat. By some pathologists in the north of Europe it has been supposed to consist of tubercular granula-

tions, connected with the lymphatic system, as they are easily filled from it, but not from the bloodvessels. 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 intestine, 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.

No apology need be offered for details of the minute morbid anatomy of the venous, glandular and follicular structure of the intestines, as presented to us in the interesting observations of Dr. Horner; since the knowledge thus developed is of that definite and precise kind which is alone calculated to throw light on this part of the pathology of cholera.

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 was not, however, successful. Dr. Hermann of Moscow, who made a number of experiments by analysing the fluids of cholera subjects, was led to the inference that the blood contained acetic acid, and that the liquid state of the former was owing to this acid, which dissolved the albumen and fibrin. The viscous and thickened state of the blood in cholera he attributed to the loss of this acid by its discharge in the secreted substances which were rejected by vomiting and purging. Under this idea of the cause of the thickening of the blood, he recommended the injection of warm water into the veins and abstinence from bleeding. But it was soon ascertained that there was no acetic acid either in the blood of the healthy or the cholera subject; and that the ejected matters are commonly alkaline and not acid.

Subsequent experiments made by Dr. Foy at Warsaw, MM. Rose and Wittflok at Berlin, Dr. O'Shaugnessy 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.

The blood of cholera patients is dark or black, 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'Shaugnessy found that there were 133 in place of 78 parts, the healthy standard in 1000 parts. Urea was detected in the blood of some cholera pa-

tients 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 ephthelium of the mucous membrane of the intestines.

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, 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 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 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 the cholera poison produces the group of symptoms indicative of the disorder of functions already detailed, we may cite the histories of the effects of injection of poisonous substances into the veins, as furnished in the experiments of MM. 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's 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, 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.)

After having passed in review an enumeration of the symptoms of cholera and the structural lesions which have been noticed in the subjects dead of it, are we able to define the nature of the disease as to its causation, and the philosophy of its treatment? As yet the reply must be in the negative. Too partial are the views that would refer it to a kind of asphyxia — poisoning of the blood, and suspended respiration; or to gastro-enteritis, follicular inflammation, and plastic or lymphatic exudation; or to a poisonous impression on the nervous system. The error here is in assuming a part, or concurrent symptom or lesion, for the entire disease. The most plausible hypothesis is, that a subtle and imponderable poison in the atmosphere, becoming more active in particular localities and in certain individuals, and finding entrance into the system, but whether by absorption into the blood of the lungs, or by primary impression on the nerves, we cannot say, deranges all the organic functions, and the greater number of the animal ones. We are told that the primary affection, that on the continuance and exasperation of which all the other forms of disease depend, is gastro-intestinal irritation and inflammation; and often both these states. In confirmation of this idea we are told that the great and peculiar changes in the blood only ensue on the discharges from the stomach and bowels. But such an argument is not very profound; for there must have been a morbid cause at work in the digestive canal to bring about the discharges; and, although the disease becomes undoubtedly more alarming and complicated by them, yet it is just as reasonable to suppose that this antecedent cause, operating on the stomach and bowels, should also operate on the lungs and heart, and on the nervous system common to all these viscera. The fact of violent inflammation, even of the gastro-intestinal mucous surface, found in many cases of undoubted poisoning, is not proof that the material cause was applied to it, or that the series of morbid phenomena began in it; for they have been seen in cases in which the poison was introduced by other channels than the stomach, or by respiring it in a state of vapour, or applying it to a denuded skin. Sometimes the person is killed by the poison without any phlogosis of the stomach or bowels having supervened, — the fatal shock may have been given to the heart or nervous system, as has happened in the instance of arsenic being introduced into the economy. So, also, it has been noticed, during the violence of cholera, that persons have died in a state of collapse, without having had any evacuation either upwards or downwards. If we were to compare cholera to some eruptive fevers caused by specific poisons, we should find many points of resemblance also, and the analogies would be adverse to an attempt at locating the disease on one organ or tissue, and at regarding the lesion of this latter as the primary or sustaining

organic cause. In scarlatina we may assign the throat, in measles the respiratory mucous, and in small-pox the digestive mucous surface, as the parts, the inflammation of which, respectively, gives rise to the chief phenomena of the disease, and in which, after death, are found the most manifest lesions. But we cannot be ignorant that death sometimes takes place after the introduction and working of any one of these poisons in the animal economy, anterior to the coming on of phlogosis, or even to the development of the characteristic eruption on the skin. A person may die in collapse from scarlatina, or from measles, or from small-pox — without phlogosis of any organ or tissue; he may die from the intensity of phlogosis in a more advanced stage, or he may die from secondary fever after all the organic lesions have been removed.

Whether we study the operation of the probable causes of the disease and the parts primarily impressed, or of the means of cure, we must, it seems to me, direct our attention, in the first instance, to the three great surfaces, viz., the *respiratory*, the *digestive mucous*, and the *cutaneous*, which, both in their organic and functional changes, play so important a part in cholera. Derangement of any one of these will produce much corresponding disorder in the others, and thence in the whole system. How great and alarming, then, must be the disease which follows the operation of morbid causes acting on all three, as when the cholera poison is inspired with the air, and disturbs the economy through the respiratory mucous membrane, while the sedative influence of cold and moisture following heat, is manifested on the skin, and the irritation of unwholesome ingesta — bad food and intoxicating drinks — are at work on the digestive mucous membrane. Each one of these morbid causes is competent to disturb both classes of function — those of nutrition and those of sensibility; for even if we were to admit that a poison had once penetrated into the blood, and become mixed with it so that its vitality was impaired, we cannot but see that the nervous system must suffer almost at the same moment. It does so under the influence of the obvious and material causes already mentioned, which derange the functions of the skin and digestive mucous membrane, as we see in the pain, and cramps, and spasms, which accompany bilious colic and sporadic cholera. But how much more impressible, by morbid causes affecting it from the three great surfaces, must the nervous system be, or rather how little prepared to resist the shock of these causes, if it have been previously weakened by prolonged excitement of habits of intoxication, or the deficiency of food; and that less thought of, but not the less real cause of nervous disorder, want of personal cleanliness, and habitually impure skin in consequence. But I cannot farther enlarge on these points now, nor even repeat what I have before said on the subject, in the volume already referred to, (*All the Material Facts*, &c.,) but must pass to a notice of the chief means of cure which were had recourse to during the prevalence of the cholera epidemics in different countries.

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 scepticism on learning that, without medical treatment, the vast majority of those attacked with cholera die, and that if medical means were 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 7,450: 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, 23⅓ *per cent.* of the troops were attacked, and that of these 22¾ *per cent.* were carried off, or 5¼ *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.

The number attacked in Moscow, from September, 1830, to January of the following year, was 8130, or 54 *per cent.* 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 Cossacks, as two to three. In Jassy (Maldavia) the deaths were more than 6000 in a population of 27,000. In the summer of 1831 the mortality at St. Petersburgh, Riga, Mittau, Limberg, and Brody, according to the Berlin Gazette, was about one-half, while at Dantzic, Elbing, and Posen, it was about two-thirds of the whole number attacked. (*Doctor Robert Williams, op. cit.*) In Archangel the deaths were 1200 in a population of 19,000. In Dantzic 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, by a rigid system of quarantine, 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. On 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 estimate mortality among the sick of cholera was 58.6 *per cent.* 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 2,151 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 reappeared, 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.

LECTURE XXXIV.

DR. BELL.

TREATMENT OF CHOLERA.—Study previously of its mortality, and comparison with that in other diseases—Almost certainty of death, unless medicine be given—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.

NOTWITHSTANDING all the array of statistics of cholera, we are not in possession of the requisite data, on 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 periods of the epidemic, and of its proportionate mildness or malignancy at these times. In another important particular there has also been great want of uniformity in the hospital and other returns of cases and deaths of cholera; the period of collapse, for instance, conveying different ideas to different writers, in describing it, and the means employed for its

removal. 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; and which, under similar circumstances of violence of assault, most generally yield despite 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 class of the community was less liable to an attack of cholera, yet, if once they did sicken, they were more apt to die than others less favourably situated. 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 deaths in some of them. "In typhus 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 confluent 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 1¼. Even in 'remittent fever' the proportionate mortality to the cases treated, was 1 in 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. 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 construction 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, viz., 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, placing 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 chance 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 specify, in succession, the remedies which were employed for the cure of cholera, I ought to state that a sedative and evacuating course is much more entitled to our confidence than a stimulating one. 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 pneumonitic 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 often 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 blood-vessel system, diminished activity in one system only or region augments irritation and danger from accumulated action in another. The skin, it is true, seems to be deficient in nervous power as do the lungs; the former being cold, the latter not performing its customary depuration of carbonic acid. But these and other phenomenon 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.*, 118). I had just before summed up the reasons for disbelieving that the series of symptoms in cholera manifested a simple deficiency of innervation or the operation of a sedative poison.

"1. The brain, the grand centre of nervous power, retains its energy: its peculiar functions in the display of the faculties of the mind are, often not at all, [or slightly] impaired.

"2. The spinal marrow, measured in its functions by the irregular and yet often inordinate action of the voluntary muscles in spasms, and even convulsions, and by the sensibility of the skin, is in full energetic action. Its appearance after death shows it to have been often preternaturally excited.

"3. The senses generally are not impaired.

"As regards innervation in the ganglionic system, or the great sympathetic, we have nearly as clear evidences of its activity in —

"1. The strong spasmodic action of the muscles of organic life, which it supplies, as the heart and the muscular coats of the digestive canal.

"2. The copious watery secretion, from the inner surface of this canal, and the morbid coating of matter so often found after death on this same surface.

"3. The intense sensation of heat and thirst, and the craving for cold and acid drinks."

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 excitement, and by its very excess causing a diminution or entire suspension of other secretions. The predisposition once laid, 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 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 it, as there is so generally in all the exanthematæ.

Proceeding to the administration of remedial means under these views, our chief object, at first, will be to remove all irritants of a 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, either by direct impression, or by diffusing and equalising sensation in all parts of the economy, the morbid sensibility. So far the problem is comparatively simple for our solution, 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. — 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 twofold 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 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 unacquainted, 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 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 or twelve ounces, and even more if necessary to procure manifest relaxation; and then to give opium in the dose of a grain, or camphor water one ounce, with twenty drops of laudanum. Nausea and retching, with more or less pain distinctly referrible 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 halfpint tumblerful of warm water, the good effects of which extend beyond the mere removal, important as this is, of a now irritating substance to 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 im-

minency 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 connection 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, and still has, 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 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 these 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 passed over at once, as it were, and the third or fatal stage, that of collapse, comes on.

"The transition," says Dr. Craigie, "from the diarrhœal stage to that of collapse, though rapid, is never made *per saltum*, as it were,

but in all cases, in however short a time, by gradual and successive changes. In most of the cases in which I had an opportunity of remarking this transition, the countenance became first slightly blanched, and the skin began to assume a colliquative humidity. When the pulse was felt at this period, it was not gone; but greatly weakened in force, and small in its size. The patient, at the same time, complained of a sense of sinking at the breast, with an uncomfortable sense of thrilling heat and unsteadiness, as if unable to support himself; and though there were instances in which the patient fell down at this period, from weakness, yet afterwards, when the stage of collapse was thoroughly established, this extreme enfeeblement of the voluntary muscles was not recognised."

Treatment of the Second Stage, or of Distinctly Marked Cholera.— Bearing in mind the fact, that by far the most powerful causes, both as 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 sweats, shrunken features, small and frequent pulse, and often violent spasms of the voluntary muscles.

Emetics. — The treatment under the circumstances just mentioned, which is generally deemed most serviceable, is to encourage the expulsion of the offending matters by a mild emetic, and free dilution, by draughts of warm water, or some other bland fluid. A similar practice has been adopted in cholera, and, in many cases, on good grounds, especially when the attack is recent, and the discharges are either mixed with the food, or are white and inodorous. Inflammation cannot be presumed to exist at this time. The stomach had, up to the date of the attack, exhibited often its customary craving for food, and was not oppressed by its reception — the tongue and skin, and absence of thirst, did not betoken gastritis or gastro-enteritis; and hence we are left free to substitute one irritant, or medicinal and controllable one, for another of a more poisonous kind which is acting on the nervous expansion of the small intestines, especially of the duodenum.

Some practitioners prefer ipecacuanha, others sulphate of zinc, and some, again, mustard, in order to produce full vomiting in cholera. Mr. Hall, in his account of "Epidemic English Cholera," prevailing on the river Medway, tells us, that "having practically discovered

the efficacy of exciting full vomiting by emetics of ipecacuanha, he employed this in future, in every case, without exception. Several of the cases were infants at the breast; some were pregnant women, and one was a female above eighty years of age. In every case an ash-coloured, slimy, consistent fluid of a peculiar smell, as well as sourish taste, was discharged by full and efficacious vomiting."

"If," says Mr. Greenhow (*Cholera as it recently appeared in the Towns of Newcastle and Gateshead*), "the stage of collapse have not yet established itself, and if, with bilious diarrhœa, the patient complains much of nausea and occasional retching, the matter rejected consisting principally of undigested food, we shall probably find a dose of ipecacuanha, with or without antimony, answer the purpose; or even copious draughts of warm water will suffice to wash out thoroughly the contents of the stomach."

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 of a clammy feeling, 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 water with bi-carbonate 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 different intention than to vomit, as I shall afterwards explain.

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.

Bloodletting. — But should the patient be of a sanguineous habit, or complain of pain in the abdomen, headache, or vertigo, with an 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 col-

lapse 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 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, cupping is in general preferable.

Bloodletting was the favourite remedy of the East India physicians. It had also its advocates on the continent of Europe, more particularly in Germany, Poland, and Russia. All those who prescribe it, however, lay 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 full. As in other diseases, so in this, we shall be not a little guided by the age, constitution, and habits of the patient, as well as by the violence of the symptoms and the duration of the disease. I do not think that bloodletting can be regarded as a favourite remedy among the practitioners of Great Britain and the United States. In Edinburgh, Dr. Christie's method, "in cases with cholera, vomiting, purging, and great epigastric weight, was to detract twelve, fifteen, or twenty ounces, as the strength of the patient allowed" (*On the Epidemic Cholera in Edinburgh — Edinburgh Med. and Surg. Jour.*, 1833); whereas, Dr. Mackintosh, in the same city, says, "although I have known venesection employed advantageously, and seen purgatives used, without producing death in that stage of the disease, I cannot state the fact too strongly, that they are dangerous remedies." The two remedies here placed together by Dr. Mackintosh are not, however, to be used or omitted on the same grounds. Hostility to purgatives need not imply aversion to bloodletting.

Sedative or Contra-Stimulant Remedies. — A remedy most 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 in 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, in India, says: "Calomel, in doses of from fifteen to twenty grains, is a sedative, and has the singular good qualities of immediately stopping violent vomiting and purging, removing spasmodic irritability, producing tranquillity of mind, exciting the secretion of the liver; and preventing the progress of inflammation." (*Op. cit.*, p. 197.) This writer points out the stimulating effect of calomel in smaller doses; and in thus drawing a proper line of distinction, guides us in the use of the medicines, and presents a proper reason, not an apology, for large doses. His first prescription in a case of well marked cholera was 15 grains of calomel, which he washed down with 60 drops of laudanum and 20 drops of peppermint, in ten ounces of water. In this dose laudanum is sedative. In doses of 15, 20, to 30 drops, he found it to be a stimulant: "the former produces sound sleep, removes pain and irritability, whilst the latter excites considerable uneasiness and convulsive startings." After the first attack is over, that is, after three or four hours, if there are much spasm and irritability remaining, the dose of calomel and draught must be repeated; the patient, continues Mr. Corbyn, will then fall into a sound sleep, and awake nearly recovered. Dr. Craigie places calomel and opium next to venesection, and apparently on the same line, as remedies against the open and distinct cases marked by vomiting, purging, and cramps. The proportion of opium, half a grain to calomel ten grains, leaves us to infer that the chief tranquillizing effects are obtained by the latter medicine. This treatment will, he tells us, infallibly remove the disease, if anything will. "In milder cases, the usual practice, which, after many trials, was found to be most successful, was, to exhibit, either at once, 20 grains of calomel and half a grain of the drug, at the interval of one, or two, or three hours, according to the state of the stomach. The general effect of this remedy was, first, to allay the irritability of the stomach, and put a stop to the watery vomitings; and, afterwards, to suppress the sero-albuminous discharges from the intestinal tube." Dr. Drake, of Cincinnati, selected on this occasion to represent the therapeutical opinions of his medical brethren of the west, who may all be proud of so able an exponent of their views on other subjects also, bears similarly favourable testimony to the beneficial effects of calomel in cholera. He had before spoken of it as the best medicine in the diarrhœal or forming stage, administered alone, or combined with opium, and followed by some common, but not saline, purgative. He, then, after adverting to some of the remedies in the second or choleric stage proper, proceeds to tell us: "But the chief reliance at last was on the calomel and opium, or calomel alone.

To be successful, it was necessary to administer them, especially the last, in large doses, and in powder with sugar, so as to promote their rapid diffusion over the surface of the stomach. There is not, I presume, a physician in Cincinnati who cannot testify to the efficacy of this practice. It was worth every other therapeutical means, both external and internal. The most violent vomiting would cease, whenever the stomach could be brought under the influence of this compound, or of the calomel uncombined; and a speedy return of the suspended secretions of the liver and skin generally followed, after which the patient commonly recovered." (*Op. cit.*, p. 40.)

Two dominant motives influence practitioners generally in the administration of mercury, and more especially calomel; the first to procure a purgative—secondly, a salivating effect. Hence, if the latter is not wished for, it is always thought necessary to combine something with the calomel, or to follow its use by another article with more directly purgative properties, to insure its being carried from the bowels. But a third, and the most important, or the soothing and sedative effect of calomel, is almost entirely overlooked, or regarded as incidental and merely preliminary to its stimulation of the liver and pancreas, and the muciparous glands of the intestines. The proposition, that its good effects in cholera and dysentery, and in some of the more violent forms of inflammation of the pulmonary mucous membrane, are entirely irrespective of any evacuation following its use, would startle most of our professional brethren; but yet, if they put aside theory, and forget for a moment the conventional language of the schools, their personal observation and experience will soon show them that it is the correct one. It is now nearly twenty years since I first, and the first, directed the attention of my professional brethren in this country, after my return from travels in Europe and in the East, to the new *Italian Medical Doctrine of Counter-Stimulus* (Dr. Chapman's *Med. and Physical Jour.*, vol. iii.), and endeavoured to point out its harmony with our home experience of the operation of certain medicines, and, notably, mercury and antimony. It will be found, I think, invariably, that even when evacuations are produced by calomel or blue pill, they are preceded by a renewal or marked diminution of the more urgent painful symptoms, and that purging in the early period of mercurial medication, like salivation in a later one, is an evidence, rather than a cause, of its beneficial impression and antiphlogistic operation. I would not deny that there are often matters in the digestive canal — crude ingesta in the stomach, retained hepatic duodenal secretion in the small intestines, and scybala in the large, — the retention of which will irritate the canal and cause general disturbance; but that, even anterior to their expulsion, the irritation of the mucous surface may be greatly abated by the direct sedative effect of calomel. The restoration of the flow of bile will follow the use of calomel, so it will venesection, and sometimes opium. Saliva will be made to flow into a dry and

parched mouth, in which neurosthenia prevails, by simple demulcents and cooling drinks. In none of these cases do we suppose the restoration of secretion to be the result of, or to be accompanied by, excitement of the glandular apparatus.

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. 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 in 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 has neither a preventive nor a curative power 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 occurring 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."

Happily, as regards the danger of its salivating, calomel is tolerated in the largest doses, repeated at short intervals, during the intense or neurosthenic stage of cholera: "As long," says Dr. Griffin, "as cholera existed, none of the usual effects of calomel appeared; it acted neither on the salivary glands, nor liver, nor bowels; I suppose, on the same principle, that tartar emetic does not excite vomiting, nor opium narcotise during the presence of inflammation." He states his having given it hourly, in scruple doses, to the amount of two or three drachms or upwards, without eventual salivation; and in one instance, in particular, he gave nearly two drachms, within an hour and a half, with perfect success, and without affecting the salivary glands.

If the views which I now advocate and endeavour to elucidate

be correct, we must stop the administration of calomel so soon as the stage of collapse has arrived, and the pulse at the wrist is no longer felt. The extent of neurosthenia and the evacuations caused by it have now brought on prostration, insensibility to common agents, and a state of the system demanding other than sedative remedies. Calomel given in this state will, from the diminished and almost lost susceptibility of the mucous tissue, and the organic systems generally, have, it is true, little or no effect; but if its use be persisted in, there will be a dangerous accumulation and the worst effects of the medicine, manifested by salivation, nervousness, &c., should there be reaction and the patient survive the collapse. The use of calomel ought, therefore, to be restricted to the first and second stages of cholera; in the first of which it is primarily sedative and indirectly purgative; in the second it is primarily and mainly sedative, and incidently purgative and cholagogue. Sometimes it is called for in the fourth stage, or that of reaction with fever.

Dr. Griffin, in summing up the number of cases of cholera during a month, in St. Michael's hospital, Limerick, in which calomel was largely employed and chiefly relied on, found them to be 165, in which there were 47 deaths, "or less than one-third, which was not far away from the general mortality in most countries." But on ascertaining the amount of the mortality in the separate stages, he "was perfectly astonished to find that, while in the primary stage, or that of rice-water vomiting, and purging, there were only 5 deaths in 119 cases, there were in those admitted in collapse 42 deaths in 46 cases." The inference which he draws, and that which seems to be the correct one, is, that "the calomel practice was capable of effecting a greater number of cures than any known remedy in any other dangerous disease, so long as the patient was placed under treatment before the pulse ceased at the wrist; but after that occurred, it did nothing, or it did mischief; the recoveries being perhaps less than might be effected if the cases were wholly abandoned to nature until the period of reaction. Reports from other hospitals in Limerick, the same treatment having been at the time pursued in all, confirm the accuracy of these inferences. At a subsequent period, when the disease made a second visit in the latter end of August, Dr. Griffin and his three medical associates "agreed upon a plan of treatment which altogether excluded the use of calomel during collapse, and the administration of large doses after reaction had taken place. No limit was placed upon the amount which was given in the early stage of the disease." The result was that, in a period of six weeks, out of a 126 cases admitted, of which 59 were in the primary [not premonitory] stage and 61 in collapse, 8 only died of the former, although several of the original number (59) ran into collapse; and of the latter (61) 43 died, and 18 recovered — "a greater number than had previously recovered from that state under the most sedulous medical treatment." By thus classing the cases, and restricting the use of calomel to a particular stage of the disease, all the best remedial effects of the

medicine were procured, and there were "few sore mouths and no very bad ones." A different result used to follow the indiscriminate use of the calomel and rubbing in by inunction, without reference to the stage; but with the effect of salivating the patient severely after the chief danger from the disease was over. Dr. Griffin, at the close of his remarks upon this important part of the treatment of cholera, says: "It is now at least evident that, by the judicious application of one remedy, we can control the disease, or arrest its progress, in 84 cases out of 100, if the patient be placed under our care before the pulse has ceased at the wrist; and if, after that, no more than two or three can be saved out of ten, it is only to be considered that the stage of collapse in cholera is like the stage of muttering delirium and floccitation in fever, the almost fatal conclusion of the disease."

It is pretty generally known to the American practitioner, that calomel has been given, particularly in some of the Western States, in large and even enormous doses in cholera; but as we have not been furnished either with the numeral estimates of cases treated, or of the several stages of the disease in which the medicine was given, or the proportion of deaths in each, little profit can come of the reports of our home-practice in this respect.

I shall interrupt here, for a minute, a specification of the remedies of a counter-stimulant nature advised in cholera, in order to indicate the other points of treatment proper to be prescribed at the time in which we are administering the calomel, and expecting its beneficial operation. Experience soon showed the inefficiency of common stimulants to the skin, and especially of high heat, which was at all time intolerable to the patients, and elicited from them the most animated and often evident demonstrations of dislike and dread. By far the most successful mode of exciting the cutaneous surface was by mild but steadily persevered in and prolonged frictions with dry cloths, or the hands of assistants: and the application of sinapisms to the extremities, inside of the forearms and of the legs above the ankles, and on the epigastrium, or between the shoulders. This practice should be had recourse to at once, whenever the surface becomes preternaturally cold, or cramp is felt. Embrocations of turpentine was a common remedy with some of the East India physicians, and particularly with Mr. Annesley.

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, 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 followed 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." Mr. 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 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 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 giving it 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, and whose effects on the two parts of the digestive tube will be in harmony with each other.

Opium. — In speaking of the remedies which experience has pointed out as 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 any 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 of laudanum, from 60 to 80 drops. 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. I say practice, for more than one influential practitioner there relied on it almost exclusively, when it could be given early in the disease and in full doses. 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. Tweedie 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* in Paris, where this drug was at first largely prescribed, the physicians of the former of these hospitals 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; and it may be laid down as a general rule, that it is least efficacious, if not positively hurtful, in cases in which it manifests no narcotic effects. To be useful in the disease it ought to be given early and in full doses.

LECTURE XXXV.

DR. BELL.

TREATMENT OF CHOLERA (*Continued*).—Drinks; warm; cold; ice—Stimulating drinks injurious—Tartar emetic as a sedative; its successful use—Ipecacuanha with similar intention—Magnesia—*External medication.*—Warm, tepid, and cold baths, all sedative — Stimulants externally; blisters; cauterising skin; dry heat; continued frictions of the skin—*Internal Stimulants;* the milder kind preferable; tonics; sub-acetate of lead and sub-nitrate of bismuth are sedatives—More active stimulants; ammonia, capsicum, camphorated ether—*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.

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 under which he suffers. Mr. Scott, in common with nearly all the best practitioners, concedes the propriety of allowing some bland diluent, but maintains that it should be given of tepid warmth—he conceives that *cold* drinks are always dangerous, and generally fatal.* This was the opinion very generally 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

* Madras Report.

† Annesley on the Diseases of India, p. 174.

‡ 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.

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.* Mr. Orton allowed usually only moderate quantities of a weak infusion of ginger, with the addition of a little sugar and milk.† 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 the latter desires earnestly cold drinks, they may be given in small portions at a time, without fear of any bad consequences. Fresh milk, moderately cool, he states, has been found 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‡ — 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 pints of water, to be the best. Brandy, or ardent spirits of any kind, he rarely used; having discovered that they increased the thirst, caused burning sensation at the stomach, and aggravated other symptoms, by increasing congestion of the organs. And 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."§ 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

* Lefevre on Cholera, p. 82, et seq. † Orton on Cholera, p. 309.
‡ Kurzgefaste anweisung die Orientalische Cholera, p. 37.
§ Beobachtungen uber die Asiastische Cholera, von Dr. Hille, page 92.

and the taste of their drinks. The chief restriction that we are bound to impose on them is, respecting quality. 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.

A course of practice having been marked out, calculated to meet the chief exigencies in the first stage of cholera proper, I shall now resume and complete the view of the contra-stimulant or sedative remedies, which the experience of some physicians has shown to be of marked benefit in the disease. You will have seen that, so far, even the digression made from the direct line of narrative in this part of our subject, indicates generally the superiority of sedative means. I have told you that high heat to the skin was especially disagreeable to the patients, and aggravated if anything the disease; and I may now repeat, that internal diffusible stimulants of the stronger alcoholic class were also injurious and often very fatal (Kirk — *Practical Observations on Cholera Asphyxia*). I next propose to make a few remarks on the potassio-tartrate of antimony (tartar emetic) in cholera, in reference to its contra-stimulant or sedative operation, which it so decidedly manifests in some other diseases.

Tartar emetic has been employed in several countries (India and on the continent of Europe) in which cholera prevailed, with, in some instances, certainly a good effect, but as a sedative, not emetic. When frequently repeated, it was found to operate in the same way as in the phlegmasiæ, viz., abating the violence of the symptoms, but without evacuations. A good measure, indeed, of the propriety of its use in the disease was a prolongation of the periods of suspension of vomiting. Dr. Griffin (*op. cit.*) introduces a summary of the results of the practice by some of the British physicians. Mr. Steward, who, after vomiting with the tartrate, gave it in two or three grain doses every hour, with one and a half or two grains of opium, states, that he had seventeen recoveries and four deaths in twenty-one cases; or about nineteen deaths in the hundred; which, if they were all primary cases, was not far short of the success with calomel, and, if several were in collapse, may be said to exceed it. Mr. Steward says, that before he adopted this plan, he had seventeen deaths in twenty-six cases! An anonymous contributor to Dr. Ryan's Medical Journal (vol. ii., p. 528), who seems to have been a very accurate observer, states that he gave this medicine in doses of three grains every two hours, in the dry state, until the vomiting subsided, which was always soon, and usually after the third dose. If the vomiting continued, he sometimes combined it with a grain of opium. The effect of it, however, uncombined, was generally to check the vomiting, not to increase it, and he remarked that the recovery was always speedier in proportion as the interval between the fits was prolonged. The most accurate report which we have met of the treatment by tartrate of antimony, is that published by Mr. Longford of Manchester. He adminis-

tered it in much smaller doses — half a grain, frequently repeated, with toast and water, or whey, *ad libitum*, prohibiting all heat and friction. The following is the statement of results in 94 cases (*Med. Chir. Rev.*, January, 1834) : —

" 1st Class. — Cases with the skin and tongue warm, and pulse tolerable, 28 in number : all recovered.

" 2d Class. — Cases with skin and tongue cool, or icy cold, with feeble pulse, 36 in number : 25 recovered, and 11 died.

" 3d Class. — Cases pulseless, 30 in number : 11 recovered, and 19 died.

"By throwing the two first classes together, a comparison may be drawn between the tartrate of antimony, and the calomel, treatment. They amount to 64 cases, out of which died 11, or at the rate of about 17 in 100 ; the greatest mortality under the calomel treatment in Limerick being 16 in 100.

" In the 3d Class, or cases of collapse, there were 19 deaths in 30, or nearly two out of three ; that is, about three recoveries in ten, which exceeds the amount of recoveries from this state when calomel was used, and is equal to the amount obtained when the treatment was limited to very mild cordials and diluents."

Influenced by analogy, a very uncertain guide, by-the-by, in medicine, we should be the more disposed to put faith in the beneficial operation of tartar emetic in cholera, from the resemblance of the state of the bowels in this disease to that of the mucous membrane of the larynx and trachea in croup ; and as, in this latter, the medicine is serviceable, even when no false membrane is formed, so, in cholera, it may be equally so, although no exudation should previously have lined the intestinal canal. In the collapsed stage of croup, tartar emetic is not admissible, — in that of cholera it must, *à fortiori*, be still more hurtful. Its sedative and depressing powers are not required at this time ; but, on the contrary, they must be mischievous.

Ipecacuanha has, also, been used with some freedom in cholera, as a sedative remedy. Already I have directed attention to the fact of its special influence in dyspnœa and in dysentery. Its relations with the digestive mucous membrane cannot, certainly, be measured by its emetic operation. It is not surprising, therefore, that this medicine should have been employed with other intentions than to procure vomiting in cholera. Dr. Thompson of Madras, found it very successful, given in a dose of only ten grains, with five every half hour after, until the vomiting subsided. The German physicians were freer in the doses. In Paris, M. Recamier gave the tartrate of antimony in the dose of two or three grains ; ipecacuanha in a quantity varying from fifteen to twenty, or more, and repeated it at intervals. The vomiting at first increased, but soon ceased altogether, and with it the intestinal discharge ; a gastric warmth followed, the skin was covered by sweat, the cramps ceased, and tranquillity of the system was restored.

Mr. Corbyn ranks magnesia 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 the child slept so much more than usual. The remarks of Mr. Corbyn apply, however, we may suppose, to the calcined magnesia, as he speaks simply of magnesia without specification; and he recommends it in doses of two to three drachms. In common, this article, in subjects of a sanguine temperament and irritable bowels, is, I have observed, exciting, so as to produce heat and rectal irritation, and sometimes, where predisposition to piles is present, a little blood appears mixed with the last discharges. Magnesia might well follow calomel, if, in prescribing the latter, we are intent on procuring some feculent stools, in addition to its contra-stimulant operation. There will be no danger from it of increase of serous discharges, as there is from saline medicines in full doses; nor of hypercatharsis, by excessive irritation of the muciparous glands and exhalents, as from drastic resinous purgatives. If virtues have been manifested by saline medicines, in small and repeated doses, in cholera, I am inclined to attribute the effect more to their cooling, sedative operation, than to any chemical changes in the blood by their being absorbed into the veins.

External Medication. — 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 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 that of 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 or the constitution of the individual. There are many instances of successful result 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 rise 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 the warm and tepid 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.

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 bed-side 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 cauterisation 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, of 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.

Stimulants. — When medicines of this class were resorted to in cholera, it was found, after some experience, that those of the milder kind were the best. Carbonate of ammonia, oil of turpentine, and capsicum, are among the safest; 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 so often 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 when manifested is chiefly through the nervous tissue and general nervous system. The 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.

Sub-acetate of lead was used at the time by Dr. Harlan of this city, and has more recently been highly extolled by Dr. Graves of Dublin, as a remedy peculiarly adapted to the disease, when united to small doses of opium. The latter gentleman used it largely on the second attack of the cholera in Dublin in 1834. Unquestionably sedative as the preparations of lead are, their utility must be more doubtful in circumstances in which, although the neurosthenia is great, there is also feebleness of the circulating ap-

paratus, on which, in a remarkable degree, lead exerts a depressing influence. Dupuytren made trial of sugar of lead nearly in the manner recommended by Dr. Graves, viz., by giving it in combination with decoction of poppy-heads; but with by no means satisfactory results. Dr. Graves's prescription is: ℞. Acetatis plumbi, ℈i.; Opii, gr. i. M. ft. secund. artem massa in pilul. 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, give a pill every quarter of an hour. In two hours their effect is perceptible; then a pill is given every hour. Many take more than 40 grains of the acetate of lead in twenty-four hours. Dr. Venables, at the Cholera Hospital of Bethnal Green, tried the acetate and other salts of lead, but without any good effect.

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 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 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.

When still more active stimulation was deemed advisable, tincture of capsicum, aqua 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. Part of the stimulating treatment will be injections of hot saline solutions, turpentine, &c., and blisters over the stomach, or to the nucha, and lower down on the spine.

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 with some diarrhœa alternating 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 bi-chlorate of soda, according to the state of the stomach, every quarter of an hour.

If the collapse has come on suddenly without much exhausting discharges, 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 arm, 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 spoonsful 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 articula-

tion 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 vessed 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 and scarifying cups 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 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 every evacuation, however frequent. A preference is indicated by Dr. Jackson (*op. cit.*) 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 so often been in the earlier, yet marked and violent stage of the disease. The mustard emetic had considerable vogue in Great Britain. Three tablespoonsful of mustard-flower 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 reac-

tion 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 have 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, then to apply the ammoniacal liniment in the manner already stated.

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. A 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 does not assume any direct or controlling power for cold water over the disease; but he believes that it satisfies one of those conservative instincts which may be

observed in every disease in which a natural effort at recovery is made. He has shown, that, where a patient in the collapse of cholera is left to the ministry of nature, no amendment can be observed in the first five or six hours, except some diminution in the purple hue of the extremities; that in the next six or eight hours, there is a manifest improvement in the countenance of the patient, and more disposition to speak, but often no restoration of pulse nor increase of temperature; that in some cases, the pulse may not become perceptible for twenty-four or even thirty-six hours; that from this period the pulse, the animal heat, and the secretions, are very gradually restored; and that, at the end of forty-eight hours, or the third day from the commencement of the collapse, the patient is convalescent. In asserting that convalescence took place in all cases of the cold water treatment without consecutive fever, Dr. Shute generalized wrongly, from what, no doubt was the result of his own personal observations. By others who have tried the cold water in cholera, its use has been thought in some cases to cause more violent congestion of the brain, and very high consecutive fever. But, as Dr. Griffin, with equal plausibility and truth, has remarked on this point: "the intense thirst which prompts to such continued and excessive potations of cold water, is indicative, as I have already stated, of alarming if not fatal disease: and hence, they who struggle through the collapse with this symptom strong, may be considered as the worst cases; and among whom, of course, we might look for the bad form of consecutive fever."

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 have prescribed a tobacco enema. It was used in infu-

sion, 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.

LECTURE XXXVI.

DR. BELL.

TREATMENT OF CHOLERA (*Concluded*).—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.—Chief means are temperance, cleanliness, and equable temperature of the body—Importance of early attention to the very first symptoms of the disease—Connexion between cholera and other diseases—Influenza—Influenza and cholera in 1780 and 1781—Both have pursued a similar course, including divergencies from the main line—Prevalence of bowel affections in cholera seasons—Increased mortality at this time from other diseases—Scarlet fever with cholera.

THE *saline treatment*, as it has been termed, which consists in the administration of small doses of neutral and alkaline salts, did not 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, 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, have tried it 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. By the first showing of the practice at the former place among cholera patients, the case stood thus: — 50 had bowel complaints, with some degree of irritation of stomach; fluids ejected, deficient in bile; 31 with the above symptoms; cramps to a greater or less degree; 19 are described as malignant, having been seized with the disease or fallen into collapse in the cold wards of the prison during the night. The population in the prison was about 1300. Out of the first 50 cases none died; out of the 31 cases 2 died; out of the 19 malignant, 1 died; in all, 3 deaths, or 97 recoveries, in 100 cases. It has been properly objected to this statement, that the introduction of 50 cases in the diarrhœal or premonitory stage is not correct, since the treatment was not anywhere a matter of difficulty, nor can its success be received as a test of that proper in true cholera. The next 31 cases had cramp with diarrhœa, a state of things certainly demanding vigilance and treatment, but hardly entitling them to be called cases of epidemic cholera. Still there were two deaths in this number, — and it is probable that under the calomel treatment not one would have been lost. A want of specification of the real meaning to be attached to the term malignant, and the group of symptoms characteristic of it, must prevent our knowing whether they were approaching to or in collapse. If, however, as Dr. Griffin has suggested, we were to take all the supposed cholera cases together, or those compared in the second and third sections, they would amount to 50, of whom three died, or six in a hundred. This result is not more successful than that of the common treatment tested in several hundred cases, in various hospitals, and under different physicians. "In a second incursion of the epidemic, which Dr. Stevens describes as more violent than the first, there were 105 cases, and 15 deaths: if they were all absolute cholera cases, with perfect suppression of bile and urine, there was, even here, as great a mortality as appeared in the most unfavourable reports of any of the Limerick hospitals, excluding the pulseless or cadaverous cases." — *Griffin.*

Mr. Bossey has made more attempts at classification. He had at first 65 cases, out of which 9 proved fatal; afterwards 61, out of which 11 died; in all 126 cases, — 20 deaths; rather more, says Dr. Griffin, than the proportion lost on the average of hundreds of cases in the most unfavourable reports of any of the Limerick hospitals, excluding the cases lost in pulseless collapse; but less by half than the mortality in those hospitals, if all the admissions are taken together; for in that case, 40 would have been probably the proportion of deaths in 126 cases, instead of 20. But the extra-

ordinary part of Mr. Bossey's statement, is the reporting out of 149 cases, 23 of which were of premonitory diarrhœa, no less than 126, or, in fact, the whole number of true cholera cases, as those of collapse. Can we credit, that, in a place where a man who had three evacuations while at labour was immediately placed under observation, and the dejections examined, all the true cholera cases should have run into collapse, unarrested by the treatment which must have been instituted for them. The contrast is a strange one. The most uncommon want of success in the first instance, allowing in all the supervention of collapse, and the most singular and unparalleled success in curing all these collapses except twenty.

There is yet one other report from an anonymous source, at Warrington (England), which states that out of 108 cases, 78 were treated in various ways, and all without exception died; whilst of the remaining 30, which were placed under the saline treatment, only 2 were lost. There is a still more violent contrast in this statement, than in that of Mr. Wakefield, already commented on. All deaths on one side — nearly all cures on the other.

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.

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 blood-vessels 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 appropiate means, they will neither act or 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 remains 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 a 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 artizans 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 early 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 disorganizing inflammation in them — the stomach, intestines, or brain.

In two important particulars there would seem to have been a difference in the course and features of the epidemic cholera in India, from 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.* 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. 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."

Galvanism, electro-puncture, inhalation of factitious gases, are remedies of experiment more than of available use, even if their value were greater than has as yet been shown.

* Bengal Reports, p. 56.

I must not conclude the subject of the treatment of cholera without mention of the change of practice in India, or at least in Calcutta, of late years, in this disease. Mr. Martin (*Official Report on the Medical Topography of Calcutta, with Brief Notices of its Prevalent Diseases, Endemic and Epidemic*, 1839) tells us that the plan of copious bloodletting, followed by full doses of calomel and opium in the outset of the disease, and topical bleeding and mercurial purgatives in the reaction, which was found most successful in the early periods of cholera visitation in 1817 and 1818, is now either inefficient or injurious. Mr. Martin adds a remark respecting the stage of collapse, not very encouraging or flattering to medical science at its favoured seats: "I repeat, that our European and transatlantic brethren have not helped us through any of our difficulties in the treatment of this stage of the disease."

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 the 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 readily suggest themselves to the reader, after he has 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, ill-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 service. 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.

The connection between cholera and other diseases merits our notice. 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 that 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 beseiging Negapatam was attacked by it in November, 1781. Whether it spread thence to China, or co-existed 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. Petersburgh in February, 1782; and these are almost the precise stages by which the cholera penetrated into Europe in 1831–2. From St. Petersburgh 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.—(See *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. Petersburgh, 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 Egypt sweating sickness which was months in Shrewsbury, but staid 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 Mississippi, the precursor of cholera.

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	2 9	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	24	23	17	14	54
Inflammations in general, .	32	19	26	77	28	43	29	100
Inflammations in the chest, .	16	10	8	34	16	15	7	38
Inflammations 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
Excess after deducting mortality from cholera, .					75	222	428	425

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 those 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 febrile, or indeed any other 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.

The scarlet fever prevailed to a great extent in Philadelphia during the cholera year, as also measles. 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.

LECTURE XXXVII.

DR. BELL.

CHOLERA INFANTUM.—Is endemial 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 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 as endemial 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 the detail of 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 antumnal 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 analo-

gous 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. Copeland, whilst referring to his personal experience of the disease in London, and more particularly at the Children's Infirmary, of which he was physician, draws, notwithstanding, nearly all his description and the chief parts of its treatment from American writers, and particularly Drs. Rush and Dewees. Drs. Evanson and Maunsell (*A Practical Treatise on the Management and Diseases of Children*, First Ed.) 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 stomach 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 irritability 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, during 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 the 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 anticipated from an observation of the causes of the disease, which act primarily on it, and of the irritation of the stomach and bowels, of which it is made secondarily the recipient. 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, or 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, and the limbs are relaxed, and the head 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 objects around it; 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 and 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 advantage 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; if the pulse become fuller and slower, 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 a 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 is 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 of 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 is 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; but 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 by

any means 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, if in this state of predisposition 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 its being the chief and main endemial 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 fewer 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 ten 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 116 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, in his article already referred to, 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.

	Whole No. of deaths.	Under 2 years of age.	Cholera Infantum.
1837.			
June	30	14	4
July	31	14	10
August	52	21	14
September	42	18	3
October	28	6	2
1838.			
June	18	7	2
July	41	25	15
August	59	28	22
September	50	26	14
October	33	13	2

The ratio of cases of infantine 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."

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 a period of ten years, was 149. That 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 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 into the stomach. Still, that weaning, or the privation of breast-milk is an active contributing cause, is shown in the greater 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. 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. 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.

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 for other diseases. 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.

Connected with a knowledge of organic causes of cholera infantum, is an inquiry into the extent and signification of the *anatomical lesions* in subjects dead of this disease. The structural changes 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 some, 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 the enlargement of this organ 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*, p. 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. "The same condition of the muciparous follicles prevailed in the large intestine from one end to the other; but they were larger and more tumid, and gave to the mucous coat somewhat the appearance of having been sparingly sprinkled with fine white sand." Subsequent more careful inspection, after washing away the colouring matter and mucus, and suspending the intestines (the whole of the large and a portion of the small one) in spirits of wine, enabled Dr. Horner to see more prominently the glands or follicles. Thousands of them, the ulceration of which was previously imperceptible, are now seen very clearly to be in this state. At this time, also, some common erythemoid ulcerations were brought into view. If we were to admit this kind of organic origin of cholera infantum, we can hardly refuse our assent to the opinion of Dr. Horner, that cases of violent disease may occur without evacuations, but in which the most striking symptoms are convulsions. He adduces a case of constipation, or rather of disease marked chiefly by constipation, in which convulsions supervened eight hours before death, and continued up to this date. Autopsic examination revealed no other morbid peculiarity, except a hardness and somewhat yellow hue of the liver, and cystic enlargement of all the follicles of the colon, of the size and transparency of the itch vesicle; on being punctured they readily gave out their transparent fluid.

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, in 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. 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 cases of inflammation of the follicular apparatus of the intestines, which closely resembled the symptoms of our cholera infantum. One of these I shall place before you: —

"François Tessont, aged thirteen months, entered the infirmary on the 12th of September. For several days he had been very restless, and had scarcely slept; the pupils were dilated; the tongue red and dry; the skin very hot; the pulse very frequent. There was neither vomiting nor diarrhœa. (*Gummed barley water, sinapised pediluvium, cataplasm to the abdomen, three leeches to the epigastrium.*) On the thirteenth, a very abundant diarrhœa of green liquid matters; abdomen less tender; child cried less, and appeared enfeebled. From the eighteenth to the twentieth, there was no change. On the twenty-first, diarrhœa less abundant, and vomiting supervened. On the twenty-third, respiration was painful, and the child exhibited a state of general prostration difficult to describe; the face was pinched, and the forehead, particularly, exhibited a number of wrinkles which continued even after the cries had ceased; two livid circles appeared about the alæ of the nose; the pulse beat from ninety to a hundred. On the twenty-fourth, the same general state; the feces were extremely fetid; great prostration; extreme marasmus; and the pulse became evidently enfeebled, although the skin retained much of its heat. On the twenty-fifth, prostration complete; *facies hippocratica*, convulsive motion of the globe of the eye; the bites of the leeches had become violet; they ulcerated, and a purulent sanies flowed from them. The child died on the night of the twenty-sixth. The examination of the body was made on the twenty-seventh.

"General paleness and marasmus; an eschar of the size of a two-franc piece was found on the sacrum; mouth and œsophagus healthy; slight redness of the stomach. In the duodenum and ileon there were found a large number of glands red and tumefied; some of them were open, and exhibited in their centres superficial ulcerations. Twelve follicular plexuses, very red and tumefied, existed at the end of the ileon. In the colon and cæcum there were a great number of isolated follicles about the size of a hemp-seed, and which, instead of being red like those in the ileon, were, on the contrary, surrounded with a blue circle. The circulatory and respiratory apparatus presented nothing worthy of remark. The brain was injected, and contained in its ventricles a quantity of slightly turbid serosity. The spinal marrow was healthy."

In this case you must have been struck with the perfect identity of symptoms with those of cholera infantum, aud of the *post mortem* appearances with those described by Dr. Horner. The injection of the brain and effusion of serum, particularly the latter, are common in the advanced stage of protracted cases of cholera infantum. 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 XXXVIII.

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—Modification 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.

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 instestines, 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., p. 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. Dewees describes the mucous coat of the alimentary canal as manifesting the effects of previous inflammation during the lifetime 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 admitted as 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 exanthematæ, 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. He asks: "May not cholera infantum, as a follicular disease of the intestines, be the inevitable lot of every individual of the human family, but under circumstances of various severity, being mild, scarcely perceptible, in some; and in others aggravated by the season of the year, by the local circumstances of the individual, and by his early infancy? May not, in fact, the whole follicular system of the body be successively under the necessity, in most individuals, of undergoing inflammation, the symptoms of which will of course vary according to the functions of the part in which the follicles are placed, and give rise apparently to diseases having no external analogies? As, for example, in the inherent follicular inflammation of the skin, we have what is called small-pox, from

its vesicular or bladder-like appearance; — in the inherent inflammations of the follicles of the intestines, we have what is called a cholera, or flux of children, because the bowels are constantly expelling their contents, being too irritable in most cases to retain them; and is it not perfectly consistent with the laws of induction, that when a similar innate inflammation attacks the follicles of the trachea and lungs, we shall of course have symptoms suited to the organs assailed? In fact, what is hooping-cough but an ingenerate inflammation of the mucous follicles of the air-passages, manifested by the immense transparent mucous discharges, which are sometimes brought up by the teacupful after a fit of spasmodic coughing?" An inference from these remarks, and more particularly from a query which concludes the passage, would be the contagiousness of cholera infantum, of which we cannot be said to have even plausible evidence. The importance of the subject, both in its pathological bearing and therapeutical applications to most of the diseases of infancy, and certainly to all those in which any portion of the digestive system, from the mouth to the colon, is implicated, induces me to place before you, in his own words, the ingenious suggestions of Dr. Horner respecting intestinal follicular disease. His theory rests on what may be called inevitable pathology, — that is, organic change and sympathetic functional disturbances, occurring, of necessity, to every individual, although quickened into display earlier, and rendered more violent, by certain occasional causes.

There is yet another view of this subject, which I would say was 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 (Lect. III., p. 37), is the most common kind of sore mouth in children; and it is that which is a frequent accompaniment of chronic diseases of the gastro-intestinal mucous surface in subjects of all ages. I ought to have said of acute and chronic, for in the specification which follows most of the diseases, and among them cholera infantum is mentioned, are acute. 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 disease 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. You will naturally inquire why adult age chiefly should have been attacked by epidemic cholera, if my explanation of the pathology of cholera infantum be a correct one. The answer is ready: In the first place, epidemic influences, of whatever nature, operate with fearful power on an organic system or an organ, compared with common sporadic and even endemial causes; but more to the point, because susceptible of direct evidences, is the fact, that the sufferers from cholera have been, in an immense majority, those persons who, either from intemperance in using alcoholic drinks, or from depraved and deficient food, have had their digestive system, and *à fortiori*, the follicles of this latter, brought into a state either of disorder or of high predisposition, which would require slight additional, to say nothing of an epidemic, cause, to develope destructive disease. Farther points of analogy, of a patholo-

gical nature, between the two diseases, are seen in the follicular eruption of a vesicular nature, and in the suspended function of the liver, which are met with in both.

Deference to the expressed opinions of so many judicious writers, as well as a proper desire to describe all the anatomical lesions met with in autopsic examinations of subjects dead of cholera infantum, require of me a notice of the condition of the liver. The hepatic pathology of the disease is advocated by Doctor C. D. Meigs of the Jefferson Medical College, (*Medical Recorder*, vol. iii., 1820,) who thinks that cholera infantum depends principally on a loss of the healthy functions of the liver; by Dr. Stewart (*op. cit.*), who regards the disease of the follicles as a secondary affection caused by the congested state of the liver; by Dr. Cross (*West. and South. Med. Recorder*, vol. i.), who thinks that "the vomiting and purging, so distressing and exhausting in cholera infantum, are fairly referrible to an increased determination of blood to the alimentary canal, which has resulted from congestion of the liver." Stress is laid by Dr. Condie (*Philad. Journ. of Med. and Phys. Sciences*, 1825) on the suspended or vitiated secretion of the liver, owing to its irritation and engorgement in this disease; also by Dr. Lindsly (*op. cit.*), who asserts, that "the liver is almost universally engorged with blood, and, in cases of long standing, greatly enlarged."

Dissections of subjects who have died of cholera infantum do not, however, sustain the hepatic pathology of this disease. Beyond enlargement of the liver, which was indeed sometimes considerable, this viscus did not, except in one or two cases in which it was rather firmer than natural, present any other mark of disease in the experience of Dr. J. Jackson. In three cases described by Dr. Horner the liver is declared to be healthy in two; and in the third it was "of a light yellow colour, without any other abnormal peculiarity. Dr. Dewees, while he tells us that the liver, under almost all circumstances, and especially in cases of long continuance, is greatly enlarged, so as sometimes to occupy two-fifths of the abdomen, adds, that it "is not deranged in structure, merely swollen by congestion, more firm and solid than natural." In a case of dissection of a cholera subject, in which Dr. Parker assisted Dr. Gross, the liver was "normal," while the glands of Brunner were enlarged, and the elliptical plates at the lower end of the ileum were distinct, their edges thickened, and in an ulcerated state in many places (*N. Y. Med. Gaz., ut sup.*) In Dr. Swett's cases already referred to, the liver appeared healthy. 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) de-

scribes 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. It is not easy to tell to what extent hepatic enlargement and congestion, as the result of disorder in the portal circulation, interferes with the secretory function of the liver; but, considering how suddenly this is at times arrested and as quickly restored, it is presumable that the suspended secretion of bile in cholera infantum is owing more to morbid impression transmitted from the duodenal membrane, than to any organic vascular change in the liver itself. 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, than demonstrated by the appearances of these viscera on dissection. I early advocated (in my Inaugural Essay upon the Liver), 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, it seems to me, and 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 of 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 hypotheses 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. The 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 in 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 stages 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 exanthematæ, 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 removal of the exciting causes, there should be a return of the disease.

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 systems secondarily, are excited, must be removed, and 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 medicinal 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 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, and the 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, 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, is proper to different medicines and compounds, 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.

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.

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 an eighth to a twelfth 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 freer secretion, and thus unloading it of congestion. With similar therapeutical intentions, small fractional doses of calomel, as above, 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.

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, as we learn, very 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.

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 subacetate 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 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 XXXIX.

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. Dürr'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.

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 it has 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 posture, 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 spoonsful of cool toast and water, or plain water, it is attempted to be soothed by being put frequently to the breast, or, more than all, 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 assume 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 a true hydrocephalus, or a dropsical effusion on the membranes of the brain.

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 (Lect. XIX., p. 253). Some years ago it was used in the case of his own child, by Dr. Skinner, of Hertford, North Carolina (*Am. Jour. 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 argill: 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 or 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. 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 bear-berry, and *chimaphila*, or pipsissewa, are the most esteemed.

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 course, 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 of 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 myself 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 ad-

vanced 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 particularly 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 tincture of the sesquichloride of iron, the *tinctura ferri muriatis*, I have found to check obstinate diarrhœa in children. Dr. Chapman speaks highly of the bi-sulphate in solution with sugar, in a dose of a fourth of a grain. The restorative effects of fresh air in cholera infantum are strikingly evinced in the relief procured by many hundreds of children every summer in Philadelphia, by their simply crossing and recrossing 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 teaspoonsful 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.

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 received 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 æ 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. 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 continue 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 bowels 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.

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*, p. 294–7.

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 recrossing 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 mattrass 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 mouth, but what, in the opinion of prudent advisers, and from her own positive experience, will contribute to its nourishment, with the least fatigue to its stomach, 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 particularly will require protection against sudden changes of temperature, as well as against moisture.

Prophylaxis. — 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."

Before entirely dismissing the subject, let me recommend to your careful perusal the highly valuable essays of Drs. Rush and Parrish. The latter gentleman's communication is in the *North Am. Med. and Surg. Journ.*, vol. ii.

LECTURE XL.

Gastritis, with delirium tremens—Varieties of intestinal worms—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 yourelves. (*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.

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, riband-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 within 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-worms, 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 may 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 produce an organized 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 has been found in the fœtus both of man and other animals.* Kerkring describes a fœtus, the intes-

tinal 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 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 organized 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 connection 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 most 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 perforation 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 tympanitis, 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 for 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 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 that 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, esophagus, 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 attains is 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 connection 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 XLI.

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 irrita-

tion 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 connections, 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 symptom 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 differ-

ent 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 without worms. If, then, you have a case where these phenomena are present without the co-existence 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 an hypochondriac habit, there is nothing more injurious than their getting the idea that they have a worm in their bowels. When once this notion gets into the head of an 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 the 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. sedentary 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 causes of worms, poor diet rather tends to favour their removal. Uncooked vegetables and fruits 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 treament 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 dislodgement 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 wormseed, 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 tea-spoonful three times a day. This is the remedy on which the West Indian 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 drams of powdered valerian: here is another. You then combine with these two drams of sulphate of potass and a dram 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 tea-spoonsful 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 tea-spoonful 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 XLI.

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 twofold 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 morning's 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.

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. Occasionally I have found calomel and aloes serve very effectually for the expulsion of large quantities of ascarides, and exemption, at least for some time, from irritation caused by them. Their 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 ℈i., 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 esophagus. 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 was 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 XLII.

DISEASES OF THE BILIARY APPARATUS.

PATHOLOGY OF JAUNDICE—Its co-existence 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 connection 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 co-existing with even a copious flow of bile.* This is a strong proof in favour of the opinion, that some cases of jaundice have no connection 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 reabsorbed, 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 reabsorption 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 case 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 Médécine*, 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, general 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 dreadful 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, seems 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 occurrence, 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 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 composition. You will see this observation in the Medical 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 typhus 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 stimulus 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 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 connection 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 XLIII.

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 mechanical 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 that 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 the 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, characterised 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 circulating 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.

We come now 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 overheated. 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.

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 intussusceptions found along the course of the small 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, were found in every case to present intense marks of inflammation; there were numerous intussusceptions 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 disorganized.

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.

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* [The very carefully conducted autopsic examinations made by M. Louis on a number of the bodies of those who died of yellow fever, at Gibraltar, in 1828, lead to new conclusions on this subject. The lesions peculiar to, or nearly peculiar to, yellow fever, are, M. Louis thinks, *a red or black matter* found in the digestive canal, and an *alteration in the appearance and structure of the liver*. The first, or the red and black matter, is evidently that which the author calls the materials for the hemorrhagic vomitings in the disease. It was found in the stomach in about three-fourths, and in the intestine in two-thirds, of the subjects examined. But the most remarkable and the most constant lesion, that which M. Louis regards as the *essential anatomical character* of yellow fever, is the change in the liver. In all cases of the disease, the colour of this organ was changed to that of a light yellow, or straw colour. "Sometimes it exhibited a fresh-butter, or straw, or coffee and milk hue; at other times, a yellow, or gamboge, or mustard, or orange, or, finally, an olive colour." There was at the same time a very evident dryness of the hepatic tissue, and more commonly an increase than diminution of its cohesion. M. Rufz, who had, recently, opportunities of seeing the yellow fever at Martinique, found similar lesions to those noticed by M. Louis.— B.]

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.

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 on 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, and 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 speci-

men. 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 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 characterises 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 distension of that organ. This may go on until the distension 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.*

LECTURE XLIV.

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 — Connection with malignant disease 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 conse-

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* [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 first 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 tuberculous 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 tuberculous 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 situ*, 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.]

quent 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 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 threefold. 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 antispasmodic. 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 leeching as 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 me 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 for ever 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 a case 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 discharges 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, and 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 antispasmodics 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 bene-

ficial 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 connection, 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.

A few observations now with respect to the discharge of fatty matter from the bowels. The reason why I introduce the subject here is, because it has been frequently observed in connection 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 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 burned like fat when thrown into the fire; this patient also recovered. Dr. Babington 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 tubercular 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 corpse." 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 ma-

lignant 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 XLV.

ACUTE AND CHRONIC HEPATITIS—Pathological differences—Effect 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.

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 of 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

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* [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 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 much 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 disease 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, also, 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 blacks to 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.

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? Inflamma-

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Twining, how seldom we find any palpable disease of the liver of Asiatics attending the fevers and dysentery of Bengal.

In the United States, among 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.]

tory fever, and lesion of the digestive function; and in addition to this, if the case be 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 inflammations 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 system, 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 co-exist 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 occurrence. 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.*

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* [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 symptomatology 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: —

No. of Cases.	Towards Axilla.	Towards the Nipple.	In the Epigastrium.	To left of Median Line.
In Health .	4 inches	3 inches	$2\frac{1}{2}$ inches	2 inches
In Disease—				
55 Typhus . .	$5\frac{1}{2}$	$4\frac{1}{2}$	3 —	2
19 Bronchitis .	$5\frac{7}{12}$	5	3 —	$1\frac{1}{3}$
24 Phthisis . .	$5\frac{1}{3}$	$4\frac{1}{3}$	$2\frac{2}{3}$	$1\frac{1}{2}$
8 Rheumatism.	$5\frac{7}{12}$ +	$4\frac{7}{12}$ +	3	$2\frac{1}{2}$
24 Hepatitis . .	7 —	$5\frac{1}{2}$	$4\frac{1}{8}$	$3\frac{1}{3}$
82 Ague . . .	$5\frac{1}{2}$ —	4 +	$2\frac{3}{4}$ +	11 lines
22 Pneumonia .	$5\frac{1}{4}$	$4\frac{1}{3}$	3	$1\frac{1}{2}$
9 Heart Disease	$6\frac{2}{3}$	$5\frac{1}{3}$	$3\frac{1}{8}$	$1\frac{1}{2}$

"From the above table we may infer, 1st, that, in hepatitis, the

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 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 symptom is agonizing 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 pleuropneumony. 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.

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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.]

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 inflamed 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 connection 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 disease 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.

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 becomes 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 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 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 lung 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 into 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 cicatrisations 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.

LECTURE XLVI.

Diagnosis of the rupture of hepatic abscess—Pulmonary openings—Case of double opening—Puncture of the gall-bladder—Gangrene of the liver—Its connection 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 diminished. 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 bronchophonia*, 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 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 apo-

plexy, or effusion of blood into the substance of the liver. This is an accident to which the liver, as well as every 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 that that of verisimilitude.

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 trochar 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 characterise 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 characterise 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.

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 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 patients 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 sur-

face 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.*

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* [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]

LECTURE XLVII.

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 after 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 loose 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 his 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 hazle-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 connection 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 dis-

section explained the difficulty which I felt in making the diagnosis at first, for it showed that the hepatic tumour was formed, not by an 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 acute 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 typhus 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 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 plexi-meter. 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 connection 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 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 con-

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* [In cases of this description I have directed the iodine (Lugol's solution and the iodide of potassium in solution) with excellent effect. — B.]

siderable difficulty in divesting yourselves of early prejudices, and combating those of others; but when you have an opportunity of acting for ourselves, 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 would 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 dram of camphorated mercurial ointment every six or eight hours until the gums are affected. A very good auxiliary means is to place a dram 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, 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. Recollect 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 trochar 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 organized 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 sunk 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 ef-

fused on the surface of the peritoneum, in the substance of which several large bloodvessels had been developed.

The principles 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 connection 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 of. 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, hypertro-

phied; 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 fœtal 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 XLVIII.

Treatment of chronic hepatitis—Neuralgia of the liver succeeding hepatitis—Connection 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, one 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 dram 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 you 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, was 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.

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 symptoms 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. 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 presenting 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 remarkble 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 obstruction 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 subperitoneal 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.

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 substances, 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, verified by Professor Carswell, namely, that this condition of the liver is always accom-

panied with more or less ascites. I may add, that I have never met with this disease without ascites.

I remember a most remarkable case of disease of the liver, which occurred during my stay in Edinburgh. My lamented friend and instructor, 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 by 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.

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 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.*

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* [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 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 sub-carbonate of iron should be given, as directed in the text. — B.]

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 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 XLIX.

DR. BELL.

DISEASES OF THE PANCREAS AND SPLEEN.—CHLOROSIS.

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—Connection 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, characterise 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 epi-

gastric 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 schirrous 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, steatomous, and schirro-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; whilst 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 referrible, 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 the stomach and esophagus 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 of which 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 referrible 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 diseases 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 attending the 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 vertebra. 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 neighbour-

ing 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, first, 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 these, 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. In this instance, then, we find ourselves passing from the guidance of general anatomy to that of physiology; for if, taking the clue of the former, we were to continue to describe, after the diseases of the liver and pancreas, those of other glands, we ought to pass on to the kidneys, thence to the uterus, and testicles. But again we shall find ourselves tempted to recur to the physiological basis, and to complete our description of the diseases of the urinary apparatus, of which the kidneys constitute only a part; the rest being made up of the mucous membranes of the bladder and the muco-fibrous ones of the pelves and ureters.

For a while I shall now deviate from the line both of general anatomy and of physiology, and, 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 that these latter are described, 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 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. 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., p. 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 38 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 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 is met with also in congestive fevers of a malignant grade.

Splenitis of an acute character would, one 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. 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 crisis 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 by 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 connection 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; schirrous 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 connection 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 any 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 abscess 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 had acquired a remarkable size. One case is mentioned in the Memoirs of the Academy of Sciences, in which it contained 30lbs 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, characterised 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. The peritoneal coat is not 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 the spleen 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. 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 this 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 patients 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—Philad. Edit.)

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. M. 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, were of this nature.

LECTURE L.

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 leeching, 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.—CHLOROSIS—Its real nature—Depending on impoverished blood—Changes in the blood at this time—Causes—Symptoms—Means of renovation—Iron, the chief medicinal agent—Hygienic restoratives—Hemorrhages do not always contraindicate the use of iron.

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 form of spleen disease which you will be called upon to treat, is chronic splenitis, with more or less enlargement of the organ, blended or alternating with congestion, in varying degree. It 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 contraindicated. 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 any 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 early relief from mercury, it would be unwise to continue its use.

Free purging is most relied on for the 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 case 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 the 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 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, 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 while 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. of Pulv. scam. comp. to the above mixture. On the other hand, in very delicate and emaciated snbjects, 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 bedtime; and twenty drops of muriated tincture of iron in a wineglassful 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 ϑss. 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 bedtime.

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 sub-carb. ϑi.
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. iii.
Pulv. cinnam., ϑi. 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 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 treat-

ment 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. 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 hospitals 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, ʒij. to ʒiv. twice a day for an adult, mixed with 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, ʒi. 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 exercise over enlarged and congested spleen, would of itself, even if direct testi-

mony 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.

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 anæmia 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.

Chlorosis.—As I may not have an opportunity of formally placing the subject of chlorosis before you, I cannot let the present occasion pass without exhibiting the chief peculiarities of the series and succession of disorders designated by this term. I am the more inclined to do this, from a fear that, under the pressure of arduous professional occupation and habitual intentness of view on the violent phlegmasiæ and fevers of so many regions of our country, many practitioners are too apt, after a rather hasty diagnosis, to place the impediment to function, and lesion not unaccompanied by pain in this disease, to the account of inflammation, and to treat it accordingly.

Chlorosis is more peculiarly 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 analyses 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. In chlorotic subjects they have found it to fall as low as 38.

Into all the causes of this impoverishment of the blood, or defective hematosis, it is not my purpose now to inquire. The chief are, disordered digestion — from deficient or improper food — want of suitable exercise in the open air, and sedative moral causes; and at times chronic inflammation of some important viscus, as of the liver, spleen, lungs, or digestive canal. Its effects are readily recognised in the paleness, we should call it rather the discoloration, of the skin and mucous membranes, puffiness of the face and 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 of a loud noise: 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. Panting respiration on the slightest movement. Menstruation painful and irregular, deficient, or wanting, and the discharge pale; fluor albus, sometimes menorrhagia, and generally sterility. (Trousseau et Pidoux: — *Traité de Therapeutique et de Matière Medicale*, T. I., chap. 1re.)

It has been very justly said, that chlorosis is the dominant pathology of women; a fact to be constantly borne in mind when treating these disorders, which are not the immediate effect of a 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 anæmia as it is met with in our own sex; and analogous, I might say identical, is the treatment in these cases — chlorosis, chronic splenitis, and anæmia. The leading indication is to restore to the blood its lost iron and fibrin — its colouring and nutrient 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 we be misled by the troubled circulation, the immense throbbing and noise in the large arteries, and the hurried and panting respiration, the frequent pulse, the hot and dried skin, into a belief that these are symptoms of phlegmasia, or of febrile state with inflammation, calling of themselves for depleting remedies.

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 latter purgatives, — selecting of these rhubarb and aloes, in preference. If the stomach is in a state of atony, we give aromatics and bitters at the same time with the iron; never overlooking the vast importance, during this time, of suitable nourishment, which, while it furnishes abundant chyle, is neither to stimulate unduly by its composition, nor to oppress by its bulk. In order to render it useful towards 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 sub-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 (*op. cit.*), the tartrate of iron and potassa, as milder in its immediate, and fully as remedial in its subsequent and remote effects, as the heavy subcarbonate, 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 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 preparation. 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 impoverishing of the blood, — a thin, watery state of this fluid, — in fact, chlorosis in women and anæmia in men. It is also well ascertained that this condition of the animal economy predis-

poses 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 hemorrhage by the administration, for a short period, of the muriated tincture of iron.

If I have dwelt on the physical, that is, the medicinal and hygienic means of cure of chlorosis, without noticing those of a moral nature, it is not from a want of conviction that these latter are often powerful in the cure as they were in originally bringing on the disease; but because the one class of remedies can be administered under the control of the physician, whilst those of a moral nature are seldom under his guidance. As friend and counsellor, however, on all subjects relating to the health, he ought to be made cognisant of all the circumstances which have acted injuriously on the moral as well as the physical constitution of his patient; and he can then, with knowledge of cause, often suggest a remedy for the present, and prevention for the future. In having recourse to moral and intellectual hygiene, and medicine, in this case, it will be sometimes as well not to apprise the patient herself of the motives which prompt the advice for her relief, but to make this come from the friends rather than from the physician.

END OF VOL. I.

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