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THE
STUDENT'S GUIDE
TO THE
PRACTICE OF MEDICINE

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THE

STUDENT'S GUIDE

TO THE

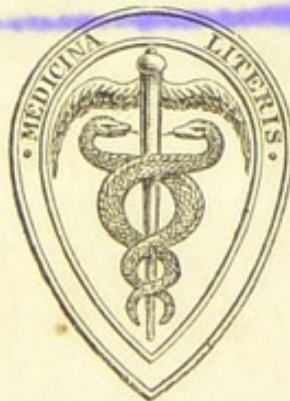
PRACTICE OF MEDICINE

BY

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SECOND EDITION

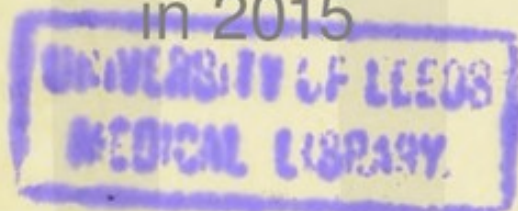


LONDON

J. & A. CHURCHILL, NEW BURLINGTON STREET

1879

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PREFACE TO SECOND EDITION.

IN preparing this Edition, I have carefully revised the First, and have adopted many of the suggestions for its improvement with which critics and personal friends have favoured me. There are upwards of forty pages of new matter in the body of the work ; and in the Appendix will be found a method of performing post-mortem examinations, and a Glossary of the medical terms used in the text.

For help with the work throughout I am indebted to Dr. Christie, Glasgow ; for the Appendix I have to thank Dr. Foulis, Glasgow, and Mr. Jackson, Oldham ; and for the drawings and engravings my special obligations, as before, are due to Dr. Whittaker Glasgow.

I have done all in my power to make the Handbook more worthy of the favour with which it has been received.

M. C.

GLASGOW, *December* 1878.

PREFACE TO FIRST EDITION.

THE idea of compiling this Handbook was suggested by my own experience ; and I have tried to write as one speaking to students. My aim having been to render it “handy” and practical, it is in many respects necessarily brief ; and as I desired to present ascertained facts, some points still in dispute have been only incidentally mentioned, not discussed.

I desire to record my special thanks to my friend and colleague Dr. A. M. Buchanan, and to my former assistant and highly-esteemed pupil Dr. T. O. Guthrie, for kind and willing assistance in preparing the sheets for the press.

My obligations to Dr. Whittaker are seen in the illustrations.

M. C.

GLASGOW, *October* 1877.

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GENERAL CONSIDERATION OF DISEASE,

WITH

BEDSIDE HINTS.



WHAT is health? The answer to this inquiry can scarcely be given in the form of a definition, yet it requires no medical education to suggest a picture of what health is at the typical eras of human existence, when all the various functions of the human body are performed easily, naturally, and well. The healthy individual breathes without difficulty, the food taken is relished and properly assimilated, the blood is forced from its centre—the heart—onwards over the body, without valvular flaw or subsequent hindrance, and the brain, with its nervous expansion undisturbed by morbid fancies, controls the movements and the thoughts of the living organism. Disease is a deviation, to a greater or less extent, from what we thus realise, though we cannot define, as the standard of health. It may invade one or more of the systems we have alluded to, and it is the duty of the physician to find out, by the varied appliances of his art, what and where the disease is. Thus the student will perceive, what practical bedside experience teaches, that diseases are to be referred in many cases to certain systems—viz. respiratory, circulatory, digestive, integumentary, genito-urinary,

and nervous. Each of these systems being liable to various diseases, and the allocation to one of these systems having been made, it is the further province of the physician to ascertain, by a careful examination of the phenomena presented to him, what the particular disease which he is investigating may be. A little reflection or experience will, however, convince the student that all diseases cannot be brought under such a simple classification. There are certain diseases, by no means the least important, which, though presenting well-marked features during life, are found, by examination after death, not to have involved any one particular system. These must be called, for the want of a better term, General Diseases. The exact idea expressed by this will be better understood when these diseases are individually considered.

When we are called to investigate real or imaginary disease, the question presents itself to us, How is the nature of the disease to be determined? How is the inquiry to be prosecuted?

Pain is a prominent feature in disease, and important information may be obtained by asking

“Where do you feel pain?” Follow this up by further inquiring

“How long have you been ill?”

The patient in this way refers his pain to some particular part or parts, and tells the story of his illness in his own words, without any promptings on your side, which may be misleading. Now, with certain data to go upon, and with no preconceived, and therefore probably erroneous, ideas directing you, the systematic investigation can be justly commenced. If attention is directed to the chest, that region must be carefully explored by the three great means of Auscultation, Percussion, and Palpation. In order

to facilitate inquiry, and to localise its evidences, the chest has been divided into certain regions, as the accompanying diagram will at once show; a fact which beginners should realise, not merely by looking at it, but by drawing the corresponding lines in ink on a friend or fellow-student's chest.

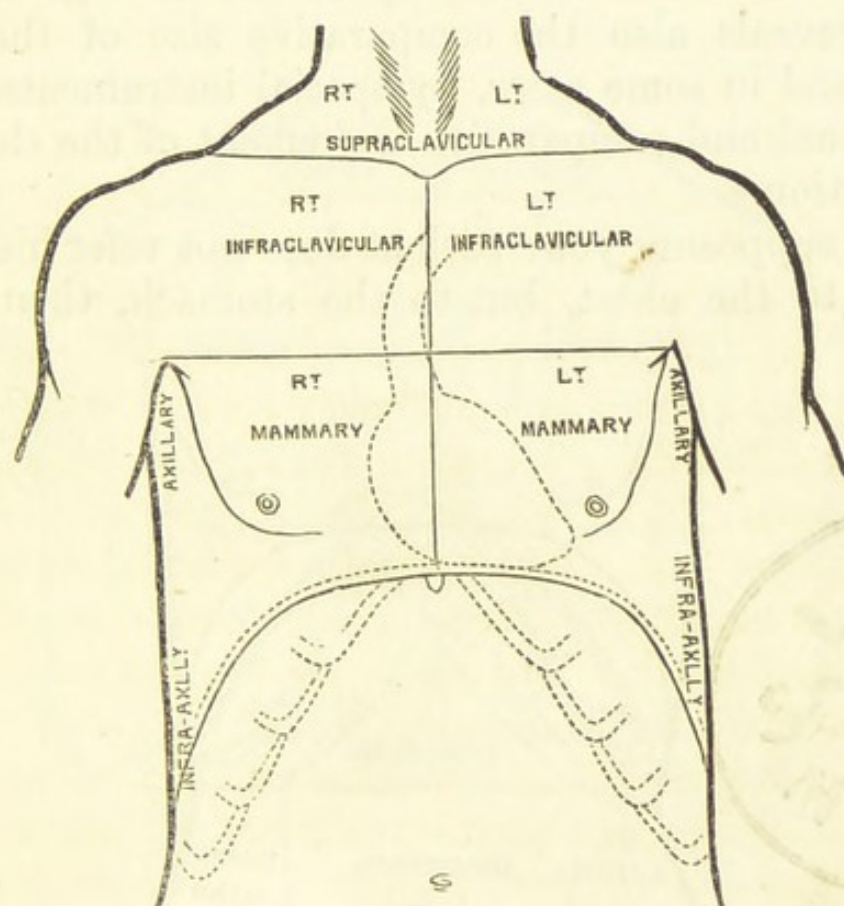


Fig. 1.

In Percussion the Pleximeter and Hammer may be used, or, in lieu of them, the first two fingers of the left hand may be applied flatly to the chest, and struck with the tips of corresponding ones of the right. Being already familiar with the sounds in health, you compare one region with the corresponding region on the opposite side, and note whether the sounds produced by percussion are healthy or the reverse, abnormally dull or abnormally clear.

Proceed in a similar way with Auscultation, by

means of the Stethoscope, after carefully reading the chapter on Respiratory Sounds in Health.

Palpation, *i.e.* the application of the hand, shows the comparative movements of the two sides of the chest. It indicates also the vibration communicated to the chest wall by the voice, or what is called "Vocal Fremitus." Mensuration, by means of a graduated tape, reveals also the comparative size of the two sides, and in some cases, by special instruments, tells the actual and comparative movement of the chest in respiration.

But supposing your patient does not refer his complaint to the chest, but to the stomach, then your

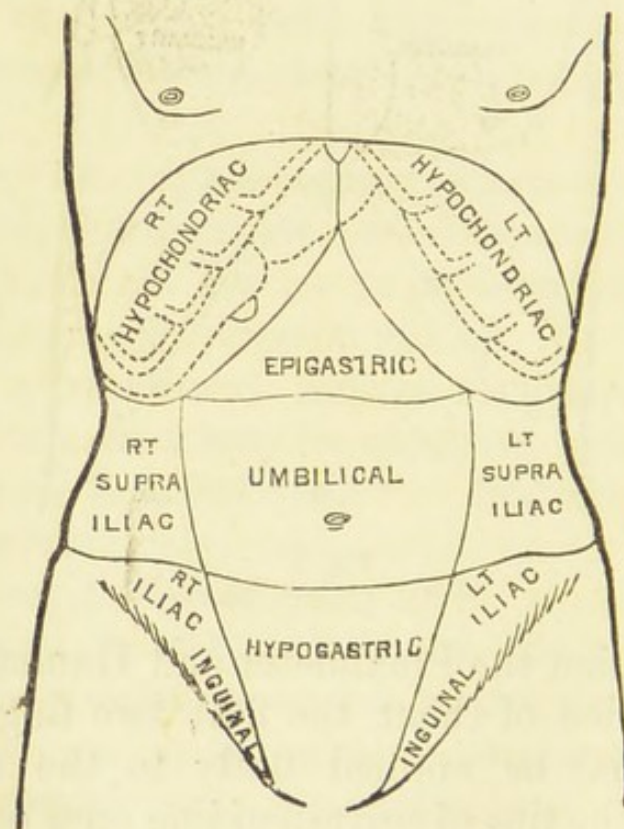


Fig. 2.

inquiry must be directed primarily to the digestive system. Examine the tongue, ask as to his appetite and the state of the bowels. Percussion and Mensuration are now of great importance. The abdomen

has also been divided by lines, as in the accompanying diagram.

If the patient refers his ailment to the kidneys or the bladder, your inquiry must be particularly directed to the urine, for this is the key-note to diagnosis. Note its colour, take its specific gravity, etc. (See chapter on Urinary Diseases.)

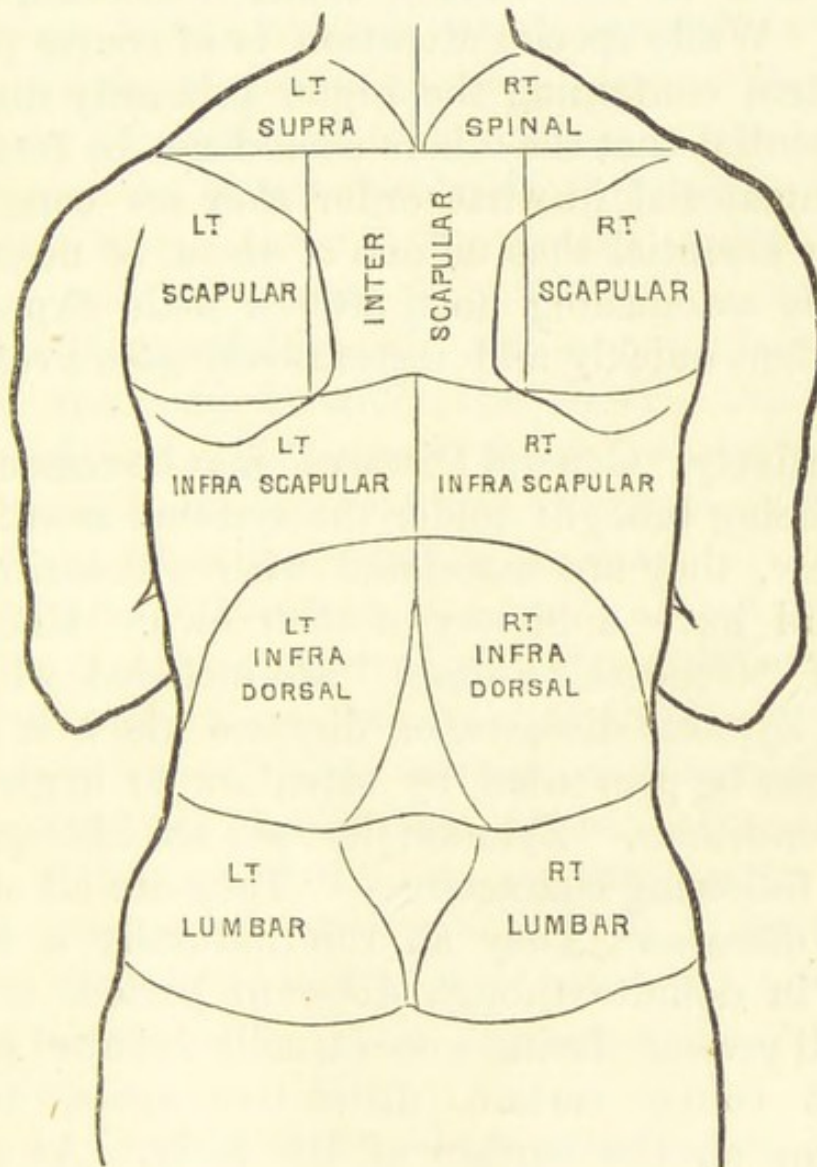


Fig. 3.

If he refers his complaint to the nervous system, try to discover from the symptoms presented what disease it may be, remembering that the brain is an aggregation of various parts, and that the means

which assisted you before are now of little avail,—“For the brain you can neither see, nor touch, nor handle.” The subject is thus beset with greater difficulty than in the case of the other systems mentioned.

It is a matter of great importance, in the method of examination thus suggested, to remember that one system cannot be long involved without implicating, to a greater or less extent, some, if not all, of the others. While special attention is of course paid to the system containing the organ primarily diseased, it is essential that the others should not be forgotten. It is immaterial in what order they are considered, but it is essential that no one of them be neglected; and it is astonishing how, after a little experience, the student quickly and instinctively goes over them all.

Negatively, “General Diseases” may be remembered as not being brought under the systems mentioned; positively, they are associated with a constitutional state and have a history of their own. Under the head of “General Diseases” are included what are termed Zymotic diseases, or diseases which it is supposed can be prevented by attention to hygienic or other conditions. Zymotic diseases are distinguished by the following characters:—“They are all of them febrile diseases. They all run naturally a definite course in definite though different periods of time. They all present during some (usually definite) portion of that course certain distinctive spots, making eruptions on the surface of the body. As a rule, broken and proved by rare exceptions, they occur once only in the same person. Lastly, they are communicable from person to person by contagion, and arise in no other way.

“Small-pox, chicken-pox, typhus fever, typhoid or enteric fever, scarlet fever, the plague, measles, hoop-

ing-cough, mumps, constitute Zymotic diseases." (Sir Thomas Watson.)

In investigating these diseases it will be found that they appear to be propagated by some unknown though probably atmospheric influences, owning no general law, spreading over a wide area (epidemic), or peculiar to certain fixed localities (endemic). Under "General Diseases" it will thus be seen are numbered the various fevers, some of which seem the offspring of filth and the neglect of sanitary laws; while others depend on a specific something which is transmitted from person to person, probably through a disease-germ, and which through its specific character can originate only the disease from which it sprang.

Under "General Diseases" also are included various states of the body, in which the blood seems chiefly implicated, and which reveal themselves by local and constitutional and characteristic symptoms, as will be pointed out when individually considered.

The student, therefore, in forming an opinion with regard to diseases connected with the various systems, or with regard to general diseases, will see that an important element in this opinion or diagnosis must be the causation, the etiology, of the disease in question. Is it peculiar to one country or to many? Is it a disease of youth or age? Is it hereditary, or is it acquired? Is it dependent on known or unknown agencies? Is it characteristic of sex or occupation?

Having thought these things over, having gleaned what he can also from signs, symptoms, and history, his further duty is to form a prognosis, a forecast of the probable issue. Will it be fatal, or the reverse? What complications may arise, and how may these be averted? These and all previous considerations have one definite object in view, viz. Treatment, specially

directed to the person who is ill, but also in certain cases prophylactic, *i.e.* guarding against the extension of the disease to others, if that be possible.

We now take up the first great class of diseases, *viz.* Fevers, of which Graves says—"In the whole range of human maladies there is no disease of such surpassing interest and importance as fever." The knowledge of fever in the abstract is essential for the proper treatment of all diseases, and hence it is, doubtless, that the literature of fever is so varied and voluminous.

The old physicans said—"Essentia vero februm est præter naturam caliditas." And they were led to this definition by feeling the skin, which they recognised to be warm—warm above the natural temperature of the body—warm above what is consistent with health. In late years we have been enabled to estimate more accurately than they did this increased warmth, by means of the clinical thermometer, which may be placed in the rectum, vagina, mouth, or axilla. For obvious reasons the latter is the site generally chosen. If the bulb of the thermometer is placed in the axilla, and kept there from ten to fifteen minutes, it will be found in health to register 98.6° , or if it is placed in the rectum or vagina, it may rise to 99° or even a little higher. Certain circumstances may occasion a variation from the points mentioned, and yet health may be retained. What circumstances are these? 1st, Long exposure to great heat or cold. 2^d, Climate. The average temperature in tropical climates is greater than in temperate; *e.g.* it may reach 99.5° or even 100° Fahr. 3^d, Food and drink. After a full meal the temperature first falls, then it increases as digestion goes on. Fasting lowers the temperature, and the taking of alcohol first causes a fall which does not last long, for it requires a con-

siderable amount to have any material influence. 4th, Exercise also increases, while prolonged study causes a slight depression.

Aware of the existence of these circumstances, and bearing them in mind, the student may confidently assume that if these conditions do not exist, and yet the temperature remains persistently above normal, he has then undoubtedly to do with the state called Fever. It must be remembered, however, that increase of temperature is associated with many of the acute affections subsequently to be considered, and the student must not *ipso facto*, from mere thermometrical indications, and without carefully weighing probabilities, consider that he has to do with one or other of the continued fevers. In fever, as in all acute diseases, the temperature should be carefully taken morning and evening, and in hospital a chart, containing the daily result from the commencement, hung up in a convenient situation near the bed.

In accordance with what has been stated, Virchow's definition of fever is the best, as it is the shortest, viz. "That it is that state of the body in which there is an increase of temperature above the normal."

In this country there are four kinds of continued fever—

1. Simple Fever or Febricula.
2. Typhus.
3. Typhoid.
4. Relapsing.

Simple fever or Febricula is non-contagious, and depends frequently on errors of diet, exposure to the sun or cold, or other insanitary agencies which may fatigue or weaken the system.

Symptoms.—Following on one or more of these causes, without almost any warning, the patient be-

comes languid and disinclined for either mental or bodily work; the appetite is lost, and headache ensues; a dull aching pain is felt all over the body, especially at the back, accompanied with "a creepy cold sensation" difficult to define.

This creepy cold sensation is followed, in the course generally of a few hours, by increased heat of body (fever), rapid pulse, furred tongue, and scanty, high-coloured urine. Delirium through sleeplessness may supervene, and the state of matters may seem very alarming, when, after an interval of three or four days, there is a crisis. The pulse falls, the skin becomes moist, thirst abates, headache ceases, and a copious perspiration terminates the fever. The patient is left weak, yet convalescent, and the strength gradually returns.

Prognosis.—This fever is rarely dangerous. It may be added that its division into catarrhal, bilious, mesenteric, and brain fever seems unnecessary.

Treatment.—The indications for treatment, since the fever terminates in recovery, may be summed up in a few words. At the commencement give a saline purgative of sulphate of soda and sulphate of magnesia, or a seidlitz powder. After the bowels have acted, employ a diaphoretic or diuretic mixture (F. 31, 40). The patient has no inclination for solid food, and should not be urged to take anything but a sloppy diet, as arrowroot, milk-gruel, etc. Convalescence is to be assisted by nourishing food, such as beef-tea, chicken-soup, and wine. A tonic mixture is also serviceable (F. 75, 76, 77).

To understand properly what is to follow, it may not be out of place to give a short historical account of the two great continued fevers of this country—typhus and typhoid. Formerly the word "typhus" included a group of diseases, but as morbid anatomy became

more studied, it was attempted to explain typhus by an anatomical definition. This was especially the case in France at the beginning of the present century; it being found that cases like typhus presented characteristic lesions in the ileum and mesenteric glands. It was therefore supposed that all cases of typhus would present these characteristic lesions, and much disappointment ensued when it was discovered that there were instances of typhus which a post-mortem examination failed to explain. So, gradually, French and English physicians were reluctantly compelled to admit that the cases seen must belong to different categories. And hence it became necessary to use the term typhoid (like typhus), and although objections may be urged against its employment since the diseases differ so materially in their symptoms, progress, and terminations, yet it is doubtful if a better one can be established without being open to grave theoretical objections. For its other synonym, "enteric," conveys the impression that the inflammation of the intestine is the cause of the fever, whereas in point of fact it is the result. So also "pythogenic," as applied by Dr. Murchison, implies that putrefactive changes, simply as putrefactive changes, can produce the fever—a conclusion which many deny.

Although the controversy which so long raged has now been practically settled, it seems impossible to doubt that these fevers presented distinctive characters from the earliest ages, although their anatomical differences and clinical history were only elucidated in recent years. For it can scarcely be supposed that typhoid did not exist as well as typhus long ago. Its non-detection is probably due to the looseness and the carelessness displayed in recording the results of pathological observations. All intestinal ulcers

were at one time classified under the term Dysentery, and very probably typhoid epidemics were simply treated and styled dysenteric epidemics. In the seventeenth century descriptions of cases, with accounts of post-mortem examinations, leave little doubt that typhoid fever was then widely spread in Europe. Such reports were given by Spigelius in Italy; by Willis and Sydenham in England; by Hoffman in Germany. In the eighteenth century its existence can be proved with certainty, for Morgagni describes a case with ulcers and perforations in the ileum and beginning of the colon, with swelling of the mesenteric glands and of the spleen. So also, other cases were reported with more or less minuteness, until, at the beginning of the present century, the French described epidemics of typhoid fever with constant intestinal lesions.

It was reserved for Bretonneau of Tours, in 1820, to prove that the disease was always localised in the solitary and agminated glands of the ileum. He also was the first to maintain that it depended on the action of a poison, which was communicated from the sick to the healthy; and, carried away by the discovery, he and subsequent French observers deemed it identical with the contagious typhus seen in camps and following armies. Then there came to be a wide division in the views of French and English pathologists—the former rarely failing to find the intestines diseased in continued fever, while the latter saw them healthy, and regarded the intestinal lesion as a mere accidental complication. So the controversy raged for some years, and it appeared puzzling to candid inquirers how eminent and truthful observers should record such seemingly discordant facts.

For it would appear clear, either that the intestine was diseased, or that it was not. It was, or it was

not, the seat of ulceration. In 1835 Dr. Perry of Glasgow very nearly guessed the whole truth that the fevers were essentially distinct, though he admitted that the one might pass into the other. He was followed by Dr. Lombard of Geneva, and Messrs. Gerhard and Peacock of Philadelphia, who stated "that the distinctive characters of the two diseases were such as in practice could not allow them to be confounded." In 1841, Louis, in his great work on typhoid fever, admitted "that the typhus fever of the English is one very different from the one he is now describing, viz. typhoid." Notwithstanding this, the doctrine of non-identity did not remain unopposed, for different schools propounded different doctrines.

Much of the remaining doubt was, however, dispelled by the researches of Sir W. Jenner, published between 1849 and 1851. Not merely did he state the differences observed during life, but by an analysis of carefully recorded cases, he showed the distinctive post-mortem features of typhoid. He also demonstrated that the two fevers were dependent on different causes, that the one did not communicate the other, and finally concluded by stating "that typhus and the so-called typhoid fever were as distinct as any of the exanthemata"—an opinion which all subsequent observations have tended to confirm.

After these remarks we now take up the separate consideration of the different fevers, commencing with

TYPHUS FEVER.

This fever was, as has been indicated, formerly called putrid, pestilential, ship, or hospital fever, and it derives its name from the Greek word *τυφος*, smoke. This fever is contagious, usually epidemic, and most frequently follows, or is the direct result of, destitu-

tion, overcrowding, and bad ventilation. It is eminently a disease of the poor.

Symptoms.—The fever poison having been absorbed into the system, there is a period of incubation from one to twelve days, during which time the patient feels out of sorts, with pains in his limbs, languor, loss of appetite, headache, thirst, and the “creepy sensation” formerly alluded to. These are succeeded after a varying interval by increased heat of skin, full and rapid pulse, restlessness, apathy, great thirst, and prostration. The patient no longer fights against his malady, but willingly keeps his bed.

Is there anything particularly characteristic of this fever?

There is what is termed the typhus rash, somewhat dark and mulberry in appearance. It consists chiefly of irregular spots, sometimes single and easily defined, at other times patchy from a number of them coalescing. They are most frequently seen on the chest and abdomen, rarely on back or face, and at first disappear on pressure. Their dark colour fades after a day or two into a brick-dust hue or mottling, which appearance increases until the rash becomes ecchymosed or hæmorrhagic, and in this later stage does not disappear on pressure, but remains permanent even after death, or until recovery ensues. The rash comes out once for all, not gradually, from the fifth to the eighth day of the fever, and is rarely absent in adults, although in young children it is not so frequently observed. In addition to this rash characteristic of typhus fever, there is also peculiar to it a dull, heavy, stupid expression of countenance. The eyelids droop, and the eyes have the appearance of those of a man recently recovered from a debauch.

With the fever there is generally delirium. This rarely comes on before the end of the first week, and

usually continues until death or convalescence supervenes. The delirium is of a violent and painful character, and at first is not continuous. The patient can be roused to answer questions, take drinks, or show his tongue. Yet his expression is vacant, and he mutters when alone. Generally this stage is succeeded by a loss of cognisance of external objects, and all kinds of illusions, especially during the night. The patient tosses about from side to side, or he may shout madly, or endeavour to get out of bed. The mind is, in one word, thoroughly unhinged.

The pulse increases in rapidity, and at the same time gets more soft and feeble. The temperature rises in the first week to 104° or 105° , remaining about these points for a week, and then subsiding to the normal or sub-normal about the end of the second week.

The tongue becomes dry, brown, tremulous, and is protruded with difficulty, while the teeth and lips are covered with sordes, emaciation all the time going on, with tendency to contraction of the pupil, cold extremities, and congested conjunctivæ. In favourable cases the disease usually terminates on the fourteenth day from the commencement of the fever by a "crisis," which is ushered in by profuse sweating, by a prolonged sleep, or by diarrhœa; or more rarely there is no marked crisis, but rather a gradual subsidence of pulse and temperature ("a lysis").

Should a fatal termination ensue, it usually happens between the twelfth and the twentieth day of the fever, death being preceded by great prostration, picking of the bed-clothes, *subsultus tendinum*, involuntary passing of fæces and urine, and coma. The mortality is about one in five of those attacked, and the greater the age above ten years the greater the danger.

Complications.—Typhus may be complicated by the

occurrence of acute bronchitis, pleurisy, or pneumonia, rarely by affections of the larynx or pharynx. The heart is sometimes softened, especially the left ventricle, and this gives rise to depressed action of the organ, and a loss of the first sound. At other times the sounds are well developed, and are accompanied by a vigorous and heaving impulse indicating over-excitement of the organ without softening. Other complications are gangrene of the extremities, bed-sores, very rarely diarrhoea—the bowels all through the disease rather being constipated.

Diagnosis.—The rash and the nature of the fever distinguish typhus from any inflammatory condition of the lungs. Its further diagnosis from typhoid will be alluded to afterwards. Acute meningitis, for which it has been mistaken, is attended with nausea and vomiting, no rash, and delirium almost from the commencement.

Morbid Anatomy.—There is nothing characteristic in the post-mortem appearances of a fatal case of typhus fever. If there has been marked delirium we may expect to find the sinuses engorged; but in the majority of cases the brain is seldom altered. The spleen is softened, and in some cases enlarged. The heart may be somewhat atrophied, and the blood “dark and fluid.” Should there have been an inflammatory condition of the lungs, indications of this will of course be found on examining the thorax. The intestinal tract is healthy.

Treatment.—As in all epidemics of contagious diseases, the first cases are to be watched with special care, if possible placed in separate hospital wards, and the clothes and effects disinfected. In the early incubatory stage, Dr. Hughes Bennett recommended an emetic, which he said had saved him from one or two attacks, when he was certain the poison was in

his system. If this stage be over, we must treat symptoms, remembering that we may guide, but can never cure a fever. A purgative of thirty to sixty grains of rhubarb may be given at the outset. Tepid water injections relieve after-constipation. The apartment should, if possible, be large and well ventilated, with a fire in the room. Intercourse with friends should be restricted, and attendance limited to skilled nurses. The head should be shaved, or the hair teased out, and cold lotions applied. The diet should consist chiefly of milk and weak broth.

Stimulants may be needed to tide over the disease, and should be administered when there is signal loss of strength, or rapid feeble pulse, and weakness of the first sound of the heart. If it is found that the temperature does not increase, that the pulse becomes fuller, and the general condition improved, brandy may be given in tea-spoonful or table-spoonful doses every two hours. Care must be taken to give it at certain intervals, and if necessary the patient must be roused to take it. A mixture of chloral and bromide of potassium is beneficial, especially at the approach of the crisis, if there is great irritability and sleeplessness (F. 69).

Bed-sores must be prevented from forming, and attention should also be directed to the bladder.

The pulmonary complications must be met if they arise by local and general treatment.

Cold baths at about 65° Fahr. have been strongly recommended lately, and may be repeated day and night when the temperature rises above 102° Fahr.

TYPHOID FEVER.

Etiology.—The term typhoid literally means *like typhus*. It has also been termed “enteric,” “gastric,” or

“pythogenic” fever. It is not, like typhus, markedly contagious, and it seems to be generated from bad drains, sewage gas, or fluids contaminated by sewage.

Symptoms.—The patient is attacked by the disease more insidiously than in typhus. There is no abrupt departure from health to disease. There may be a slight premonitory chill, followed by *malaise* and inability or aversion to work. The man feels out of sorts, and attends listlessly to his business; the child inclines to rest, and not to play with its toys. Then lying in bed is found to be a welcome relief, and there is no inclination to leave it. At the early stage of typhoid, as well as during the whole continuance of the fever, the thermometer is found to be of great value. Thus, even although the pulse indicates little deviation from health, it will be found that the evening temperature is higher than the morning by about a degree— 99.9° morning, 100.5° evening; and this characteristic of a high evening temperature compared with that of the morning is retained throughout the disease. The temperature rises gradually, and may reach 105° towards the end of the first week, after which it again slowly falls to reach the normal state, by a series of oscillations between the morning and the evening temperatures, which may continue for an indefinite time, extending even to weeks after other symptoms have gone. The general symptoms of fever are present—as thirst, loss of appetite, and headache. The tongue loses the colour of health and becomes small and dry, having a pale brownish-yellow fur, with red tip and edges.

About the seventh or eight day of the fever small rose-coloured spots sometimes, but not invariably, appear on the abdomen, chest, or limbs, being situated on normal uncoloured skin. They may be few in number or numerous. Their form is circular, and

they last three days, disappearing completely under pressure, to reappear when that is removed. Fresh crops succeed those previously formed, until the termination of the fever. They are rarely seen after the thirtieth day unless a relapse occurs.

The abdomen becomes somewhat enlarged, and on careful pressure over the right iliac fossa a gurgling sound is generally heard, with distinct wincing or even actual pain. Even when delirium is present, this wincing is usually seen by looking at the face.

Diarrhoea is almost always present. In some cases the stools are numerous, in others only two or three in the day. The colour of the stools is characteristic, and is best described as being like that of pea-soup. Occasionally they are tinged with blood. With diarrhoea there may be marked distension of the abdomen and tympanitis.

Course and Progress of the Disease.—The disease may end in recovery or death. If the former, after the twenty-first day the severity of the symptoms abates, and gradual convalescence ensues. The temperature falls, presenting a gradual approximation of that of the evening and that of the morning. If the latter, the patient may sink exhausted and worn out by the disease, or fatal hæmorrhage may ensue, or peritonitis from perforation through the ulcerated spots on the small intestine. As in typhus, acute inflammatory disease of the chest may complicate matters and be the more immediate cause of death. Again, death may occur from inflammation arising from absorption of foetid matter from ulcerated bowels.

Morbid Anatomy.—Characteristic traces of the disease are found after death, and are pathognomonic of typhoid fever. These are altered appearances of Peyer's patches and the adjacent mesenteric glands, and the lesions are most distinct in the group of

glands nearest the ileo-cæcal valve. In the earlier stages the Peyer's patches are congested and swollen, and may be found projecting above the level of the mucous membrane like buttons. The surface of these raised patches may later on be eroded and ulcerated, and portions of them may slough away, exposing the muscular and even the peritoneal layers. The ulcer has sharply defined edges, and may vary in size and shape. Perforation of the thin floor of the ulcer is one cause of a fatal termination to the disease. The cicatrices left after these ulcers have healed commonly disappear after a few years. The mesenteric glands in the neighbourhood of the patches are enlarged.

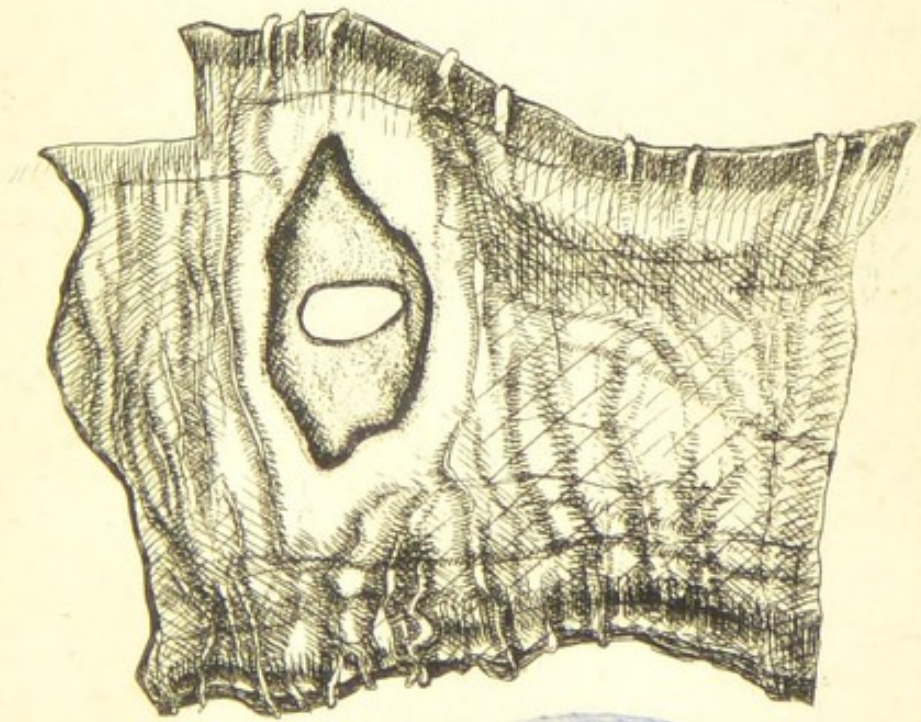
Diagnosis.—Typhus and typhoid fever are both distinguished from febricula and relapsing fever by the longer continuance and course of the fever, along with the characteristic eruptions, and from one another by the following symptoms:—

1. In typhus the rash is mulberry, mottled, and continuous, going on to ecchymosis, and hence resisting pressure. In typhoid the rash consists of rose-coloured spots, fading in three days, and giving place to a fresh crop. These spots disappear on pressure, and are not surrounded by mottled skin.

2. In typhus the rash appears from the fifth to the eighth day; in typhoid between the seventh and the fourteenth.

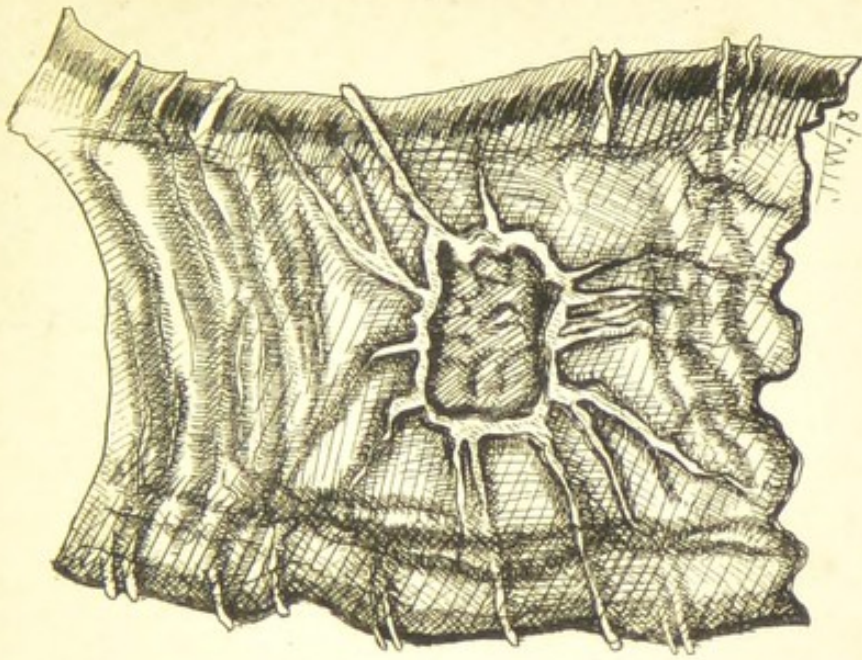
3. In typhus there is no diarrhœa. In typhoid diarrhœa is common, and the stools are of a pea-soup colour.

4. In typhus the symptoms are generally cerebral; hence disquietude going on to coma, with an intermediate stage of delirium. In typhoid the symptoms are abdominal; hence diarrhœa, and pain on pressure over right iliac fossa. In typhus we see contracted pupils, muttering delirium preceded by disquietude



SIMPLE ULCER OF INTESTINE.

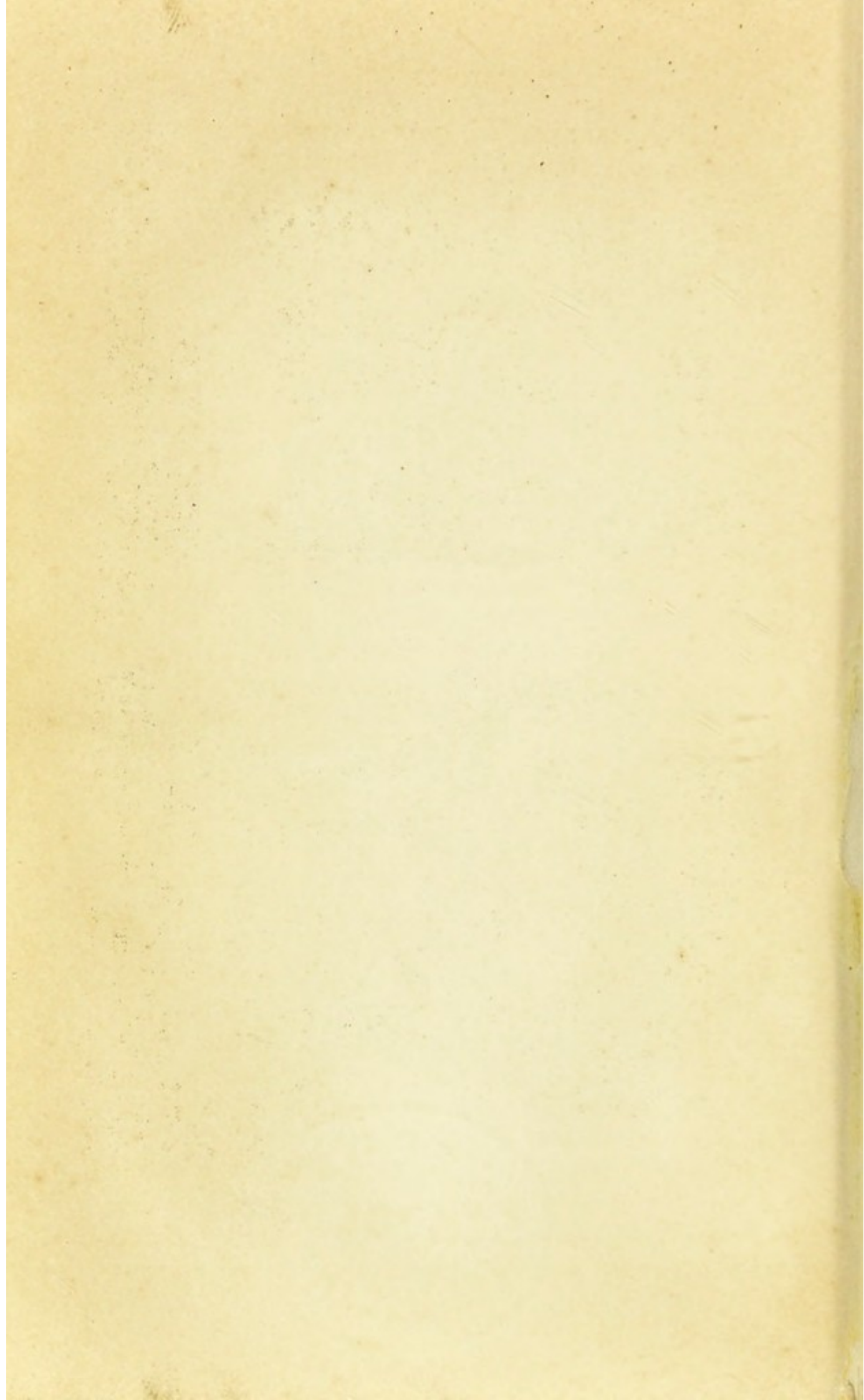
LIMITED IN AREA, PUNCHED OUT APPEARANCE.
TERMINATING IN PERFORATION; PERITONITIS.



TUBERCULAR ULCER OF ILEUM.

WALLS COMPOSED OF RUGÆ GATHERED INTO A HARD
CIRCULAR KNOT, CENTRAL AREA ERODED FORMING FLOOR.





and uneasy manner, and *congested conjunctivæ*. In typhoid we see dilated pupils, delirium preceded by apathy and somnolence, and no congestion of the conjunctivæ.

5. These fevers also differ in their duration, a crisis being reached in typhus on the fourteenth day of the fever; while in typhoid, not a crisis, but a lysis, is reached on the twenty-first day. Typhus may occur at any age, and is commonest amongst the poor. Typhoid is generally a disease of youth or adult life, is rare after forty, and it shows no partiality to the poor.

Treatment.—The prophylactic treatment is of essential importance, for if the disease spreads from the dejecta of the fever patient, it is obvious that these should be carefully attended to, and not thrown without due precautions into privies or dunghills, whence they may contaminate the water or milk supply, and give rise to extensive epidemics. Accordingly, Liebermeister recommends the use of a porcelain bed-pan strewed each time before being used with a layer of sulphate of iron; and, immediately after the stool has been passed, crude muriatic acid is poured over the fæcal mass. If practicable, as in country districts, the contents of the bed-pan should now be emptied into trenches removed from water supply sources; and if in the town, where such a proceeding is impossible, thrown into the privy-vaults with a considerable quantity of the acid. Underclothing or bed-clothing soiled with the stools should be immersed in cold water to which a little chloride of zinc has been added, and then thoroughly boiled within twenty-four hours.

In investigating an epidemic of typhoid fever it is desirable to trace it to its source, and thus it will be essential in many cases, through neglect or ignorance of the prophylactic measures mentioned, to shut

up suspected wells, stop the milk supply from an infected dairy, and in each hygienic regulation guard against a panic by giving to the people an intelligent reason for the institution of the measures adopted.

In individual cases a teaspoonful of ipecacuan wine may be given every ten minutes until vomiting ensues, if the patient is seen in the early stage, and before the spots have appeared. Purgatives should be avoided. After the disease has been established, it is necessary simply to watch and treat symptoms.

Should the diarrhoea be excessive or weakening, astringents may be given. There is not the same necessity for caution as in typhus with regard to the administration of opium, and the drug may be given either by the mouth or rectum; if in the former way, combined with catechu (F. 17); in the latter, in the starch and laudanum injection. Should hæmorrhage occur, gallic acid is requisite, with brandy if there be great depression and exhaustion; or the pil. plumb. C opio, turpentine, or the subcutaneous injection of ergotine may be tried. Delirium and sleeplessness may necessitate sedatives, such as chloral, the bromide of potassium, or both combined (F. 69). Tincture of hyoscyamus is also serviceable. All physical restraint should be forbidden, as patients are generally easily coaxed by a kind and skilful nurse to do what is requisite. Good ventilation, careful sanitary arrangements, cleanliness, and prevention of bed-sores, should be matters of routine.

The diet is of paramount importance. Nothing can be better than milk, and of this the patient may drink *ad libitum* at regulated intervals. On the return of convalescence the patient should be warned against rising too soon, or changing the milk diet, or supplementing it by other food. It must be remembered that the ulcers are now cicatrising, and any

error in diet may prevent this, and bring on alarming symptoms. Besides, relapses are not uncommon. An addition may gradually be made to the milk by a little weak soup or broth. Then give arrowroot with dry toast, and finally, beef-tea; although the latter should be avoided if there is any tendency to diarrhœa. No solid food should be ordered until the tongue is clean, all pain on pressure over the iliac region gone, and the temperature normal.

Latterly, under the impression that the true danger in this, as in other fevers, consists "in the deleterious influence of a high temperature" on the tissues, it has been attempted to lower the abnormal temperature. This treatment has been termed "antipyretic," and may be carried out as follows, if the temperature should be over 102.2° in the axilla:—*1st*, A full-length cold bath of 68° Fahr. of ten minutes' duration, and repeated so that in severe cases twelve baths are given every twenty-four hours; or, *2d*, Give from twenty-two to forty-five grains of quinine within the space of half an hour or an hour, and do not repeat it, as a rule, until two days have elapsed. *3d*, In exceptional cases, digitalis may be combined with the quinine, so that eleven grains of the powder of digitalis may be cautiously given at intervals during thirty-six hours, and followed by the large dose of quinine previously mentioned. This line of treatment in typhoid fever, according to the statistics of Liebermeister, seems to have been highly successful; but it is to be remembered that in English practice it has not yet been sufficiently tried to be absolutely recommended.

Finally, it must be remembered that a careful thermometric chart of the temperature, as taken morning and evening, is the only satisfactory index of the fever.

RELAPSING FEVER,

known also as recurrent typhus or famine fever, was long confounded with typhus, as epidemics of relapsing fever have usually co-existed with epidemics of typhus. Accurate historical records clearly show how careful observers saw its non-identity with ordinary typhus as far back as 1817, and how this opinion was confirmed by the remarkable epidemic of 1842-43, which was chiefly confined to Scotland. These opinions gained greater strength when it reappeared in 1846, and lingered with varying intensity in different parts of the United Kingdom until 1853, when it entirely disappeared from this country for fourteen years. In 1868 it again was observed in London, and also attacked other large towns. Since 1871 no cases of relapsing fever seem to have been noted. The observations made as to the nature of this fever clearly prove that it is highly contagious; that it may originate from filth, overcrowding, and destitution—notably the latter; that it is allied to times of scarcity, and thus has its home chiefly in the dwellings of the very poor. Lebert and other German observers find a strange peculiarity in the blood of relapsing fever patients, viz. thin, thread-like, spiral organisms of a vegetable nature, called the spirochæte. They occur in the blood during the onset of the attack, and are supposed to enter the system either directly or through the taking of fluids or solids. The period of incubation is from five to seven days. It is most common in early childhood, and from the 20th to the 30th year. Between 30 and 50 it is rare; and after 50 it is scarcely ever seen.

Symptoms.—Unlike the other fevers mentioned, there are no forewarners. The disease sets in suddenly with headache and intense fever, which at once

prostrate the patient, and it is accompanied with thirst, loss of appetite, pain in limbs, and burning heat of skin. The temperature for the first two days is usually 102° morning and 104° evening, and then it mounts to 105° and 107° . The pulse is weak and quick, and the skin moist. The tongue is thick and coated; not parched and black as in typhus. The bowels are constipated.

On the second day the liver and spleen, especially the latter, notably enlarge—not merely from day to day, but from morning to evening. There is little delirium. The high fever, the rapid loss of strength, the splenic enlargement, indicate a fever likely soon to be fatal; when, as suddenly as it came, on the fifth, sixth, or more usually on the seventh day, there is a crisis, with profuse sweating, rapid fall of temperature, and complete improvement of all the symptoms, with entire decrease of the splenic enlargement. The only thing left is great languor, which sometimes may approach syncope.

This interval of freedom lasts usually a week, when a relapse occurs, generally at night, with all the symptoms which characterised the previous attack. This attack is, however, shorter, lasting only three or five days. It suddenly ceases, leaving the patient weak and anæmic, and entailing a lingering recovery of from four or five to six weeks. As many as four or five relapses have been known.

Prognosis and Complications.—In only two or three per cent of the cases is the fever fatal. Death may occur from the intensity of the fever, or from complications, as pneumonia or abscess of the spleen.

Post-mortem Appearances.—If death occur from the disease, the spleen may be found greatly enlarged, the capsule tense, the parenchyma soft and pulpy, with

wedge-shaped impactions due to emboli. The liver and kidneys are also congested. Nothing of special note is observed in the other organs.

Treatment.—Rest in bed, cleanliness, milk, strong soup, and wine, are necessary. A bladder of ice may be applied to the head, to relieve headache; and water charged with carbonic acid given to allay thirst. For splenic pain apply cold applications or continuous poultices.

Ten drops of dilute phosphoric acid should be given in sweetened water every two hours; if symptoms of collapse, carbonate of ammonia and alcohol; if delirium, 15-grain doses of chloral every hour, until one or two drachms have been taken.

During convalescence, good nourishing diet, with wine, and the preparations of quinine and iron, are essential.

INTERMITTENT FEVER, OR AGUE.

These fevers constitute a class by themselves, and were well known to the ancients.

They are dependent on certain marshy miasms, and are endemic, not epidemic, in character.

The febrile phenomena occur in paroxysms, ushered in by rigors, and terminate by a critical sweat.

There are three distinct stages—1, a stage of chill; 2, of heat; 3, of sweat.

The fevers are divided into types according to the length of these stages, for the attacks occur pretty regularly—every twenty-four hours (quotidian); every forty-eight hours (tertian); every seventy-two hours (quartan).

The time between the commencement of one paroxysm and the beginning of the next is termed the interval. That between the termination of one

paroxysm and the commencement of the next the intermission.

The type most common in temperate climates is the tertian.

Etiology.—While the predisposing causes are those which weaken the system, as exhaustion, insufficient food, intemperance, or exposure to night air, the exciting causes are certain peculiar invisible emanations, undetected by chemistry or the microscope, which are known as malaria, and spring chiefly from marshy lands. Most probably decomposing animal and vegetable matters furnish the materies morbi, chiefly, if not entirely, the latter; for it is an established fact that ague in time past was common in certain tracts of country then uncultivated, whereas now, since the land has been purified by agriculture, the disease is unknown.

Symptoms.—The invasion may be sudden or after a few days of indisposition, with headache, loss of appetite, and sneezing.

The *cold* stage is characterised by chilliness first in the limbs and afterwards over the whole body, with a sensation of streams of cold water running down the back; shrivelled skin, “cutis anserina,” chattering of the teeth, blueness of the nails, hurried respiration, and small pulse.

The duration of this stage varies from half an hour to three or four days, and is succeeded by the hot stage or reaction, with increased temperature, dry skin, great thirst, frequent pulse, and a peculiar fullness about the head.

This hot stage usually lasts from three to four hours, but it may be prolonged to six, eight, or twelve hours, and is then followed by the sweating stage, beginning with a diminution of the heat, followed by a gentle moisture on the forehead and breast, and terminating

in a copious sour-smelling steaming sweat, with an abundant flow of urine, normal pulse, and a cessation of all pain or uneasiness.

This stage in its duration cannot be easily determined, but it appears materially to exceed the other two.

The fever thus described rarely results directly in death, but it often induces permanent enlargement of the spleen with induration, popularly known as the Ague Cake. The enlargement is a pure hypertrophy—that is, an enlargement of every element of the organ—and is accompanied by a peculiar cachexia.

There is also congestion and permanent morbid change in the liver, with serious disturbance of all the digestive organs. The patient is subject to cachexia from enlargement of spleen, and even after his recovery from that he is much more subject to recurrences of the fever, which do not necessarily require new exposure, but the periodic character may imprint itself upon other diseases, as epilepsy or neuralgia. He seems to carry the seeds about with him.

Treatment.—In the cold stage the patient should be placed in bed, covered with blankets and rugs, with hot bottles applied to his feet, and hot drinks, such as tea or weak negus, should be given.

In the hot stage cooling drinks are required, and the body should be sponged with tepid or cold water.

In the sweating stage great care must be taken to prevent chills, and the action of the skin should be encouraged by tepid drinks.

During the intervals quinine should be given in a large dose, 20 to 30 grains, either before or at the close of the paroxysm.

REMITTENT FEVER

appears to be dependent on the same causes as intermittent fever, viz. malaria. It is also endemic, non-contagious, and is chiefly confined to tropical climates. The different localities in which it prevails have led to its being designated by various names. It is thus called Walcheren fever, Bengal fever, bilious remittent of the West Indies, jungle or hill fever of the East Indies, African fever, Mediterranean fever, etc.

The symptoms resemble those of intermittent fever; it is distinguished from it, however, by the notable fact that in the intervals there is no entire cessation of the fever, but simply an abatement or diminution. The disease continues from twelve to fourteen days, and the period of remission varies from six to twelve or fourteen hours. It is worthy of note that a distinct sliding scale of periodicity can be traced from intermittent fever down through remittent to the severe tropical continued fevers.

Symptoms.—The fever is ushered in with gastric symptoms, uneasiness, depression, and sinking at the epigastrium, with headache and languor. The cold stage is scarcely marked, or, if so, is rapidly succeeded by a severe hot stage, with burning skin, vomiting, sleeplessness, intense headache, or even delirium. This stage, usually lasting the time mentioned, is succeeded by an indistinct stage of sweating or subsidence, and is followed by another attack similar to the first but more severe. These attacks and varying remissions constitute the fever, which terminates in recovery or death, often in permanent ill health. Occasionally there is jaundice, and the liver and spleen are enlarged and tender. The remissions usually set in during the morning, while the exacerbations take place towards the evening.

Treatment.—The object of treatment is to mitigate the exacerbations, and lengthen the remissions, and is based on the same principles as those indicated in intermittent fever. Thus, see that the bowels are acted on, sponge the body, or use the cold pack, and give effervescing and saline drinks. When the remission occurs, give quinine in doses varying from four to six grains every three hours, omitting the remedy when the hot stage commences, but resuming it at the next remission. Cold should be applied to the head if the headache is severe, and sinapisms to the stomach to relieve the gastric irritation. If there be much exhaustion, stimulants should be freely given.

At the termination of the disease, the patient should, if possible, be sent to a temperate climate, or a non-malarious district.

In very chronic cases fresh air and outdoor exercise seem to be beneficial, with the administration of iron. Dr. McLean highly recommends the use of the biniodide of mercury ointment over the spleen, which has the advantage of never causing salivation.

YELLOW FEVER

requires an average temperature of at least 72° Fahr. for some weeks to produce its appearance, and seems peculiarly to affect the West Indies, Africa, and some parts of America.

It varies in severity, frequently terminating in death either by the acuteness of the fever, or by the exhaustion or intercurrent complications, such as uræmia or apoplexy. It is sometimes epidemic, and it is a matter of dispute whether or not it is contagious. It appears to be dependent on some morbid poison, probably of malarial origin.

Symptoms.—The fever commences abruptly, often

in the middle of the night, and is attended with severe headache, great irritability of the stomach; with vomiting, and a peculiar yellowness of the skin; the vomited matters at first being slimy and tasteless, but afterwards black like coffee grounds—hence called black vomit. The urine is frequently suppressed; if passed, it is loaded with albumen and tube-casts, and is smoky in appearance. The fever usually lasts from three to five or seven days.

When the sixth day elapses without the occurrence of black vomit or suppression of urine, hopes of recovery may be entertained. The mortality is usually one in three.

The symptoms of the fever point to the poison specially affecting the liver, which is supposed to undergo acute fatty degeneration. The poison is considered to produce certain specific changes in the blood—viz. destruction of the red corpuscles. The blood thus loses its capacity for nourishing and regenerating the tissues, and when death does not take place there is a lingering convalescence, consequent on the feebleness of the whole organism.

Treatment.—Although yellow fever is dependent on malaria like the preceding fever, it is to be remembered that the spleen does not seem to be affected, and hence, probably, quinine is of little service. We have no specific for the disease, and the treatment is thus symptomatic. At the outset castor oil and calomel are given to overcome the constipation which generally exists. For the relief of the nausea and vomiting ice may be swallowed, and morphia subcutaneously injected in the epigastric region.

Hænisch suggests that transfusion after previous bloodletting might paralyse or modify the injurious operation of the yellow fever miasm.

As soon as the stomach is able to retain food and

drink, a light nutritious diet is essential, with wine and quinine and preparations of iron.

DENGUE OR DENGÉ

is a peculiar exanthematous disease which has prevailed epidemically in Eastern Africa, British India, the West Indian Islands, and the Southern States of America. The epidemics invariably appear after long intervals, and they seem to originate independently of any antecedent case. After an interval of about fifty years, the last epidemic of Dengé originated in Zanzibar in 1870, and continued to spread in India till 1875.

Symptoms.—After a short, but indefinite, stage of incubation, the patient is suddenly attacked with pain and stiffness of the muscles, specially in the palms of the hands and soles of the feet, rendering every movement very painful. This is speedily followed by pain over the whole body, more particularly in the back, shoulders, and ankle-joints. After twenty-four hours there is swelling of the small articulations and severe pain on pressure. The febrile stage sets in immediately after the accession of pain, and is accompanied by a scarlet efflorescence extending between the cheek-bones, across the bridge of the nose. The average duration of the febrile stage is about forty-eight hours, and this is followed by a period of remission of from two to three days. On the fourth day, the febrile symptoms reappear; and, on the fifth day, the peculiar exanthematous eruption, which spreads over the entire body within forty-eight hours, the eruption extending from the head and face to the lower extremities. When the eruption has become general, the lymphatic glands begin to swell, the occipital invariably; the mucous membrane of the mouth and nose is implicated, and sometimes the throat. On the fifth and sixth days, the symptoms reach their maximum of intensity; and on the seventh or eighth day, desquamation of the cuticle begins, and terminates as in scarlatina. Dengé is very rarely fatal.

Treatment.—It is almost always necessary to administer an active cathartic, as obstinate constipation is the rule. Quinine, in five-grain doses, should be given, after the bowels have acted freely. When the febrile symptoms disappear, iodide of potassium, in four or five grain doses, should be given and continued

during the period of remission and for several days after desquamation has been completed.

THE PLAGUE,

called by Heberden "The black death," was formerly prevalent throughout Europe, and terribly fatal. Now it is little known except in certain parts of the East, Egypt, and Asia Minor. It is caused by a morbid poison which spreads by contagion, and is epidemic in its nature.

Post-mortem appearances reveal great congestion of internal organs, especially the spleen, with effusion into serous cavities.

It is characterised during life by fever of a low type, with high delirium tending to a typhoid form, by enlargement of lymphatic glands and formation of buboes, with carbuncles and ecchymoses, vomiting of black matter, and hæmorrhage from the mouth, stomach, and bowels. There is often, also, a cutaneous rash like that of typhus.

It terminates most frequently in death.

ERUPTIVE FEVERS.

Small-pox, measles, and scarlet fever, are simply continued fevers with a characteristic eruption super-added. In these fevers a definite period of time elapses from the reception of the fever until the appearance of the eruption and its final disappearance. Thus, measles has an incubation of from twelve to fourteen days, the eruption appearing on the third or fourth day of the fever, and fading on the seventh.

Scarlet fever has an incubation of from four to six days, the eruption appearing earlier than measles, viz. on the second day of the fever, and disappearing on the fifth. Small-pox has an incubation of from twelve to fourteen days, the eruption appearing on the third day of the fever. The eruption does not fade away so rapidly as in the other two; scabs form on the tenth day of the fever, and commence to fall off about the fourteenth.

These fevers are distinguished from one another not merely by the facts mentioned, but by other peculiarities.

SMALL-POX.

The first authentic narrative of small-pox as a distinct disease is given by an Arabian physician, Rhazes, in the year 900, and it was recognised in after years as the most dreaded scourge of the human race, as the hereditary curse of mankind, as an inheritance which neither time nor medicine could dissipate. To rob it of some of its terrors, to modify its most alarming features, Lady Mary Wortley Montague, in 1718, introduced the practice of inoculation. The essential character of this proceeding was the insertion of small-pox matter in a healthy person, and it was found that small-pox so imparted gave rise to a milder form of the disease, and less chance of succumbing to the virulence of the poison than when caught in the ordinary way. The benefits conferred by its adoption were great to the inoculated, but small-pox perpetuates small-pox, and in proportion as inoculation was actively undertaken, centres of contagion were multiplied, and almost every home was converted into a hospital. Inoculation did not diminish, nay, it actually increased, the mortality from small-pox.

The vitality of the disease was thus not conquered when Edward Jenner, on 14th May 1796, announced the birthday of vaccination. On that day matter was taken from the hand of Sarah Nelmes, who had been infected by her master's cows, and it was inserted into the arm of James Phipps. Satisfactory vaccine vesicles ensued. Subsequent experimenting by small-pox inoculation on the same boy yielded a negative result, and Jenner believed that vaccination, actively and efficiently performed, would, in the course of time, obliterate small-pox, and cause it only to be remembered like extinct epidemics of the Middle Ages. This estimate—naturally a sanguine one of Jenner's—has not been confirmed, for small-pox still exists it may be owing to gross carelessness, or wilful neglect, or inefficient performance; and when it occurs on an unvaccinated person, it has lost none of those features which rendered it so repulsive and fatal in bygone times. It is still the loathsome malady dreaded by all

who have seen it, and even avoided by those who know it only by repute. Occurring, however, on a person who has been previously vaccinated, it is a mild, non-fatal disease, and loses also its hideous characteristics. Briefly stated, it may be said then to present an eruption limited to a few scattered uncoalescing pustules, which reach their acme on the fourth day, and then crisp and die away. There is no delirium and no pitting in the vast majority of cases, and the mortality is only 1 per cent. Except in the premonitory fever, which is of the same intensity in both, the two diseases are essentially distinct.

After these remarks, it may now be observed that in small-pox a specific poison is taken into the system, and after twelve days' incubation fever is ushered in with shivering, weariness, and pain in the small of the back, and very frequently vomiting. These two latter symptoms are very characteristic of small-pox, and may guide in distinguishing it, before the eruption appears, from the two other fevers mentioned. Sometimes very acute delirium may appear in the first twenty-four hours, not remaining over three days. In children convulsions are substituted for the delirium. Lachrymation and salivation are often early symptoms. A papular eruption appears on the third day on the forehead, neck, and hands, then on the trunk, and lastly on the lower extremities. If the papules remain separate and distinct we have what is termed Simple Small-pox, or *Variola Discreta*. If they are numerous they coalesce, and we have Confluent Small-pox, or *Variola Confluens*.

In *Variola Discreta* we observe on the third day a vesicle forming on the papule, and around this an inflamed area. Two days after this the transparent lymph, which the vesicle at first contains, is changed into pus. After this the top becomes gradually depressed until it divides the pustule into two. This condition is termed *umbilication*, and is very characteristic of the small-pox eruption. A peculiar greasy

odour, difficult to describe, but never forgotten if once perceived, is now apparent in the room.

About the eighth or ninth day the pustule breaks and a scab forms. Generally after ten days from the commencement of the fever, or on the eighth day of the eruption, the scab falls off, and a red stain is left on the skin, which gradually disappears. Should, however, the true skin be attacked, a permanent mark remains, and the patient becomes pock-marked.

In *Variola Confluens* the simple state of matters we have described is generally altered for the worse. The headache, the pain in the back, and the vomiting, are more severe, and a more copious eruption appears. Developing as the simple type did, the vesicles become so continuous as to render it sometimes impossible to put a pin's head between them. This is specially observed in the face, which becomes so swollen as to render the features unrecognisable. Large black scabs form, and the characteristic odour is sickening in the extreme. The mucous membranes of the mouth, larynx, and trachea, are implicated. The voice is husky, throat sore, and swallowing is difficult. Cough and dyspnoea are also distressing, and there is delirium.

There is thus a very marked distinction between the general appearance and symptoms of the simple and the confluent type of small-pox, and there is also a great difference in what is termed "The Secondary Fever." This term is somewhat puzzling, and hence it is necessary to explain that the high fever which precedes the small-pox eruption in either form abates when the eruption appears. This is designated "The Primary Fever." Fever again reappears as the pustules mature on the eighth day of the eruption, or eleventh of the fever, and then it is termed "The Secondary Fever," which is of a typhoid or inflammatory type.

As might be expected from the description of the two forms of small-pox given, it is slight in the first variety (*variola simplex*), while it is violent in the second (*variola confluens*), and very often proves immediately fatal. It may be accompanied by boils, erysipelas, or ulceration of the cornea or *membrana tympani*.

Prognosis.—In persons who have been previously vaccinated efficiently, or in whom the attack is non-confluent, the disease is rarely fatal. In those who have not been vaccinated the mortality is one in three. Further, if the papules be filled with blood (*hæmorrhagic form of eruption*) or serum, not umbilicated, and if extending, the prognosis is extremely unfavourable. Lastly, the “*corymbose*” form of eruption (where it groups itself into patches) is of very bad omen.

Treatment.—There is no contagion so sure as small-pox, none which acts at a greater distance, and hence prophylactic measures are of paramount importance. The sick person should be isolated, and those in attendance, before seeing other people, should change their clothes, after thorough ablution. If the disease has entered a household of the poor, removal to a special hospital is essential. Every one likely to be exposed to the contagion should be re-vaccinated, and patients who have recovered should be kept in the strictest quarantine until all crusts have fallen off. Clothes worn or bedding used should be destroyed, and the apartment thoroughly fumigated before again being occupied. Neither vaccination nor medicine is of any avail when small-pox is incubating or has appeared. The disease must run its course, and all that can be done is to enable it to do so under the most favourable circumstances. The patient should be kept in a cool, well-ventilated room. The diet ought to be

light, and saline draughts or lemon-juice may be administered to diminish the thirst and regulate the bowels.

In the secondary fever, if it be severe, stimulants should be given, with good broth or strong beef-tea. If there is great restlessness, opium or bromide of potass and chloral do good service. If the sores are sloughy, and the system is greatly depressed, wine or brandy must be administered to sustain the strength through the attack. If the mouth and pharynx are much involved, a weak solution of iron may be employed as a gargle, and mucilaginous drinks, to which some chlorate of potash may be added.

Locally no escharotic treatment seems of any avail. The pustules should be smeared with cold cream, or carron oil, or carbolic acid lotion (F. 56*a*), or with oxide of zinc and hydrocyanic acid to relieve the itching (F. 61). Iced compresses, applied wherever the eruption is abundant, are said to diminish the pain and swelling better than anything else.

When the pustules have burst, some dry powder of starch or oxide of zinc should be applied.

All scratching should be prevented, and to effect this the hands of young patients should be tied.

Warm baths may be given during the stage of decrustation every day, and the body afterwards anointed with oil or any kind of fat.

VACCINIA, OR COW-POX.

The remarkable discovery of Jenner towards the end of the last century marks an era in medicine. All experience testifies that, while vaccination does not infallibly prevent small-pox, it yet so far modifies the disease as to rob it of its disgusting phenomena and sequelæ, and to render it a comparatively trifling

malady. It is unnecessary to detail the process of vaccination further than to state that after the simple operation has been performed, a little redness and elevation can be detected on the second day. A vesicle with depressed centre and raised edges is seen on the fifth, and reaches its acme on the eighth day. It is now observed to be composed of a number of cells containing clean lymph situated on a hardened base. On the ninth or tenth day these burst, and a scab is formed which finally falls off on the twenty-first day, leaving a well-marked permanent cicatrix.

A little constitutional disturbance attends the process.

VARICELLA, OR CHICKEN-POX,

is a trifling affection, attacking infants or young children, attended with only slight fever, if with any. The eruption consists at first of pimples, which on the second day are converted into vesicles. These burst on the fourth day, and rapidly dry up. The rash first appears on the shoulders or trunk, subsequently it may attack the scalp, but it rarely involves the face. Chicken-pox has been occasionally mistaken for a mild case of small-pox. The points which should guide us in distinguishing the two, are the mildness of the premonitory symptoms; the first appearance of the eruption on the trunk instead of the forehead; the papules rapidly becoming vesicular; the absence of hardness round the vesicles; and the shorter course of the disease. It seems to have an incubation of four days, and is undoubtedly contagious.

SCARLET FEVER

is eminently contagious. It is usually a disease of

childhood, occurring once in a lifetime, and it derives its name from the character of the eruption, which is red, minutely punctated, appearing on the second day of the fever or earlier, and lasting three days. It commences on the arms and trunk and lower side of the thighs, and thence proceeds to the face and the inferior extremities. In addition to the fever and the eruption, the disease evidences itself on the tonsils and mucous membrane of the mouth and pharynx.

It varies in severity, and hence has been divided into

Scarlatina Simplex,
„ Anginosa,
„ Maligna.

In *Scarlatina Simplex* the fever runs a simple and natural course, the eruption appearing after the usual incubatory stage, disappearing on pressure, fading on the fifth day, and terminating generally with desquamation of the cuticle on the face and trunk. This desquamation takes the form of scurf on the body, while on the hands and feet large patches of skin may come away at once. The process of desquamation may continue for days or weeks, accompanied by itching. The tongue in scarlet fever is very characteristic. At first it may be covered with a white fur; as this clears away it becomes red, the lengthened filiform papillæ project, and the organ presents a strawberry appearance. The tonsils and mucous membrane of the mouth are congested, but in a mild degree.

In *Scarlatina Anginosa* the fever is of a much more violent character, being often attended with delirium, great restlessness, and prostration. The temperature often reaches the highest point in the first

twenty-four hours of the fever. This point varies much, and may, although rarely, reach 109° or 110° . The eruption may be delayed to the third or fourth day, is of a more livid colour, and it may be even patchy and evanescent. The throat symptoms are more severe, the tonsils being greatly swollen, and ulcers frequently forming on them. The neck is stiff, the sub-maxillary glands enlarged, and deglutition is difficult. Even after the eruption has disappeared, the throat symptoms do not abate in severity, as in the simple form.

Scarlatina Maligna is attended with marked cerebral disturbance, passing into coma, and with great vital prostration. Tenacious phlegm hangs about the mouth and throat, the teeth are covered with sordes, the tonsil ulceration may become gangrenous, and the breath is very offensive. The rash is irregular in its appearance and its continuance, and is of a livid colour. This variety, as its name implies, is usually fatal. The vital powers succumb to the strength of the poison on the fourth or fifth day. Hope may, however, be entertained if the seventh or eighth day is passed.

The dangers arising from scarlet fever, considered as a whole, do not terminate with the subsidence of the fever. Troublesome and even fatal sequelæ may result. The cervical glands may remain permanently enlarged—abscesses may form—ophthalmia result—or a muco-purulent discharge obstruct the nares, or the throat affection may spread from the pharynx up the Eustachian tube, causing disease of the ear and deafness. One of the most common and not the least dangerous sequela, however, is the affection of the kidneys, resulting in anasarca and albuminous urine. It is to be carefully observed that this result is most common in those cases where the primary fever was

of a mild form. The patient has probably suffered little or no disturbance from the fever, and is perhaps exposed to cold or draughts during the stage of desquamation. The excretory powers of the skin are impeded, and increased work is thrown on the kidneys, bringing on acute desquamative nephritis (acute Bright's disease). This may be ushered in with shivering, fever, and pains in the back, or it may come on insidiously. The face becomes puffy, and this is followed by general swelling, with scanty, high-coloured, and albuminous urine. Under the microscope the urine presents blood-corpuscles, coagulated fibrin, and epithelial casts.

Anatomical Changes.—There are no distinctive post-mortem appearances in scarlet fever. The ordinary anatomical changes may be summed up in a single sentence—Erythematous inflammation of the skin, with superficial œdema; inflammation of the fauces, and congestion and catarrh of the tubules of the kidneys.

Prognosis.—The throat is the source of greatest danger. “Whenever,” says Sir Thomas Watson, “I see the glands much enlarged at the angle of the jaw, and beneath the jaw, in a child suffering from scarlet fever, I augur ill of the disease.” If, in addition, the urine is very scanty and albuminous, the danger is increased by a tendency to uræmia. When these symptoms are absent the prognosis is more favourable. In the majority of cases the dropsy disappears, though serious permanent injury to the kidney may be the result.

Treatment.—Attention to the bowels, with a slight febrifuge mixture, and rest in bed, are alone necessary in simple scarlet fever. For a drink in this, as in the severer forms, Potass. chlor. 60 grains, in a pint of water, may be given freely. The parents should be

warned to keep the patient in bed in a warm room, until the desquamation is over, and after that flannel should be worn. A warm bath may be given to bring out the eruption.

In *Scarlatina Anginosa*, in addition to the above, if the fever is considerable, tepid sponging, cold effusions, or wet-sheet packing, may be employed. Shaving of the head, and the application of vinegar cloths afterwards, should be insisted on. If the throat is much inflamed, and the patient is an adult, five or six leeches should be applied. If a child, hot poultices should be applied instead of leeches.

Beef-tea, wine, and ammonia, are necessary, if the patient is weak and prostrated.

The great prostration in *Scarlatina Maligna* necessitates from the first a stimulating treatment. Wine or brandy should be given freely. Three ounces of port wine may be given to a child, and double or treble that quantity to an adult, in the twelve hours.

The ulceration of the throat ought to be touched with nitrate of silver, or with a mixture of iron and glycerine. Ammonia and bark must also be given from the commencement.

In all cases the body should be rubbed with oil, as this facilitates desquamation. Should, however, the desquamation be arrested and anasarca result, the loins ought to be cupped, and this should be followed by the constant application of hot linseed meal poultices.

Hydragogue cathartics are also necessary to relieve the strain on the kidney, and of these, pulv. jalapæ co., or elaterium, seem the best. Iron, either in the form of the tincture or ferr. ammon. cit., should be ordered, in as large doses as the system can bear without producing headache or nausea (F. 89). The diet should be generous, with plenty of milk; and a

uniform temperature of 60° Fahr. should be insisted on. Under such treatment the dropsy may be successfully combated, and the albumen disappear from the urine.

MEASLES

was long confounded with scarlet fever, and it is only since the beginning of the last century that it has been recognised as a specific and independent disease.

Measles is contagious, but the cause of the contagion is unknown. Susceptibility to the contagion diminishes with years, and second attacks are rare. The incubatory stage of measles, judging from the epidemic in the Fiji Islands, and other isolated instances, lasts from 10 to 12 days.

Symptoms.—Measles may be considered a catarrhal fever, with a characteristic eruption added to it, the eruption appearing first on the face and forehead, and afterwards on the trunk and extremities. The symptoms of catarrh—running at the eyes and nose, cough and sneezing, with great oppression and foul tongue—precede the eruption. The fever which accompanies these catarrhal symptoms indicates that an exanthem will follow. This fever, with a temperature it may be of 102° Fahr., lasts for three or four days, when an eruption of small circular dots, like flea-bites, appears on the forehead, spreading to the trunk, limbs, and feet. These do not remain distinct, but coalesce, until patches of a reddish colour and of irregular shapes cover the parts affected, accompanied by flushing of the face. Thirty-six hours from the commencement of the eruption the temperature is highest. The eruption lasts three days, and disappears in the same local sequence as it came.

There are two kinds of measles,—the essentially mild, and the severe.

Of the first variety there seem to be two forms—measles without catarrh, and measles without eruption.

The former attacks chiefly young persons, gives rise to little sickness, yet effectually destroys the after-susceptibility to the disease.

The latter variety is seen during an epidemic of measles, and we are justified in assuming a person to have it if the catarrhal symptoms are as severe as if the patient had a measly rash, and if the person becomes non-susceptible to the disease.

The essentially severe form of measles, popularly termed “black measles,” is generally associated with the hæmorrhagic diathesis. Before or after the eruption of measles, hæmorrhage occurs in various regions: in the skin, causing petechiæ or ecchymoses; in mucous membranes, causing violent bleedings from the nose, or in organs and cavities.

The general symptoms are those of a typhoid character; sordes on the teeth, small pulse, debility and diarrhœa.

Complications.—Catarrhal pneumonia and bronchitis—an extension of the catarrh down the respiratory tract—are chiefly to be dreaded in measles. They appear after the eruptive stages, and intensify the fever and increase the danger. Of fatal augury are livid lips, cold extremities, and a rapid feeble pulse. Cerebral complications, peculiar forms of ophthalmia, dropsy, and albuminuria are not unknown.

Prognosis.—As a general rule it may be stated that measles is essentially dangerous to very young children, and that the danger decreases rapidly with years, except in old age, when it may be fatal. Unusual sparseness or paleness of the eruption, or the hæmorrhagic diathesis, are bad omens. If the chest is only slightly affected, or not at all, we may predict a

favourable result. The great danger is not in the disease, but in what it leaves behind it, such as lobular condensation or collapse of the lung, or a tendency to emphysema in after life.

Treatment.—As the greatest danger in measles is an extension of the catarrh to the lungs, all exposure to cold must be avoided. The room should be darkened, and the patient kept in bed. Milk diet, attention to the bowels, and a slight diaphoretic mixture, are all that is required in ordinary cases (F. 34).

If there is severe coryza, warm water may be drawn through the nose. Emetics are useful at the commencement to prevent cough, and cold compresses may be applied to the abdomen if diarrhoea is excessive. Should chest complications ensue, the principles of treatment to be afterwards spoken of under Acute Bronchitis should be adopted. Trousseau has recommended whipping the whole skin with nettles.

In the typhoid state associated with the hæmorrhagic diathesis, wine and stimulating expectorants are essential (F. 72).

RUBEOLA, RÖTHELN—GERMAN MEASLES.

The term rubeola was brought into use by German physicians about the middle of the last century to designate a disease, which it was considered could belong to no one of the acute contagious or non-contagious eruptions, though closely resembling measles and scarlet fever.

Opinions with regard to it have greatly varied, but latterly it has been shown that it is an independent disease by distinct epidemics of it, and by the fact that while it ensures against a second attack of itself, it affords no protection from measles or scarlet fever.

Recognising it, therefore, as a contagious and essentially epidemic, and thus also specific, disease, it may also be noted that it is especially a disease of childhood, attacking indiscriminately boys and girls, and older and younger children, down to sucklings. A second attack is rare—as rare as that of measles. Its contagion is not quite so great as that of measles.

It consists of an eruption on the skin of numerous discrete blotches, from the size of a pin's head to, at the utmost, that of a bean, slightly raised above the level of the skin, with at times a distinct, at others a faded, border.

The spots are round or oval, and are well marked on the face, their colour being of a pale rose-red. They are seen on other parts of the body, especially on the neck, scalp, and thighs ; while on the forearms, hands, and lower parts of the legs, they are not so common.

The eruption lasts usually for two days, and then disappears without any desquamation. The size of the spots is less than that of measles, the form being more round, and the colour paler.

Symptoms.—The course of the disease in the majority of cases is as follows:—After the patients have coughed and sneezed somewhat, and manifested slight photophobia, from a few hours to a day, one notices—either at once, or after the attention has been excited by a gradually increasing temperature—the beginning of the exanthem on the face. While now the exanthem gradually spreads over the body, the temperature, if increased, becomes quickly normal again. Thus children generally object to stay in bed, and would prefer to be out of doors.

In ordinary rubeola there are no other local symptoms, except slight catarrh at times, some difficulty in swallowing, and some diminution of the appetite.

Prognosis.—Its almost feverless course makes the prognosis most favourable, but the disease may be complicated with bronchitis, and may have a fatal termination.

Treatment.—The treatment of rubeola is restricted to a suitable regimen; protection against exposure, keeping the patient in bed, if feverish, and attending to probable catarrh of the air-passages and the pharynx.

Other complications, if any, should be treated according to their nature.

DROPSY.

By dropsy is meant a collection of serous fluid in one or more of the shut cavities of the body, or in the meshes of the areolar tissue, or in both. Dropsy is not so much a disease *per se*, as it is symptomatic of other diseases. And it may be viewed in two aspects: first, as to its cause—the organ implicated; second, with regard to the dropsical effusion. Different terms have been given to the effusion in relation to its different sites.

Hydrocephalus is the term applied when the effusion is in the ventricles of the brain, or in the sub-arachnoid space.

When in the Pericardium, Hydropericardium.

„ „ Pleura, Hydrothorax.

„ „ Peritoneal Cavity, Ascites.

When it is situated more or less generally in the subcutaneous areolar tissue all over the body, it is termed anasarca; when it is confined to one particular part of the areolar tissue, the term oedema is used.

To account for dropsy it is to be remembered that all closed cavities and interstitial tissues are kept

moist during life by a continual serous exudation from these surfaces, which exudation again is as continually and constantly absorbed. When dropsy occurs, the balance has been destroyed. There is either too much exudation, an increase of fluid sent out, or absorption is impaired, while the exudation continues the same.

Dropsy is thus naturally divided as arising from defective absorption—chronic or passive dropsy; or excessive exudation—active or acute. Similarly, any interruption to the venous return, by favouring exudation, originates dropsy.

Although anything which tends to weaken the system and impoverish the blood, such as bad or insufficient nourishment, or exhausting disease, may cause dropsy, yet there are three great kinds of dropsy, which are named after the organs implicated, cardiac, renal, or hepatic.

Cardiac dropsy, due to disease of the heart, commences in the feet and hands, and mounts upwards, ultimately becoming diffused all over the body.

Renal dropsy originates in the face and upper extremities, and is frequently first observed in the loose cellular tissue about the eyelids, ultimately affecting the feet and serous membranes.

Hepatic dropsy is localised at first, being confined to the peritoneal cavity. The portal system of veins is alone implicated, and hence the legs, feet, and hands may not give evidence of dropsy for some time.

Dropsy in the subcutaneous areolar tissue is easily recognised. There is swelling; the skin is pale, and may be tense and glazed. There is no actual pain or tenderness, but simply a feeling of uneasiness and discomfort. Pressure on the skin causes what is termed "pitting," and this is due to its want of elasticity.

The diagnosis of ascites, *i.e.* the accumulation of fluid in the peritoneal cavity, is more difficult. That fluid is present is recognised by the fact that the abdomen is swollen, and that the liquid is free is shown by the ease with which it goes from side to side on varying the position of the patient; and, further, on placing the hand on one side of the abdomen, and striking on the opposite side with the other, the wave of the fluid communicates a perceptible sensation.

Ascites may be confounded with tympanitis, but the distinction between them is, that tympanitis gives an exaggerated sound to percussion all over the abdomen; whereas in ascites the centre is clear, but the gravitation of the fluid renders the flanks dull. To distinguish it from distension of the bladder and from pregnancy, the history of the case, and the application of the catheter in the one instance, and the stethoscope in the other, are sufficient.

The history of the swelling commencing on one side, and the facts that this swelling does not shift with the different positions of the patient, and that the sound on percussion is dull and deeply seated, indicate the presence of an abdominal tumour, which is confirmed by examination, showing that neither heart, kidney, nor liver is at fault.

Dropsical fluid presents the following characters: It is thin and watery, generally of a pale straw colour, and having a specific gravity of 1008 to 1014. Its reaction is usually alkaline. It is allied to blood serum in this, that it holds in solution albumen and alkaline and earthy salts, especially the chlorides. The proportion of solids is, however, much less, and the albumen, especially, varies in quantity.

Treatment.—Without entering specially into the treatment of the different kinds of dropsy, it is to be observed that there are obvious indications—

1. To remove the fluid : 2. If possible to prevent its recurrence ; and, if neither the one nor the other is possible, palliative measures are necessary.

Rest in the recumbent posture is of paramount importance, and the part in which is the greatest effusion must be elevated and supported. For this end raise the anasarcaous limb, and support the distended scrotum.

There are three great channels for getting rid of the effusion—the skin, the kidneys, and the intestines ; and if the remedies employed to eliminate it by these organs fail, then tapping or puncturing must be had recourse to (F. 33, 37a, 27).

TUBERCULOSIS.

By the term tuberculosis we mean a certain peculiar condition of the system, most probably originating in the blood, and showing itself in such conditions as scrofula, pulmonary consumption, tubercular hydrocephalus, tabes mesenterica, etc. We are ignorant of what change the blood undergoes ; yet, we are justified in stating that it is a deficiency of red corpuscles, and an increase of the watery portion. In some towns, 35 per cent of the death rate is due to the tubercular diathesis, and all over the country it is the cause of the direct mortality of one-seventh of the classified forms of disease.

Authorities seem to agree that the morbid state of the blood gives rise to the specific production of tubercle. After the admission of this fact, there are three widely different views of the subject :—

One is, that there is an exudation from the capillaries, as in ordinary inflammation, and that this exudation, instead of forming pus, is, owing to the peculiar state of the system, transformed into tubercle.

Another is, that while there may be an exudation, this is not the whole, but the minor part of the process, for the cells of the lung-tissue tend to increase for some time, then they shrivel up and die, thus constituting tubercle.

A third view is that tubercle is the product of infectious disease—this infectious disease being due to the absorption of cheesy morbid products into the blood, which in some peculiar manner excite a specific inflammation which gives rise to tubercle. Some modify this opinion by saying that the caseous matter produces tubercle by a local influence, through the lymphatics, and not by a general infection.

There are two forms of tubercle—the grey and the yellow ; the former consisting of minute, firm, bluish-grey granules, about the size of a millet-seed ; hence the term miliary. Sometimes, however, they are as large as a small pea. They are generally firm, and of a semi-cartilaginous hardness.

Yellow tubercle is not semi-transparent, but opaque, its colour varying from a dirty white to a bright yellow. It has been likened to cheese ; and as the consistence of cheese is not uniform, in some cases being firm and tough, in others creamy and easily cut, so the yellow tubercle is firm and tough, or fluid and soft. This tubercle may be found alone in isolated masses, or a large portion of the lung may be infiltrated with it, or the large masses may be crowded together, in which case cavities may be formed by the softening of the tubercular matter.

The grey tubercle is composed of cells in a fine reticulum, and among these cells are to be seen larger ones with more than one nucleus. As the tubercle assumes more and more of the yellow appearance, the cells are observed to break up, and at length the yellow mass may be found to be composed merely of

detritus, amid which a few half-shrivelled small cells may be detected. From this it would appear that the yellow tubercle is a degenerated form of the grey tubercle.

What becomes of tubercle thus deposited or formed in the lung?

It may be absorbed, or it may be converted into a cheesy consistence by means of fatty degeneration, or again, it may become hardened, undergoing the change termed calcification. Around the tubercular particle or mass there is often a zone of irritation, in which there is a cell-growth in the connective tissue of the lung, and this ultimately encloses the cheesy or calcareous matter in a capsule of fibrous tissue, where it may lie for an indefinite period encysted. On the other hand, should the softened cheesy material be in communication with an air tube, it may be coughed up and the capsule of fibrous tissue may remain empty, or with merely fluid contents—a cavity, in short, in the midst of the lung tissue. The sides of this cavity may cohere, and nothing may remain of it but a fibrous nodule or scar. To establish the cure it is necessary that the patient should become so healthy as to prevent the deposition of further tubercle, or of what may become tubercle.

It is impossible to deny that tuberculosis is hereditary, and that it may also originate from breathing a vitiated air, or from want of proper nourishment or exercise. Any disease which tends to weaken the body and impair digestion favours the development of tubercle; and it may be further added that, whenever an organ is specially weakened by previous disease, there tubercle may form. It may also be stated that general tuberculosis has been set up in animals by the inoculation of caseous material.

What general symptoms indicate tubercle?

A delicate white skin, which at times blushes with a rosy hue of characteristic beauty ; a coldness of the body ; in youth great precocity both in walking and talking ; a somewhat swollen abdomen : and a strong disinclination for all fatty food.

When the tubercles are forming, or have actually formed, there is marked debility, loss of flesh, and a fever of a remittent character, as is indicated by a rise of the thermometer in the evening and a fall in the morning.

The scrofulous diathesis cannot be considered to be distinct from the tuberculous. It is simply a coarser expression of the same picture. The lymphatic glands of the neck are enlarged, sometimes even they suppurate ; the face is not so intelligent, nor has it the same transparency or regularity of feature ; the lips are frequently thick and swollen ; the nose flattened ; forehead low ; the teeth carious ; and the belly much enlarged during early life.

Paget says : " The scrofulous constitution is peculiarly liable to tuberculous disease."

Tubercular disease may be mistaken in early life for typhoid fever. The indications by the thermometer are similar ; but there is an absence of gurgling in the iliac region, of rose-coloured spots, or of characteristic pea-soup stools ; and while night-sweats are associated with tuberculosis, they are unknown in typhoid fever.

Tubercular disease is often preceded by what is called strumous dyspepsia. By that term is not meant ordinary dyspepsia, pain or vomiting after taking food, but a kind of shuddering distaste for all fatty food, and which, if taken, gives rise to nasty acid eructations, quite distinct from ordinary faulty digestion. Statistics show that this dyspepsia was present in 77 per cent ; and out of 50 cases carefully

tabulated by Mr. Hutchinson, it was found that it had preceded the chest symptoms in 33.

Prophylactic measures are necessary to prevent the transmission of tubercular disease; 1st, Marriage should be well assorted, and should not be contracted by those labouring under this diathesis. 2d, If a child is born when there is evidence of this complaint on the part of one or other of the parents, it should be entrusted to a healthy wet nurse, and should be much in the open air both during and after lactation. Cleanliness and friction of the skin should be attended to; and substances which are likely to occasion diarrhoea, such as fruits and pastry, should be avoided.

If circumstances permit, such children should be sent to a warm and equable climate until the constitution is well developed. They will there be enabled to spend much time out of doors without risk of catching cold, and thus obtain the most important hygienic factors—daily exercise and a pure atmosphere.

On the same principle sea voyages are useful. There is not much risk of catching cold at sea, and the appetite and the digestion are improved.

The appropriate treatment for each of the tubercular complaints—phthisis, tabes mesenterica, etc.—will be alluded to under the separate diseases. The general principles, however, are good nourishment, fresh air, warm clothing, and great attention paid to the digestive system. By these means, aided by appropriate medicines, it is our hope to remedy the blood disease connected with tuberculosis (F. 81).

SYPHILIS.

Syphilis is a chronic infectious disease, with different symptoms at different stages of the malady. As

a separate and distinct disease, syphilis dates from the end of the fifteenth century, when a notorious epidemic of it occurred in Italy, which gradually became less malignant, and the physicians then inferred, falsely, as we now know, that it would wear itself out, and cease altogether to infect the human body. The disease is at the present day prevalent throughout the world, although its principal sites, for obvious reasons, are large seaport towns and great commercial centres.

The most common way by which syphilis can be communicated is by the genitals as the result of sexual connection. A little red papule appears, followed by hardness and induration. A few days after this the lymphatics of the groin are enlarged, become hard to the touch, without tenderness, and freely movable beneath the skin. Shortly after the affection of the lymphatics, the papule is seen to be scaly or covered with a thin crust, which, when removed, discloses a shining surface of a bright red colour with a scanty secretion. Meanwhile, the patient begins to feel weak and somewhat indisposed, and in the course of from six to eight weeks from the appearance of the papule, an eruption is observed on the skin of a red colour and unattended with itching.

This is the commencement of constitutional syphilis. Simultaneously with the red eruption, or shortly afterwards, the throat begins to be inflamed; the inflammation leading to ulceration or to the production of circumscribed flat growths on the mucous membrane. There are frequently also more or less baldness, affections of the nails, pains in the bones, inflammation of the iris or of the deeper structures of the eye.

Now, the disease properly treated may take a favourable course, with disappearance of the symptoms and restoration to health in from ten to twelve months

from the time of infection. But in the majority of cases new crops of eruptions come and go on the skin and mucous membranes; and thus we have small papules on the tongue, and scaly isolated patches of psoriasis on the palms of the hands or other parts of the body. If the constitution is weak and scrofulous, eruptions tending to suppurate may be developed. These become encrusted and form ulcers, which finally heal by cicatrisation.

Severe ulcerations may also be developed in the throat and nasal cavities, in which latter the bones may be laid bare and the nose become permanently depressed. Tumours may form in various internal organs, especially the liver, the testicles, and the brain, and from the semi-translucent aspect which they present, especially in the quite recent state and at the growing edges, they have been termed gummata. Phthisis may now be set up, with albuminuria and dropsy due to amyloid degeneration of the kidneys.

Constitutional syphilis may also be communicated from local secondary lesions, as by kissing, etc., by syphilitic nurses, by vaccination when blood is taken along with the lymph of the vaccine vesicle, etc.

The syphilitic cutaneous affections may be of various kinds; probably the squamous variety is the most common, appearing in patches of a coppery colour, and having the scurf renewed as fast as it is shed.

These eruptions may generally be diagnosed as syphilitic by the fact that they do not itch; by their dull coppery colour; by their more or less circular form and grouping; and by the brownish coloration the severer forms leave behind. Syphilis is often communicated to the infant through disease of either parent. In such cases, within a few weeks or months, an examination of the nates will reveal mucous

tubercles, or red patches at the buttocks, ankles, or hands. Fissures may also be observed at the lips. The child also presents, if no treatment has been adopted, a pinched, young-old appearance, and there is a history of characteristic snuffles from birth. As the result of this congenital syphilis the upper central incisors permanent teeth may have a pegshaped form and notched appearance, and one or both eyes may be affected with a lingering inflammation of the cornea (Keratitis).

Treatment.—It is doubtful if the initial lesion can be destroyed at the seat of infection, opinions varying on this important point. Experience testifies that all treatment of constitutional syphilis is futile without the aid of mercury. How this remedy acts we cannot tell. There are three modes of employing it:—

1. By inunction; rubbing in some ungt. hydrarg. every night, after washing the part with soap and water, and stopping the remedy whenever the mouth becomes in the slightest degree affected.

2. By fumigation; 8, 15, to 20 grains of calomel being employed for this purpose. The patient, undressed and enveloped in a blanket, being seated on an ordinary cane-bottomed chair, the calomel, placed on a small metal vessel below which the spirit lamp is burning, is evaporated in about 15 minutes and deposited on the skin of the patient. This method may likewise be continued daily, until slight mercurialisation is produced.

3. By mercurial preparations internally, that one being chosen which can be continued for the greatest length of time without producing digestive derangements.

Thus pil. hydrarg. is good, or hydrarg. c. creta, or the perchloride in the form of a pill, or in a mixture in doses of $\frac{1}{16}$ of a grain (F. 1, F. 3) thrice daily.

Iodide of potassium should be given alone for a considerable time afterwards. This remedy is specially serviceable in pustular eruptions and affections of the bones in the secondary and tertiary manifestations of the disease. If there is much anæmia, it may be combined with carbonate of ammonia or ammonia-citrate of iron. Condylomata are best treated locally by dusting calomel over them. For Keratitis, my experience at the Glasgow eye infirmary induces me to speak highly of small doses of hydrarg. c. creta and quinine, with the local application at first of atropine and subsequently of calomel dusting.

The patient should avoid sudden changes of temperature, go to bed early, and wear flannel. Beer and wine may be allowed, but no spirits. The teeth should be brushed daily with tincture of myrrh, or chlorate of potass. The diet should be nourishing.

RHEUMATISM.

The word *rheumatism* is derived from *ρευμα*, a fluxion, and the disease arises from some disordered or abnormal condition of the blood. Its frequency has attracted the attention of physicians both in ancient and modern times, and much speculation has been excited as to what causes operate in determining its predisposition for the white fibrous tissue, which enters into the composition of sheaths, fascia, fibrous membranes, and ligaments, and thus in particular affecting the joints. The heart and its coverings, moreover, are often implicated.

It is believed that the poison circulating in the blood is lactic acid. Dr. Prout first pointed out that the blood contained a superabundance of this acid; and Dr. Richardson's experiments indicate that the injection of a solution of seven drachms of lactic acid

to two ounces of water into the peritoneum of a cat induces not peritoneal but endocardial inflammation (especially of the left side of the heart), and fibrous deposits on the mitral and aortic valves.

The starchy matter of the food is supposed in health to be changed into lactic acid, which then combines with oxygen to form carbonic acid and water, in which state it is excreted. If this oxidation does not take place the lactic acid accumulates in the system and rheumatic fever results.

The fibrin appears to preponderate over the saline elements of the blood during the disease. Few opportunities have been afforded of examining the state of the parts affected when the attack is acute, as few people die of rheumatism *per se*; hence the somewhat contradictory statements of different authors.

Rheumatism is most conveniently divided into acute and chronic. In the former, the general and local symptoms are well marked. There is usually a feeling of coldness, want of appetite, thirst, and more or less feverishness, attendant on or caused by exposure to cold or wet. Pain is experienced in one or more joints, and is followed by inability to move, and by swelling and great tenderness. The large joints are often implicated, but the disease usually attacks the middle-sized ones. Hence the knee, ankle, wrist, and elbow are the chief seats. The disease tends to shift from one joint to another, and does not often remain fixed in the one first affected.

When the disease is thoroughly established the pain is severe, and is intensified by the slightest movement. The pulse is full and quick, and the fever is attended with a peculiar acrid, copious, and sour-smelling sweat. This sweat, which may almost be regarded as pathognomonic of the disease, seems neither to mitigate the fever nor relieve the pain.

The bowels are constipated, and the urine is high-coloured, scanty, and deposits a quantity of urates on cooling.

Unfortunately the disease is not limited to the joints. It has been found that in three cases out of four of acute articular rheumatism with high fever, the heart is affected by endocarditis or endopericarditis, and the foundation is laid for permanent chronic valvular disease. The cardiac complication is insidious, and frequently attended with no pain, and it is only discovered on examination with the stethoscope. While pneumonia is rare, pleurisy with effusion may complicate matters.

The temperature ranges from 100° to 104° , gradually ascending for at least a week, and subject to considerable variations. Sometimes it reaches as high as 108° or 109° , and then death quickly ensues.

The duration of the attack varies from three to six weeks. Relapses are common, and although five to six weeks is the usual limit, the attack may extend over some months, as it has no fixed epoch for its departure. The termination is generally in recovery, but often a joint or joints may be left stiff, or may become chronically enlarged. The average number of deaths is usually 1 in 1000. Rheumatism is not thus so serious in itself as in the after-mischief which it entails by cardiac and other complications. A variety of subacute rheumatism sometimes met with during an attack of gonorrhea is termed "gonorrheal rheumatism." In this form the disease usually locates itself in one of the large joints, as the knee, which becomes the seat of considerable effusion and swelling.

In chronic rheumatism there is subacute inflammation of one or more joints, notably the knee, ankle, and shoulders, and the pain, which is more or less constant at all times, is aggravated by changes of

weather, and is accompanied by swelling. It is also peculiar to the latter half of life, never shifts quickly from joint to joint, never attacks internal organs; and these characteristics, with its tedious course, sufficiently distinguish it from the acute variety, which, however, may supervene at any time on the chronic form. The prognosis is favourable to life, but unfavourable as regards complete recovery.

Treatment.—The varying course and duration of the disease has clouded the actual value of medicinal agents, and hence a shifting therapeutics has characterised the treatment of acute articular rheumatism. Bleeding, mercury, and purgatives have had their day, but these are now practically abandoned, and at the present time the alkaline treatment is generally adopted. It is said that the heart is only implicated during the first week of the disease, when the fever is high and the urine acid, and that it is not attacked when the urine is alkaline. Hence two scruples of the bicarbonate of potass soda should be given every three or four hours in half a bottle of soda-water, or in an effervescing citrate of ammonia or potash draught, and should be continued steadily until the febrile disturbance is much lessened, the pulse reduced, and the urine rendered alkaline. If the patient is robust and the urine loaded with lithates, ten minims of vin. colch. should be added to each draught.

Locally, alkaline lotions should also be applied. Half an ounce of carbonate of soda, and six drachms of liq. opii, are put into nine ounces of hot water. Flannels are soaked in this, wrung out, and applied to the affected joints, while gutta percha tissue is placed over all. A sort of local vapour bath is thus established.

Lemon juice may be given as a drink, to the extent of two or three ounces daily.

The patient should always lie between blankets. The perspiration is thus absorbed, and there is greater comfort, and less risk of catching cold. Milk slops and farinaceous food should be the diet at first, followed by beef-tea and stimulants, if there be any signs of depression; sherry taken with soda-water being, by preference, the best stimulant.

While the alkaline treatment has still its advocates, and repeated blisters find favour with a few, it is undoubtedly the case that at the present moment the therapeutics of rheumatism have been largely advanced by the administration of salicin or salicylic acid. The result of the remedies seems identical, although the one is obtained from the bark of the willow-tree, and the other artificially from the action of carbon dioxide on phenol, and consists in 1st, diminishing the pain; 2d, lowering the temperature in forty-eight hours, and thus arresting the severity and length of the disease. Neither drug should be continued after the ends mentioned have been accomplished, as their further employment is weakening to the system and retards permanent recovery. The identity of the action of the two drugs is accounted for by the fact that salicin is converted into salicylic acid after its entry into the stomach. This line of treatment may be supplemented by placing the affected limb in a light starch bandage after injecting morphia subcutaneously. A 1 per cent watery solution of carbolic acid has been recommended recently, or painting the joint with the same acid and linseed oil in the proportion of 1 to 15.

In chronic rheumatism the treatment is essentially tonic, and if possible a residence should be selected in a dry warm climate. Of other means, iodide of potassium seems the best given internally, combined with stimulating liniments of turpentine, or if

the pain is severe, with local injections of morphia. If circumstances admit, and if there should be effusion, concentrated brine springs, rich in solid matter, are useful, as Aix-la-Chapelle and Wiesbaden; while, if the pain is great, the more indifferent waters containing less saline matter are efficacious, as Wildbad.

GOUT.

Sydenham, the father of English medicine, who was a martyr to gout, thus congratulates himself on the fact:—

“So have lived, and so have died, great kings, and leaders of armies and fleets, philosophers, and men of varied culture, of this peculiar disease. It kills more rich men than poor, more wise than simple.”

Gout was formerly considered to be a catarrh, and derived its name from the French *goute*, Latin *gutta*, a drop, because it was supposed to be produced by a liquid which was distilled drop by drop into the diseased part. It is now deemed a specific inflammation, attacking by preference those who live well, and especially those who are hereditarily predisposed to it. It is not unknown in London hospitals, as boatmen, butchers, and footmen are admitted with it. In Scotch infirmaries it is never seen.

It rarely attacks women. It is hereditary, and the result of living high, and eating too much, and of sedentary habits. It is specially induced by port wine, strong ale and porter, and rich food; and is rarely due to drinking gin or whisky.

Its special seat is the great toe, but it has also been observed on the heel, the calf of the leg, the ankle, knee, wrist, thumb, and fingers.

Symptoms.—An attack of gout is said to come on most frequently towards the close of January or

beginning of February. For some days the patient feels ill, and out of sorts, with bad digestion, crudities of the stomach, flatulency, and heaviness. The temper is peevish and irritable. With or without these preliminary dyspeptic symptoms, the patient may go to bed at the usual hour, and awake to find himself suffering from the most severe and excruciating pain in the ball of the big toe, which is said to be similar "to dogs gnawing at a bone from which they have already eaten all that could be got." Even the weight of the bed-clothes is oppressive, and no change of posture gives relief. After some hours the pain may abate, and the patient falls asleep; but on awakening he finds the joint inflamed and swollen. There is also fever and furred tongue, with great irritability and depression. The urine is high-coloured, acid, and deficient in quantity. It is also loaded with urates and uric acid.

The pain continues, with paroxysms of acuteness, for two or three days, in a first and an acute seizure; in other cases, and when the attack is not primary, it may last as many months.

After the paroxysms have subsided, the urine is usually copious, with increase of uric acid, which, with phosphoric acid, is at first insufficiently eliminated.

A violent itching of the toe sometimes precedes the outburst of gout; or it may attack the toe when the gout is disappearing, this being followed by decrease of the swelling and desquamation of the cuticle.

Gout does not terminate with one attack, though after a first seizure some years may elapse before a second occurs. The intervals between the attacks become shorter and shorter, and the patient becomes a martyr to gout, which is now not confined to one joint, but invades both hands and feet, external ear, eyelids, and nose. Deposits of a chalky consistence,

called "tophi," are formed round the joints ; these deposits consisting of urate of soda. Chronic Gout is the term usually applied to this stage. Occasionally there is great distortion of the joints, and sometimes ulceration, with discharge of the concretions.

The same salt also invades the kidneys, being deposited first within the tubules, and subsequently in the intertubular tissue, leading to contraction and induration, and constituting what has been termed the "gouty kidney."

Gout at times attacks internal organs, and then it is best termed Retrocedent Gout. A French author says—"Articular gout is a disease, internal gout is death." It may thus retrocede to the stomach, giving rise to vomiting, internal pain, spasm ; or to the heart, leading to disturbed action, small feeble pulse, or coma ; or to the brain, causing severe headache, sluggishness, apoplexy, or paralysis ; or to the lungs, originating a form of asthma, with severe cough.

Dr. Gairdner has alluded to what is termed a gouty diathesis. By this is meant a habit of body, in which, without gout showing itself externally, flying pains are prevalent over the body, which are sometimes considered neuralgic, and treated accordingly ; whereas they are of a gouty nature, and can only be cured by colchicum and remedies serviceable in gout.

Dr. Garrod's researches indicate that, while uric acid can be detected as a mere trace in the blood in health, in gout it exists in a much greater quantity—in fact in detectable excess, as the urate of soda. Recent investigations seem to indicate that, so long as the kidneys are able to carry away this excess, health may be maintained. If, on the other hand, the uriniferous tubules become plugged up by deposits of urates within them, the urates accumulate in the blood, and, becoming deposited in a joint or in joints,

they lead to a fit of the gout. Should these deposits be washed away, the attack is over, and health is regained. If this does not take place, the kidneys become atrophied, and chronic gout is the result.

Diagnosis.—Gout is allied in some measure to rheumatism in its symptoms and pathology, yet differs materially from it. Gout attacks either one joint or the small joints, and usually occurs after thirty as the result of hereditary taint or high living. It is associated at first with a vivid redness, and afterwards with the formation of chalk stones; while rheumatism invades the larger joints, produces fluctuation there, occurs at any age, and is accompanied by fever and a peculiar sour-smelling sweat. Finally, rheumatism is a disease of the poor, gout of the rich, or of those who are able to afford the luxuries of the wealthy.

In gout, before and during the fit, the urates are deficient, though they become excessive afterwards; while in rheumatism the urates are always abundant.

Treatment resolves itself into what to do, and what not to do. Cold applied to the foot has been known to result in death or hemiplegia. Leeches are rarely productive of good, while general blood-letting is now abandoned.

The indications of treatment resolve themselves into a brisk purgative of calomel and colocynth, followed by a black draught. When the bowels have been freely opened, but not till then, administer colchicum in 10 or 15 M. doses every six or eight hours, with sedatives and alkalies, or in Vichy water (F. 68).

Locally, enjoin perfect rest. Wrap the affected part in flannel, or cotton wool, or oiled silk, or apply a poultice sprinkled with opium or belladonna, and, when the inflammation has subsided, bandage, and use slight friction. During the height of the fever the diet should be light and sloppy—milk arrowroot, tea.

When the fever abates, give beef-tea or chicken-soup, with plenty of lithia water. For retrocedent gout sinapisms and antispasmodics are necessary.

After the acute attack is over, regulate the digestive organs and bowels, and tell the patient to abstain from port, heavy sherry, fruit, ale, and porter. Claret and hock seem to do good rather than harm. The diet should not contain too much animal food, and plenty of exercise should be enjoined.

The mineral waters of Bath, Cheltenham, and Leamington, in this country, are beneficial. Those of Wiesbaden, Vichy, Carlsbad, and Aix-la-Chapelle, on the Continent, can be highly recommended.

SCURVY.

Scurvy is a disease of great antiquity. It is alluded to by Pliny, and at different times it has proved very fatal both by land and sea. It is essentially dependent on the want of fresh vegetables as an article of diet, and, although it has frequently occurred on land, it is pre-eminently a sailor's disease. Other causes than that mentioned may predispose to the disease, such as great privation, bad food, a marshy soil, and defective hygienic conditions; but these by themselves will not specially originate it. That which produces scurvy is essentially the want of a vegetable diet.

While thus aware of the cause of scurvy and the means of preventing it, we are ignorant of the exact changes which it originates in the system. Different statements have been recorded by different observers. The blood seems to undergo some change. Older writers stated that the blood deposited a black, muddy sediment, subsiding from a reddish serum. Later writers explain the thickened crassamentum by stating that the cohesive power of the fibrin is so much

lessened as to prevent its being separated from the red corpuscles, and that this probably explains the meaning of the terms, so often mentioned, "agglutinated blood" and "thickened crassamentum." Dr. Garrod views scurvy as essentially due to the want of potash salts in the blood, through the food being deficient in them.

The symptoms of scurvy are well marked. They come on gradually with weakness, anxiety, bad breath, a sallow muddy complexion, and the appearance of blotches on the legs. Some pains of a wandering character are felt all over the body, while the temperature is lower than normal, an evidence of deficient vitality.

As the disease advances, the gums become swollen and spongy, bleed on being touched, and are said to present an appearance similar to that seen when a patient is salivated. As the disease reaches an advanced stage the teeth rot from the socket, and hæmorrhage takes place from the mouth, nose, stomach, and intestines. The debility becomes extreme, and petechiæ, developing into ulcers or ecchymoses, form on the lower extremities.

A friend who was much exposed to Arctic privation, and who was surgeon to a ship when a fatal attack of scurvy broke out, thus describes the disease:—

"The men were listless and dispirited before there were positive indications of scurvy. They could scarcely drag their legs along, and were unable to go aloft, or, if they did so, this was attended with great pain and marked debility. The pain seemed rheumatic in its character, and was always worst at night. The countenance was sallow and muddy long before the actual manifestation of the disease. The pain was at first confined to the extremities, and upon these

the effusion of blood first occurred, generally in the form of small petechiæ, which afterwards developed into vibices, and sometimes into ecchymoses. A bruise, a rebound from a rope, or any small injury, occasioned a steady development of an ulcer. Sometimes there was extensive and diffused infiltration beneath the subcutaneous and inter-muscular areolar tissue.

“The limbs, especially the calves of the legs, then became as hard as a board, while above the induration the skin was either immovable and unaltered in colour, or had blood suffused under it.

“When a fatal termination ensued, it either did so from extreme exhaustion or general dropsy, unless the patient was cut off at an earlier stage by pleurisy, pericarditis, or profuse bloody diarrhœa.”

Treatment.—From the description of the disease, and its cause, there are certain obvious indications for treatment. Rest is necessary, and the low vitality of the patient requires this rest to be in a warm atmosphere. Antiscorbutics should be administered, such as potatoes, lime juice, oranges, or the freshly squeezed-out juice of water cresses, mustard, or horse radish. The extract of these latter plants is useless.

The diet should consist at first of soups and milk; afterwards, when the digestion has improved, fresh meat and vegetables should be given.

As a local treatment for the ecchymoses and infiltrations, lotions and compresses of aromatic vinegar and spirits of camphor have a high reputation.

Dr. Garrod's theory indicates the administration of the tartrate or chlorate of potash, to prevent or cure the disease. The barm of beer has also a high reputation, and of this six or eight ounces may be taken daily as an antiscorbutic.

PURPURA

seems to be dependent on a lowered vitality, the result of liver disease, affection of the spleen, syphilis, poverty, intemperance, or over-work. This lowered vitality in some way affects the blood, breaking up the red corpuscles, and allowing their contents to transude into the tissues.

The blood thus passed through the capillaries is seen as circular spots from the size of a pin's head to that of a pea, being apparent first on the legs, afterwards on the trunk. They are unaltered by pressure, and have no tendency to coalesce, unless exposed to pressure, when they seem to run into one another, causing vibices or ecchymoses. In their first or circular form they are termed petechiæ.

Purpura is usually ushered in with slight fever, and with the other usual concomitants of this, viz. thirst, headache, and quick yet compressible pulse. In other instances the premonitory symptoms may pass unnoted. Not merely does the skin suffer as described, but blood may also be effused into the several mucous, and occasionally also into the serous, membranes of the body. In these effusions lies the chief danger of purpura, and the disease has thus two great divisions:—

Purpura Simplex and Purpura Hæmorrhagica.—

In purpura simplex the disease runs a simple course, with little constitutional disturbance. A few spots are probably found dispersed over the body on awakening in the morning; but not aggregated. Two or three successive crops may thus form; and the disease usually subsides in from seven or eight days to a fortnight.

Purpura Hæmorrhagica is an aggravated form of

the simple disorder, and in addition is specially characterised by an effusion of blood into those passages of the body lined with mucous membrane. Consequently, effusions are observed during life on the gums, tongue, and inside of the cheek; and, if the case ends fatally, they can be seen all over the digestive tract.

Necessarily, the constitutional symptoms are more intense, the fever higher, the general oppression more apparent than in the other form; and, in from twenty-four to forty-eight hours, spots are rapidly developed on the skin. These spots are of a bright red colour at first, but deepen into a purple red. The skin becomes tender and blotched, and scratching occasions bleeding.

The same exudation may take place into the mucous membranes from the first, but it usually follows after a few days. From the gums, oozing of blood may occur, which it is sometimes difficult or impossible to check, while from the same cause there may be epistaxis, or hæmorrhage from lungs, stomach, or bowels. Thus there may be great and fatal loss of blood, or simply weakness, anæmia, and pallor.

Diagnosis.—Purpura and scurvy may be confounded with one another. They agree in this, that they are due to some impoverished state of the blood which leads to effusion. They differ, however, as will be observed, in certain points.

Scurvy appears gradually, purpura suddenly, and with some premonitory feverishness. Scurvy is essentially characterised by sponginess and lividity of the gums, while these conditions are absent in purpura. A dusky sallow complexion accompanies scurvy, but not purpura. Further, scurvy is due mainly to the want of fresh vegetables, and can be cured by the administration of these.

No single error of diet, no single cause, originates purpura, and it can neither be prevented nor cured by the antiscorbutic remedies.

Treatment.—Ignorant of the cause, we can only treat purpura symptomatically. We have no specific, as in scurvy; yet, knowing that poverty, bad diet, fatigue, and defective ventilation, are great predisposing causes, it is obvious that a good nourishing diet, rest, and a well-ventilated room, are essential.

Ten or twelve drops of dilute sulphuric acid, combined with one grain of quinine, may be given every two hours, or (F. 75).

When internal hæmorrhage occurs, the oil of turpentine, combined with creasote to prevent nausea, is necessary.

In cases of extreme anæmia there is danger of fatal swooning; hence the patient must preserve a horizontal attitude until all the prominent symptoms of anæmia disappear.

CHLOROSIS ($\chi\lambda\omega\rho\omicron\varsigma$, *green*), ANÆMIA.

Anæmia, a diminution in the colour and specific gravity especially of the red corpuscles of the blood, may be associated with many diseases, such as tubercular, syphilitic, or malignant affections of any organ; or general debility, and as such deserves no special mention.

One form of anæmia, chlorosis, seems peculiar to young women from the age of puberty to twenty-five, and is usually associated with menstrual or uterine derangements.

Symptoms.—The disease is revealed by certain symptoms, the most prominent of which are palpitation and a loss of colour, causing at first a pale sallow appearance of the surface, which may deepen into a

greenish tinge—hence the name. With the palpitation there are often combined various abnormal murmurs in the heart and blood-vessels. A soft murmur following the systole is frequently heard over the base of the heart, and along the course of the ascending arch. The pressure of the stethoscope on the veins of the neck, especially of the right side, evokes a peculiar hissing or droning sound (the “bruit de diable”). The respirations are frequent, becoming markedly increased by mental disturbance or bodily exertion; and the patient usually complains of shortness of breath and inability to do anything, with loss of appetite, and pain and flatulence after taking food. Menstruation is generally deranged, being sometimes scanty or irregular; frequently there is amenorrhœa; neuralgic pains in the face and head, or intercostal muscles, are often concomitants of the affection; and there is a special liability to perforating ulcer of the stomach.

The disease tends to recovery in the space of a month or two, unless it leads to the development of phthisis or gastric ulcer. Relapses are, however, common.

Pathology.—Trousseau regards chlorosis as a nervous disease; others consider it due primarily to disorders of the reproductive or digestive system. Possibly it even originates from a combination of various derangements. It is questioned whether there is a numerical deterioration in the blood corpuscles, though their quality and colour are changed; notably there is a deficiency in the red corpuscles, the specific gravity is reduced, and the colour greenish. Virchow noticed that in these cases the aorta was found abnormally narrow, with thin elastic walls; that there was frequently fatty degeneration of the muscular structure of the heart, and many other

abnormalities in the circulatory system. A peculiar form of anæmia, unamenable to ordinary tonic treatment, and tending uninterruptedly towards a fatal issue, has been appropriately termed "progressive, pernicious anæmia." Its causes and pathology are shrouded in obscurity. It is most frequently met with in the female sex between the ages of 20 and 40, and in a relatively large proportion of cases after a rapid succession of pregnancies. The more prominent symptoms of this perplexing disease are extreme pallor, with but a small degree of emaciation; loud and persistent anæmic cardiac murmur; moderate dropsy towards the end of the disease; hæmorrhagic symptoms, particularly extravasation into the retina; and finally paroxysms of increase of temperature, the so-called "anæmic fever." From its detection until its end, the disease seldom lasts less than six or eight weeks, or more than as many months.

Treatment.—Iron is a specific for chlorosis, and should be administered in the form of the perchloride, with a mineral acid and a vegetable tonic, associated with aloes and myrrh pills to correct constipation (F. 77, 78).

Good food, a change of air, and moderate exercise, are also essential.

ERYSIPELAS.

The term Erysipelas is derived from the Greek words, ἐρῶ I draw, and πέλαι near. It is so named from its tendency to spread.

By erysipelas we understand an exanthematous inflammation, characterised by a redness, more or less acute, of the skin, attended with hardness and swelling, and terminating generally by resolution or

desquamation, though sometimes followed by supuration, more rarely by gangrene.

It may be traumatic, following on a wound, or idiopathic, dependent on some disordered state of the constitution, and not due to any injury. In its latter phase it is a medical disease; and, although it may be seen on any part of the body, it usually selects the head or face.

Like other exanthematous affections, it has a period of incubation; unlike them, however, the duration of this is not certain, but varies from a few hours to fourteen days. Five to seven days may be taken as an average.

It often sets in with chilliness and uneasiness rather than with distinct rigors; and is attended with loss of appetite, thirst, and fever, in nineteen cases out of twenty.

This general feverish condition may last a few hours or a few days, and then its local phenomena are manifested in a redness of the skin, more or less circumscribed, accompanied by acute pain, which pressure augments. The temperature of the skin is increased at the particular spot, sometimes as much as three or four degrees.

The redness does not remain localised. It spreads from point to point. If it originates in the face, the scalp is invaded, and when such is the case the individual features are not recognisable.

The distended eyelids obscure the eyes, the lips are swollen, the mouth is open, speaking is sometimes difficult or impossible, the nose acquires an enormous size, and the nostrils may be dry or obstructed by blood or mucus.

Usually after a fever of three or four days' duration, and in which a temperature of 105° may be reached, the redness fades, and the blisters or small

vesicles which had been formed in the course of the disease present a varying appearance ; in some parts being dried into a crust, while in others their contents are not yet absorbed, but are undergoing absorption.

In other cases the vesicles become dark in colour, and the skin beneath is converted into a greyish discoloured slough.

Suppuration and gangrene ensue, accompanied by a low typhoid state of the system, with increased temperature, extreme prostration, and a fatal issue.

It may also prove fatal by the extension of the inflammation to the brain or its membranes, by the blood-poisoning and malignant character of the disease, or by the glottis becoming so swollen as to induce suffocation.

Erysipelas is sometimes complicated with bronchitis, acute nephritis, and pneumonia. Most English authorities believe that the disease can be propagated by actual contact, or disseminated by means of fomites. Atmospheric conditions favour its occurrence, in what way we do not know. It has also been observed that where puerperal fever prevails there is a predisposition to erysipelas in the hospital wards.

It may be seen in infants, but after infancy it is rare until adult life. Acute attacks are most common from twenty to forty ; asthenic, or less acute attacks, from forty to old age. The sexes are affected in equal proportion.

Diagnosis.—Erysipelas may be mistaken for scarlet fever, measles, or small-pox. The redness of scarlet fever is not, however, localised, and it is accompanied or preceded by throat complications. In measles there are nasal and catarrhal symptoms. A developing small-pox pustule may simulate it, but a small-pox pustule is not solitary ; others may be seen in different parts of the body, and there are premonitory symp-

toms in small-pox, such as vomiting and pain in the back.

Erythema and erysipelas have one feature in common, viz. redness; but they differ in this, that in erythema there is no fever, premonitory or co-existent; there is no inflammation of the deeper-seated parts of the skin; there is no vesication; there is no tendency to implicate the lymphatic glands, and it does not peculiarly affect the face or head.

Treatment.—The patient, if possible, should be placed in a cool, well-ventilated apartment, and should be freed from all sources of irritation, either by officious nursing or fussy friends.

The medicinal treatment may be fitly commenced by a calomel and jalap purgative. Then give tincture of steel, in 30 or 40 minim doses, every three hours, until the fever is lowered. When convalescence is certain, diminish the doses to 20 minims thrice daily for two days; after that give bark.

If the cerebral symptoms are grave, cut away the hair; and if the throat is implicated, let steam be inhaled, and the throat touched with tannin and glycerine (F. 49).

The principle of all local applications consists in protecting the part affected. The old plan was to dust with flour and cover with flannel, or oxide of zinc and starch, as being less clagging to the skin, and more soothing. After applications such as these, it is unnecessary to be too curious in removing the coverings to see how things are getting on.

As a more perfect covering, a mixture of castor-oil and collodion has been recommended, or painting the whole surface lightly with the nitrate of silver in solution, or with the solid stick.

Dr. Wood is in favour of tincture of iodine as a local application.

DISEASES OF RESPIRATORY ORGANS.

Accurately and intelligently to understand these, it is necessary to be familiar with the meaning and importance of certain terms which are met with in the description of diseases of the chest. The air in breathing passes into the trachea, the wall of which is rough and irregular in three-fourths of its circumference, with strongly-marked cartilaginous rings, and the current of air entering is great and quick.

Below the bifurcation of the trachea the bronchi divide into smaller and smaller tubes; the cartilaginous rings become less and less distinct, until, in the terminal ramifications of the bronchi, they cease to exist, and the tubes are smooth on their internal surface.

If the stethoscope is placed over the trachea, two rough harsh sounds of equal length will be heard, the one accompanying inspiration, the other expiration, with a distinct interval between them. This is what is termed "tracheal or cavernous respiration."

Next, placing the stethoscope on the upper bone of the sternum, opposite the point at which the trachea divides into the bronchi, there is heard a modification of the tracheal breathing, the character of the sound being hollow, blowing, and soft, and with the inspiration rather longer than the expiration, and they are still separated by a slight but appreciable interval. This is "bronchial respiration" or "tubular breathing."

Again, placing the stethoscope over other parts of the chest, it will be found that the blowing character is gone, that the inspiration is soft and gentle, that the expiration immediately follows it, and is less prolonged. The combination of the two constitutes the healthy vesicular murmur.

If the person is told to speak when the stethoscope is at the different situations mentioned it will be found that the character of the voice also varies. Thus over the trachea it seems as if he were speaking right into it, so loud and full is the sound; even a whisper can be heard. This is "pectoriloquy."

Over the sternum it is still distinct and clear, but not so loud. This is "bronchophony."

While over other parts of the chest a buzzing scarcely audible sound is heard.

These sounds, as will be seen, are significant of various diseases when heard in parts of the chest, where in health they are not detected.

The mucous membrane lining the respiratory tract is in health moist, but not too much so, else this also would give rise to disease; and as illustrating terms used, and various conditions, let us suppose a common cold is caught. The effect of this on the mucous membrane of the respiratory tract, if it extends to it, is, first, to make it dry; secondly, swollen and inflamed. The consequence is an alteration in the character of the sounds where the vesicular murmur is heard. If the larger air-tubes are alone involved a deep-toned note will be produced like that of a person snoring in sleep, or humming like that of a spinning top; hence it is often described under the terms cooing, snoring, buzzing, or technically, "sonorous rhonchi." If the dryness extends to the smaller air-tubes the sounds are shriller in character—piping, whistling, hissing, or technically, "sibilant rhonchi." These sounds may occur separately or together, and, if together, there is frequently a combination of the characters of both heard on auscultation, giving rise to a strange medley of cooing, whistling, piping, and snoring.

The mucous membrane in a cold, although still

inflamed, does not remain dry, but becomes moist, and hence the dry sounds are replaced by moist ones. The air passes through liquids, and, in doing so, gives rise to bubbles; and to these liquid sounds the term *râles* is applied. If these are fine, and confined to the smaller air-tubes, the term "small crepitation" is used; if on a larger and coarser scale, involving the

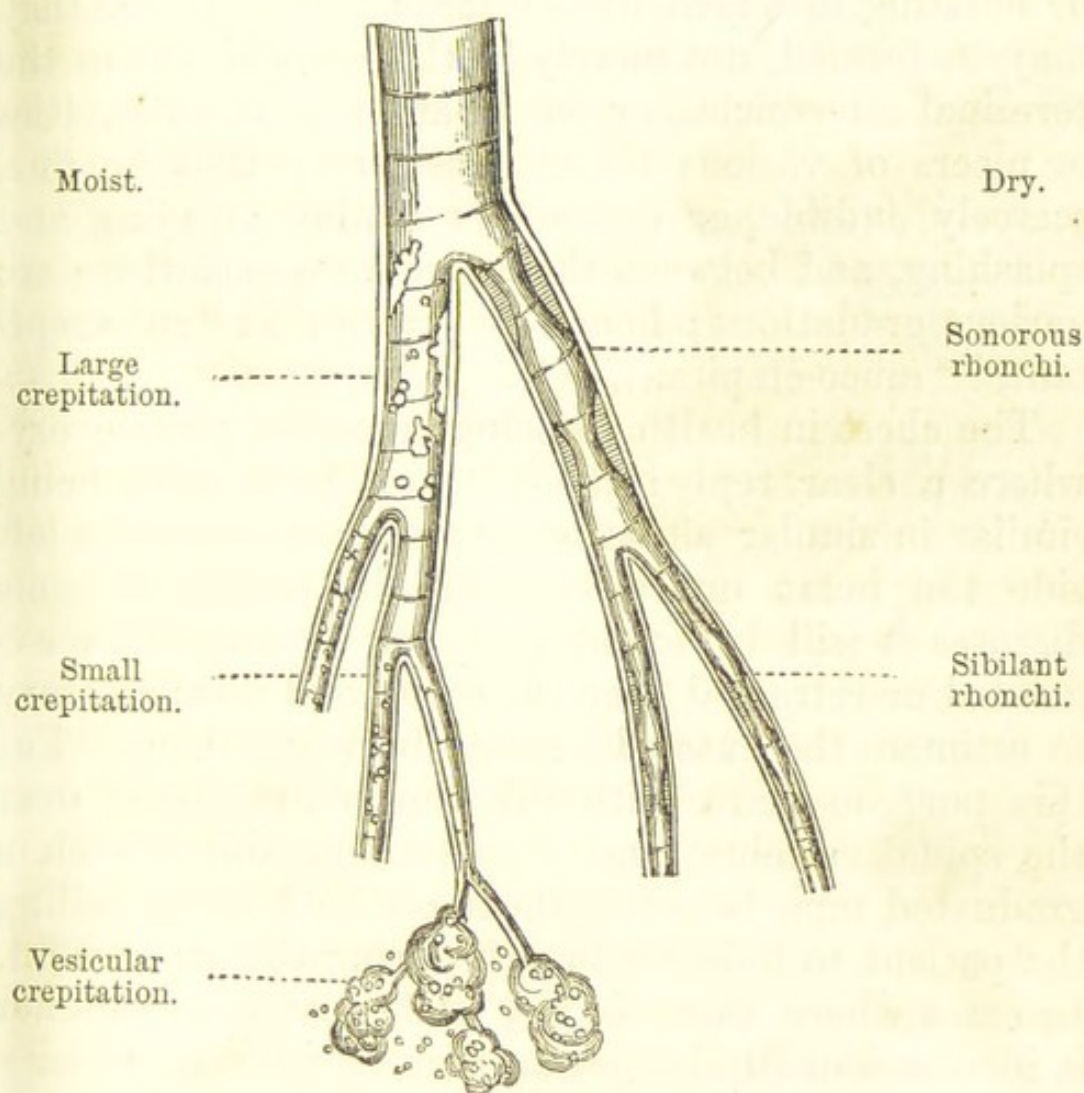


Fig. 4.

larger air-tubes, they give rise to "large crepitation." These two liquid sounds may and often do merge insensibly into one another, so that they are often heard on the same chest during the same complaint.

It will thus be observed, as the above diagram will show, that we have "sonorous rhonchi" and

“large crepitation” as representing the dry and the moist sounds of the larger air-passages; “sibilant rhonchi” and “small crepitation,” in a similar manner, being applied to the smaller air-passages.

Leaving the mucous membrane as seen in its inflammation from a common cold, we may say further that moist sounds are produced by bubbles of air traversing or bursting in a somewhat viscous fluid. Hence they may be formed, not merely in the bronchi, but in the terminal air-vesicles, or on a larger scale in cavities or ulcers of various sizes. They may thus be fine, scarcely audible, or coarse, resembling gurgling and splashing, and between these two extremes there are various gradations; hence such terms as “sub-crepitant,” “muco-crepitant,” etc.

The chest in health on being percussed gives everywhere a clear reply: the note on both sides being similar in similar situations, unless where on the left side the heart intervenes. In the course of some diseases it will be found that one side is more expanded or retracted than the other, and it is necessary to estimate the exact difference between them. For this purpose mark with ink the central spots over the spinal vertebræ and the sternum, and stretch a graduated tape between them on both sides, telling the patient to hold his breath during the experiment. In cases where there is any difference note whether it increases or diminishes at regular periodical visits. If your hand is placed over the chest when the patient speaks, a distinct vibration is communicated to it. This is termed “vocal fremitus,” which sensation may be altered by disease.

CATARRH.

We have commenced, and, to a certain extent,

illustrated in the preliminary remarks what effect a cold has upon the chest when it affects the mucous membrane of the respiratory tract. It may, however, stop at the head, affecting only the nose (coryza) or the frontal sinuses (gravedo), giving rise at first to dryness followed afterwards by what is termed running at the eyes or nose, and a profuse muco-purulent discharge. The general symptoms attending vary from weariness and stuffiness of the head to actual headache and some distinct feverishness, with inability to attend to ordinary duties.

The question in treatment is to endeavour to keep it at its place of origin. How are you to stop a cold? Catch it at its commencement, and feed it by an opiate. Twenty drops of tincture of opium, or ten drops of liq. morph. and eight of vin. antimon. given twice at an interval of three hours, will usually accomplish this. A simple and effective method has also been suggested—viz. to take no liquid of any kind for twenty-four or forty-eight hours. In this way the materials for flux are minimised, and it dies of inanition. A Turkish bath can also be recommended.

LARYNGITIS, ETC.

The extension of a common cold to the larynx, leading to congestion and slight inflammation of the mucous membrane, is by no means uncommon. It is evidenced by hoarseness, soreness in drawing in the breath, and a dry tickling cough, and is attended with no danger. "Acute laryngitis" is a much more severe, and fortunately rare affection; peculiar, generally speaking, to adults, and due usually to exposure to cold or wet, or inhaling vapours or dust. Oedema of the glottis culminating in "acute laryngitis" may be produced immediately by the fumes of irritat-

ing gases, and by the accidental swallowing of boiling water. However originating, the symptoms of "acute laryngitis" are well marked. Thus, there is pain in the region of the larynx, notably at the pomum Adami, and this pain is increased by pressure externally, while internally there is a feeling of great dryness and soreness, and a sensation as if the passage was narrowed. The inspiration is protracted, wheezing, and laborious, the expiration comparatively easy, the voice hoarse or altogether lost, the cough peculiarly imperfect and brassy, and attended with hardly any expectoration. Accompanying these local symptoms of "acute laryngitis," it is found that, if not of traumatic origin, the disease is ushered in by chilliness and more or less fever. The face is full and flushed, and if the disease advances unchecked, becomes pale or livid, the pulse feeble and irregular; the restlessness is intense and accompanied by a feeling of suffocation—which actually does take place unless relief is afforded—with drowsiness, delirium, and coma. The patient dies strangled, and this, as the symptoms indicate, is due to the rima glottidis having become so swollen as to be reduced to a mere chink, while there is inflammatory effusion into the subjacent areolar tissues. If a laryngoscopic examination can be made, the mucous membrane of the larynx will be observed to be red and swollen, being most markedly so at the aryteno-epiglottidean folds or the false vocal cords, or at the epiglottis, where all view may be obstructed. The course of the disease is rapid, sometimes carrying off the patient in twelve hours, or at all events before the fifth day. At other times recovery ensues; or the affection may pass into *chronic laryngitis*.

"Chronic laryngitis" is characterised by a sense of uneasiness and tickling in the throat, which occasions

a frequent desire to cough, to clear the larynx. The expectoration is scanty, consisting of mucus, or mucopus, and rarely contains blood. It is not usually dangerous to life, and is often the result of over-exertion of the voice in clergymen, public speakers, or singers. The general symptoms are thus of little importance, unless there exist complications in the lungs or elsewhere. The laryngoscope reveals more or less congestion of the mucous membrane of the larynx—the colour varying from a normal pink or red up to a purplish red. Small pellets of mucus may be seen adhering in places to the mucous membrane, and most probably occasion the cough and irritation. Both cords may be red, or only one, or part of one.

In what is termed “laryngeal phthisis” the same local symptoms are manifested as in chronic laryngitis, with the addition of difficulty of swallowing and more violent fits of coughing; and almost complete loss of voice and dyspnoea when the disease is far advanced. Ulceration may be seen on various parts of the mucous membrane. “Tumours” or “polypi” may also form on the larynx, and give rise to symptoms like those of chronic laryngitis. They are recognised by the laryngoscope, and can sometimes be removed.

Treatment.—In laryngitis due to and accompanying a common cold, and hence better termed “laryngeal catarrh,” it is essential that all talking or undue exercise of the voice should be prohibited; that the patient should keep to his room, which should have a uniform temperature of 63° to 66° Fahr.; that a mild diaphoretic mixture should be given (F. 31), and that the cough should be relieved by inhalations (F. 52), or by a spray solution of bromide of potassium or chloride of sodium, 20 grains to the ounce.

In “acute laryngitis,” properly so called, leeches

should be applied directly to the larynx of adults or the manubrium sterni of children ; or hot water compresses may be employed, and covered with india-rubber cloth. Scarification of the swollen parts by a curved bistoury protected to within a quarter of an inch of the point has been followed by relief of the severe paroxysms. Should, however, marked stenosis occur, and the local means mentioned aided by inhalation (F. 31) fail to give relief, tracheotomy ought to be performed without delay ; and thus rest will be allowed to the inflamed part, and relief to the engorged lungs.

For chronic laryngitis the treatment is mainly local by the inhalations previously mentioned. Chloride of zinc has been specially recommended as a local application in the proportion of 30 grains to the ounce of water, every day for a week, and afterwards on alternate days until amendment occurs. Tannin, with glycerine, is useful in phthisical, and nitrate of silver in syphilitic, ulceration. If the secretion is excessive, turpentine or creasote may be inhaled ; or if the irritation is great, inhalation of hop or chloroform with the steam of boiling water may give relief. Rest, a dry climate, the careful wearing of flannel, and sometimes of a respirator, form valuable adjuncts, and in some cases are essential to the general treatment (F. 49, 52, 53). In the chronic laryngitis of plethoric persons, the springs of Carlsbad and Marienbad find special favour ; while to those of a delicate constitution, and with phthisical predisposition, the warm springs of Ems are very serviceable. Those with a sensitive larynx should remember that smoking is injurious, and that the use of snuff, spirituous liquors, or highly seasoned food, by irritating the mucous membrane of the pharynx, also may, and often do, awaken inflammation in the larynx.

DIPHTHERIA.

Although this disease seems to have been well known to the ancient physicians, yet its existence in England under the term diphtheria (a skin or membrane) dates back only to 1856, when it spread from France to this country. The first accurate investigations into the nature of diphtheria were made by M. Bretonneau in 1821. He considered that it was wholly a local disease, spreading by contagion through the inoculation of the soft mucous membrane with the diphtheritic secretion. He was subsequently obliged to concede that blood-poisoning is one of its essential characteristics. Much controversy has been excited as to the causation of diphtheria, which hinges round the inquiry, Is it a local or constitutional disease in its origin? Does the constitutional disease cause the local exudation; or does the local exudation originate the constitutional disease?

In support of the first hypothesis, the epidemic character of the disease has been insisted on; the grave and serious disturbance of the system, with only a few minute exudations observed on the fauces, and the impossibility of destroying the diphtheritic process by any amount of cauterisation.

In support of the second hypothesis it is urged that diphtheria fixes itself at the point of inoculation, as shown by experiments on animals, and radiates thence all over the body. Thus it is seen earliest and most constantly on the parts swept over in the acts of respiration or eating and drinking, when it attacks the human subject. Further, the diphtheritic process is always associated with vegetable organisms (micrococci), and their development poisons the blood. These organisms are present in delicate ring-shaped greyish-white spots, scarcely rising above

the level of the mucous membrane in the first hours of the disease, penetrating the cells of the different epithelial layers, and pushing them out. Pus and fibrinous exudation do not appear until the disease has advanced farther. Inoculation with diphtheritic material containing these micrococci on the cornea of a rabbit, produces intense keratitis, killing the animal on the fourth or fifth day by secondary general infection. So also they spread over the mucous membrane of the trachea, beset the cellular elements, crowd upon the young exudation cells and destroy them ; they fill the blood and lymph vessels, jamming up the fluids and producing serous exudation. So also they appear in severe cases in the kidneys, causing inflammation with ruptured vessels and the formation of epithelial casts in the tubes.

If the membrane, on the other hand, is finely divided, passed into Pasteur's fluid, and filtered, negative results are obtained on repeated inoculation of the cornea. These micrococci are thus, it would appear, not of accidental occurrence, but are inseparable from the diphtheritic process. "Without micrococci," says Eberth, "there can be no diphtheria." The action of this matter on the tissues begins the moment it comes in contact with them, and the appearance of constitutional disturbance (fever) is brought about when these processes have reached a certain degree of intensity, and involved a sufficient extent of tissues. In artificial inoculation the greyish discoloration can be detected in from twelve to twenty-four hours ; in diphtheria caught in the ordinary way, about the third day.

Without entering further into the controversy, it may be stated that the results of diphtheritic inflammation are peculiar. Redness and swelling of the parts affected are succeeded by patches of lymph, which start from one or several points. This

lymphous exudation is of a greyish ashy-white colour, and its consistence is like that of wetted parchment or damp wash-leather. It can be stripped off, leaving a raw and bleeding surface, which is again speedily covered over with the characteristic exudation. Not merely is there exudation, but there is often also on the site of the exudation marked ulceration, sloughing, or abscesses. In fact, true diphtheritic inflammation may be considered to be one of substance involving the mucous membrane, and tending to slough. Further, it may be stated that diphtheria seems to spread by direct contagion, and that bad hygienic conditions, especially defective drainage, appear, if not actually to originate it, at least to foster its occurrence.

Symptoms.—The general features of diphtheria are prostration, restlessness, and muscular debility, with headache and nausea, and a sense of stiffness and soreness about the neck and the angles of the jaw. Further, there is often marked blanching. The local effects of the disease are manifested by the exudation first on the tonsils, and from thence spreading in different directions. Thus it may creep backwards and upwards into the posterior nares; or, more frequently, it passes over the epiglottis into the larynx and trachea. Attacking parts so intimately connected with life, the local gravity of the disease is obvious, and death may be caused by suffocation; or, on the other hand, the grave constitutional disturbance may result in death by asthenia, either directly or through paralysis of certain nerves.

The tongue is generally not much furred, the breath is foetid, saliva dribbles from the mouth, and there is great difficulty in and disinclination for swallowing. The submaxillary glands are enlarged, and, owing to the extension of the disease to the larynx, difficulty

of breathing is a common late symptom. What causes this dyspnoea? Though much controversy has arisen about this, yet it may be safely said that the best explanation is that it is due to the combined result of several causes acting together or in succession—the most important of these being the mechanical one, viz. the swollen mucous membrane on the one hand, and muco-purulent secretion on the other, obstructing the narrowed glottis. To these purely mechanical causes must be added another of subordinate importance, viz. the paralysis of the laryngeal muscles. The fever is not great. The urine is found albuminous in fifty per cent of the cases.

In non-fatal cases the specific disease is supposed to terminate on the seventh day, although the convalescence after this is slow and attended with great depression. After the complete healing of the local lesions, in the course of the second or third week of the disease various sequelæ may ensue, viz. paralysis of the soft palate and pharynx, paralysis of the muscles of the larynx, occasioning in the one case difficult deglutition, in the other impaired voice. Sometimes there are great disturbances of vision and progressive paralysis of the extremities.

The course of the paralysis mentioned is gradual and characteristic, paralysis of the soft palate and pharynx being first noticed; this is followed, either immediately or shortly afterwards, by disturbances of vision, while paralysis of the upper and lower extremities occur later. The ordinary termination of diphtheritic paralysis is in cure, and it is also noteworthy that the muscles which were first paralysed are also the first to recover their activity. The process of cure occupies from six or eight weeks to two or three months. A fatal termination has been noted in eight to ten per cent of diphtheritic paralysis

cases, but then only through intercurrent diseases, or from food entering, through paralysis, into the larynx, causing suffocation, or possibly pneumonia.

Treatment.—If, as later investigations indicate, diphtheria is at first a localised disease with after constitutional symptoms, it is obvious that treatment must be local and general. Tearing off the membranous exudation is absolutely negatived, and even thorough cauterisation has not been attended with much success. It is said that nature unaided in diphtheria tends to heal by suppuration, and that in this way the false membrane is thrown off. Hence it has been suggested by Oertel to imitate nature and to establish a rapid and abundant production of pus by means of hot inhalations in quarter-hour sittings every half-hour, with nourishment supplied during the intervals, and allowing a longer time to elapse as the membranes are thrown off. The mouth should also be rinsed and the throat gargled with a solution of carbolic acid or permanganate of potash (2 grains to $\bar{3}$ i of water).

In the general treatment, an even temperature of 65° to 68° Fahr. is essential, with plenty of milk, ice, and cooling drinks, and with alcoholic stimulants if the powers are failing. The best internal remedy appears to be tincture of the perchloride of iron, given in large doses (30 minims every two hours in water or glycerine). Iodide of potassium and chlorate of potass have also been advocated. If the disease attacks the larynx and is advancing in severity, tracheotomy should be performed as soon as possible (F. 5, 7). Sir W. Jenner recommends, as a local application, a strong solution of nitrate of silver (1 grain to $\bar{3}$ i of water), and advises this to be used effectively, once and for all, around as well as over the patches.

For the secondary paralysis of diphtheria, tonics,

change of air, and careful electric stimulation by the constant current are recommended.

CROUP.

Two forms of croup are recognised. One form, having no inflammatory cause, no structural change, is considered to be of a nervous origin. It is termed "false or spasmodic croup," or "laryngismus stridulus." In the other form, true croup, there is a local and catarrhal inflammation of the larynx or trachea, and this inflammation is accompanied by an exudation of false membrane on the parts attacked.

Inflammatory or true croup is a disease of early life; for although it may occur at any time between weaning and puberty, its most common epoch is in the second year of childhood.

It seems to attack boys more frequently than girls.

The chief seat of croup is said to be the trachea, but it may extend from this to the smallest bronchi, and hence bronchitis or pneumonia may complicate croup. The vessels of the mucous membrane of the trachea exude a material, which stiffens and forms a layer of false membrane. In some cases it can be wiped off easily, in others it requires force to remove it; hence it is said to be thick or thin, diffuent or consistent. This stiffened croupal formation obstructs the breathing directly, gives rise to a spasmodic contraction of the muscles of the larynx, and diminishes the calibre of the air-tubes. Serious results from these causes ensue, and in addition shreds of the false membrane partially detached may produce fatal spasm. The inflammation is essentially a simple non-specific or fibrinous one, confined to the surface, and hence distinct from the diphtheritic.

Symptoms.—A premonitory feverish catarrh, such as occurs in other chest affections, may attract attention. If this catarrh be accompanied with hoarseness in young children, croup is to be apprehended. Preceded or not by this feverish cold, when croup is well established it is characterised by marked symptoms. The cough is brassy and ringing; the inspiration is loud and crowing; and the fauces are observed to be red and swollen.

As the disease advances the fever increases, and from the obstruction to the passage of air and the proper arterialisation of the blood, the skin gets dusky, the feet cold, and the pulse feeble.

The character of the cough ceases to be ringing, and becomes husky. There is great irritability and restlessness, the child frequently attempting to thrust its finger down its throat to take away the obstruction. If the case proceeds to a fatal termination, the breathing becomes more and more laboured, the face pale and livid, cold clammy sweat forms, and drowsiness deepens into coma and death. Favourable symptoms are the cessation of the crowing inspiration; the cough becoming moister, and accompanied by expectoration of false membrane. Croup is thus well described by Steiner:—

“A distressing restlessness seizes the poor child. Lying or sitting in bed, he impetuously begs to be taken in the arms of his mother or nurse, and then immediately to be put back to bed again; he tosses his hands and feet about; springs up in bed, or convulsively grasps the side of his crib; frequently clutches his neck, as if to remove the obstacle to his breathing, and throws off the bed-clothes; the face expresses great anxiety, and not unfrequently is even distorted; the eyes protrude; the frontal veins are swollen, and the respiratory muscles taxed to their

utmost capacity ; in a word, we have before us the heart-rending picture of a child nearly suffocated, tortured with the death-pang—a picture which draws out all our compassion, and brings home to us, as few other diseases do, the painful side of our calling.”

The duration of croup is usually five days.

Diphtheria and croup are closely allied, yet they are supposed to differ in this, that diphtheria is epidemic and contagious, is not so sudden in its attack, is not limited so much to the trachea as croup, but, beginning at the pharynx, may so spread as to involve the whole respiratory tract, and the membrane may be found in other regions ;—that, in fact, according to one theory, it is a specific constitutional disease, with throat complications ; while croup is a local disease, giving rise to constitutional symptoms.

Further, diphtheria is accompanied often by albuminuria and swelling of the submaxillary glands, and is followed by paralytic sequelæ. It is also much more asthenic than croup. The membrane in croup does not appear so often as in diphtheria. In fine, the clinical distinction between the two diseases must lie in a careful estimate of the general symptoms, the affection of the glands and kidneys, in the non-contagiousness, and partly also in the sporadic appearance of the croupous inflammation.

Treatment.—Formerly leeches were always applied in cases of croup ; now the most consistent line of practice seems to use them only where children are vigorous and plethoric. Leeches cannot stop the exudation, but they seem to prevent the swelling and infiltration which might prove fatal. They are applied to the manubrium sterni, not to the larynx, as the bleeding there may be difficult to restrain. They ought never to be applied to puny and badly-fed children. Emetics are useful, and of these the

sulphate of copper is to be preferred to zinc, as tending less to weaken the system. Ten to fifteen grains of the former should be dissolved in two ounces of water, and a large teaspoonful of this given every five minutes until vomiting is produced. Ipecacuanha may also be used—a teaspoonful of the wine being given at frequent intervals until the child vomits (F. 42).

If the vomiting relieves the dyspnœa and expels the false membrane, it has done good and ought to be repeated. If it fails in these objects its repetition is contra-indicated. A solution of nitrate of silver should be applied at intervals of several hours to the entrance into the larynx. The bowels should also be acted on either by an enema or calomel. If, with the addition of a warm bath, hot pack, or hot sponging, these means fail, after a trial of twelve hours, tracheotomy should at once be resorted to.

Niemeyer says, “If it does not cure, it makes death less terrible.”

The diet should consist of milk and nourishing soups. Inhalations of simple steam or medicated vapour, containing hops, chloroform, or benzoin, are often pleasantly palliative (F. 52).

When the disease has terminated favourably, the cough should be encouraged by a mixture of carbonate of ammonia and squills, in an infusion of senega (F. 44).

FALSE CROUP.

Non-inflammatory croup, to which also the names of “laryngismus stridulus,” “spasm of the glottis,” “spasmodic croup,” and “spurious croup,” have been applied, is met chiefly in scrofulous, rickety children of one or two years of age. It may originate from the brain, as in hydrocephalus; from direct irritation

of the vagus or recurrent nerves ; from tumours or enlarged thymus gland ; from reflex causes, such as dentition, worms, improper feeding ; or from mental emotion, fright, or anger.

Symptoms.—The attack is sudden, usually occurring at night and during sleep, and is characterised by one prominent symptom, dyspnœa. No air enters the glottis for the moment, and respiration seems to cease. The child struggles for breath, as if it were about to die from suffocation. There may be also convulsions and a contracted state of the flexor muscles of the thumb, fingers, and toes (carpo-pedal spasms).

The paroxysm ceases suddenly, but may be succeeded by others, and death sometimes takes place through suspended respiration, or by the stagnation of the blood in the lungs, heart, or brain. The train may be laid for serious after-results, and although termed false croup, the disease is not free from peril.

It is chiefly distinguished from true croup by its sudden accession and sudden departure, by the freedom of breathing between the paroxysms, and by the absence of fever, hoarseness, and any attending cough.

Treatment.—During the paroxysm, place the child in a warm bath, apply a hot sponge to the throat, and, after being taken from the bath, or before it, sprinkle the face and chest with cold water.

As prophylactic remedies against its recurrence, regulate the bowels, lance the gums if hot and tender, and recommend fresh air and nutritious diet.

Depending, as it frequently does, on a rickety state of the system, 5 to 10 grains of the phosphate of lime may be given thrice daily in chalk mixture.

HOOPING-COUGH

is an infectious disease, which usually occurs in child-

hood, and is preceded by a catarrh of from three to fourteen days' duration. Succeeding this there is a peculiar cough of a paroxysmal character, which is pathognomonic of the disease. Hooping-cough usually terminates in six weeks; at times it may be prolonged from two to three months. It is not attended with much danger *per se*, but it may, and often does, originate various chest diseases, notably emphysema.

When hooping-cough has fairly determined itself, its features are very characteristic. The child has usually some premonitions of an attack, and runs to its mother or nurse for protection. Then commences a paroxysm of expiratory efforts and cough, with no intervening inspiration. The child becomes black in the face, and it would appear as if suffocation were imminent, when a long-drawn inspiration takes place, attended with a peculiar crowing sound. This sound is doubtless due to the air entering the contracted, or even partially closed, rima glottidis. When expansion of the glottis has been completed, and the air is permitted to enter freely, the fit for the time is over. Or a succession of forcible expirations and cough alternate with crowing inspirations, until a quantity of mucus is brought up, or actual vomiting ensues.

The paroxysms occurring in the twenty-four hours vary as regards intensity. As a rule, they are worse at night. During the early stages of the disease the mucus expectorated is thick and sticky, but afterwards, with the decreasing intensity of the paroxysms, it becomes thinner, more abundant, and more easily brought up.

Listening during the intervals, you hear simply catarrhal sounds, or perhaps nothing abnormal. During the expiratory paroxysm wheezing may be detected, but during the long-drawn inspiration no sound can be heard in the lungs at all. This may

be partly explained by the slowness with which the air enters by the contracted glottis, and partly, as Laennec says, by "the spasmodic contraction of the muscular or contractile fibres of the bronchi not allowing the air to enter."

Etiology.—The absence of fever in whooping-cough negatives the idea that the disease is due to inflammation; and it has been urged, from its spasmodic character, that it is probably dependent on irritation of the pneumogastric nerve by some peculiar poison. Some consider that this poison affects the cervical glands, which lie in the course of this nerve or the recurrent, causing enlargement of these, as in a similar manner the parotid is enlarged in mumps.

Fatal cases usually exhibit pulmonary collapse—the lobular pneumonia of former writers; and with this there is also evidence of bronchial inflammation.

Treatment.—The disease tends to run its course like all specific diseases, and the rule of practice appears to be best met by warding off complications and treating symptoms. Avoid all gastric irritation by keeping the patient on a regulated diet, with plenty of milk and little meat, and attend carefully to the bowels.

Various specifics have been recommended, one of the most noteworthy being that of Dr. Fuller (F. 15*a*), which is based on gradually increasing doses of belladonna, and by the employment of which he states the hoop rarely lasts more than twenty-one, and may terminate in ten, days.

Nitric acid has been employed successfully by Dr. Gibb. Bromide of potass and hydrate of chloral and carbonate of iron have also been highly spoken of; so also have inhalations of carbolic acid (F. 15, 53 *a*).

Locally, Roche's embrocation has considerable popularity among the poorer classes.

If bronchitis sets in, poultices should be applied to the chest, probably after leeching, with antimonial or ipecac. wine internally, followed, if requisite, by stimulants.

Head Symptoms.—Squinting, convulsions, or stupor, must be met by small and repeated doses of hyd. c. cret. warm baths, etc.

Niemeyer says—"Hooping-cough can be cured on the principle that 'he who spareth the rod spoileth the child,' and that the cough of hooping-cough is not an exception to the physiological law, 'that violent reflex symptoms are controllable by the will.'" Hence he advises coercion, the promise of no bonbons or toys if coughing is persisted in, and states that the effects of this mental dietetic are admirable.

It is often asked whether patients should be allowed out in the open air? In all but acute stages this may be permitted with much benefit, especially in the warding off of succeeding tubercular disease.

INFLUENZA.

This term is of Italian origin, indicating something fluid or transient, and was first applied by Pringle in 1752 to designate a disease, epidemic in its nature and attended with catarrh, especially affecting the respiratory and digestive organs. It can be traced back with certainty only to the sixteenth century, and since then ninety epidemics of more or less severity have been described. Its universality in later years has greatly diminished. An epidemic has not been noted for some time.

In 1837 it was very prevalent in London; nearly the whole population was attacked, and the mortality was great.

The cause of the disease seems to be *sui generis*,

and dependent on some poisonous influence in the atmosphere, the nature of which is unknown. Influenza rarely ends fatally, and, when it does, reveals no characteristic post-mortem features, there being simply swelling and redness of the respiratory tract, with signs of hyperæmia also in the œsophagus and stomach.

Symptoms.—The onset of the disease is sudden, hence the term “lightning catarrh.” There is first a chill and malaise for several hours, followed by fever most marked at night. There is also a dry tormenting convulsive cough, with a fulness of the head, redness of the conjunctiva, throat, and mouth, and swelling of the tonsils and difficulty of swallowing. The sputa are scanty and muco-serous. There is intense prostration from the first, with dragging pains in the limbs and utter inability to move about.

The disease lasts four or five days, and usually terminates in a critical sweat, with diarrhœa and an increased secretion of urine. During an epidemic of influenza the death-rate of a town is increased, especially among the aged and feeble, through its setting up acute bronchitis or inflammation of the lungs.

The great number of persons attacked and the severe prostration distinguish influenza from an ordinary catarrh, with which alone it can be confounded.

Treatment.—By rest in bed, quietness, and a stimulating expectorant, influenza is best treated. Opium, inhalations of steam, and counter-irritants, are useful for the cough. Relief will be afforded to the headache by smearing the face with fat or snuffing up a solution of morphia in the proportion of 1 to 50 or 60 of cherry laurel water. During convalescence give quinine and iron. The diet should consist of mucilaginous drinks and nourishing soups, with stimulants when the debility is great (F. 43).

BRONCHITIS

is essentially an inflammatory affection of the bronchial mucous membrane, and may be either acute or chronic.

It is caused by exposure to cold or wet, local irritation from mechanical operations, *e.g.* needle-grinding, or it may be dependent on heart disease, or associated with various constitutional affections, such as rheumatism, gout, fever, Bright's disease. It is most common in childhood and old age.

Two varieties of acute bronchitis have been recognised :—

1. When the larger and medium-sized air-tubes are alone affected.

2. When the inflammation does not stop there, but involves all the bronchial ramifications—capillary or general bronchitis.

The last form is rarely seen in adults, but chiefly among young children and old people, and is frequently fatal.

Certain general symptoms accompany both varieties. Thus, there is chilliness, fever, running at the eyes and nose, and general malaise. The extension of the inflammation down the respiratory tract causes irritation of the mucous membrane of the larynx and trachea, which is evidenced by a sense of tightness behind the sternum, and a tickling sensation about the windpipe. The expectoration is at first dry, and difficult to bring up, scanty, white, and frothy ; but in the course of a few days, or a few hours, it increases in quantity, and if the attack be severe or prolonged, it becomes muco-purulent.

In the more severe form the symptoms, corresponding to the gravity of the case, are more urgent. The

restlessness is great, the fever high, anxiety is depicted on the countenance, and the impaired and impeded circulation through the right side of the heart is evidenced by the livid lips ; and this lividity sometimes extends over the body, and is observed at the finger-ends. Should the disease terminate favourably, there is a gradual remission in the severity of the symptoms. The fever decreases. Respiration becomes easier, the cough less troublesome, and the expectoration freer. But if a fatal termination is likely, the symptoms increase in intensity. Unable to sit up in bed, the patient sinks exhausted on the pillow. The breathing is thus more difficult, and the lividity becomes more intense. There is not the power to bring up the mucus, which accumulates in the air-passages, and thus the patient dies from suffocation, or apnœa, due to the arrest of the circulation through the lungs in consequence of the coagulation of blood in the pulmonary arteries, and in the right cavities of the heart.

On auscultation during the first or dry stage of bronchitis we detect two coarse, rough, dry sounds all over the chest. The air-tubes are narrowed, but the air does not come through mucus ; hence the dryness of the sounds, which are termed sonorous rhonchi if the larger tubes are implicated, sibilant rhonchi if the smaller ones are involved. Percussion in this stage is clear.

When the secretion of mucus commences, these dry sounds are replaced by large bubbling in the larger air-tubes, or small bubbling if the disease has reached the smaller tubes. This has been termed the moist stage of bronchitis, and the sounds then heard have been technically called large and small crepitations.

Percussion may now sometimes detect dulness through œdema at the base of either lung ; while, if

there is pulmonary collapse through tenacious mucus plugging up a bronchial tube, as not unfrequently happens, the percussion note will lack resonance over that particular part.

Prognosis.—From one-half to three-fourths of those attacked with capillary bronchitis die between the sixth and tenth days of the disease. In favourable cases improvement commences from the fourth to the eighth day. Bronchitis affecting the larger air-tubes is not dangerous. Relief generally supervenes when expectoration becomes abundant. Should this fail to return, pulmonary congestion ensues, and ultimately death. Circumstances increasing the gravity of the prognosis are very early or advanced life, the existence of some acute or chronic disease, or other complications.

Anatomical Appearances.—The morbid appearances directly indicating bronchitis as a distinct affection may be summed up in one word—redness, which may, however, vary in intensity. With the redness there is swelling, and at first dryness, of the mucous membrane. The dryness is afterwards replaced by a muco-purulent secretion.

Treatment.—Every case of bronchitis must be treated individually, as no general rule can be laid down. Yet it may be stated that bronchitis, during its early catarrhal stage, may sometimes be prevented from proceeding farther by the administration of a full dose of opium or wine in whey. If the fever is too intense for this, a hot bath, followed by a weak saline purgative, and diaphoretics and expectorant mixture, must be trusted to (F. 45); or antimonial wine, with liq. acet. ammon., for children, in doses proportioned to their years, or (F. 34).

Bronchitis occurring in people of a gouty habit must be met by adding colchicum to the above-men-

tioned formula. The antimonial mixture may be omitted when the expectoration becomes freer. Steam or medicated inhalations are very grateful. When the depression is extreme, and the lividity great, carbonate of ammonia must be trusted to.

Local applications will consist of sinapisms, turpentine stupes, jacket poultices of linseed meal, etc. The diet should be fluid,—milk, beef-tea, gruel, arrow-root, in ordinary cases ; and to these wine or brandy must be added in the more severe types of the disease.

In sthenic cases occurring in adults, cupping, or the application of a few leeches to the chest, has been strongly recommended. General blood-letting has now been practically abandoned.

CHRONIC BRONCHITIS

sometimes follows the acute form, or is the result of general bad health, or the sequela of what is termed coughs and colds. It is common in advanced life, appearing in wintry inclement weather, and disappearing in summer. It may vary in its severity, at times being attended with little or no uneasiness except a slight cough and some expectoration ; in other cases the cough is very harassing, especially in the morning, the expectoration copious and resembling very much the nummular sputa of phthisis, or it may simply be frothy and muco-purulent. Fresh exposure to cold or atmospheric changes may at any time convert chronic into a dangerous form of acute bronchitis.

Chronic bronchitis is sometimes dependent on certain constitutional diseases, as syphilis, gout, rheumatism. It also specially affects workers at certain occupations ; *e.g.* knife-grinders, miners, cotton opera-

tives, etc. Auscultation after free expectoration reveals loud harsh sounds all over the chest. These are best described as snoring. They vary in their intensity according as the air-passages are well cleared from mucus, or the reverse. In advanced cases the respiration is of a hollow blowing character, and attended with gurgling. Percussion is unaltered unless there is great accumulation of matter to be expectorated, when it may be temporarily dull over a particular spot.

Sometimes, as the result of various chronic lung affections—as bronchitis, emphysema, or interstitial pneumonia—a bronchial tube may become so dilated as to form a single pouch, like an aneurism of an artery, or a series of pouches in the same tube. This condition is termed Bronchiectasis, and if the cavity is near the surface, is surrounded by condensed lung, and contains air as well as liquid, the signs will be identical with those of a phthisical cavity, and can only be distinguished from it by the fact that such dilatations are usually found at the base and not the apices of the lung ; by the absence of lung tissue in the expectoration, which is abundant and foetid, and by the breath being very offensive.

A peculiar form of bronchitis, occurring either in an acute or chronic form, but much more frequently in the latter, is called variously “croupous,” “plastic,” or “fibrinous.” It is very rare, occurs more frequently in males than in females between the tenth and the thirtieth years of life. It is attended with the ordinary symptoms of bronchitis, and has only one certain diagnostic sign, the expectoration of branching bronchial casts. Recovery in the chronic form is the rule, although the disease is apt to recur.

Treatment.—Indications for treatment vary according to the different forms of the affection, but, in all

cases, are based on certain obvious principles. The patient should always be well clad, flannel being constantly worn, and he should be exposed as little as possible to the vicissitudes of the weather. During winter, if circumstances admit, the patient should reside where the climate is mild and dry. In addition, an attempt must be made to relieve the cough, to promote or restrain free expectoration, and subdue spasm. As stimulating expectorants, vin. ipecac., squills, and senega, may be mentioned. In checking the expectoration, when excessive, tincture of benzoin, dilute sulphuric acid, and the various preparations of opium, may be employed. Inhalations of steam alone, or charged with hops or with dilute hydrocyanic acid, are serviceable for the cough or spasm. The treatment for bronchiectasis can only be palliative (F. 44, 45, 21, 52). In "fibrinous bronchitis," emetics are indicated after hot inhalations, to remove the branching casts in the bronchi. Iodide of potassium is also specially serviceable for this, as the casts are said to become loose even on the second day of its administration. There is no known remedy to prevent its recurrence.

EMPHYSEMA.

There are three kinds of emphysema usually described by pathologists, viz. *interlobular*, *lobular*, and *senile*. These terms explain themselves, hence we shall postpone the separate consideration of them until we come to speak of the pathology, especially as the symptoms of the three forms are the same.

Symptoms.—The patient generally has a livid or cyanotic appearance, and, if he be otherwise healthy, this points to a deficient aëration of the blood. In this disease also we find pigeon-breast in the child,

and barrel-shaped chest in the adult. The history is of great importance ; for, if the patient has had chronic bronchitis, asthma, tubercle, or violent whooping-cough, or difficult establishment of respiration in childhood, we may suspect emphysema.

Dyspnœa, with a distressing feeling of oppression behind the sternum, accompanied by cough with opaque yellow expectoration, are pretty constant signs.

Physical Signs.—Regarding the percussion note there is much difference of opinion, some saying it is abnormally resonant, others that it is normal or dull (Gairdner). The respiratory murmur is deficient, and there are sonorous râles, and in rare cases crepitation. Vocal resonance is diminished, and the heart sounds feeble or masked. The liver and heart are frequently depressed, and the latter may be pushed to one side if one lung only is affected.

Prognosis.—This is most unfavourable, for, although not so fatal as tubercular disease, emphysema is very intractable, disabling, and permanent.

Pathology.—1. *Interlobular form.*—The air vesicles may be ruptured from without as by a broken rib, or from within as by obstruction of the larynx from croup or diphtheria, causing great pressure. Thus air escapes into the connective tissue outside the vesicles, from which it may pass to the root of the lung, neck, or the subpleural tissue.

2. *Lobular, or ordinary Emphysema*, is an inflation of the terminal air-cavities, with atrophy and destruction of intervening septa from mutual pressure, ending in large cavities. This may be local or general, and the lung tissue is bulky, although pale, and collapses on section. There are three views as to the cause of this—

a. That there is a primary degeneration of lung tissue, as in senile emphysema, to be noted afterwards. It may also occur in hereditary emphysema.

b. That violent expiratory efforts with closed glottis cause increased pressure, which acts on the least supported parts of the lung; and it is in these positions that we most frequently find emphysema, viz. at the outer margin, apices, and margins of base.

c. *Inspiratory Theory*.—When a portion of lung contracts, or adhesions exist, rendering inspiration impossible, some other part of the lung must be over-distended during inspiration; hence emphysema occurs, and we often find emphysematous vesicles round cicatrices at apex, or round adhesions.

3. *Senile Emphysema* is simply an atrophy of the tissue between the vesicles, and between the infundibula.

Pulmonary emphysema, owing to the great obstruction to the pulmonary vessels, causes hypertrophy, and dilatation of the right side of the heart from its increased action, then eventually leading on to tricuspid insufficiency and general venous congestion.

The loss of inspiratory surface causes the breathlessness.

Treatment.—We can only palliate. The patient should be clothed in flannel, and avoid damp and cold. He should be very temperate in living, and if possible enjoy a warm climate. Medicinally—Smoking stramonium cigarettes, or the use of arseniate of soda, or potash-nitrates, may give relief. The latter may be prepared thus (F. 51).

If the cough is very troublesome, an expectorant with ether may be given. If much difficulty in expectorating, an emetic of ipecac., with sinapisms to feet and calves of legs, may be tried. If indicated, any of the antispasmodics may be of temporary benefit (F. 12, 13).

ASTHMA

seems to be essentially a spasmodic disease, the patient being healthy in the intervals, although during the paroxysm, which seldom proves fatal, suffocation seems imminent.

Symptoms.—The first invasion takes place during sleep. The patient awakens to find that he can scarcely get breath, hence he puts himself into the position that gives him most purchase for breathing. Respiration is accompanied by great wheezing, and yet hardly any respiratory murmur is heard. The patient feels that, if he could cough and expectorate, he would be relieved, but this he cannot do till the end of the paroxysm. The extremities are cold, the face livid, and the expression anxious. Pulse small and quick, but no fever. Towards the end of the paroxysm the expectoration appears, and is found to consist of frothy mucus free from blood or pus.

Such patients are usually thin and round-shouldered, and the attacks often appear to take on a periodic character. Asthma is most frequent during middle life, affecting men more than women, and being often hereditary.

Asthma is termed *idiopathic or spasmodic* when uncomplicated, and *symptomatic or organic* if it accompanies bronchitis, heart disease, etc.

Causes.—*Direct.*—As irritating inhalations, or over-eating, leading to distension of the stomach and pressure on the diaphragm.

Indirect.—Through nervous system, as by strong emotions.

Prognosis.—In itself most favourable, but by its complications, as congestion of lung, emphysema, and hypertrophy of heart, it is of much more serious import.

Pathology.—Asthma consists essentially of a spasmodic contraction of the muscular fibres of the bronchial tubes, by which means the admission of air is diminished, and the tubes become blocked up with expectoration, which it is partly the function of the muscular fibres to expel.

Treatment.—*During the paroxysm.*—The first thing is to procure fresh air, and remove any tight clothing from neck and chest. Medicinally—Stramonium, in the form of cigarettes or in a pipe, frequently gives relief. Tobacco also has been found useful. Inhalation of chloroform should be tried, care being taken to stop it if the lips become blue. Burning nitre paper under the nose may do good (F. 51).

In interval.—Change of air from town to country, or *vicé versâ*, may be tried. Avoidance of over-eating and attention to bowels are necessary. Tonic and antispasmodic remedies may be given, and iodide of potass has been highly recommended, alone or with expectorants (F. 5, 46).

PNEUMONIA.

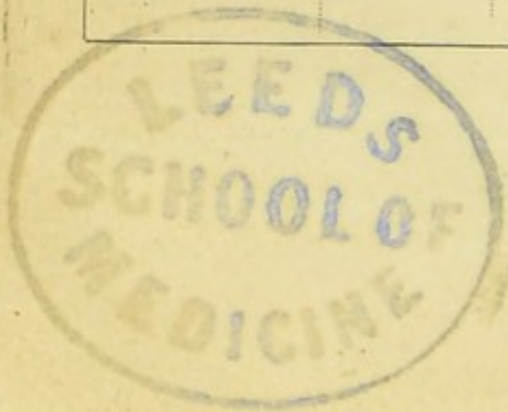
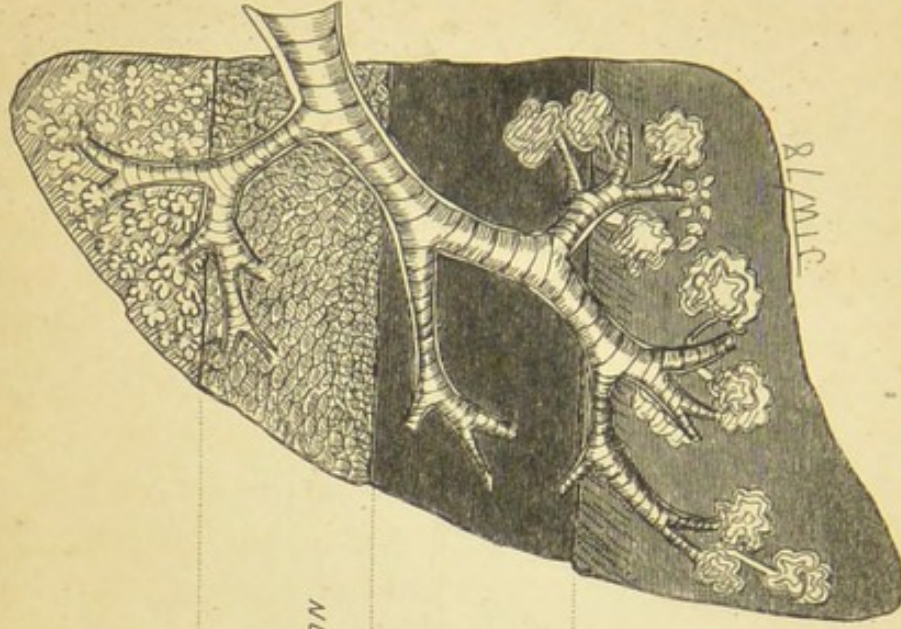
Acute inflammation of the substance of the lung is best recognised, probably, from its clinical history.

A person catches cold, as the saying is. The cold settles in his chest. There is also feverishness, preceded by shivering, and accompanied by gastric disorder, and sometimes by jaundice. Then the breathing becomes accelerated, although not laborious, and there is cough; this cough causing pain, which is referred to the chest, and, as a rule, to that particular part of it which is affected. After a varying interval, the cough, which at first was hard, becomes softer, and a tough tenacious sputum is expectorated. This sputum is considered, and justly considered, character-



PNEUMONIA. Normal Lung.

- 1ST STAGE: ENGORGEMENT.
CREPITATION HEARD ON INSPIRATION
- 2ND STAGE: COMPLETE DULNESS.
TUBULAR BREATHING.
- 3RD STAGE: RESOLUTION.
CREPITATION HEARD ON
INSPIRATION AND EXPIRATION.



istic of the disease. It is thick, adherent, glairy, sticking to the sides of the vessel, and through part of it a prune-juice colour is observed; or what is more often termed the rusty sputum of pneumonia, which a student of mine once likened to badly-mixed Gregory's powder. The temperature, in accordance with the fever, is necessarily increased. The fever is usually intense, and may have a very high temperature (up to 105°); or there may be typhoid symptoms, with debility, dry tongue, or delirium—so much so as often to be mistaken for typhus fever. Pulse frequent, and hard at first. A herpetic eruption frequently appears on the lips or nostrils about the acme of the fever. Such are the general outward signs of pneumonia. What is going on inside? In answer to this it may be stated that the disease has been divided into three stages, which it is well to be familiar with, although it is absurd to suppose that they follow one another with mathematical precision. In the first stage, if an opportunity was afforded of examining the organ attacked with inflammation, the characteristic appearance of the part involved would be redness, with a quantity of red frothy serum escaping on section. The elasticity and sponginess of the lung are diminished, but it still will float in water. The vesicles contain fluid and air, and fine crepitation is heard by the stethoscope. In the second stage the redness has yielded to solidification. The part affected has a thick heavy consistence. It no longer crepitates when pressed, and if thrown into water it sinks. Pressed between finger and thumb it breaks down, and from the appearance being like that of liver tissue it has been termed "red hepatisation." Here the fluid in the vesicles has coagulated. In the third stage resolution is taking place in the majority of cases, and the lung is coming

back to its primary condition. When cut into, a great quantity of reddish or greyish fluid oozes out. Hence some call this "grey hepatisation." This stage may, however, be carried farther into diffuse suppuration, and sometimes, though rarely, into abscess and gangrene.

The change from the first to the second stage goes on rapidly, twenty-four hours or even less being sufficient. It must also be remembered that you may have one part of the lung in the first, another in the second, and another in the third stage, so that the auscultatory phenomena, which come now to be considered, will be found to vary at different sites. The accompanying engraving is intended to show the three different stages of pneumonia, while the upper part is unattacked by inflammation. On applying the stethoscope over an inflamed lung, the healthy vesicular sound may in part be heard, with the addition of minute crepitation during inspiration. What is this due to? Very probably it is formed in the minute spaces of the bronchial terminations and pulmonary vesicles; and by some is considered due to the bubbling of air through the liquid in the vesicles, and by others to the forcible separation of the walls of the vesicles glued together by exudation, and yielding to the inspired air; the sound is best realised by rubbing a lock of hair in the immediate vicinity of the ear.

In the second stage, over the part where the lung has become dense and solid, neither the vesicular murmurs nor the minute crepitation are heard, but there is a something else probably—viz. bronchial respiration or tubular breathing. This is due to the fact that there is entering the condensed mass a permeable bronchus, and the sound is conveyed along the solid conducting medium. So, also, there may be no bronchial respiration, and no breath-sounds at all

heard, because the bronchi may be filled up with accumulated secretion. Sometimes this may be set free by a cough, and the bronchial respiration may be established. Ask the person to speak while the stethoscope is applied over the site of the solidified lung, and the voice-sounds will be conducted to the ear in an intensified manner, and hence the term "bronchophony." Similarly the vocal fremitus will be increased. On percussing the same part, it can also be easily understood how distinct dulness will be elicited.

In the third stage moist sounds are detected, for the lung is permitting the air again to enter. It is the first stage on a larger and coarser scale, because the crepitations are heard both during inspiration and expiration. It has been termed the *crepitatio redux*, and it is usually a happy sign in pneumonia, because it indicates that the lung is returning to its duty, permitting the air to re-enter its wonted seat. It does not come on at once, neither does it invade the whole lung at once, and at last, as health is established, it is replaced by the healthy vesicular murmur, if resolution has been thoroughly progressing.

In pneumonia the right lung is more frequently attacked than the left, and the site of the inflammation is at the base; hence the back and not the front is the proper place for hearing the phenomena indicated. Pneumonia is sometimes double. If it is not, the healthy lung, requiring to act with increased force, renders the respiration "puerile."

Should the inflammation end in gangrene, there will be an intense foetid smell of the breath, great prostration, dyspnœa, and hectic fever; and a fatal result unless the part involved is very small. Gangrene may also result from obstruction of vessels, from embolism, various septic poisons, and (it is also said) from nervous influences. The urine in pneu-

monia, during the stage of hepatisation, shows a marked diminution in chlorides. These again reappear as the inflammation subsides. It is frequently scanty, high-coloured, and tends to deposit urates. The average duration of the disease in uncomplicated cases is fourteen days, when complicated, about twenty-one.

A certain amount of bronchitis must always accompany acute pneumonia; very often also pleurisy, when the disease is termed pleuro-pneumonia.

It is necessary to mention two other varieties of pneumonia, "catarrhal" and "interstitial." Catarrhal pneumonia, by some termed "lobular pneumonia," to distinguish it from the preceding form, nominated "lobar," has a clinical history and post-mortem appearances of a different character, the consolidation in "lobar pneumonia" being massive, in "catarrhal" or "lobular," disseminated, limited to single lobules, and scattered more or less over the lung-substance in patches varying in size from a hemp-seed to an egg. Catarrhal pneumonia is always associated with, generally preceded by, inflammation of the smaller bronchi (capillary bronchitis), and is a frequent complication of measles and whooping-cough, or it may follow a common cold in old or weakly persons. It may thus be considered a secondary morbid process, never originating primarily. Understood as such, what occurs in the lungs is this:—The inflammation may creep from the smaller bronchi to the air-vesicles, or it may follow pulmonary collapse, as it does in the great majority of cases. For a bronchial tube becomes obstructed, collapse of the air-vesicles beyond the obstruction takes place, and subsequently in these vesicles congestion and increased cell-formation ensue. The cells multiplying, completely fill the alveolar cavity, and may, as

the inflammatory process advances, undergo fatty degeneration, so as in appearance to change from a reddish-grey to a yellowish-white colour. This fatty change may lead to resolution and absorption, but frequently it is not completed, and the masses become cheesy, break down, and play an important part in pulmonary phthisis.

On section, therefore, of lungs in a recent catarrhal pneumonia, it will be understood how that the most prominent features will be pneumonic lobules scattered through its substance, as reddish-grey ill-defined nodules. Auscultation during life will thus reveal simply the sounds of capillary bronchitis, and percussion will indicate no dulness, unless the centres of inflammation have joined together over a considerable extent of the lung-substance, when areas of dulness will then be here and there detected. Its distinguishing characteristics from the first variety (lobar pneumonia), in addition to what has been mentioned, are its high temperature, its affecting both lungs, the absence of a distinct chill and of rusty expectoration; and finally, the mortality from it being much higher, as from one-half to two-thirds of those attacked.

"Interstitial pneumonia," by some called fibroid pneumonia, is rarely a primary affection, but is dependent on previous inflammation. The connective tissue of the lung becomes increased and hardened, the calibre of the air-cells is diminished and replaced by the fibroid growth. This change may follow on an unresolved pneumonia of the forms previously mentioned, or it may attend chronic phthisis or bronchitis. A lung which is the seat of fully developed "interstitial pneumonia" is diminished in size, solid, and hard to the touch, and when cut, it presents a smooth shining appearance, and gives a creaking sound under the knife. By some, the change is

considered identical with what occurs in cirrhosis of the liver or kidney, and has hence been termed "cirrhosis of the lung."

Prognosis.—Pneumonia occurring in the young or very old is attended with great danger. An unfavourable prognosis must also be given when it is double, when the temperature is above 104° Fahr., and when the patient has been addicted to drinking habits, and becomes delirious in the course of the disease. Although the pneumonia, *per se*, may terminate favourably, yet through its not resolving properly, or other circumstances, phthisis may supervene. In acute catarrhal pneumonia, the prognosis depends entirely on the circumstances attending the development; occurring with measles or whooping-cough, the prognosis is favourable. With scarlatina having a temperature above 105° it is very unfavourable, especially if there is also a feeble pulse and a tendency to coma. In interstitial pneumonia the prognosis as to time is good, as people with it may live for many years, and suffer only from dyspnoea. Any intercurrent affection will, however, have a direct influence on the prognosis of a disease which can scarcely be regarded as an independent affection.

Treatment.—Bleeding, once so much in vogue in acute pneumonia, has now been practically abandoned. Sometimes, however, leeches are useful if the case is seen early and the patient is young and plethoric. I have usually found the antimonial treatment the best. Thus I give

R Vin. Antimon. ℥ss.

Sp. Chloroform. ʒii.

Aqua ℥vi. M.

A table-spoonful every two hours. In the course of twenty-four hours the pulse is diminished in volume, the temperature decreased, and the body is bathed in

perspiration. The expectoration also becomes freer. The same mixture is continued for the next two or three days, but instead of every two hours it is taken every four hours. Then it may be stopped, and ammonia and bark substituted. The advisability of giving stimulants must be judged of by the individual peculiarities of the case. If the patient is a broken-down and dissipated man, or has been accustomed to take them freely, the necessity for their administration is indicated from the first. In other cases common sense and prudence must guide the practitioner.

Locally, hot linseed-meal poultices ought to be applied and carefully attended to. The temperature of the room should be kept uniformly at 60° Fahr., and beef-tea, given at regular intervals, should form an essential part of the dietary.

Cold bathing or cold applications to the chest have found considerable favour in Germany. In addition to the general treatment laid down in acute bronchitis, Dr. Flint strongly advises sulphate of quinine in full doses as an antipyretic. In catarrhal pneumonia occurring in the progress of measles or other affections of children, Juergensen recommends a uniform moist atmosphere by means of steam so contrived as to pass over the mouth of the patient, and in addition, baths of 77° to 86° Fahr., followed by cold affusion if the fever is high, and carbonic acid poisoning from non-expansion of the lungs, manifest. Still further to dislodge the bronchial secretion, a mixture of oil of aniseed, senega, and ammonia is advised, with "Nestle's food" and wine to support the strength.

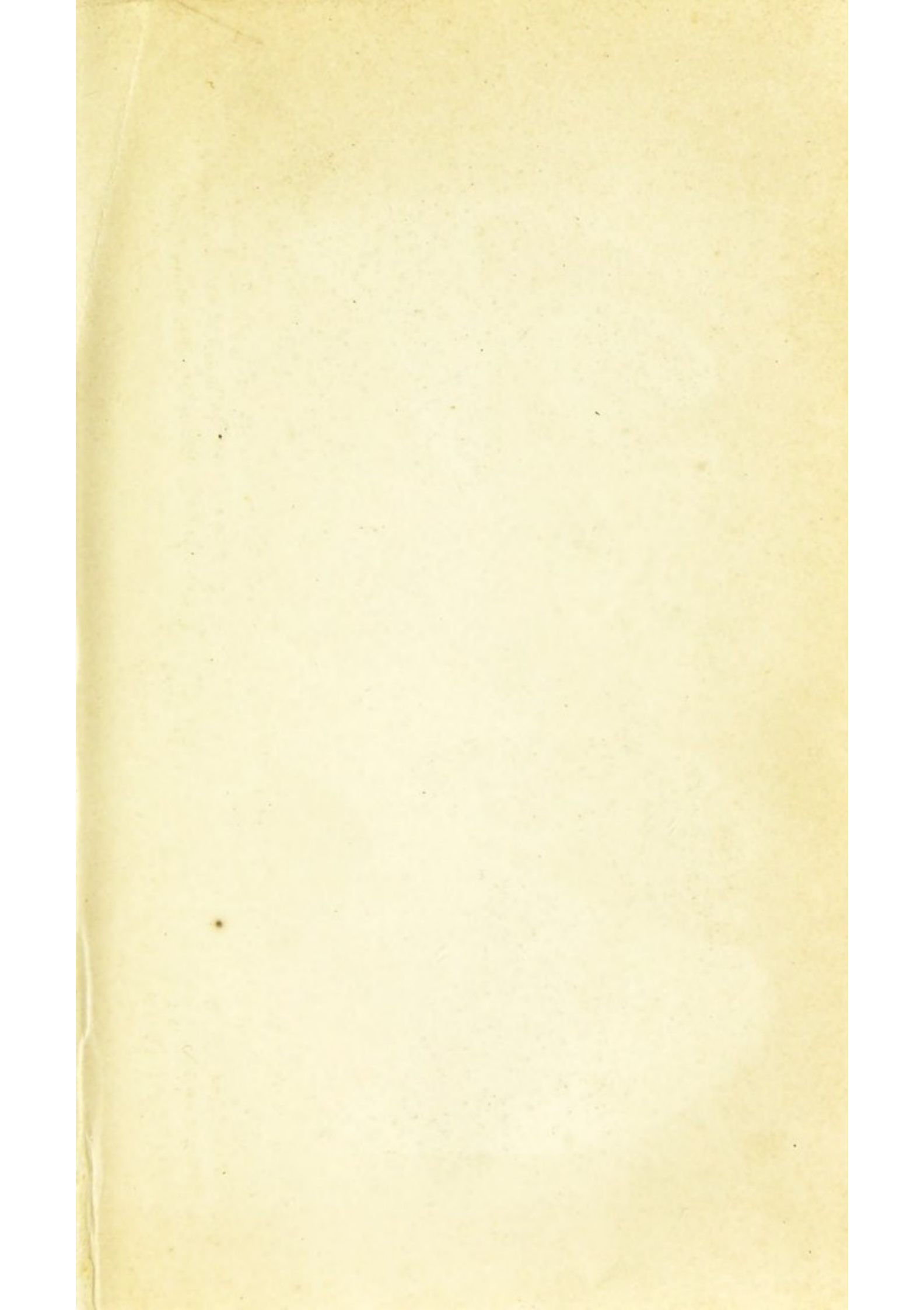
PLEURISY.

Pleurisy was the designation given at one time to every pain connected with the chest, but now it is

exclusively applied to inflammation of the serous membrane lining the walls of the thorax and investing the lungs. It may thus be either single or double, according as one side or both sides are affected. It may also be either acute or chronic.

Symptoms.—In acute pleurisy the attack is usually sudden, and there may be no premonitory chill, as in pneumonia. Pain is, however, generally felt, acute and lancinating, chiefly in the mammary region, and is increased by cough and inspiration. On account of the pain, the respiration is voluntarily impeded. The cough is short and dry. These local symptoms are attended with headache, anxious countenance, hot skin, and rapid pulse. The temperature does not rise so high as in pneumonia, nor decline so rapidly, but tends to fluctuate.

In the early stages, if the stethoscope be applied to the place where the pain is felt, the opposed pleural surfaces are heard grating against one another, and producing what is termed “the friction sound.” The surface of the pleura is roughened by the effusion of a thin layer of lymph on it, which can be felt on post-mortem examination as a rough coating, like fine chamois leather. This sound only lasts a short time, for, should resolution have occurred, it ceases, and the investing membranes glide over one another as in health; or adhesions may have formed between them; or, as most frequently happens, an effusion of fluid has taken place into the cavity. The fluid in the pleural sac may be purulent, constituting what is termed “empyema,” and this pus may seek an exit either internally or externally. If internally, an opening is made into the same lung through the pulmonary pleura, and the matter is evacuated by expectoration; or it may make its way externally through an intercostal space, and usually at the most dependent part. If the

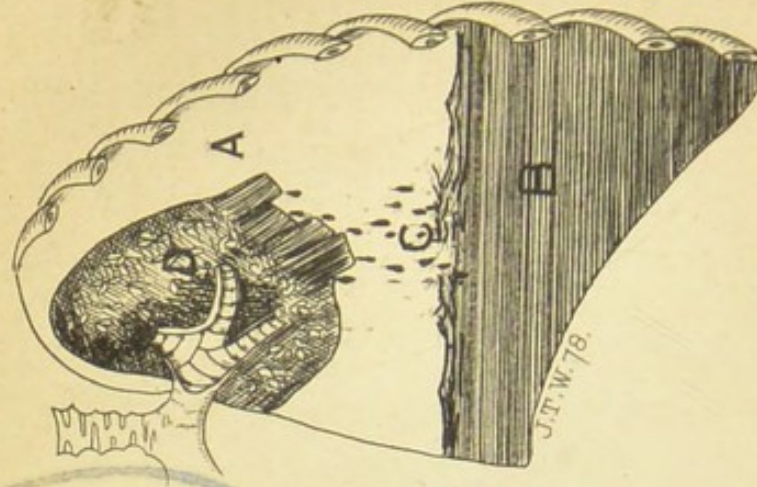


PLEURITIC EFFUSION.

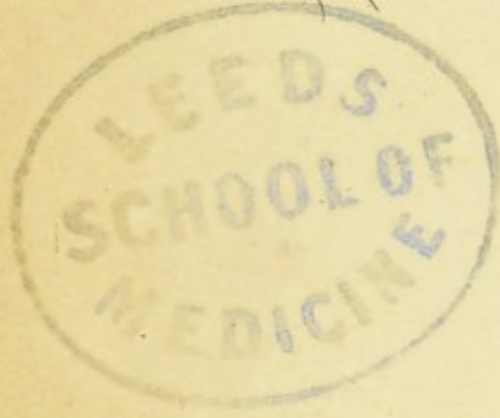


- A.—VOCAL RESONANCE INCREASED ABOVE (BRONCHOPHONY);
DIMINISHED COMPARATIVELY BELOW (ÆGOPHONY);
- B.—VESICULAR BREATHING ABSENT.
- C.—PUERILE BREATHING.
- D.—HEART DISPLACED.

PNEUMOTHORAX WITH EFFUSION.



- A.—PERCUSSION TYMPANITIC ABOVE, DULL BELOW. (B.)
- C.—METALLIC TINKLING, SPLASHING ON SUCCUSSIO.
- D.—AMPHORIC BREATHING HEARD OCCASIONALLY.



opening thus formed does not close, we have what is termed bronchial fistula if the opening is internal, or parietal fistula if external. In this way air may reach the pleural cavity, and thus we have pneumothorax, or if serum as well, hydropneumothorax. The word Pyopneumothorax applies to the cases where pus and air exist at the same time in the pleural cavity.

The effused matter, consisting of serum or pus, gives well-marked indications of its presence. On percussion we find dulness corresponding to the extent of the effusion, and this dulness may be complete or partial according as the fluid fills the whole or only part of the pleura. The dulness, also, if the effusion is partial, will vary with the position of the patient, the fluid gravitating to the most dependent part, except where it is bounded by adhesions, in which case no change of level occurs on the patient changing his posture.

The lung is pressed back against the vertebral column, and if this compression is so complete as to prevent any air entering it, on auscultation we can hear no breath-sounds at all. If, however, we listen at the back, where the compressed lung is in part acting and allowing air to enter, or, more definitely, in the interscapular region of the affected side, we may detect increased resonance and bronchial breathing; the bronchial or tubular breathing being like that of pneumonia, only softer to the ear and more superficial. Sometimes, when the patient speaks, the voice appears faint, distant, and trembling, like the bleating of a goat; it is then termed "œgophony."

At the outset of the illness the patient lies on the sound side, probably to diminish the tension and increased pain of the affected side; but as the disease

advances and effusion ensues, this position cannot be retained, because the effusion would then involve not only compression of the lung on the affected side, but compression also of the sound lung, through the displacement of the mediastinum; hence it is seen that the patient lies on his "back," or on the "affected side," if the pleurisy is single and the effusion great. Moreover, the effusion, if great, may cause considerable displacement of organs. Thus the diaphragm may be depressed and the liver displaced downwards if the effusion is on the right side. In extreme cases on the left side the heart may be so shifted as to be seen beating on the opposite side. The unaffected lung in single pleurisy is thrown into increased activity, and the sounds becoming more distinct occasion what is termed "puerile breathing." The intercostal spaces may also be flattened or even bulged out, while the intercostal muscles do not rise and fall as in the healthy state. The measurement of the affected side will also show an increase as compared with the sound one.

Duration.—This varies; sometimes amounting to five or six days, sometimes to as many weeks.

Termination.—The effusion may never have become purulent, but may be absorbed, as indicated by a gradual diminution of the dulness, and if there are no adhesions the lung will resume its natural size and functions. If it is bound down by adhesions we may find that it will not proportionately expand, but shrink in comparison with the other side, or empyema and hectic fever may result; or there may be an aggravation of the symptoms, swelling of the hands, dyspnoea, and death; or the disease may pass into the chronic state.

Varieties.—Usually pleurisy is single, but the disease, although primarily affecting one side, may

spread to the other, constituting double pleurisy. Sometimes there is little fever, little pain, no dyspnœa, and yet an extensive pleuritic effusion—latent pleurisy. Diaphragmatic pleurisy is characterised by pain in the hypochondriac region reflected to the clavicles, great dyspnœa, cough, intense fever, and vomiting.

Diagnosis.—Pneumonia and pleurisy have certain things in common, viz. pain in the side, fever, dyspnœa, oppression, cough, and dulness on percussion. The dulness in pleurisy is, however, more complete, the elasticity of the lung being more fully lost, and it is associated with absence of respiration, of voice sound, and of vibration; and further, there is no fine crepitation and no rusty sputum as in pneumonia. Cancer of the lung presents physical signs closely resembling those of a pleural effusion. It does not, however, cause enlargement of the affected side, and it is also a disease so rare as practically to be left out of account, unless the history and the cancerous cachexia, and the probably “red currant jelly expectoration,” point to its occurrence. To tell whether the fluid is still serous or has degenerated into pus (empyema), is a point of great practical importance in regard to treatment; for, if purulent, medicinal absorbent treatment is valueless. This point can only be determined by general considerations, unless an experimental puncture by the aspirator is resorted to; yet a history of a long continuance of the disease, and of shiverings, night sweats, hectic fever, and rapid emaciation, indicate the probabilities of empyema. Intercostal neuralgia may simulate the first stage of pleurisy, but is distinguished from it by the pain not being aggravated by breathing, and by the absence of friction murmur and fever.

Prognosis—Favourable, if single and primary, un-

favourable, if the effusion becomes purulent. If secondary to other diseases, it may so complicate matters as to be the immediate cause of death. As will be seen from the foregoing remarks, the pathology of pleurisy may be shortly stated thus:—

1. Some redness of the pleural surfaces.
2. Exudation partly serous and partly fibrinous, the fibrin being deposited on the inflamed surfaces; and as inflammation goes on this fibrin is replaced from below upwards by an inflammatory growth comparable to granulation tissue.
3. The fluid may be absorbed, and thus the two granulating surfaces coalesce, obliterating the cavity.
4. The fluid may increase and become purulent, as previously noted.

The treatment most consistent with the sketch of pleurisy given seems to be this:—If the case is seen in the early friction stage, the application of leeches to the seat of pain, followed by hot poultices and the administration of a purgative, the latter to be succeeded by a soothing expectorant mixture (F. 43). Opium hypodermically, or by the mouth, is of much benefit, especially if combined with calomel. Controlling the movements of the affected sides by straps of sticking-plaster has been found useful in preventing effusion. If effusion has already taken place, then it is necessary to promote absorption. Of the remedies most useful for this, special mention must be made of a pill containing squill, digitalis, and mercury, given thrice daily (F. 36). This should be followed by the iodide of potassium, with rest in bed, nourishing diet, wine, and the local applications of small blisters, or the unguent. iod. hydrarg. (F. 5).

Should the effusion not be removed by these means, or should it have become purulent, as indicated by hectic fever and sweats, paracentesis by the pneumatic

aspirator should be performed. The site selected for the operation should be, according to Bowditch, at the inferior angle of the scapula, between the ninth and the eleventh ribs. Fraentzel, however, suggests that the position is unadvisable, because of the danger of wounding the diaphragm, and because punctures in this situation, from a thick layer of fibrin intervening, prevent the fluid from being withdrawn. He prefers to follow Laennec's advice, and puncture between the mammary and axillary lines, selecting the fifth interspace on the left, and the fourth interspace on the right, side, in order to keep clear of the liver. The patient should assume a semi-recumbent position, the aspirator should be carefully tested, to see that it is acting properly, and the fluid should be drawn away slowly, rather by repeated operations at intervals of a day or days, than all at once. How much should be withdrawn at a time? and what should be done if the fluid is purulent and of an offensive odour? My answer to the first question is, From 70 to 90 ounces, if the fluid comes away freely, unstained by blood; and to the second, Do not trust to the aspirator; let the pus out, insert a drainage tube, and wash the cavity daily with a solution of carbolic acid, two grains to the ounce.

CHRONIC PLEURISY.

As in simple pleurisy, the pleura is full of fluid to a greater or less degree, but this fluid is milky or purulent, and often exists with a pulmonary fistula. If the pleurisy be double, it is frequently associated with tubercle.

Symptoms.—As in acute pleurisy after exudation, there is absence of thoracic vibration, complete dulness, and loss of the respiratory murmur, which may be replaced by tubular or bronchial breathing. The side

affected remains immovable, the intercostal spaces are filled up, while any other position than lying on the back, or the side affected, is impossible. When chronic pleurisy is primitive, *i.e.* does not follow on an acute affection, it does not announce itself by any local pain; the fever, if any, is irregular, with little or no dyspnœa. In fact, the pleura may sometimes be full of fluid without the patient being conscious of this. After this mode of invasion, tuberculosis is apt to set in with weakness and enfeebled digestion, followed by hectic fever and night sweats.

Treatment should be tonic—cod-liver oil, syrup of the iodide of iron, and good nourishing soup and beef-tea.

Should there be no indication of tuberculosis or cancer, should the effusion seriously endanger the patient's life by suffocation, and should it fail to be removed by the means mentioned, or by absorbent or diuretic treatment, it is advisable to perform paracentesis (F. 35, 36, 37).

Addenda to Chronic Pleurisy.—The condition termed pneumothorax may here be briefly alluded to. Injuries may lead directly to this, as from fractured ribs or blows, but in the great majority of cases the air is admitted as the result of the bursting of a small cavity into the pleura in the progress of phthisis. Sudden severe pain, faintness, and dyspnœa, characterise this occurrence at first, and afterwards the face and lips become blue and swollen. The percussion note is abnormally clear on the affected side, or dull; there is no true vesicular murmur, though bronchial breathing may be detected along the spine. With inspiration, voice and cough amphoric sounds will be heard, and also a metallic echo; auscultating, while an assistant uses two coins, one as a hammer, the other applied to the chest as a pleximeter, may elicit a

sound clear and ringing, of varying intensity and loudness, and sometimes not unlike the chime of a small clock. Hence it has been called "the bell sound." As there is generally fluid with the air, it may be detected at the base of the pleura by dulness on percussion, by metallic tinkling occasioned by the fall of a drop of fluid on the fluid at the bottom, and by a splashing sound being sometimes produced when the patient is shaken. This latter fact, known to Hippocrates, has sometimes led to its being termed, not merely succussion, but "Hippocratic succussion."

As the consequence of disease of the heart, kidney, or liver, obstructing the circulation, there may be a passive effusion of serum into both pleural cavities, and the condition termed "hydrothorax" is established. It is not a disease of the thorax *per se*, but simply marks the advance of the general dropsy to the lungs.

PHTHISIS, PULMONARY CONSUMPTION,

is the most fatal and most common disease to which the human race is liable; it may occur in any country, and may attack either sex at any age. It may be hereditary or acquired, and may run an acute or chronic course. Acute phthisis is, however, rare.

Phthisis (chronic), as we generally observe it, is shown by certain general and local symptoms.

The general symptoms are first dyspeptic; want of appetite, a faulty digestion, a marked aversion to all forms of fatty food, may for some time precede the cough, this being at first dry, and most severe at night or early morning, but is afterwards accompanied with a clear, sticky expectoration, or it may be tinged with streaks or dots of blood. If the expectoration of blood is abundant, vomiting accompanies the cough;

hence, the term "vomiting of blood" so often employed by patients. In inquiring into the character of the blood, it is necessary to remember that if it proceeds from the lungs the succeeding coughs will generally bring up portions of blood which remain behind; the colour becoming darker and darker, and finally turning to a dirty brownish-red. If from the stomach, the blood comes away by a single act of vomiting, and then follow black-coloured discharges from the bowels. There is no fixed pain, but often a dull, varying, aching feeling between the shoulders or below the clavicles. Exertion, such as walking quickly, going up stairs, occasions dyspnoea, while hurried breathing is a constant symptom. Loss of weight and emaciation from the faulty digestion, or from the accompanying fever, as evidenced by increased temperature and quickened pulse, form valuable diagnostic signs.

Sometimes a red line is seen on the gums, and the fingers are often club-shaped and the nails curved.

Some, if not all of these symptoms, are found in the first stage of phthisis, and accompanying these, and evidencing the existence of the tubercular deposit in the lungs, are marked local symptoms. The deposit affects, as a rule, the apex of one lung at first, and on percussion in the supra-spinous or supra-clavicular region, want of elasticity is detected, or actual dullness. The expiration is prolonged, and accompanying the inspiration a feebleness or jerking is heard, or dry clicking. When the exudation has become more marked, and has set up more pulmonary irritation, localised evidence of this is shown by sub-crepitant bubbling sounds, or by bronchial or tubular breathing. It should, however, be borne in mind that phthisis may have taken perfect hold of the system and yet

there may be an absence of physical signs, or only the slightest indication of them. In such cases the thermometer is of great service, as it will indicate an increase of the evening temperature over the morning to a greater or less extent.

In the second stage, with which, for convenience of description, the third or last stage is also included, we find the general symptoms to have markedly increased in severity. There is distinct flattening above and below the clavicles of one or both sides. The fever is more pronounced, and is hectic in its type. The system is further weakened by profuse night sweats

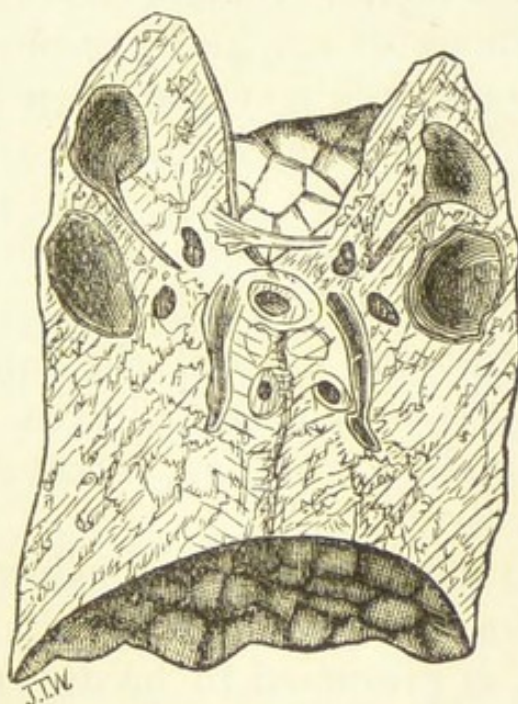


Fig. 5.—SECTION OF LUNG, SHOWING CAVITIES.

and diarrhoea. The cough is frequent and irritable, often giving rise to vomiting; the appetite capricious, and digestion greatly impaired. The expectoration is thick, yellow, sinking in a kind of thin glairy liquid, pellet-shaped, or from its resemblance to a coin called "nummular;" later on it loses this character, and becomes distinctly purulent, sometimes having a greenish colour and most offensive odour.

Should a fatal issue result, as usually happens in this stage, the exhaustion becomes more profound, the night sweats more severe, and finally, swelling of the feet and ankles is often observed.

The tubercles formed in the first stage have softened and broken down, leaving cavities. The layer of lung forming the wall of the cavity or cavities is usually thick and solid. Hence, on percussion, the sound is dull, or if there is a free communication with the open bronchi and the mouth, there is a cracked-pot sound (*bruit de pôt félé*).

On auscultation gurgling is heard, caused by the air bubbling through liquid. Should the cavity be dry and hollow, "cavernous or amphoric respiration" will be present. These sounds may also often be combined if the cavity contains fluid at its lower part, while above it is to a great extent dry. The vocal resonance indicates "bronchophony" or well-marked "pectoriloquy."

If the student should be asked what are the signs of a cavity, say at the apex of the lung, the answer should be, Dulness over a limited area, or probably a cracked-pot sound—"gurgling," "cavernous breathing," and "pectoriloquy."

Frequently a murmur is heard below the clavicles, especially on the left side, following the first sound of the heart, and is presumed to be due to adhesion at the apex of the lung. The shrinking thus occasioned produces a bending, an alteration in the direction of the artery (subclavian), and the blood flowing through the narrowed part gives rise to the murmur.

The elastic fibres of the lung-tissue can at times be detected in the sputa by mixing them with an equal quantity of caustic soda in distilled water 18:100. Boil the mixture, frequently stirring, then add three or four times its bulk of water, and allow it to stand in a conical glass. The deposit contains the elastic

fibres. It is sometimes difficult to decide between the probabilities of incipient phthisis and acute bronchitis. As aids to diagnosis, the following points, gleaned from what has been told under the two diseases, are of practical importance as bearing on the cough, pain, temperature, and history. For the cough of phthisis is at first dry and hacking, followed by the expectoration of thin mucous fluid, sometimes streaked with blood; while that of bronchitis begins suddenly with fever and coryza, and is attended with expectoration of a frothy, generally abundant, muco-purulent character, not often blood-stained. The pain in the chest in phthisis is generally wandering, although sometimes it is most felt below the clavicle of one side, or between the shoulders. In bronchitis there is no actual pain, but a feeling of tightness behind the sternum, which feeling is aggravated by coughing. In phthisis, the evening rise of temperature is always apparent, while in bronchitis there is no marked difference at night. The physical signs of the disease in phthisis are localised to the apex of one lung, and are persistent there, while in bronchitis they exist equally all over the chest, are of temporary duration, and subside gradually.

Further, the hereditary history and the general appearance and loss of flesh and strength accompanying phthisis, will materially aid, if present, in deciding in favour of that disease.

ACUTE PHTHISIS

is a rare disease, and runs a rapid course. It seems dependent on tubercular degeneration following catarrhal pneumonia; the pneumonic consolidation, instead of undergoing resolution, breaks down into soft

cheesy matter, with the formation of cavities of various sizes, at times all over the chest.

It is attended with a sudden onset, shivering followed by a high fever, pain, cough, dyspnoea, profuse sweatings, rapidly increasing weakness and prostration. The pulmonary mischief is evidenced by hurried breathing, and small and large crepitations not localised but general.

In the only two cases I have seen, death occurred in less than five weeks.

Treatment.—The general treatment is indicated under tuberculosis. With regard to other remedies, cod-liver oil has deservedly been the sheet-anchor of the profession for many years. It affords the greatest amount of nourishment in the smallest form, and should be commenced in tea-spoonful doses at first, mixed with lime-water, and gradually increased. The oil may also be rubbed in externally, especially if the stomach cannot digest it. Glycerine can sometimes be taken with advantage in dessert or table spoonful doses thrice daily, either alone or with the syrup of the iodide of iron in a bitter infusion. Pancreatic emulsion has by some been considered beneficial. Malt extracts have recently met with considerable favour. Counter-irritants, as croton oil or iodine paint, may also be employed over the front of the chest.

It is better to allay the cough with inhalants than cough mixtures. The hop inhalation can be specially recommended (F. 52).

Opium, or some of its preparations, forms the essential ingredient in all useful cough mixtures, and must be given when it would be cruel and impossible to dispense with these (F. 71). The injection of ergotine is to be recommended in severe hæmoptysis, with gallic acid internally (F. 19), ice cloths over the

chest, and the sucking of ice. To control the diarrhoea chlorodyne is useful. And to prevent sweating the hypophosphite of lime or the injection of atropine is highly serviceable. I have seen much benefit following the use of the hypophosphites in the early stages of hereditary phthisis (F. 82).

Alcohol may be given freely in all stages of the disease. It tends to check the destructive process ; it frequently allays the cough better than anything else ; and it does not raise the temperature. If the case is not too far advanced, and the patient can afford it, a sea voyage should be tried ; and, if circumstances admit, a residence for some time in a warm and equable climate, such as Torquay, Hastings, Mentone, Nice, Algiers, or Madeira, or the pure and elevated atmosphere of Davos may be selected if there is manifest arrest of the disease.

CANCER OF THE LUNG

is usually of the medullary form, and originates from the bronchial glands—thence invading the substance of one or both lungs. It may, however, be primary. The symptoms are obscure—the more prominent being dulness on percussion, dyspnoea, tubular respiration, and the expectoration of sputum of “red currant jelly” character and consistence. Rapid emaciation ensues, and ultimately death by exhaustion, through the malignant nature of the disease and from its involving by pressure, nerves, blood-vessels, and other structures. Its course is rapid, the mean duration being 13·2 months.

DISEASES OF CIRCULATORY ORGANS.

ANGINA PECTORIS.

The introduction of this term into medical nomenclature is due to Dr. Heberden, who in 1768 first described the disease, and stated that the sense of strangling and anxiety with which it is attended may make it not improper to call it angina pectoris (anguish of the breast). It is a rare disease.

Etiology.—Some consider it merely neuralgic, commencing for the most part in the pneumogastric nerve, and spreading in different directions. Militating against this theory is the fact that it seems brought about by what disturbs the heart's action, viz. mental emotion and bodily exertion, and especially that it is so often suddenly fatal. Dr. Jenner believes it due to ossification of the coronary arteries, disordering the nutrition of the organ. This does not, however, account for the sudden pain. Generally speaking, it may be said to be essentially connected with fatty degeneration, ossification of the coronary arteries, or some valvular disease of the heart.

Symptoms.—The attack is sudden and without warning, occurring sometimes when walking quickly up a hill, or after early breakfast. The pain is referred to the cardiac region, and is intense in its character. It may radiate from the heart as its central origin, to the neck, back, left shoulder, and arm. The suffocating feeling with which it is accompanied gives rise to the fear of impending death. The countenance is pale and covered with sweat; the pulse feeble, small, and fluttering; while consciousness is unimpaired.

Fortunately the attack does not last long, generally

only a few seconds, but it may be prolonged even an hour. It is paroxysmal in its character, and may be evoked by unknown exciting causes. It is a disease of middle life or advanced age, and is more common in men than women.

The prognosis is necessarily grave, and, sooner or later, death ensues in the course of a paroxysm.

Treatment.—During the spasm, externally, mustard foot-baths, sinapisms to the back, or hot fomentations. Internally, give brandy, or a mixture of sp. ammon. aromat., sp. chloroform, and acid hyrocyan. dil. (F. 13). The inhalation of chloroform, or nitrite of amyl, is strongly recommended.

The prophylactic treatment consists in a tranquil life, moderate diet, abstinence from wine and spirits, and the wearing of flannels, no constriction being placed about the abdomen. As the attacks often occur while walking against the wind or ascending a mountain, common sense and prudence interdict such exercises.

HYPERTROPHY OF THE HEART.

As a preliminary inquiry to the subject of hypertrophy of the heart and other cardiac affections, it may be asked, "What is the area of superficial cardiac dulness in normal cases?"

To answer this the student should percuss very carefully, employing pen and ink to dot out the results of his investigations on the chest. It will then be found that he has a map roughly triangular in form, the right side of the triangle being the mid-sternal line from the level of the fourth chondrosternal articulation downwards; the hypoteneuse being a line drawn from the same articulation to a point immediately above the apex beat; the base

being a line drawn from immediately below the apex beat to the point of meeting between the upper limit of liver dulness and the mid-sternal line.

How are the valves situated in the area thus mapped out? From above downwards the pulmonary comes first, then the aortic, then the mitral, and lastly the tricuspid; and in regard to their depth from the surface, the tricuspid is the most superficial, then the pulmonary, next the aortic, and deepest of all is the mitral orifice, the exact anatomical arrangement being as follows:—

The tricuspid orifice extends from the junction of the fourth left costal cartilage with the sternum behind that bone to the articulation of it with the sixth right cartilage.

The mitral orifice to the left of the tricuspid valves immediately behind the fourth costal cartilage.

The pulmonary orifice immediately behind the left border of the sternum, at the junction of the third costal cartilage with that bone.

Aortic, about half-an-inch lower than and to the right of the pulmonary orifice behind the sternum, on a level with the third interspace.

These facts having been remembered, and to understand further what is meant by the term hypertrophy of the heart, it is necessary, moreover, to have some definite idea of the size of the organ in health, and also of the relative thickness of the walls of its different chambers. The size of the heart, all authorities seem to agree, is, in health, about the same dimensions as the closed fist, and it weighs 8 to 10 ounces. The left side of the heart has to do more active work than the right, and nature has accordingly provided it with increased thickness of the muscular tissue to accomplish this. The relative thickness is as follows: The right side is to the left as two to five; or, in

other words, and generally, the thickness of the left ventricular wall more than doubles that of the right.

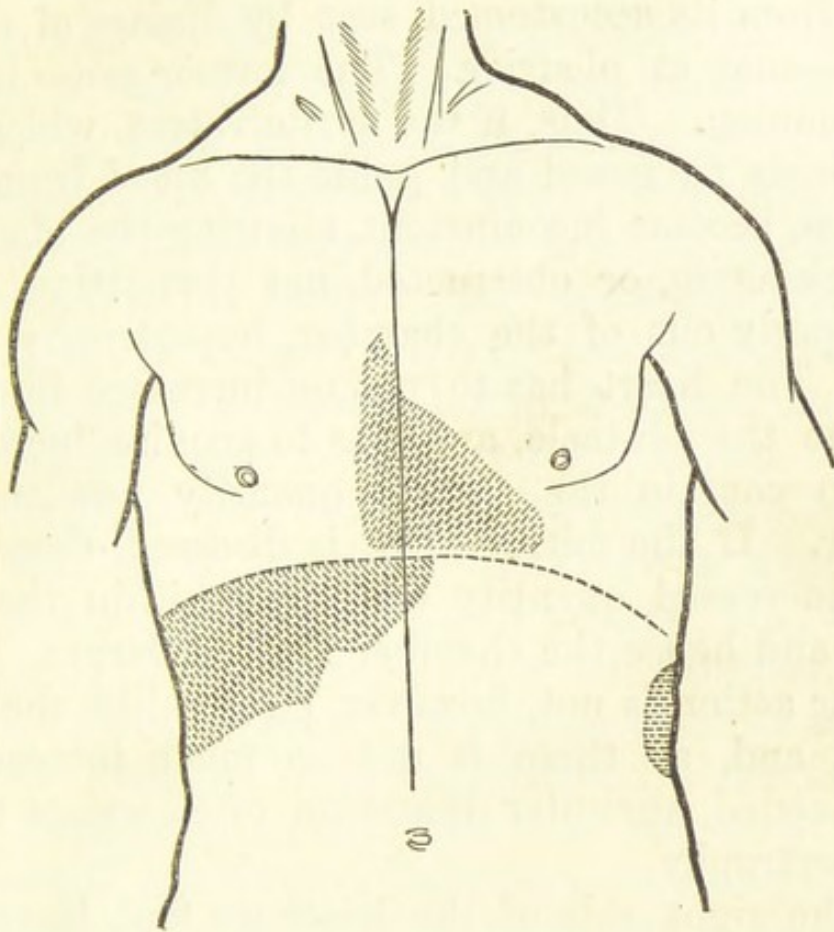


Fig. 6.—AREAS OF CARDIAC, HEPATIC, AND SPLENIC DULNESS.

Hypertrophy of the heart is therefore most frequently found in the left side of the organ, or that side of the pump which has the most work to do.

This hypertrophy may be of two kinds. In the *first* there is simple enlargement of the muscular walls without dilatation of the corresponding chamber.

In the *second*, not merely are the walls thickened, but the chamber is also increased in size. The first is termed "simple" or "passive," the latter "active" or "eccentric." The first is rare, the second frequent. Dilatation and hypertrophy thus most frequently go together, and the reason for this is obvious if we look at what is the cause of hypertrophy. In nineteen

cases out of twenty there is some obstacle to the transit of blood to or from the organ. This obstacle may be in the heart itself, or may be due to its being pushed from its accustomed seat by disease of other organs,—such as pleurisy. The former cause is the more common. Thus, if the aortic valves, which act as sentinels to guard and guide the blood from the ventricles, become incompetent, allowing the blood to flow back again, or obstructed, not permitting it to get properly out of the chamber, hypertrophy must result. The heart has to put on increased force to overcome the obstacle, and has to acquire increased space to contain the greater quantity now in the chamber. If the mitral valve is diseased, there will be an increased quantity of blood within the left auricle, and hence the chamber must be larger. The auricular action is not, however, strong, like the ventricular, and, as there is not so much increase of power needed, auricular dilatation often exists without hypertrophy.

On the right side of the heart we find increased size and thickness of the right ventricle, where there is some obstacle or too great patency in the pulmonary or tricuspid valves, or some hindrance in the diseased state of the lungs to the proper circulation of the blood, as from emphysema.

Symptoms.—In general the symptoms are developed slowly. They may be broadly enumerated as follows: Palpitation, dyspnoea, pain localised about the heart, and inability for active exertion, such as walking, running, or going up stairs quickly. Symptoms of granular kidney disease, more particularly alluded to at page 219, will also often be observed. The character of the pulse is usually strong, powerful, jerking; but it varies with varying causes.

On percussion, the area of cardiac dulness is found

to be increased. The direction of the increased dulness varies according to the part of the heart affected. If it be the left ventricle, the extension will be downwards and to the left, giving an elongated shape ; while, if the right ventricle be hypertrophied, it comes to form the apex, and thus the outline is square, and the dulness extended to the right. There is a sensible and very distinct heaving impulse communicated to the hand or the stethoscope. The heart-sounds are heard over a largely increased surface, and the apex-beat is removed from its place to a lower position, and more to the left than normal. Further, if the hypertrophy be simple, the first sound is obscure and muffled at the apex. If there is hypertrophy and dilatation, the first sound is loud, full, and pronounced ; while, should there be valvular disease, murmurs will be heard, varying as to sight and peculiarities with the valve implicated. If we remember that hypertrophy and dilatation generally co-exist, a practical summary of the two conditions may be expressed thus :—If the hypertrophy is greater than the dilatation, the dulness of the heart is chiefly increased from above downwards ; but when the dilatation is in excess, the dulness is greater transversely.

Treatment must be guided by the state of the patient. If of full and plethoric habit, rich food should be avoided, also all alcoholic stimulants, and tea and coffee. If, on the other hand, of weak and feeble frame, nourishing diet and tonic medicines are necessary. To combat the violent impulse of the heart, digitalis is useful ; while for dyspnœa, sp. chloroform or other stimulants must be administered (F. 12).

ATROPHY OF THE HEART.—In contradistinction to hypertrophy or enlargement of the heart, with increase of the muscular substance, we sometimes find the

heart atrophied or diminished in weight. The muscular substance becomes pale, soft, and flabby, and easily broken down. The weight of the organ may thus be reduced to one half of what it ought to be, and its chambers are small.

The simple form of atrophy is the result of debilitating disease, such as fever, cancer, marasmus, phthisis; or it may be congenital, or the result of disease of the vessels which nourish the heart's substance—the coronary arteries. It is thus rather a post-mortem appearance than a distinct disease.

Symptoms.—If there is marked diminution of the size of the heart, the area of cardiac dulness will be decreased. The smaller quantity of blood contained in the cavities, and the feebler contracting power of the organ, will render the impulse weak and the heart's sounds indistinct. The pulse will also be found to be small. There are, however, no certain diagnostic signs.

FATTY DEGENERATION OF THE HEART.—There is another form of atrophy in which the muscular texture becomes altered by fatty degeneration. The term fatty degeneration does not imply that the heart is overloaded with fat, and has on its outside, or even dipping in between its muscular fibres, an increase of adipose tissue. This is rather and better termed a fatty growth—a something superadded. What is meant by the term “fatty degeneration of the heart” in reality is, that the healthy transverse striæ and nuclei of the muscular substance are obscured by groups of fat granules. The muscular fibres are soft, easily broken, and some authorities (Dr. Quain) have pointed out that there is frequently ossification of the coronary arteries.

Symptoms.—The diagnosis is beset with difficulties, the principal symptoms being a feeble action of the

heart—pulse 45 to 50—weakness, giddiness, and sometimes faintness. Then there is what was once considered diagnostic of this disease, well-marked “arcus senilis,” due to fatty degeneration of the edges of the cornea. Yet it must be remembered we may have fatty degeneration of the heart without the arcus senilis, and *vice versâ*. Men are more often attacked than women. It comes on at all ages, but most frequently in advanced life. The prognosis is unfavourable.

It will thus be observed that fatty degeneration differs from a fatty growth of the heart; the latter being usually associated with general obesity, the fat which is normally deposited on the heart being abnormally increased, especially on the surface of the right ventricle.

Treatment can only be symptomatic.

PERICARDITIS.

The serous covering of the heart is liable to inflammation as the result of cold, of renal disease, of specific fevers, of wounds by fractured ribs, of the extension of inflammation from lungs or pleura; but, in the great majority of cases, pericarditis occurs during an attack of rheumatic fever. The female is less subject to it than the male, in the proportion of one to five.

The result of this inflammation is the exudation of lymph or serum, and in the early stage of the affection, supposing we were enabled to open the body, we would find, most likely, the membranous sac partly filled with some serum, and with a plastic coagulable lymph. At a later stage the effusion would be found completely to separate the membranes with layers of lymph deposited, forming false mem-

branes ; while, at a still later stage, the effusion may have been absorbed, and the two sides become glued together (adherent pericardium).

The deposited lymph we have mentioned, on account of the continual movement of the heart, is laid down in a somewhat unequal manner, or in layers, just as the tide leaves the sand ribbed ; or in some instances it is shaggy, like the rough surface of tripe.

Symptoms.—On auscultating at an early stage of the disease, before effusion has occurred, a to-and-fro friction sound is detected, from the serous membranes not gliding upon each other with the ease and smoothness of health. Essentially the sound is of a rubbing character, and has been compared to the unfolding of a crisp bank-note, to the rustling of silk, or the creaking of new boots. As the endocardium, and especially the mitral valve, is generally also implicated with the pericardium, there is usually a systolic bellows murmur which may mask the friction sound ; and it is to be remembered that while the systolic murmur is permanent, the to-and-fro friction sound may not be detected, and, in any case does not last long ; for the patient may die during its continuance, or the effusion may be so great as to prevent the membranes rubbing on each other, or they become adherent—glued together. When effusion has occurred, the dilated pericardial sac assumes a pyramidal form, with its apex upwards towards the second left costal cartilage, its base corresponding with the lower edge of the sixth rib ; consequently dulness will be detected on percussion over this area, and varying to some extent with the position of the patient. If the pericardium becomes adherent, the dulness will be that of the normal heart. Can you tell if the pericardial adhesions have taken place ? We have no certain signs, but we suspect this to be the case if

dulness is unaltered by position or deep inspiration ; if, similarly testing, the apex beat remains the same, and if one or more intercostal spaces or the epigastrium seem drawn in along with each pulsation of the heart.

The general symptoms attendant on pericarditis vary, and are sometimes so insidious as to attract little attention. This fact is often noted when pericarditis supervenes in the course of acute rheumatism. Pain, when the disease occurs from other causes, is referred to the cardiac region, and is increased by cough or pressure, or lying on the left side. The heart's action is irregular and intermittent, and this is more apparent after the fatigue of speaking, or taking food, or any emotion. Patient lies propped up—complaining of headache, with anxious countenance and difficulty of breathing, and of disturbed and restless sleep. This restlessness passes into delirium in fatal cases, and is attended also with œdema of the lungs and other symptoms of malaëration of the blood.

Prognosis.—Pericarditis is a grave malady ; yet, when occurring in rheumatic fever, it is not so much to be dreaded for its immediate as its after consequences, in producing endocarditis and leaving permanent valvular disease. Should it supervene in the course of a chronic disease, it is generally fatal, the prognosis being specially grave in Bright's disease and in cases of copious and rapid effusion. The prognosis should be determined rather by the complication than the disease itself.

Treatment.—General blood-letting, once so prevalent, has now been abandoned. The local application of leeches does good by easing the pain in the early stage of the disease, and should be followed by the application of hot linseed-meal poultices, and foment-

ations. When effusion has occurred, the object is to promote absorption, and for this purpose blisters are serviceable. Mercury pushed to salivation is now rarely employed ; combined with squills and digitalis it is a diuretic and absorbent, and as such may be given (F. 36). Iodide of potassium is also largely used (F. 5). The strength should be supported by strong soup, beef-tea, with wine and brandy if these do not excite the action of the heart. Stimulation is specially necessary in pericarditis occurring in Bright's disease or fever.

ENDOCARDITIS.

By endocarditis is meant an inflammation attacking the lining membrane of the heart. It is usually associated, as has been indicated, with pericarditis ; yet by some authors it is contended that it exists as an independent disease. In any case, we do not often see this endocardial inflammation in its early stage. If we did, we would observe—

1st, Increased redness and vascularity.

2d, The membrane thickened and dull.

3d, Vegetations forming and attaching themselves to the valves, which are also involved in the inflammation. The valves may thus become thickened or puckered, or adhering together, and their healthy action is permanently impaired.

Symptoms.—Endocarditis, occurring as it does in the great majority of cases during an attack of acute articular rheumatism, Bright's disease, or pyæmia, has its symptoms so much masked by the severity of these affections, that its actual existence is only recognised in many cases by the physical signs which it leaves of valvular mischief. There may be, however, an indication of its existence at the moment—general

uneasiness about the heart, palpitation, restlessness, cold sweats, and increased fever. In a variety of endocarditis an ulcerative destruction of the heart's substance occurs, and this form is characterised by typhoid symptoms, prostration, and a rapidly fatal issue.

Treatment is the same as pericarditis.

CARDIAC MURMURS.

On listening over the cardiac region in health, two distinct sounds are heard following each other at regular intervals. These sounds have been termed first

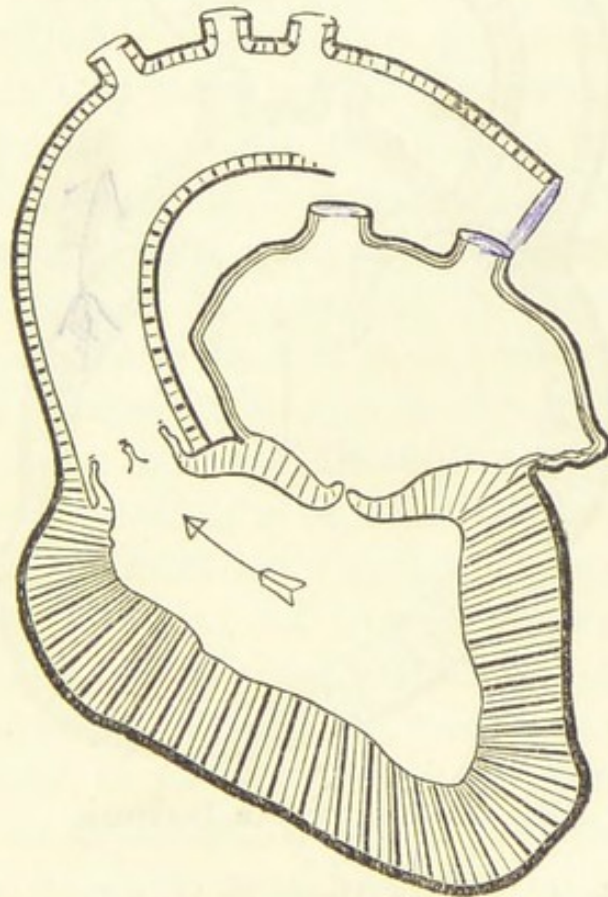


Fig. 7.—VENTRICULAR SYSTOLE.

and second, systolic and diastolic, as the one corresponds to the contraction (systole), the other to the filling up (diastole) of the ventricles. The first sound has its maximum intensity at the apex of the heart ;

the second at the base, or, more accurately, on a level with the third rib and a little above and to the right of the left nipple, near the left edge of the sternum. In determining, therefore, the state of the heart, it is necessary first to apply the stethoscope at the apex and next at the base on the spots mentioned, and to ascertain whether or not a murmur or murmurs exist, denoting a variation from the sounds of health, and if so, what valve or valves are implicated. In order

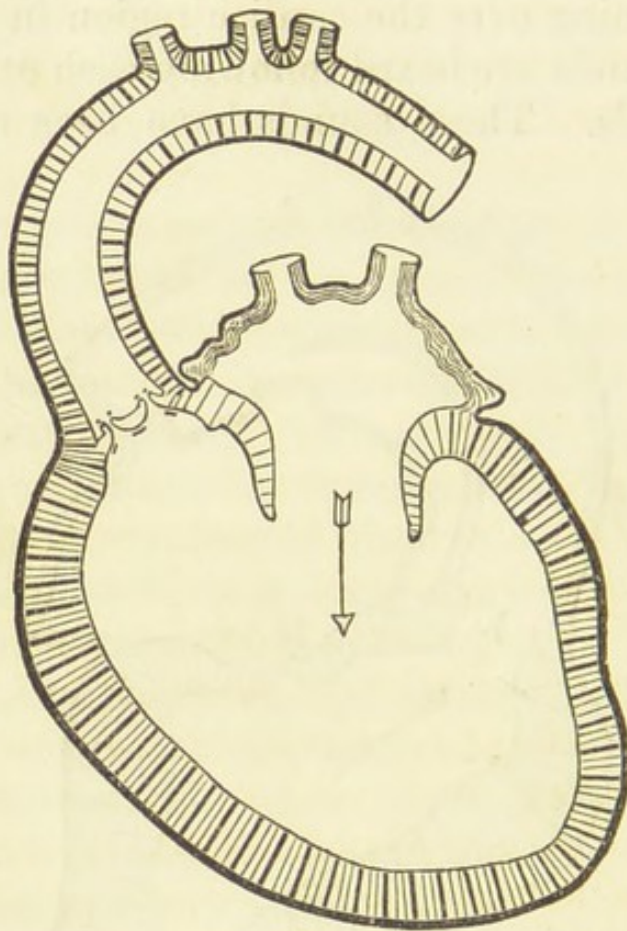


Fig. 8.—VENTRICULAR DIASTOLE.

to realise what is to follow, it is advisable to leave out of account the right side of the heart, and to fix the attention entirely on the left side, and more particularly the left ventricle, which has two valves in connection with it—the mitral and the aortic. With the contraction or systole of the ventricle

(Fig. 7), the mitral valve is closed, to prevent blood flowing back into the auricle, and the aortic valves are laid back to allow it to go freely away on its circuit. With the filling up or diastole of the ventricle, the reverse of this happens (Fig. 8). The mitral valve opens and the aortic valves are closed to prevent the blood flowing back from the aorta into the ventricle. If disease has involved one or more of these valves, interfering with their healthy action, a murmur or murmurs are occasioned, which may be considered regurgitant or obstructive according to rhythm or the time when they are heard ; and thus we may have one or more of four great classes of murmurs, viz. mitral regurgitation, mitral obstruction, aortic regurgitation, aortic obstruction. The further great practical fact may be dogmatised thus :—Mitral murmurs are heard loudest at the apex, aortic murmurs at the base ; accordingly, if a murmur is heard following the first sound, it may be termed generally a ventricular systolic (V. S.) murmur, and if loudest at the apex and diminishing or lost at the base, it is due to mitral regurgitation ; or if loudest at base, it is dependent on aortic obstruction. If a murmur follows the second sound, it may be termed generally a ventricular diastolic (V. D.) murmur, and as indicating its nature, aortic regurgitant. Again, a murmur may be heard following directly neither the first nor second sound, but immediately preceding the first, it may be termed auricular systolic (A. S.) murmur, or præ systolic, or, as more definitely recognising its causation, mitral obstruction.

Attention to these considerations will enable the student generally to detect the nature of the lesion, aided as he will be by the state of the pulse, which as a rule is soft and compressible in mitral, and hard and jerking in aortic disease ; and by the pulmonary symptoms, which are more common and urgent in

mitral, while cerebral symptoms or complications are more often associated with aortic disease. I purposely say nothing of diseases of the right side of the heart, as they are rare, and to enter completely into their causation would confuse the conception desired to be retained by the student of a single-chambered organ in connection with the subject of heart murmurs.

The following tables, read, however, in connection with what has been said, can now be understood:—

A.—Mitral obstruction, stenosis, præ systolic murmur, indicates an impediment to the flow of blood from the left auricle to the left ventricle.

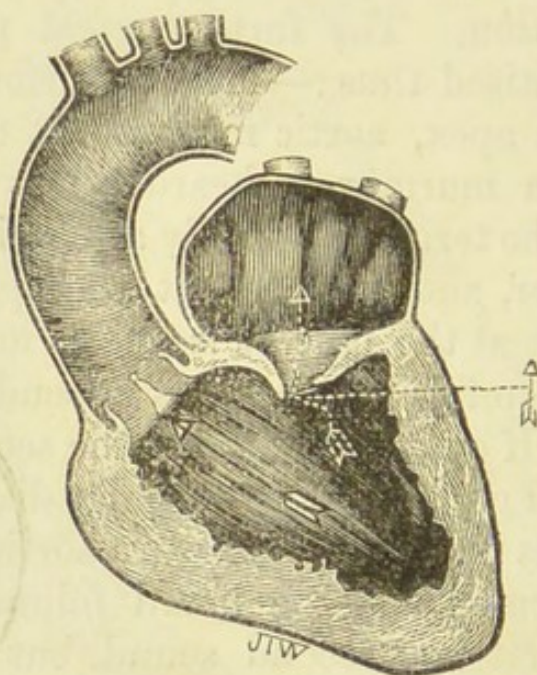


Fig. 9.—MITRAL REGURGITATION.

Recognised by a purring thrill at apex; a murmur running up to the first sound and loudest at apex; a feeble often irregular pulse; difficulty of breathing after exertion.

It occasions sometimes little uneasiness; sometimes pulmonary congestion and spitting of blood; sometimes it terminates in sudden death.

B.—Mitral regurgitation, incompetence, an imperfect closure of mitral valve, permitting blood during contraction of ventricle to flow back to the auricle.

Recognised by a blowing murmur following the first sound, and heard the loudest at the apex ; diminishing towards or inaudible at the base ; confirmed by its being heard at inferior angle of left scapula ; pulse feeble and irregular.

Caused by contraction or roughening of segments of valves ; by dilatation of left ventricle ; by irregular contraction of papillary muscles.

Resulting in more or less suffering from congestion of lungs, liver, and kidneys ; rarely in sudden death

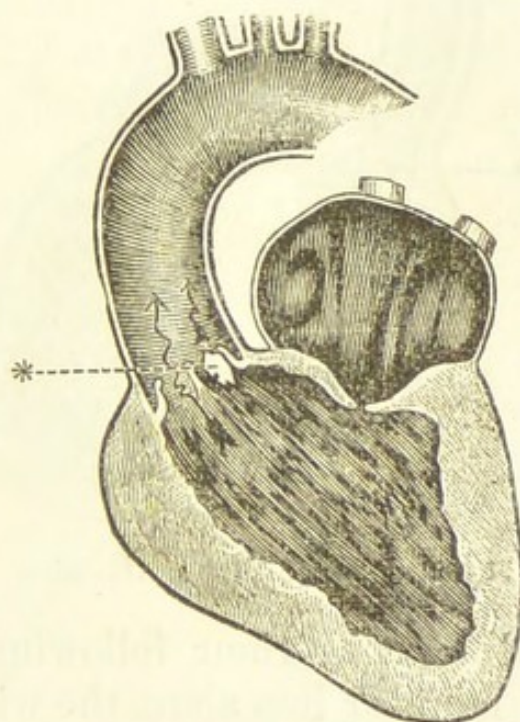


Fig. 10.—AORTIC OBSTRUCTION.

C.—Aortic obstruction, stenosis, narrowing of orifice, preventing blood flowing easily from the left ventricle into the aorta.

Recognised by a murmur following the first sound, heard loudest at the base, at second intercostal space of right side, always propagated to the vessels of the

neck, and having its point of greatest intensity at the right border of the sternum in the second intercostal space, *sometimes with considerable intensity downwards along the sternum*; pulse small, regular, and diminished in volume.

Resulting often in little suffering for years, in consequence of compensating hypertrophy of left ventricle.

D.—Aortic regurgitation, incompetence, an imperfect closure of the aortic valves, causing regurgitation.

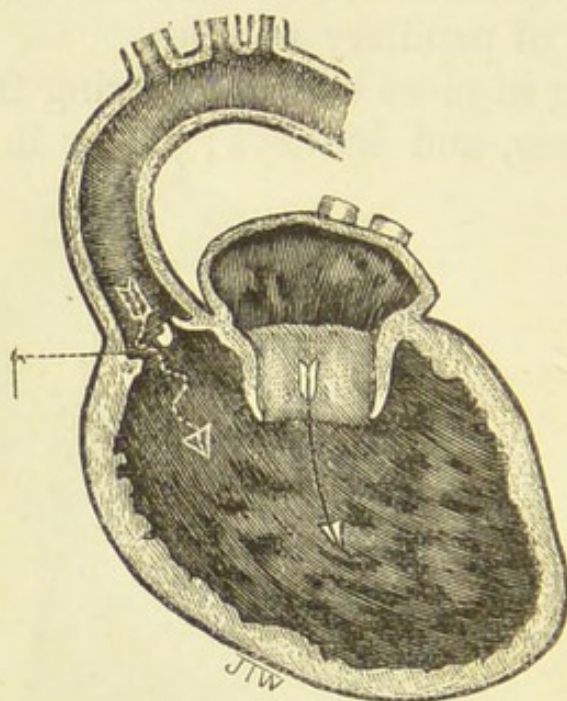


Fig. 11.—AORTIC REGURGITATION.

Characterised by a murmur following the second sound, diffused more or less along the whole sternum, although perhaps loudest at third right costal cartilage; shotty jerking pulse.

Resulting sometimes in sudden death; sudden attacks of dyspnoea and oppression are often prominent symptoms.

E.—Tricuspid obstruction rare.

F.—Tricuspid incompetence, regurgitation, imperfect closure of tricuspid valve.

Recognised by increased dullness of right side of heart; diffused pulsation over the right ventricle; murmur with the first sound; pulsation and fulness of jugular veins; dyspnœa and dropsy; generally associated with mitral regurgitation or emphysema.

G.—Pulmonary stenosis rare.

Pulmonary incompetence also rare; detected by its situation over the pulmonary valves, by its loudness and non-propagation from this spot.

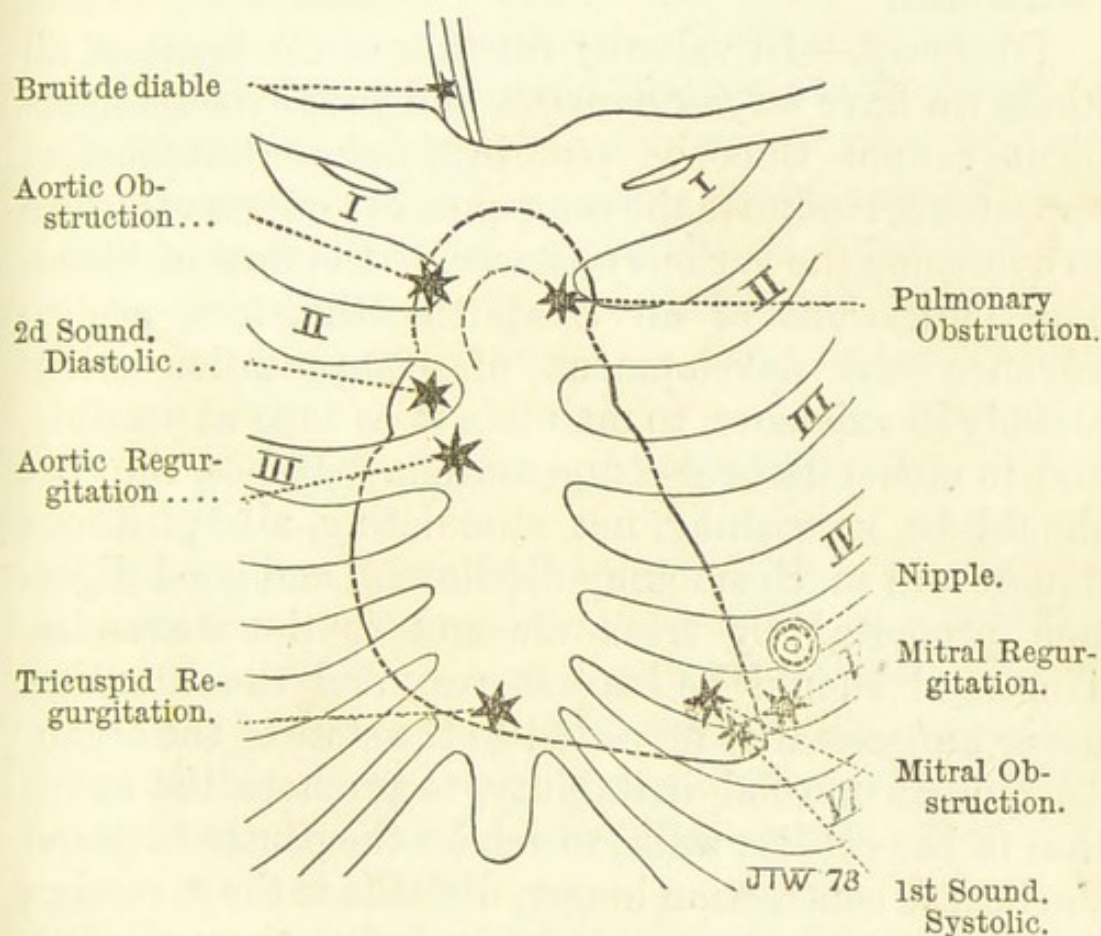


Fig. 12.—AUSCULTATION OF HEART SOUNDS. POINTS OF GREATEST INTENSITY OF DIFFERENT MURMURS.

It must be remembered that these murmurs are frequently combined—the most frequent combination being aortic obstruction and regurgitation; mitral obstruction and regurgitation; various combinations of mitral regurgitant and aortic murmurs. These murmurs, which are termed organic, are permanent,

and must be distinguished from another class of murmurs, denominated functional, and associated with chlorosis or debility. These latter are heard at the base of the heart and in the vessels of the neck, always accompany or immediately follow the first sound, and may disappear under treatment. Any præ systolic or diastolic sounds indicate organic changes. The diagram on preceding page indicates the points of greatest intensity of the chief murmurs mentioned.

Treatment.—In valvular diseases of the heart of all kinds we have *un fait accompli*, and prophylactic treatment cannot thus be put in force. Post-mortem appearances indicate the compensatory efforts of nature to overcome the various obstacles to the flow of blood. The indications of all treatment, therefore, are to advance the development of compensation when already in existence, to maintain it as long as possible, and to moderate over-compensation. Hence, the diet should be nourishing, not stimulating, all spirituous liquors and much smoking disallowed, and good digestion promoted by fresh air and cautious exercise. The mind should be kept at rest, and the attention never unnecessarily attracted to the state of the organ. To combat unusual irritability, to promote the nutrition of the cardiac walls, to render the pauses between the heart's contraction longer, digitalis is the sovereign remedy, either alone or combined with iron (F. 89). It acts as a cardiac tonic, not as a depressor, and its use may be continued for the purposes indicated, either in the form of the tincture or infusion, for a considerable length of time.

Pain is best relieved by subcutaneous injections of morphia; commencing dropsy by diuretics, such as squills and digitalis (F. 35, 37).

When the heart's action is irregular, the pulse low,

the urine scanty, and disturbed compensation evident, the diuretic effects of digitalis and quinine are highly recommended (Rosenstein).

PALPITATION OF THE HEART

expresses increased frequency of cardiac action, irregularity, suddenness of impulse; and varying causes may originate this—mental excitement, strong tea, tobacco, indigestion, exertion, gout.

As a rule, the symptoms which accompany the palpitation without organic disease are flushings or pallor of the face, ringing in the ear, or some coldness of the extremities. The causes being removed, the palpitation is removed; yet at times the heart may get hypertrophied or dilated through the chronicity of the palpitations.

THORACIC ANEURISM.

There are three chief situations for thoracic aneurisms; viz. the ascending portion of the aortic arch, the transverse part of the arch, or the roots of the large vessels arising from the arch.

Most frequently they spring from the ascending arch, and from the convexity rather than the concavity.

Aneurisms of the arch embraced by pericardium are always small in size, and are usually associated or confounded with simple aortic valvular disease. When the aneurism is situated beyond the pericardium, it frequently attains a very large size, displacing the lung outwards, especially on the right side, and anteriorly coming in contact with the anterior thoracic wall, where it may ultimately form a visible pulsating tumour. In the interior of the chest it presses on

the right lung, and may compress the descending vena cava, and involve the right pneumogastric nerve. An aneurism in this situation is liable to open externally or internally into the pericardium, right pleura, or lung itself; an aneurism of the transverse arch springing from its convex portion spreads upwards and to the left, pressing upon the manubrium sterni, the clavicle, and the left upper ribs in the same situation. A tumour is thus formed in the region mentioned, which sometimes rises from the sternum into the root of the neck. If it springs from the posterior surface of the transverse portion of the arch, its course is often latent.

Aneurisms of the descending part of the arch are rarely to be detected until they have attained a large size; although their presence may be suspected by dulness, pulsation, murmur, absence of respiration over a limited area, with dull aching or burning pain over the vertebræ.

General Symptoms.—When the tumour can be detected externally, the diagnosis is easy, but if this is not the case the symptoms are obscure, and generally speaking consist in cough, dyspnoea, difficulty in swallowing, and pain about the chest and back. The cough is audibly brassy in character, and attended with a suffocative feeling if one or both recurrent laryngeal nerves are implicated; and if the tumour extends deeply backwards, pressing on the ganglia and branches of the sympathetic, there will be permanent contraction of the pupil of the affected side.

The physical signs are dulness, "bruit," absence of respiration, or bronchial respiration from pressure on a bronchus. Again, if the transverse part of the arch be the seat, the tumour or pulsation may be felt by placing the finger deeply in the supra-sternal notch. Heart

murmurs and pain, or numbness of the arm or side, serve to confirm our diagnosis.

The duration of the disease is uncertain. In thirty cases collected by Lebert the disease lasted from one year to four years. The disease seems to make more rapid progress in young people than in old. The prognosis is necessarily very unfavourable.

For treatment, see page 154.

ABDOMINAL ANEURISM.

Aneurisms of the abdominal aorta are more frequent above than below the coeliac axis. They are spindle-shaped or saccular (from three to six inches in mean diameter), often of very considerable size, the contents being as much as ten pounds. They project from the anterior surface or sides of the artery, and tend to develop downwards and to the left more than upwards and to the right.

Symptoms.—A tumour is usually found to the left, just above the navel. On palpation a forcible pulsation is perceived, a little after the apex beat, and accompanied with a thrill, and along with this thrill a murmur is heard. The murmur may be propagated into the iliac and femoral arteries.

Functional disturbances may also be present in a greater or less degree. The most common of these is pain in the belly and in the back, corresponding to the seat of the tumour.

There may also be vomiting, diarrhoea, or constipation.

The general condition of the patient may remain unaltered for some time, or there may be progressive debility. Rupture of the aneurism is frequent, giving rise to sudden peritonitis; or sometimes an aneurism of this kind may burst into the left pleural cavity.

Treatment.—The general treatment must be that advisable in all forms of cardiac disease, viz. rest, and avoidance of all excitement, mental or bodily. Probably Tuffnell's method in thoracic as in abdominal aneurism is the best; the principle being the giving of a spare, dry diet, with few liquids, and the enjoining of strict and absolute rest in the recumbent position. Hence he orders six ounces of milk, two ounces of roast meat, and six ounces of bread and butter daily. By this means the blood tends to coagulate in the sac; just as water, through which a comparatively stagnant stream flows, affords every opportunity for the accumulation of débris on the sides, so in this way, at the sides of the aneurismal sac fibrin becomes accumulated in layers, and ultimately is moulded into the walls of the sac.

Of medicinal agents, iodide of potassium, in large and increasing doses to the extent of 90 grains daily, is held most in repute. This drug has the support of eminent English and foreign authorities. The subcutaneous injection of ergotin has been tried in the immediate neighbourhood of the tumour twice or thrice daily, the object being to diminish the sac by producing contraction of its muscular elements.

Galvano-puncture in some cases has been successful. Out of twenty-three cases related by Ciniselli, five were cured. "The mechanical action of the needles is combined with a chemical action produced by the electrolytic decomposition of water and of the salts of the blood."

DISEASES OF THE DIGESTIVE SYSTEM.

In all diseases, as a matter of routine, the tongue is necessarily examined. Thus it may be moist or dry, its size and colour may vary, and it may be

abnormally clean or covered with epithelium or "coating." Valuable indications may thus be afforded as to the disease itself, or the state of the system generally towards recovery or the reverse. It is impossible, however, by its appearance to predicate what the disease may be, though it is useful to remember that the tongue is pale in general anæmia; red as to its tip, edges, or papillæ, in subacute inflammatory stomach derangement. If covered with a thick fur, the stomach also is similarly affected in its mucous membrane, whereas, if it looks raw, as in scarlet fever, the other parts of the gastro-intestinal tract are also involved.

The tongue may be the seat also of local affections. Thus, simple ulcers, the result of gastric derangement, may form on the tip or frænum of the tongue. Ulcers may be of syphilitic origin, and if so, are usually situated at the sides of the tongue and inside of the lips. Sometimes syphilis forms oval bald patches, without any ulceration.

Treatment.—If the result of gastric derangement, attention to the diet and a mild purgative will generally effect a cure (F. 8). If of syphilitic origin, then the constitutional remedies for that disease must be put in force.

STOMATITIS.

Inflammation of the mouth or stomach may occur under several forms. Thus there is a variety called simple or catarrhal, commencing with bright red patches on the inside of the cheeks, and extending with considerable swelling until the whole surface may be covered, and attended with a bad taste, furred tongue, and want of appetite. The mucous follicles, again, may be enlarged and obstructed, and

when they soften and burst, as they usually do, small ulcers are left with some redness. This variety is termed "follicular." In infants, especially after some feverishness and restlessness, small yellowish white spots on the lips, cheeks, or palate are seen. These are vesicles, which, bursting, leave small ulcerations. This form is called "aphthous." Two other varieties claim a few additional words.

"Parasitic stomatitis" depends on the presence of a parasite, *Oidium albicans*. There is heat and pain in the mouth, and the disease is revealed by whitish-grey patches, looking like curdled milk and easily detached. It is peculiar to young infants, being known by nurses and mothers as the "Thrush." Sometimes it appears in the course of phthisis in adults, and is a specially unfavourable symptom.

GANGRENOUS STOMATITIS, or CANCRUM ORIS, is a rare but dangerous affection, attacking weakly children recovering from measles or other acute diseases. The ulceration commences on the mucous membrane of the lip or cheek, and spreads to the deeper tissues, perforating the skin and destroying the jaw, and leaving a hideous excavation with ragged gangrenous edges. It is noteworthy that pain and tenderness may be slight or altogether absent.

Swelling of the cheek, intense foetor of the breath, great salivation, and rapid prostration, with a fatal termination, accompany the local changes described.

Treatment.—In all affections of the mouth, chlorate of potass seems beneficial, given in five-grain doses to an infant of a year old, but increased to twenty or thirty in an adult (F. 7). Borax and honey may be applied locally in thrush; and in cancrum oris the only chance for the child depends on its being put under chloroform, and having the part burnt with

strong nitric acid. The strength must also be supported by brandy and beef-tea, and the mouth should be freely washed with Condyl's fluid or carbolic acid solution.

MUMPS, CYNANCHE PAROTIDEA, is an acute contagious affection of the parotid and other salivary glands; the parotid especially being much swollen, and painful to the touch. It is attended with some fever, and difficulty of opening the mouth and swallowing. The disease extends over a period of four or five days, and terminates in recovery; its declension being occasionally marked by swelling of the testicles or mammæ.

QUINSY, CYNANCHE TONSILLARIS, is attended with fever, foetid breath, and pain in one or both tonsils, shooting along the eustachian tube into the ear.

The tonsil or tonsils are red and inflamed, the inflammation terminating in resolution or progressing to suppuration, with speedy recovery following the discharge of pus.

It is caused chiefly by exposure to cold, and is most common in youth.

A form of chronic tonsillitis is not uncommonly seen in young and delicate children, where the tonsils are enlarged and the voice husky, with occasional deafness.

Treatment.—In mumps a saline mixture and a flannel bandage over the glands are alone requisite (F. 66). In quinsy the inhalation of steam and the application of hot linseed-meal poultices hasten resolution or promote suppuration. Sulphate of magnesia (F. 24) can be recommended. Guaiacum is by some considered a specific (F. 6). In chronic tonsillitis excision of part of the gland is sometimes necessary.

DISEASES OF THE ŒSOPHAGUS.

Acute inflammation may attack the œsophagus, constituting what is termed "acute œsophagitis," and may be due to extension of simple catarrhal inflammation of other parts ; to direct injury from foreign bodies, or swallowing some corrosive poison ; or it may be a complication of specific fevers, or cholera, or pyæmia. It is attended with pain, more or less severe, deep in the chest in the course of the œsophagus, with painful difficulty of swallowing and the vomiting of what has been taken, probably mixed with blood or membranous casts. There is also much thirst and great general distress.

The œsophagus may be the seat of stricture, either spasmodic or real, or of cancer.

The affections are all characterised by one prominent symptom—difficulty of swallowing, with, in cancer, also great pain, enlargement of the lymphatic glands, cough, and husky voice, through pressure on the trachea or recurrent laryngeal nerves. Non-cancerous stricture is generally the result of swallowing some corrosive poison.

In attempting a diagnosis when the symptoms point to the œsophagus, it is important to look to the age and sex of the patient, to the presence or not of a cancerous cachexia, to the implication of other organs, and to the knowledge as to the seat of stricture, if there is any, conveyed by an examination by the bougie. In forming a prognosis it is to be remembered that spasmodic affections of the œsophagus, though difficult to get rid of, are not fatal ; whereas every form of obstruction is unfavourable, and in cancer a fatal termination may be foretold.

Treatment can only be palliative, unless in the

spasmodic stricture of young and hysterical females, when the general treatment recommended in hysteria may be adopted. In spasm, friction with a belladonna liniment, the passage of a bougie, and careful dieting, are essential.

DYSPEPSIA.

The stomach is the natural receptacle of the food we eat and the liquid we drink. It starts on equal terms with other organs, but its powers of endurance are tried more than those of any other organ. Into it are thrown the most heterogeneous compounds, and it is expected to do its duty satisfactorily, whether we lead the life of an anchorite or an epicure ; or if we go to neither of these two extremes, if we neither eat too plainly nor too abundantly, we may yet try its staying powers by the rapidity with which we swallow our food, or the length of time we allow to elapse between meals.

An organ tried so much naturally rebels, gets out of gear, and sooner or later dyspepsia or indigestion supervenes, and the whole body sympathises with its ailments. The mind becomes clouded, and the temper peevish, bodily vigour is impaired, and life is rendered not a pleasant holiday, but a sour and angry fact. Dyspepsia has many symptoms, and a brief consideration will be given to the most prominent of these, and how they may be met.

Want of Appetite may depend on mental causes, as joy, or anger, or anxiety, or it may appear without any apparent cause. Common sense must dictate how to deal with the former causes, and for the latter, an acid or a bitter infusion may be employed (F. 10).

Nausea and Vomiting.—Nausea after taking food, which may or may not terminate in vomiting, sometimes

attracts attention—the vomited matters being sour at first, and if long continued mixed with bile. To soothe this irritability there are special therapeutic remedies, in addition to careful regulation of the quantity and quality of food, such as creasote and hydrocyanic acid (F. 9).

Flatulence and Belching.—Flatulence, popularly termed “the wind on the stomach,” may be due to many causes, prominent among which are food fermenting, or the want of an accustomed meal at a certain hour.

It is often relieved by warm carminatives (F. 13), and by the injunction of a regulated interval between meals. If it immediately follows the taking of food, pepsine is useful, or rhubarb (F. 91).

Should belching be accompanied by a rotten-egg flavour, showing the evolution of sulphuretted hydrogen gas, charcoal biscuits should be ordered and creasote; if there is also great acidity, sal-volatile and carbonate of potass (F. 73).

Pain.—Cullen described two kinds, cardialgia or heartburn, and gastrodynia or cramp, or spasm of the stomach. For simple heartburn black sugar is efficacious, or eating an apple, or a draught of liquor bismuth and spirit of chloroform, or (F. 11). Gastrodynia Dr. Abercrombie thought was due to a loaded colon, and hence ordered a brisk purgative, followed by carminatives (F. 25, 13). A mustard poultice often gives relief.

Water Brash, Pyrosis, attended with the eructation of thin tasteless watery fluid, may be connected with organic disease of the stomach, or with the taking of some particular kind of food, as oatmeal. Treating it simply as a symptom, pulv. kino, co. can be recommended, combined with a watery purgative in the morning, as Friedrichshall or Pullna.

In 1842 John Goodsir discovered in the vomited matters of certain patients small flat bodies having a

rectangular outline, and a somewhat oblong shape, and resembling little packets tied lengthwise and across with a string ; hence he called them *sarcinæ* (bundles). They are dependent on fungi, and are symptomatic of organic disease by which the stomach is prevented from completely emptying itself. Sulphite of soda given in 20 to 60 grain doses relieves what probably is an always incurable disorder, by the sulphurous acid being set free in the stomach.

Dyspeptics constantly ask, What shall we eat, and what shall we drink ? and, although no fixed rules can be laid down, the following points are of practical importance.

Mutton is probably the most digestible of all animal food, while all cured meats—ham, tongue, sausage—are indigestible. Animal food is more easily digested than vegetable. While man's organs of digestion ally him more to the carnivorous than the granivorous race, yet a mixture of animal and vegetable food suits the stomach best. Do not press prohibitions as to food too far, else you will convert the dyspeptic into a confirmed hypochondriac.

Interrogate the patient as to his own sensations with regard to liquids, as no definite rule can be given. Beer agrees with some, sherry or claret with others. Many men can be total abstainers with impunity, many others cannot, and require whisky or brandy with meals. The consideration of the idiosyncrasies of each individual case must thus be daily weighed in regulating the dietary of the dyspeptic.

GASTRIC ULCER.

Ulceration of the stomach is by no means an uncommon affection, and is much more prevalent in females than in males.

Symptoms.—Painful intolerance of food is the chief symptom. The pain which is felt at the epigastrium varies in intensity, and appears within a quarter of an hour after food is taken, being increased by emotions or pressure over the umbilical or dorsal regions, according to the situation of the ulcer. Vomiting of food in all stages of digestion, with or without blood, is a pretty constant symptom. The quantity of blood varies greatly, but when present in any quantity it is a most important sign. Constipation almost invariably accompanies gastric ulcer, and the patient has a worn-out, low-spirited aspect. Lastly, the failure of all remedies and the chronic history help us in forming our diagnosis.

The intensity of the symptoms varies more according to the position than size of the ulcer, on account of some positions being more exposed to constant friction than others. If the ulcer be close to the pylorus, we may have stricture from spasm of the pyloric muscle, and thus the vomited matter will be in a sour and fermented state from its long retention in the stomach. Again, if the ulceration goes on to perforation, and no limiting adhesions form, the contents pass out of the stomach, and give rise to symptoms of acute general peritonitis.

The course of the disease is very chronic, lasting sometimes the greater part of a lifetime. It may occur at any age, tending more to cicatrisation in the old and perforation in the young.

This chronic course runs on to one of three terminations.

1. After long suffering, sometimes with relapses, the patient gets better, owing to the ulcer cicatrising; still, great care must be observed. This occurs in half of the cases.

2. Sudden death, from shock, owing to its bursting;

into the peritoneum ; from peritonitis, or from hæmorrhage.

3. Gradual death, from sheer wearing out. In such cases amenorrhœa or phthisis may supervene.

Pathology.—It is a distinct local lesion. The ulcer seems punched out, and the edges may be bevelled off or thickened. The size varies from that of a pin's head to $\frac{1}{3}$ of the mucous membrane of the stomach. It may be of all degrees, from partial removal of the mucous membrane to perforation, and it may be puckered, cicatrised, or healed. The commonest seats are on the anterior or posterior wall, near the lesser curvature. If on the anterior wall, perforation more readily occurs on account of there being no place for limiting adhesions, while, if on the posterior, adhesions may take place to the pancreas, etc., and thus, although the stomach is actually perforated, the adhesions prevent its contents passing into the peritoneum. It is worthy of note that, by means of adhesions, a communication may be set up between the stomach and colon, and thus fæcal matters will be vomited *with ease*, not with difficulty as in ordinary stercoraceous vomiting. The nearer the ulcer is to the coronary vessels, the greater the tendency to fatal hæmorrhage.

Treatment.—We have neither prophylactics nor specifics. All food should be given in very minute quantities and in liquid form. Hence milk, solution of beef, or soups containing white of egg, are most useful. In order to get the stomach to retain sufficient food, opium should be given by the mouth, so as to act as a gastric sedative during digestion. Collections of acid matter in the stomach may be prevented by alkalies or alkaline saline mineral waters. If vomiting continues, we must have recourse to bismuth, hydrocyanic acid dilute, creasote, or ice, and if all

these fail, make use in time of nutrient enemata (F. 9). When there is hæmatemesis, if not severe, ice, gallic acid (F. 19), or turpentine, may be tried; but if much blood is being vomited, we should try at once the subcutaneous injection of ergotin.

CANCER OF STOMACH.

Cancer has a partiality for the orifices of the stomach, being commonest at the pylorus. When in that situation it is usually fungating or villous, of the scirrhus type, and may be associated with cancer elsewhere—especially of the liver. When at the cardiac orifice, the cancer is always of the epithelial type, and frequently extends up the œsophagus. The body of the stomach is very rarely affected without the orifices.

Symptoms.—Vomiting and pain are pretty constant symptoms. When the pylorus is involved the vomited matter is frothy and fermented, containing sarcinæ, and the pain comes some time after taking food. If the cardiac orifice be the seat, the vomited matter contains blood altered by the secretions ("coffee-ground vomit"), and the pain comes on immediately after taking food, and is very lancinating. In either case the vomited matter may contain cancer elements.

Loss of appetite, with the general cancerous cachexia, are prominent symptoms, the latter being well marked, with great emaciation. The physical examination is most important. A hard, uneven, immovable tumour is felt an inch or two below the liver, to the right side, although it may be dragged to the left. When the pylorus is affected, the stomach is large and distended. The percussion is tympanitic, and Hippocratic succussion may be developed from the presence of fluid food and air. By grasping the stomach, we

limit the motion of the fluid ; and thus the size of the stomach may be seen, as well as an exaggerated peristaltic motion giving sometimes an hour-glass appearance, and beginning at the left hypochondrium.

The bowels being to a great extent empty, undue prominence of the epigastrium is a not uncommon sign.

Duration is important, as it never exceeds two years.

Treatment can only be palliative and supporting. Food should be given in small quantities, and—if it is pyloric obstruction—of such a kind as not to add to the discomfort by tending to ferment. Hence animal food is appropriate. Stimulants will often be required, and of these the effervescing ones, as champagne, are best. Laxatives are necessary. In some cases complete emptying of the organ by the “stomach-pump,” and then regulating the diet, does good, or, as a last resource, feeding by the rectum. The vomiting may be controlled by morphia or ice, and the former will be frequently required for relief of pain (F. 71). Condarango bark has been greatly advocated of late.

CONSTIPATION.

Healthy people, as a rule, have an evacuation from the bowels once every day, and generally after breakfast ; yet many in good health have two or three stools in the twenty-four hours, while others only have an operation every second or third day. Constipation, as independent of any acute or chronic disease, may be regarded simply as a deviation from the usual routine, and as such may be considered, to a certain extent, an independent disease. The accumulation of faecal matter is frequently due to a sluggish condition of the colon, and is attendant on old people, chlorotic females, persons having little exercise, and leading sedentary lives, or others who think little of and thus neglect the calls of nature. As a result of constipation there is little appetite, bad digestion, dusky complexion, and low

spirits, with a flabby tongue indented at its edges. Sometimes long-continued constipation may lead to the formation of an abdominal tumour by pressure on the biliary ducts, causing jaundice, or on the vena cava, occasioning œdema of the lower extremities. Exceptional cases have been recorded where no motion was effected for ten or twelve weeks.

Treatment.—A careful regulation of the diet is the most important desideratum in treating habitual costiveness. For this purpose, the food taken should be carefully chosen and slowly masticated. Brown bread is serviceable, and ripe fruits may be taken early in the morning. Idiosyncrasies of diet should be studied, and habitual exercise insisted on. In addition to these means nature should be solicited at a certain hour daily, the best being immediately after breakfast. All pills or strongly purgative medicines should be avoided. Of mineral waters, the Hunyadi Janos can be strongly recommended. A wine-glassful taken every morning about an hour before breakfast usually induces a stool neither too loose nor copious. Friedrichshall and Pullna waters are also very useful. The Tamar Indien is serviceable, especially if constipation is associated with piles. A cold shower bath is advisable in the mornings, if there is a healthy reaction afterwards. For very old people stimulating the intestinal muscles by kneading and rubbing can be recommended.

COLIC.

Colic is accompanied by severe twisting pain, especially about the umbilicus. This pain occurs in paroxysms, is unaccompanied by fever, and is relieved by pressure. The bowels are usually found to be constipated, and bile or mucus may be vomited during the attack.

As various diseases of the abdomen have pain as a prominent feature, it may be asked, What significance for diagnostic purposes has such pain?

In reflecting on this it is useful to remember that the pain of peritonitis is persistent, increased by pressure, and general over the abdomen; the pain of the pass-

age of a gall-stone has a localised area in connection with the gall-bladder, and the vomiting is generally severe; the pain of a urinary calculus is in the back and testicle, with frequent micturition; the pain of hernia is attended with hernial protrusion.

A peculiar kind of colic attacks painters, or those engaged in occupations which bring them in contact frequently with white lead. The pain is, however, more severe than in ordinary colic, the constipation is great, and a peculiar and characteristic blue line is observed round the edges of the gums. These symptoms are followed, in advanced cases, by actual paralysis of the extensors of the wrist and fingers, and wasting of the ball of the thumb, constituting what has been termed "the drop wrist."

Treatment.—As colic is generally attended with constipation, and can only be remedied by its removal, it is necessary to give aperients, such as are recommended in the chapter on constipation. An enema is also often beneficial, followed by opium, or electricity may be tried. For lead colic iodide of potassium must be given (F. 5).

OBSTRUCTION OF THE BOWELS.

If obstruction of the bowels is diagnosed, it is the first duty of the practitioner, if possible, to elucidate the cause. Naturally he will investigate and make himself certain whether or not it is due to hernia, and act accordingly. Failing to discover any hernial strangulation at its most common sites, the obstruction may be considered dependent on one of three great divisions, according to Dr. Haven:—

1st, Intermural, where, as the name implies, the mucous and muscular coats of the intestinal walls are involved.

a. Cancerous stricture.

b. Non-cancerous stricture. Comprising—

1. Contractions of cicatrices following ulceration.

2. Contractions of walls of intestines from inflammation, non-cancerous deposit, or injury.

c. Intussusception.

d. „ associated with polypi.

2d, Extramural, or those causes acting from without, or affecting the serous covering.

a. Bands and adhesions from effusion of lymph.

b. Twists or displacements.

c. Diverticula.

d. External tumours or abscesses; diaphragmatic, omental, or obturator hernia.

3d, Intramural, or obstructions produced by the lodgment of foreign substances.

a. Foreign bodies, hardened fæces; or, should the obstruction be due to cancerous stricture, the sigmoid flexure of the colon or rectum is usually affected, and, in addition to the obstruction, there will also be evidences of the cancerous cachexia.

The condition known as intussusception is not uncommon in children, and is similar to what occurs when the finger of a glove is pulled within itself. The upper segment of the bowel is generally drawn into the lower; thus, the ileum or cæcum may be protruded into the colon. The occurrence of intussusception is marked by sudden pain, sickness, and constipation.

Should the obstruction be due to bands or twists, the lower part of the ileum is the most frequent seat.

Symptoms.—The principal symptoms are—

1st, Vomiting, ultimately becoming fæcal.

2d, Pain, varying in severity.

3d, Increasing tympanitis.

4th, Hiccup and constipation.

5th, Inflammatory signs, taking effect on the pulse and temperature.

Vomiting will naturally be most marked and early when the obstruction is situated at the upper part of the intestine; and, if unrelieved, death will occur in five to ten days,—if in the colon, it may be delayed for weeks. Sometimes, by carefully feeling the abdomen, the point of obstruction can be detected by increased fulness and diminished resonance over this particular spot. Besides this, hyperdistension is seen above, and diminished distension below, the obstruction. This is best seen when the obstruction is low, and the gradual filling of bowel above it may be observed, with sometimes the coils of intestine marking themselves against the abdominal wall.

Treatment.—At first, when the diagnosis is somewhat uncertain, castor oil or an enema may be given, but neither should be continued if it becomes clear that there is a mechanical hindrance to the passage of fæces. The two principal points then are,—endeavouring to sustain the strength of the patient by means of beef-tea and milk, and the relief of pain by opium and hot fomentations. Opium sometimes is inadvisable, from its tendency to stop peristaltic action of the bowels, hence belladonna may be substituted; or, best of all, according to Brinton, a combination of ext. of opium 2 parts, with ext. of belladonna $\frac{1}{2}$ part. Ice should always be given freely, to allay thirst.

Thus calling time to our aid by the means indicated, nature may, in her own way, remove the obstruction, unless, of course, it is due to an unremovable cause.

At an early stage, before there is any possibility of gangrene having set in, the patient may be placed on

his back, with his pelvis raised, and a long stomach-pump inserted as far as it will go. Then, warm water should be slowly thrown up until the bowels become distended. When this occurs the coils of intestine should be moved on one another by the hand placed on the abdomen. In this way, or by means of air instead of water, cases have been successfully treated; and besides we can, by this means, form an idea of the position of the point of obstruction by the amount of water capable of being thrown up.

In some cases it is necessary to nourish by stimulating enemata.

Should gastrotomy be resolved on, the advice of a surgeon ought to be obtained; keeping in mind, however, before resolving on this, that not a few cases are spontaneously cured by nature in ways we are not well acquainted with.

DIARRHŒA.

Diarrhœa is rather a symptom than a disease, yet, when the discharge from the bowels is great, special treatment may be required for its relief. The character of the stools varies. Thus, they may be fæcal, although liquid, bilious, watery, mucous, or thin serous. Diarrhœa is a prominent symptom in typhoid fever, phthisis, various kidney, liver, or nervous affections. It may also result from dentition, errors of diet, influence of the season, malaria, or mental emotion. Sometimes it is "vicarious" and dependent on the rapid suppression of discharges or absorption of dropsical fluid. In all cases the stools should be carefully examined, as much information can thus be obtained with regard to the cause of the diarrhœa. A severe kind of diarrhœa, called by some English cholera, is accompanied by pains in the abdomen, cramp in the legs, and dark bilious evacuations.

Treatment will depend entirely on the cause. It is frequently inadvisable to check it, as it is nature's outlet for carrying away offending matter from the intestinal canal, or for relieving other

organs which are diseased. Thus, if due to indigestible food, it is better to promote it (for this is the easiest way to stop it) by giving tincture of rhubarb or castor oil ; if occurring in Bright's disease, it should not be interfered with, unless it produces great exhaustion. Should no direct cause be ascertained, it may be desirable to check it in whole or in part. The various preparations of opium or other astringents, as sulphuric acid, catechu, tannin, etc., are serviceable for this purpose (F. 16, 17, 20).

Boiled milk and lime water are very useful in the diarrhoea of children, preceded by a few grains of grey powder if the motions are green and offensive (F. 8).

In severe cases all solid articles of food, vegetables and fruit, should be forbidden, and the diet should consist of arrowroot, milk, and boiled rice. The local application of poultices and hot fomentations helps to relieve the pain.

DYSENTERY.

Dysentery consists chiefly in inflammation of the mucous membrane of the large intestine. The inflammation rarely involves the deeper layers, or extends past the ileo-cæcal valve. It is supposed to commence in the solitary glands that lie scattered over the surface of this portion of the intestine. These become enlarged and prominent, looking somewhat like small-pox pustules. They probably form the foci for most of the ulcers, which are sometimes narrow and oblong, lying across the gut ; sometimes very large and irregular, with great patches of thickened mucous membrane. In the severe and fatal cases the whole bowel is one tattered mass of disorganisation, with fibrous shreds and commingled mucus, pus, and blood.

Dysentery may be either epidemic or sporadic. The former is peculiar to tropical climates, and seems dependent on a miasma emanating from the soil, attacking the system generally, and locating itself in

the intestine ; the latter may occur in all sorts of places, in adults as well as children, and is the result of the lodgment of masses of fæcal matter in the lower bowel, which act as foreign bodies, giving rise to inflammation ending in dysenteric symptoms. In neither form is the disease contagious.

Symptoms.—Dysentery begins in both its sporadic and epidemic variety with diarrhœa, after there have been irregular stools or constipation. There are also lassitude, want of appetite, and a listless attention to ordinary occupations. On the third or fifth day, usually in the night, the diarrhœa becomes more severe, and attended with shivering or rigors. Pain is felt in the abdomen. The desire to go to stool is intense. Little fæces after a time are passed, and there is a straining or burning pain at the anus and rectum (tenesmus). With the disappearance of the fæces there appears bloody mucus, or pure blood, in the midst of which are often seen little white clumps, or round bits looking like minced raw meat.

The patient may seek to go to stool from twenty to thirty times in a night, and then, as might be expected, becomes giddy and faint from loss of blood and exhaustion. The disease may last in this acute form from six to eight days, with remissions in the morning and aggravations at night. As symptoms of amendment may be mentioned alternations of mushy even-formed stools with the characteristic bloody mucous ones. In very severe cases the tenesmus increases ; the dejections flow uncontrolled, and are largely mixed with blood, collapse sets in, and the patient dies of asthenia.

When the disease becomes chronic, it is very intractable, with frequent relapses, offensive discharges, and great pain and exhaustion.

Sporadic dysentery generally terminates favourably.

The mortality of the epidemic form may reach 40 or 50 per cent.

In slight cases convalescence is complete in about three weeks, medium severe cases in about seven weeks. Severe cases, if they do not terminate fatally on the eighth or ninth day, may last an indefinite length of time.

Treatment.—During an epidemic of dysentery all unnecessary crowding should be avoided, and uncleanness prevented. The discharges of the patient should be disinfected. Potatoes, salads, unripe fruit, greasy food, spices, or pickles, should not be taken; while ripe fruit and stewed apples are advantageous.

Flannel bandages should be worn round the abdomen; and if the bowels are constipated, a gentle laxative of rhubarb may be taken.

Should an attack of dysentery set in, the patient must remain in bed in a room of an equal temperature. The diet should consist of milk, strong soup, yolk of eggs; the object of the dietary being to form small not bulky stools. Thirst is alleviated by meal-gruel, and the tenesmus by starch enemata with five to ten drops of laudanum in each. Leeches ought to be applied at the commencement of the attack to the anus, and afterwards what is termed the cathartic or laxative treatment adopted. Thus give an emetic of vin. ipecac., follow this up by castor oil or tamarinds. On the second day they may be omitted, and morphia substituted in the evening. On the third day the laxatives mentioned may be administered again, and repeated on the fifth or seventh day (Heubner).

Two grains of nitrate of silver to four ounces of water are recommended as an enema. Pulv. ipecac. in full doses forms the mainstay of English treatment; and there is no doubt, from the personal experience of those who have seen the disease in India,

that its effects are wonderful. Thus it is recommended to give 25 grs. of the powder with a little syrup of orange-peel, and no fluid should be taken for three hours, although, if the thirst is great, ice may be sucked occasionally. In from eight to ten hours a smaller dose may be given, and, if necessary, repeated according to the urgency of the symptoms. It is advised, however, to give ten to twelve grains at bed-time for a night or two after the stools appear healthy. As a rule, the system is tolerant of the large doses mentioned, and no sickness is produced.

In the very severe forms the object is to prevent collapse, hence alcohol, interdicted in the milder varieties, must be given, and strong soups at frequent intervals. When the dysenteric attack has reached an advanced stage, vegetable astringents, such as tannin, rhatany, etc., are necessary. Above all, in chronic dysentery, change of air must be tried if practicable. The diet should also be bland and nutritious, rest should be enjoined, and from four to five grains of Dover's powder taken twice or thrice daily. A bandage should also be worn over the abdomen, and cold baths, with friction afterwards, taken if they are well borne.

EPIDEMIC CHOLERA.

The authentic history of cholera dates back only to 1817, when it made its first appearance in India. After a series of destructive epidemics in the East, it reached Europe, and was imported from Hamburg to Sunderland on October 26, 1831, from thence spreading to the great centres of population in this country. This epidemic lasted during 1831-32, when there was a lull; the next epidemic being in 1848-49; the third during 1853-54; and the last during 1865-66, when it was chiefly confined to London.

Cholera seems, according to the views of most recent authorities, to owe its existence to one single ultimate cause, a cholera germ, which again is supposed to be of a parasitic nature, and develops in the gastro-intestinal tract, in the interior of the follicles of the small lymph and blood vessels, and of the sub-mucous connective tissue. If the parasitic origin of cholera is granted, it can be understood how in different degrees of vitality these germs can be carried by the air in viewless numbers, and impregnate the water supply, or be drawn directly into the mouth; the different degrees of vitality accounting, to some extent, for the choleraic diarrhoea which, as will be seen, always accompanies the true disease. Experience testifies that nurses and hospital physicians exposed to the concentrated miasma from the dejections, or washerwomen who wash the linen soiled with cholera dejections, rarely escape taking the disease when it is epidemic; while the fact of outdoor physicians attached to hospitals passing safely from bed to bed, and again out into the open air, seems to indicate that cholera is not contagious.

Cholera is more common in hot than in cold weather. Although common in childhood and adult life, it is pre-eminently a disease of between twenty and thirty. Excesses of every kind, whether of food, wine, or fruit, during the continuance of the epidemic, predispose to it. The average incubatory period is from twelve to twenty-four hours, rarely exceeding one week. About one-fifth of those attacked survive.

Symptoms.—In this country diarrhoea usually accompanies the cholera epidemic, coming on suddenly, the stools being fluid, painless, yellowish-brown, and in number averaging from two to four in the twenty-four hours. This diarrhoea rarely fails to precede the real attack.

The symptoms of cholera vary greatly in intensity, especially in tropical countries. In many cases the patient, apparently overwhelmed by the poison, falls down, and dies within one or two hours, without vomiting or diarrhœa. In typical uncomplicated cases, as observed among primitive races, the first symptom is always giddiness or swimming in the head; and in a short time the contents of the stomach are suddenly ejected, without much nausea. A peculiar sensation of faintness or sinking is next experienced, and then the bowels are evacuated.

In very severe cases the patient becomes pulseless at the wrist within one or two hours, and before the vomiting or diarrhœa have proceeded to any great extent a cold perspiration covers the body, and although the surface has the cold feeling of a dead body, the patient complains of an intense burning heat, and implores to be sponged with cold water. There is persistent vomiting and diarrhœa, with intestinal cramps; the body becomes shrivelled and corpse-like; the bladder is empty; but there are intense and frequent calls to micturate; the voice becomes croaky; the carotids cease to pulsate, and death supervenes, the body having the appearance of being dried up.

In this country the attacks frequently commence during the night, and the symptoms are less intense. The patient awakes chilly and dizzy, and this is rapidly followed by a tempestuous diarrhœa, the early stools being black and pappy; but as the bile pigment quickly disappears, they exhibit the characteristic rice-water appearance. They are passed involuntarily and painlessly, and in number vary from three to fifteen. After the diarrhœa has lasted one or two hours, vomiting, attended with no pain, sets in, at first of the food which may have been taken, and latterly assuming a colourless whey appearance. In-

tense thirst and suppression of urine are now prominent symptoms. The tongue is, as a rule, white. After a few hours, distressing cramps supervene, especially of the calves and feet—rarely of the hands. Sometimes these are entirely absent, and the patient sinks without a struggle. There is also a considerable fall of temperature, commencing in the hands and feet, and most marked on the face, nose, and tongue. Should there be a tendency to recovery, the temperature approaches the normal; if it does not, the features become more pinched, the extremities more cold, livid, and collapsed; the eyes dry, the cornea cloudy, and the voice assumes a hoarse and raveny character, or it may sink into an inaudible whisper. This peculiar character has led to its being called “*vox choleraica*.” This stage has been termed the *algid* or cold stage, and either terminates in death or passes into what is called the stage of reaction. The earliest sign of improvement, preceding even the abatement of the diarrhoea and vomiting, is the return of the pulse at the wrist. Heat follows, the blueness disappears, the temperature becomes normal, and convalescence may be regarded as perfect in from ten to fourteen days. Sometimes the improvement is only transient, being followed by uræmia, or inflammation of the kidneys or intestines. During the attack proper the patient may die in from six to eight hours; even in bad cases the usual time is, however, twenty-four hours.

Morbid Anatomy.—Cholera has no distinctive lesions; the cadaveric rigidity is, however, marked. In the digestive tract the isolated and agminated glands are swollen and prominent, more especially the latter. At the ileo-cæcal valve, a whitish-grey fluid with fine granules and cell nuclei exudes if the follicles are pierced. These changes are seen during

the first forty-eight hours. Afterwards the swelling diminishes, and the glands are shrivelled up, collapsed, and of a yellowish or slaty-grey colour. The brain, heart, lungs, and liver are usually found healthy, while the kidneys are larger than usual, and congested.

Treatment is of two kinds—prophylactic and therapeutic. During a cholera epidemic all unnecessary meetings, fairs, and pilgrimages should be abandoned. The *materies morbi* being chiefly contained in the dejecta, all excreted matter should be disinfected by chemical agents, or destroyed by fire, and none should be so disposed of as to contaminate food or water. Wells ought to be inspected, defective sanitary arrangements remedied, dirt of every kind cleared away, the sale of unripe fruits and vegetables prevented, soup-kitchens established, and the stamina of the poor built up. The prodromic diarrhœa should, if cholera appears, be checked as early and speedily as possible by, according to Lebert, some preparation of opium, given either by mouth or rectum. Should these fail, we must now fall back on, or as some eminent English authorities say, commence with, a teaspoonful of castor-oil or rhubarb.

The therapeutic treatment of cholera, when it has actually begun, is very unsatisfactory; for the disease runs an extremely rapid course, and all medicinal agents are speedily rejected. Astringents are of no avail, and in fact do harm. While no distinct line of treatment applicable to all cases can be laid down, yet the following course of procedure should, if practicable, be adopted. The first two or three hours are those upon which everything may depend. The physician should, if possible, remain beside his patient or patients for an hour or two, having a pocket case containing morphia, hydrocyanic acid, and

carbolic acid of the purest quality, and be ready to administer these as occasion may require. (F. 18a) will be found very useful. Three or four minims of carbolic acid should be added to each dose. The first dose is generally rejected, but a second dose given immediately afterwards is usually retained. If a case is seen early and is amenable to treatment, there can be no doubt of the benefit of carbolic acid. After being given for an hour or two at regular intervals, the vomiting ceases, and fluids are absorbed; the pulse reappears, and there is a reasonable hope of recovery. Ice should be placed on the tongue every few minutes, and carbonic acid water drunk. Morphia may be injected subcutaneously to allay the pain and cramps, and sinapisms applied over the abdomen, while the legs are rubbed with some stimulating liniment. Should the temperature begin to fall, enveloping the patient in a blanket wrung out of hot water and sprinkled with turpentine, together with the internal administration of the same drug, was, in my experience, successful during the last London epidemic. In rapidly sinking cases brandy or champagne may be given (F. 72).

When reaction sets in, a large spoonful of good beef-tea may be taken every three hours, and later on, tea or coffee with milk several times a day. From this we may pass to a more increased and solid diet.

“The best treatment of cholera,” says Lebert, “therefore, in the state of existing knowledge, is a carefully-regulated hygienic and a correctly-interpreted symptomatic treatment, with avoidance of all perturbatory efforts, in the last degree inutile if not even injurious.”

INTESTINAL WORMS.

Of the different intestinal worms which inhabit the human body there are two great varieties—the hollow worms and the solid worms. In the first class we find three species of *tænia*, the most common being the *Tænia solium*. Its length varies from two to ten yards or more, and its habitat is the small intestine. It consists essentially of a head and segments. The head is about as large as a small pin's head flattened, with a double circle of hooks, around which are four suckers or mouths by which it attaches itself to the intestine. The segments, joints, or *proglottides*, are rectangular, and possess male and female organs opening into a common aperture retaining the ova, which, when ripe, contain a six-hooked embryo. The joints are at first more broad than long, but as they diminish in distance from the head they become smaller and smaller, and the length exceeds the breadth. The *Cysticercus cellulosæ*, a parasite chiefly resident in pigs, seems to be the parent of the *Tænia solium* in man, and from uncooked or improperly cooked pork the tapeworm is developed in the human body. How does the tapeworm develop in the human body? The answer to this inquiry and explanation of the statement preceding it is as follows:—Segments containing abundant ripe ova are passed per anum and scattered about in various ways, and so swallowed by animals, notably pigs, oxen, and sheep, mixed with their food. In the alimentary canal of these animals the shell bursts, the embryo escapes, attaches itself to the mucous surface, works its way into the tissues, and when it reaches a suitable spot, still further develops and presents a head and neck with a vesicular or bladder-like appendage. In this stage the worm is termed *cysticercus* or bladder worm, and

may be seen in the muscles, liver, and brain of various animals. If the cysticercus thus existing in the flesh of animals is permitted to enter the alimentary canal of a human being, it becomes attached by its head, the vesicle falls off, and a succession of segments form constituting the ordinary tapeworm.

Symptoms.—The only phenomenon which seems to indicate the presence of the parasite is the appearance of segments in the fæces. Sometimes the victims of tænia also complain of pain in the belly, unsatisfied appetite, thirst, great depression of spirits, with itching of the anus or nose.

Varieties.—*Tænia mediocanellata* resembles very much the former variety, but it has only a sucking apparatus in the head, and no hooks. It appears to result from the further development of a *cysticercus* infecting cattle, and owes its introduction into the system to the eating of improperly cooked beef.

The *Bothriocephalus latus*, peculiar to Switzerland, Russia, and Poland, is the largest of all the tapeworms, sometimes attaining a length of twenty-five feet and upwards, each foot containing a hundred and fifty segments or joints, and each joint having its own male and female organs. The head is club-shaped, with a longitudinal slit by which it attaches itself, but no suckers.

Treatment.—When the presence of the worm has been discovered, the best way to expel it is to tell the patient to take no food for eight hours, then to administer in the evening 30 m. of the ext. of male fern in a draught of peppermint water. Follow this up in the morning with a dose of castor-oil, and about midday by a large plate of mashed potatoes. The head and segments will probably be thus forced away; if not, let the same treatment be adopted on a subsequent occasion (F. 29).

The bark of the pomegranate root, or kousso, or oil of turpentine, are all well-known anthelmintics, but inferior to the male fern.

ROUND WORMS

possess a distinct integument and an alimentary canal, with a mouth at one end and an anus at the other. The sexes are always separate. In the male the genital pore is near to the anus, in the female about the middle of the belly.

1st, *Ascaris lumbricoides*, the common round worm, resembles much the common earth-worm. The female is nearly twice as large as the male. Its habitat is the small intestine, generally of badly-fed children, but from this it may creep upwards to the stomach or to the colon, and it has also been found in the nose, hepatic or pancreatic ducts. Authentic records indicate that a large number of *lumbricoides* may be in the body at the same time. As a rule, however, they rarely exceed five or six. They may penetrate the intestinal wall to the peritoneum, causing an abscess near the umbilicus. The symptoms are obscure and various. Generally speaking, there is thirst, disturbed sleep, fever, and depraved appetite, with itching of the nose and anus.

Treatment.—The best remedy is santonin given in one to three grains twice daily to a child, or double that quantity to an adult. Turpentine may also be given if preferred (F. 30).

2d, The common thread-worm (*Oxyuris vermicularis*) is small, white, and thread-like, the female being about the third of an inch long, the male about half that length. They exist in the colon or rectum, generally in great numbers at a time, and infest children who are badly fed or in indifferent health.

The chief symptom is itching at the anus or at the nose, with bad breath and generally indifferent health. The diagnosis can easily be confirmed by observing them in the fæces.

Treatment.—Enemata of cold water, of infusion of quassia, or tea, or liq. calcis, repeated daily, are sufficient to kill the oxyures, with occasional doses of hydrarg. c. cret. For adults, perchloride of iron, half an ounce to a pint of water, is recommended.

The whip-worm (*Trichocephalus dispar*) and the *Sclerostoma duodenale* are rarely seen in this country, although the former is sometimes observed in people who have died of typhus or enteric fever.

TRICHINA SPIRALIS—TRICHINOSIS.

The *Trichina spiralis* is met with in the muscular tissue in the form of a minute worm, which lies coiled up in the interior of an oval cyst, giving to the naked eye an appearance like minute white grains. These trichinæ are discovered chiefly in the flesh of pigs, and it is from the use of trichinous pork that man has become affected. The trichinæ cysts are dissolved by the gastric juice, and the parasites set free. Sexual maturity is developed; the ova and the living embryos at once commence active migration, finding their way into the small vessels or lymphatics of the bowels, and from thence they are conveyed over the body. In this way they enter the intestine, irritating it in their passage, getting to the intermuscular tissue of the trunk and limbs, and thence penetrating the muscular tissue and destroying it.

Symptoms.—These first consist of intestinal disturbance, not unlike that of typhoid fever, with coated tongue, diarrhœa, and great prostration. Secondly, muscular inflammation, pain, and tenderness, not

unlike rheumatism, with stiffness and rigidity over the voluntary muscles. Then dropsy commences in the face, goes to the extremities, and even involves the serous cavities.

The duration and severity of trichinosis vary according to the number of the parasites; in some cases recovery taking place in a month, in others in three or four. In some outbreaks the mortality is small, in others as high as twenty-five per cent, and death may result from peritonitis, pneumonia, or debility.

Treatment.—We can only treat symptoms, as we know of no remedy specially adapted to kill the parasites. Prophylactically, avoid raw or underdone pork or German sausages.

PERITONITIS.

The peritoneum or serous membrane lining the abdominal and pelvic cavities, and investing the viscera, may suffer from acute or chronic inflammation. The inflammation is precisely similar to what occurs in all serous membranes, viz. capillary congestion, redness, more or less loss of polish, exudation resulting in a thin greyish lamina, which ultimately becomes thicker, and ribbed or villous according to position. The surface of the intestine is injected, the intestines are slightly glued together with soft yellow-grey lymph stretching from one fold of the peritoneum to another. In the pelvic cavity there is turbid fluid, in which float flakes of lymph. The fluid effused is chiefly observed in chronic cases, and tends naturally to gravitate to the lower and more dependent parts, *e.g.* into the pelvis and lumbar regions, where it may escape observation; or, if excessive, distend the abdominal walls. This fluid may be clear or bloody, or become rapidly or slowly purulent.

Peritonitis, even though of local origin, tends to spread until the whole of the peritoneal surface is involved; and convalescence, should it occur, is attended with absorption of the fluid, organisation of the false membrane, and thickening of the peritoneal surface, with adhesions of adjacent organs. Should the fluid be purulent, it may form an external abscess, or escape into the intestines.

Causation.—Peritonitis is occasioned by injuries, hernia, perforations, and extension of disease from neighbouring parts; it is also the result of various blood diseases, as puerperal fever, tubercle, Bright's disease: sometimes it is acute and idiopathic, and due to exposure or wet.

Symptoms.—In the acute form, however occasioned, the symptoms are marked by fever, and with the fever there is pain in the abdomen, increased on pressure or by the slightest movement. The patient lies in bed with the legs drawn up. The face is anxious and pinched, and the abdomen is tympanitic, tense, and hot. Vomiting is often present, and when so naturally aggravates pain. The urine is scanty and high-coloured, the pulse is rapid, hard, and wiry, the tongue parched, and the respiration quick and shallow. Should the disease take a favourable turn, the gravity of the symptoms abates, the fever diminishes, and the pulse becomes normal. If, on the other hand, a fatal issue is to result, the abdomen becomes distended, the pulse thready, the extremities cold, and collapse sets in, with or without loss of consciousness. Death may occur as early as the second or third day, or it may be delayed for a week.

Treatment.—This consists in enforcing absolute rest, and maintaining the position which is instinctively assumed, at the same time guarding the patient from the unnecessary weight of the bed-clothes by

means of a cradle. Should the disease be idiopathic and seen early, leeches should be applied to the abdomen, and the bleeding encouraged by hot fomentations. Opium should also be given by the mouth or by rectum, or morphia injected subcutaneously in such quantities as will ensure relief from the pain.

The strength must also be sustained by liquid nourishment—beef-tea, eggs, and milk. In very acute cases an ice-bag over the abdomen, with two or three layers of flannel between, is very useful. If perforation is suspected, abstinence from food or stimulants, and nourishment by enemata, are indicated. Ice to suck is very grateful, and mitigates vomiting. Treatment by blisters has been advocated, but the inflammation is too general for such treatment.

CHRONIC PERITONITIS

sometimes follows the acute affection ; generally, however, it is an independent affection, associated with the strumous diathesis. Numerous miliary granules lie within or immediately beneath the membrane, especially in the folds of the peritoneum which compose the omentum. When there are symptoms of chronic peritonitis, with evidences of a strumous constitution and no history of a previous acute attack, Louis seems to think that these granules will always be found.

Symptoms.—These are obscure, and steal on the patient in a very insidious manner. Usually pricking pain is experienced in the abdomen, and the belly gets full and tense. The pain is increased on pressure. There are also loss of appetite, nausea, fever, and progression emaciation, with diarrhoea. After a time the effusive of fluid takes place, the abdomen enlarges, and fluctuation is felt. With this tubercular peritonitis there is often combined disease of the mesenteric glands,

phthisis, etc. The fluid does not gravitate so freely on account of adhesions, and this condition, with the thickening of the peritoneum, serves to distinguish this affection from ascites. Another useful sign, when it can be detected, is friction sound, heard by the ear or stethoscope, and produced by respiration or movement of the abdominal wall. *Tabes mesenterica* is a name given to a tubercular or strumous degeneration of the mesenteric glands, and is by some termed "abdominal phthisis." It is peculiar to young children of a strumous diathesis, and presents features very similar to those previously mentioned. There is always more or less pain in the belly, and to ease this the child instinctively draws up its legs. The abdomen, in a fully developed case, is tense and swollen, and over it the abdominal veins are seen distended. The body is thin and wasted, the appetite capricious, the bowels relaxed, and motions sour-smelling. The evening temperature is increased, and the disease ends fatally, either by exhaustion or through the lungs becoming also the seat of tubercle.

Treatment.—Mild nutritious diet—milk, beef-tea, etc.; iodine ointment applied externally; while internally syr. iod. ferri and cod-liver oil must be administered. These cases are very unpromising, and unless chronic peritonitis is the consequence of the acute attack, not much benefit will ensue from any form of treatment. Opium fomentations, or even blistering, may be used if the severity of the symptoms indicates them.

In *tabes mesenterica* the treatment is similar to that recommended under Tuberculosis, but the prognosis is necessarily gloomy if the disease is well established.

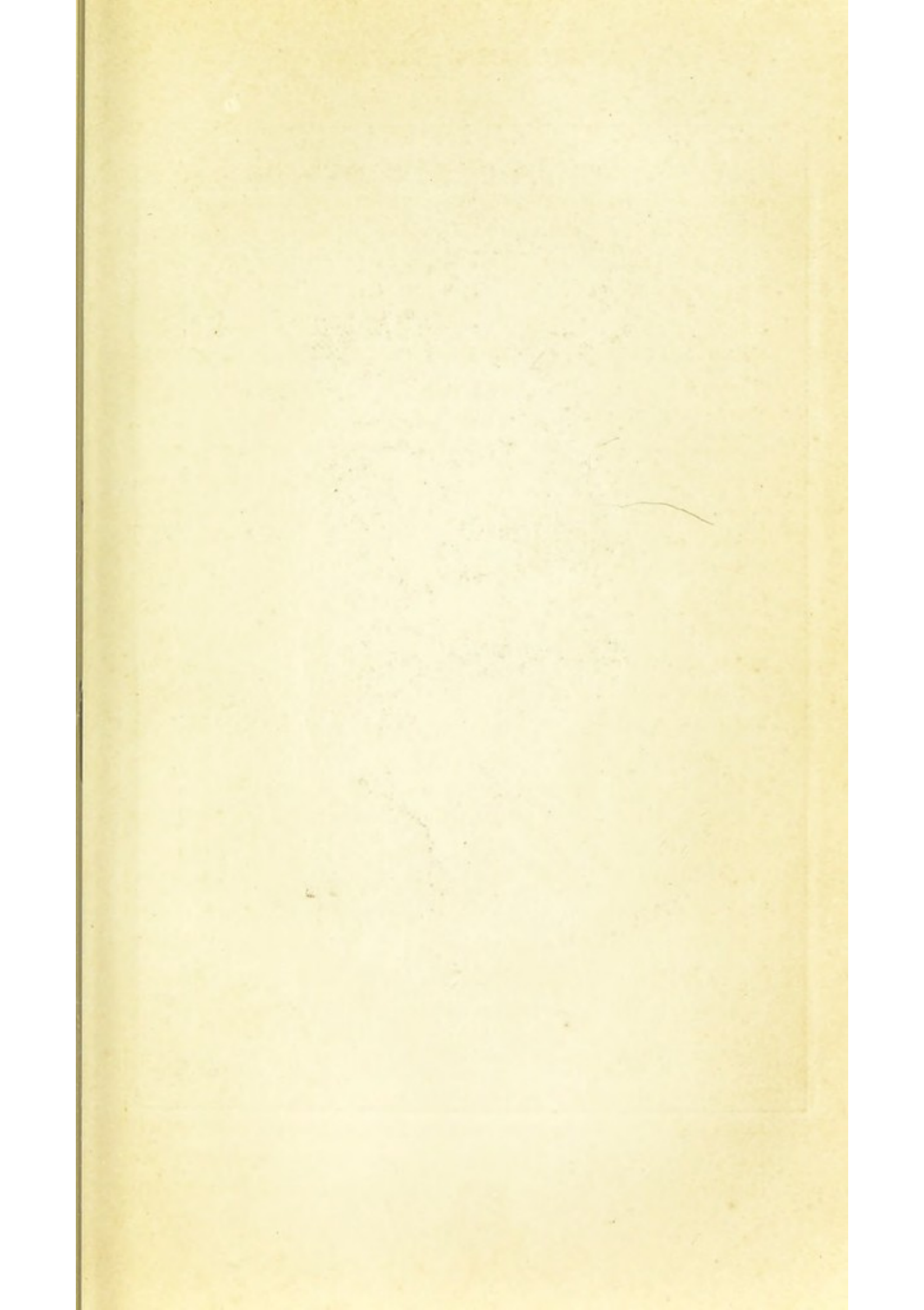
TYPHLITIS AND PERITYPHLITIS.

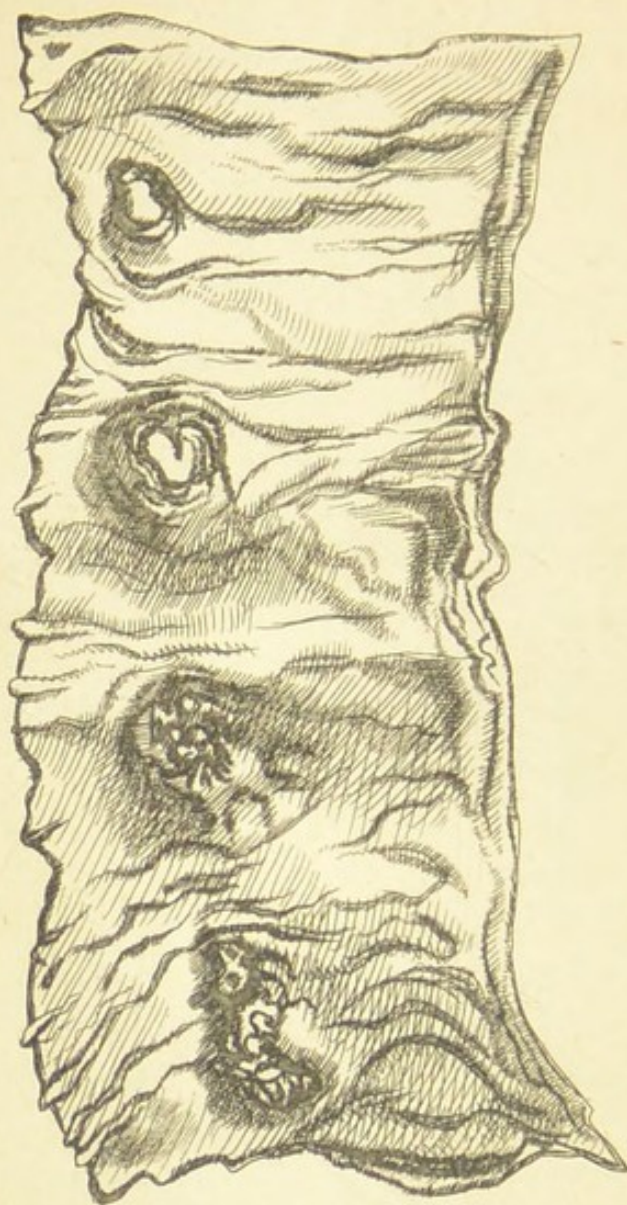
In the right iliac fossa lie the cæcum and its appendix, only anteriorly and laterally covered by peritoneum. Inflammation not unfrequently attacks this particular part of the intestine, and if the inflammation affects the mucous surface and the coats of the cæcum, it is termed typhlitis (τυφλος, blind; terminal *itis*); while if the areolar tissue connecting the cæcum to the psoas and iliacus muscles is also involved, the term perityphlitis is employed.

Various causes may originate the inflammation. Thus concretions may accumulate in the vermiform appendix, or bits of bone, pins, bristles, etc., may stick there, or any of the intestinal ulcers may perforate the bowel at the place mentioned. Should the perforation occur where the bowel is free from peritoneal covering, fæcal matter escapes directly into the surrounding tissues, leading to inflammation and abscess, which may take a varied course; at one time opening into the rectum, or forming a swelling in the groin, or passing downwards along the psoas and iliacus muscles to point at the upper part of the thigh. In the majority of cases it presents itself in the iliac region in the position which the cæcum usually occupies, from whence it may be discharged either by one of the ways previously alluded to, or it may again enter the cæcum by its original orifice; or a series of sinuses may be formed, which never entirely close.

Should perforation take place directly into the peritoneal cavity, fatal peritonitis will of course result.

Symptoms and Progress.—The early symptoms are pain and tenderness in the iliac region, with rigors and fever. The patient lies on the right side, with legs drawn up. If the abscess forms and extends downwards, the symptoms are obscure; if it tends to





TYPHOID ULCERATION OF THE ILEUM.
IN THE UPPER PART IS SEEN THE MORBID INTRUSION
PUSHING THE RUGÆ ASIDE; AT THE LOWER PART
THE DISINTEGRATION AND CHARACTERISTIC ULCERATION.

point anteriorly, the fulness and hardness become more pronounced, and the contents may be discharged into the bowel, or externally by an artificial anus. Should the discharge be into the peritoneum, the local symptoms of pain and tenderness will not be confined to one particular spot, but be general over the abdomen, occasioning great suffering and death in a few hours.

The duration of typhlitis is uncertain, sometimes ending in speedy recovery, or in death from a lingering and obscure illness.

Treatment.—Locally, leech and apply hot fomentations or poultices. Internally, avoid giving drastic purgatives. Keep the bowels quiet with opium in any of its forms. Give only liquid food, and allow wine or brandy, should exhaustion or suppuration appear.

Should the bowels not open naturally, castor-oil may be taken if enemata fail.

INTESTINAL ULCERATIONS.—The ulcers characteristic of typhoid fever and dysentery have already been described under these diseases. The bowel may, however, become the seat of ulceration of a non-specific character, as the result of inflammation from various causes, as foreign bodies, calculi, hardened fæces, etc.; or the ulceration may be specific and associated with tubercle. The latter variety, tubercular ulceration, is frequently observed in scrofulous children, while if seen in adults it is generally secondary to pulmonary phthisis. Tubercular ulcers affect chiefly the lower portion of the small intestine, and gradually cease towards the jejunum. Their position is transverse as regards the bowel, the margins and floor are thickened; sometimes imperfect cicatrization may be observed, the edges being drawn together and leading to con-

traction of the gut and even stricture. The characteristics of the simple and tubercular ulcer are seen in the engravings.

DISEASES OF THE LIVER.

The ordinary extent of hepatic dulness in an adult of average size is 4 inches in the right mammary line, *i.e.* a line descending perpendicularly from the right nipple; $4\frac{1}{2}$ or 5 inches in the right axillary line, 4 inches in the right dorsal line, *i.e.* from lines drawn respectively from the centre of the axilla, and from the lower angle of the scapula; 3 or 4 inches in the median line anteriorly, *i.e.* corresponding to the base of the ensiform cartilage.

Its position is somewhat arched. Commencing posteriorly about the tenth or twelfth dorsal vertebra, it ascends gradually towards the axilla and the nipple, and then again descends slightly towards the median line in front.

The liver may become enlarged from the normal dimensions given, and as this enlargement is a character common to many diseases of the organ, it has been happily suggested by Dr. Murchison to divide these, for the purposes of diagnosis, into Painless and Painful Enlargements. Painless enlargements are further characterised by an absence of jaundice and by a very chronic course; but in the painful enlargements jaundice is a very common symptom, and the progress is more rapid.

Among painless enlargements we have the so-called amyloid liver, the fatty liver, hydatid tumour of the liver, and simple hypertrophy.

Among painful enlargements we have congestion, catarrh of the bile ducts, obstruction of the common duct and retention of bile, cancer, pyæmic and tropical abscesses.

PAINLESS ENLARGEMENTS OF LIVER.

Waxy, Lardaceous, or Amyloid Liver.—The liver may attain, under this disease, a great and uniform size, with a rounded, well-defined lower margin. The growth is slow and imperceptible, extending over many years, with constitutional symptoms of anæmia, and frequently with evidences of a similar disease in kidneys, stomach, and spleen, the latter being often enlarged as well as the liver. The conditions favouring this degeneration are, as in the kidney, constitutional syphilis or other exhausting diseases. From the nature of the disease it may be expected that it can hardly result in recovery, although its progress may be somewhat arrested.

Fatty Liver.—The enlargement is considerable, but not so great as in the previous form. To the feel, if the abdominal walls are thin, it seems soft and doughy, and can easily be pushed aside by the finger without causing any pain. Many and opposite conditions of the system may give rise to fatty liver. Among these may be specially mentioned alcoholism, phthisis, and general obesity, so that it may rather be considered as an adjunct to other constitutional states than a disease *per se*. Dr. Addison considered a greasy velvety condition of the skin characteristic of fatty liver. On post-mortem examination the liver is found to be pale, staining the knife with grease on cutting into it. The disease is most marked round the lobules; the cells being enlarged and containing fatty globules.

Hydatid Tumour depends on the development in the liver of the larvæ of the *tænia echinococcus*, which inhabits the intestines of the dog. The ova are supposed to be voided with the fæces of the animal, and to enter the human system by means of food and drink, finding their way to the liver or other organs

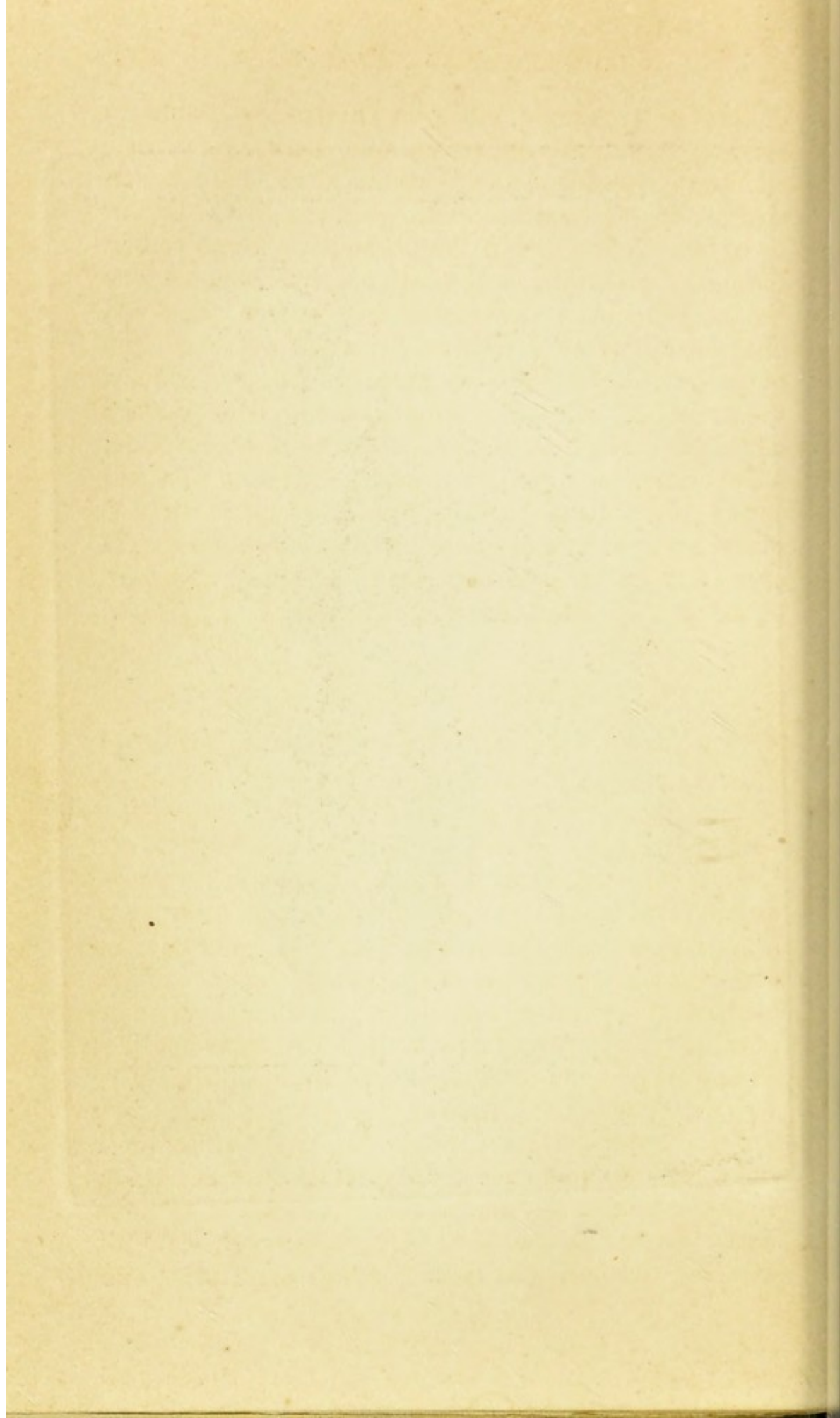
in an unexplained manner. Hydatid tumours of the liver, unlike those previously considered, are not uniform in their direction, but usually follow one direction in particular, either upwards, downwards, or laterally; hence the tumour formed may burst into the peritoneum, stomach, intestine, or lung. Sometimes it may suppurate, or it may dry up. The commencement is usually insidious, and the tumour, smooth and elastic, may attain a great size without the patient being aware of its existence, as the general health may be unaffected, there being neither dropsy nor jaundice. When detected, the painlessness and the absence of the peculiar cachexia distinguish it from cancer; the history and the absence of constitutional symptoms from abscess; the position and non-jaundiced appearance of the patient from enlarged gall bladder. Occasionally, if near to the surface, there is a sign elicited by percussion, known as "hydatid vibration," characterised by a peculiar trembling sensation being imparted to the three fingers of the left hand when they are laid flat on the tumour, and the back of the left middle finger is struck abruptly with the point of the middle finger of the right hand.

In *Simple Hypertrophy* the enlargement is not great, and is not attended with any prominent symptoms. It has been chiefly observed in some cases of diabetes and leucocythæmia.

Treatment.—The treatment of these painless affections of the liver is unsatisfactory. In waxy liver the diet ought to be nutritious, with a moderate allowance of stimulants. The tincture of iodine may be given, in doses of fifteen minims diluted, thrice daily. Complications, such as diarrhœa, vomiting, etc., must be treated as they arise. In fatty liver, if dependent on indolent habits, an anti-saccharine or Banting



TÆNIA ECHINOCOCCUS.
FROM HYDATID CYST OF LIVER.



dietary with exercise must be enforced. If due to alcohol, withdraw the stimulants. In both cases, alkalies with taraxacum are useful, ^{or} (F. 10); and if circumstances permit, the waters of Carlsbad, Marienbad, or Homburg can be strongly recommended. Iodide of potassium and common salt were at one time considered serviceable in hydatids of the liver, but subsequent experience has not confirmed the hopes held forth, and it is now deemed advisable, if the tumour is increasing, to puncture and remove the liquid contents of the cyst by a fine trocar and canula. This being done, both the parent hydatids and offspring die. Out of forty-six cases reported by Dr. Murchison, thirty-five appear to have been perfectly successful. It is necessary only to withdraw a portion of the fluid to cause the death of the hydatid.

PAINFUL ENLARGEMENTS OF LIVER.

HEPATIC CONGESTION.—The phrase congestion of the liver is too often used vaguely and applied to cases of indigestion, when, probably, there is little amiss with the organ. In true congestion there is uniform though not very great enlargement of the organ—probably to the extent of an inch—which disappears after a time; the surface projecting below the ribs being perfectly smooth, tender on pressure, and accompanied by an uneasy feeling rather than acute pain, radiating from the liver up to the right shoulder. This feeling is increased to actual pain sometimes after meals, or when the patient lies on the left side. Jaundice, rarely intense, is present after two or three days, with nausea, loss of appetite, headache, scanty high-coloured urine, and other symptoms of indigestion. There may also be in acute cases evidences of obstructed circulation in splenic enlargement or ascites.

This Congestion may be due to mechanical causes, *e.g.* consequent on disease of the mitral or tricuspid valve, or it may be dependent on errors of diet, excessive tippling, sedentary life, malarious or other poisons, or upon suppression of habitual discharges—the catamenia or bleeding from piles—or habitual constipation.

Treatment will vary with the cause, but in all cases attended with any severity hot poultices should be applied, with, in some instances, the application of leeches to the anus. The diet should be unirritating and non-alcoholic. Purgatives of sulphate of soda or magnesia, aided by blue pill or podophyllin, should be given at first, followed by the mineral acids, with taraxacum and gentian. When wine requires to be taken, dry sherry and claret are to be preferred.

CATARRH OF THE BILE DUCTS is associated with the same clinical characters as those of congestion, yet with more marked tenderness over the gall bladder, which sometimes can be felt as a pyriform tumour; while “obstruction of the common duct” has the further addition of jaundice.

CANCER of LIVER, in fully three-fourths of the cases, is secondary to cancer in other organs, as the stomach, uterus, or female breast. It runs a rapid course, being rarely prolonged beyond twelve months. It is attended with great pain and nodulated enlargement, generally with jaundice and ascites, and with other evidences of malignant disease.

Treatment can only be palliative.

PYÆMIC AND TROPICAL ABSCESSSES differ in this, that the former are many in number and small, while the latter is usually single, and may attain a large size. The former are simply the evidence of the constitu-

tional state termed pyæmia ; while the latter, though rare in this country, may follow the acute hepatic inflammation of tropical climates. This inflammation has the symptoms detailed in congestion in an aggravated form, with the addition of high fever, and frequently troublesome hiccup. Should the inflammation end in the formation of an abscess, this will be signalised by chills and hectic fever, and by fluctuation more or less distinct, according to the distance of the abscess from the surface. The abscess, which is not generally very rapid in its progress, may burst into the peritoneal cavity, giving rise to fatal peritonitis, or open into the biliary ducts and be discharged by the duodenum. More frequently, however, when the matter gets near the surface of the gland, adhesive inflammation is set up in the portion of the peritoneum immediately above it, and lymph is poured out which glues the organ to adjacent parts—to the abdominal parietes, the diaphragm, stomach, or some part of the intestine, the pus being then discharged externally, or into the lung, pleura, or stomach (Tanner).

Tropical abscess is often associated with, and considered by some the result of, dysentery.

Treatment is similar to that mentioned under congestion, in addition to the employment of chloride of ammonium and ipecacuanha in large doses. After suppuration has been established, the diet must be generous, and wine or brandy allowed. Operative interference seems advisable when there is a visible fluctuating tumour, when a distinct tumour projects from the normal contour of the liver, even should there be no fluctuation, and when constitutional symptoms indicate its presence, though there should be no local signs. It is inadvisable when, from jaundice or other symptoms, there is reason to fear the

existence of numerous abscesses. The operation should be performed with antiseptic precautions, or, if the abscess is large, by means of Bowditch's syringe or Dieulafoy's aspirator.

CONTRACTIONS OF THE LIVER.

The area of hepatic dulness may be diminished instead of increased, and under the head of hepatic contraction we have—1, simple atrophy; 2, acute atrophy; 3, cirrhosis. In simple atrophy there is merely a diminution of the size and no alteration in the structure of the organ. The liver may be reduced to one half its normal weight and bulk. The circumstances under which it occurs are two, viz. old age and inanition, the latter being dependent on either an insufficient supply of food from actual want, or on a defective assimilation arising from other diseases, as cancer of the stomach.

In "acute atrophy" not merely is the liver rapidly diminished in size, but the structure of the gland is altered. The secreting cells are broken up into granular matter and oil globules, and the whole organ is found after death to be soft and yellow. The disease is rare and caused by unknown conditions, though it is most common in pregnant females. It results almost invariably in death by coma, preceded by gastric catarrh, bilious vomiting, jaundice, and cerebral symptoms of a typhoid character, with low muttering delirium and albuminous urine.

Treatment is unsatisfactory, though temporary improvement sometimes follows smart purgation by sulphate and carbonate of magnesia.

CIRRHOSIS, the so-called gin-drinker's or hob-nailed liver, derives its name from *κίρρος*, yellow, the colour being due to the large amount of yellow pigment

found in the secreting cells. The liver becomes reduced in size in consequence of destruction of its secreting tissue, this destruction again being due to hypertrophy of the connective tissue. The organ is thus dense and preternaturally hard, its outer surface being granular and nodulated, and on section it presents firm fibrous bands, including the remains of vessels and bile ducts and surrounding islets of yellow secreting tissue.

The disease is chronic, usually extending over several years, with an insidious commencement, and probably increase of size, but latterly by diminished bulk of the liver. In its early stages it is attended with symptoms of what may be termed alcoholic dyspepsia, sickness and retching in the morning, loathing for solid food, and a strong desire for stimulants, with some slight pain or tenderness over the hepatic region. In late stages, when the portal circulation has become obstructed, its hob-nailed character may be felt externally—ascites appears and gradually increases, the spleen enlarges, and hæmorrhoids and hæmorrhages from the stomach and bowels occasionally occur. The disease is marked by progressive emaciation and debility, by a persistent sallow complexion, though actual jaundice is rare, by increasing dyspeptic derangements; and results fatally, sometimes by exhaustion attended with coma or œdema and inflammation of the lungs. It is chiefly met with in adults between 35 and 60, in males more than females, and is almost invariably connected with a previous history of undiluted spirit-drinking on an empty stomach.

Treatment.—In the early stages the essential thing is to stop drinking habits. Spirits should be forbidden, although a little claret or hock may be allowed. The diet should consist of milk, eggs,

plainly cooked white fish, game, and meat, with an avoidance of all hot spiced or greasy food. Regular exercise should be enjoined, and the action of the bowels facilitated by occasional saline or mineral water aperients, and the use of nitro-muriatic acid. In the second stage, though curative treatment is impossible, yet the same dietary must be enjoined. Purgatives and diuretics should be given for the ascites, and these failing, tapping must be had recourse to (F. 27, 35).

JAUNDICE.

The term jaundice is derived from the French *jaune*, yellow. Icterus, the Greek word for the golden thrush, another synonym, originated in the ancient idea that the sight of this bird by a jaundiced person was death to the bird but recovery to the patient. The affection has also been termed "regius morbus," from the royal and pleasant regimen prescribed for those who had it. Jaundice may be considered as a yellowness of the skin and conjunctivæ, and the tissues and secretions generally, from impregnation with bile pigment. It is not, as this and preceding remarks indicate, a disease *per se*, but a symptom accompanying many complaints, and its existence has given rise to much controversy and many conflicting statements. All cases of jaundice may be referred to two great causes—1st, when it results from obstruction to the common bile duct; 2d, when it is independent of any obstruction. With regard to the first and most common origin there is not much dispute, as it is obviously then dependent on the bile which has been secreted being reabsorbed into the system. On the second point Frerichs' explanation, adopted by Dr. Murchison, seems to be the most

feasible. It proceeds on the supposition that even in health bile to a greater or less extent is reabsorbed into the system in (addition to what also passes away by the fæces), and is at once transformed so that neither bile acids nor bile pigment can be discovered in the blood or in the urine, and consequently there is no jaundice. But in certain morbid states this transformation does not occur, and hence it circulates in the blood and stains the skin and other tissues, and jaundice is produced. These morbid states are the results of certain poisons, yellow fever, relapsing fever, snake bites, nervous influences, fear, rage, deficient supply of oxygen, or an excessive secretion of bile with great constipation. The obstructive causes, on the contrary, are from within, as gallstones,* foreign bodies from the intestines; or from without by pressure, as cancer of the liver or pancreas, loaded intestine, pregnant uterus, ovarian tumours, etc.

Symptoms.—The skin and conjunctivæ are of a yellow colour, the urine stains linen yellow, while on a few drops of nitric acid being added to it on a white plate, a play of colours, green, violet, pink, and yellow, is developed; the fæces are whitish or of a light clay appearance. The skin is often itchy, the temper irritable, the taste bitter, with a sleepy, drowsy sensation at all times. The function of digestion is uninterfered with, except in regard to fatty articles.

Cerebral derangements may supervene if jaundice continues long, with stupor and delirium and a tendency to hæmorrhages. If the obstruction is due to an impacted gallstone, the suffering may be intense, and the pain is known as biliary colic. Vomiting

* Gallstones consist of thickened bile, which in some instances has formed round a nucleus of solid biliary matter. They may exist in great numbers.

and hiccup are frequently present. Fatal exhaustion may ensue should the concretion not pass through the duct.

Treatment.—This must vary with the cause, but if due to obstruction, as from gallstones, hot poultices should be applied, or a few leeches if the attack has been long and severe, with the subcutaneous injection of morphia. Immediate relief is sometimes afforded by large draughts of hot water with one to two drachms of bicarbonate of soda to the pint. Chloroform is sometimes necessary. To prevent a re-formation of gallstones, the waters of Vichy and Carlsbad are useful.

“In other cases of jaundice,” says Dr. Tanner, “as we shall be merely working in the dark, it will be better to rest contented with resorting to gentle saline purgatives, diaphoretics, baths, rest, and regulated diet.”

DISEASES OF THE PANCREAS.

Clinically we know little of the diseases of the pancreas, as the organ is rarely affected primarily. Lying deep in the epigastric region, behind the stomach, and in front of the aorta, it must be remembered that if a tumour exists in connection with it, it will be discovered in this region, and that pain will be referred either to the front or to the back at the junction of the lumbar and dorsal vertebræ. The principal diseases to which the pancreas appears liable are morbid growths (chiefly scirrhus), calculi (of phosphate of lime) of varying size, obstructing the chief duct, and leading to enlargement of the organ and the formation of cysts; catarrhal inflammation of the same duct, probably in the same connection; and inflammation of the chief duct.

The symptoms of any of these affections during life are obscure, and attended with debility and malnutrition. As one of the principal functions of the pancreas is to assist the digestion of fatty compounds in the food, the presence of fat in the stools has been detected in diseases of this organ.

Treatment.—All special treatment of affections so difficult to diagnose during life seems out of the question.

DISEASES OF THE SPLEEN.

The spleen, situated in the left hypochondrium, weighs about six ounces ; its length being six inches, and its breadth rather more than three inches. Its external surface is convex ; its internal border, which is concave, is in relation with the cardiac end of the stomach, and has a vertical fissure—the hilus—at which apertures are found for the entrance and exit of vessels and nerves. It has no excretory duct, and its exact purpose in the system is as yet undetermined.

Composed essentially of an elastic fibrous framework (trabecular tissue), of Malpighian corpuscles, and of spleen pulp, it may become distended with blood from slight causes, especially from those which interfere with the action of the skin, the liver, or the kidneys. These causes continuing, its elastic power may be lost, and it thus becomes unable to send the accumulated blood onward. It may thus suffer from congestion leading to inflammation, abscess, and gangrene. Emboli are apt to lodge in the spleen in the course of typhus fever or pyæmia, giving rise to what is termed “ hæmorrhagic infarctions.” These infarctions are observed at post-mortem examinations as wedge-shaped masses, with the base towards the surface of the organ. Sometimes their previous

existence may be detected by a depressed cicatrix, but in pyæmia they break down into a purulent fluid and give rise to general inflammation of the organ. The spleen also may, though rarely, be the seat of malignant disease, or serous and hydatid cysts may form within it. If portal obstruction exists, enlargement of the spleen is a necessary consequence. In addition to the forms of disease mentioned, Leucocythæmia and Hodgkin's Disease are by some considered splenic diseases, and for convenience will be included under this heading.

The most common form of splenic enlargement, leading to hypertrophy of its tissue, follows the fevers of tropical climates, and is known as "ague cake." The history of the case, as associated with intermittent fever or ague, or residence in the tropics even without having contracted fever, and the marked increase in the size of the organ, form clues to diagnosis. In addition, there are signs of anæmia, debility, a sallow unhealthy complexion, and various digestive derangements. Tenderness on pressure is evinced, but this does not occur to any great extent unless the peritoneal covering is involved. In protracted cases general dropsy sets in, with a murmur following the first sound of the heart. Sometimes the spleen may be greatly enlarged without any marked disorder of the general health, with the exception of debility.

Treatment.—When the enlargement is the result of ague, change of climate and quinine are essential. In other cases steel and the bromide of potassium are serviceable. Arsenic is recommended in cases where there is no fever or periodicity. It can be conveniently given in the form of the iodide in $\frac{1}{12}$ gr. doses, accompanied or followed by iodide or bromide of potass, or both (F. 5).

LEUCOCYTHÆMIA.

Dr. Hughes Bennett of Edinburgh first directed attention to this affection in 1848, and six weeks afterwards Professor Virchow detailed another case where similar phenomena were observed in the blood. Dr. Bennett called the disease leukæmia or white blood, and imagined it was due "to suppuration of the blood without inflammation." He subsequently modified this view and called the disease leucocythæmia (*λευκος* white, *κυτος* a cell, and *αἷμα* blood), white-cell blood.

Pathology.—The pathology of the disease to a certain extent is expressed by the name, as there is a great increase of the white corpuscles of the blood, while the red ones are diminished. If an ounce of leucocythæmic blood, freed from fibrin, is placed in a glass, the red corpuscles sink to the bottom, while the colourless constitute the white milky upper stratum. Microscopically the excess mentioned is confirmed, and is more marked when the red corpuscles accumulate in rouleaux, leaving clear spaces filled with the colourless ones. The specific gravity is reduced. The disease is always associated with hypertrophy of one or more of the lymphatic glands, or of the spleen, or of both together. It is also sometimes associated with changes in the medulla of bone.

Symptoms.—Great pallor evidences leucocythæmia, and with the pallor there are weakness and emaciation, gradually increasing until death occurs. Ascites from the enlargement of the liver, spleen, or both, accompanies diarrhœa; epistaxis, urine loaded with uric acid, nausea, and jaundice, have also been noticed in cases which have come under observation. There may also be hæmorrhages from the bowels and urinary passages.

Treatment.—No remedy seems of any special avail in this disease. Of tonics, iron and quinine have appeared most serviceable (F. 77, 75). Good nourishing food should also be given. Diarrhoea and hæmorrhage should be treated as they arise, by appropriate remedies.

HODGKIN'S DISEASE.

The affection now to be considered has been termed "Hodgkin's disease," because that physician first drew attention to the morbid processes in question as a separate form of disease. In later times it has been called "malignant lymphoma," "lympho-sarcoma," "adenia," and "pseudo-leukæmia." The disease has been confounded with leucocythæmia, previously described, but it differs from it in these essential facts in the clinical history, that there is no increase in the white corpuscles of the blood, and that its course is comparatively rapid, lasting only from two to six months or a year.

The disease generally begins with a moderately painless swelling of the lymphatic glands of the neck, of one or both sides, and this swelling gradually increases until regular chains of swollen glands are formed from the angle of the jaw to the clavicle. Later on, the inguinal and axillary glands are attacked, and finally the whole lymphatic apparatus, including the spleen. In a case which came under my observation last winter, the disease was accompanied, and in fact ushered in, by profuse bleedings from the nose, which occurred again at intervals. There was latterly intense dyspnoea, probably through the enlargement of the bronchial glands compressing the bronchi. There was excessive palpitation of the heart on sitting up, also an anæmic murmur, and gradually

increasing pallor. Diarrhœa came on towards the end, the temperature, which had been below the normal standard, rose during the last few days to 102° Fahr. The man finally sank into a comatose state, and died six months after admission to the hospital. Briefly stated, the nature of "Hodgkin's disease" may be said to be this:—There is hyperplasia, increased cell-growth of the lymphatic glands. This increased cell-growth may be soft, and exude a milk-white juice on section, or it may be hard and dry, of a yellow colour, and almost fibrous in appearance. As "the soft" and "hard" forms sometimes are found on the same body, it has been inferred that the latter is only an advanced stage of the former.

Treatment.—A series of cases lately recorded by Billroth indicate that arsenic, given in gradually increasing doses, was attended with beneficial results. Previous to this, the disease had been considered hopeless.

BRONCHOCELE, GOITRE,

consists essentially in hypertrophy of the normal constituents of the thyroid gland, viz. the blood-vessels, the connective tissue, and the groups of intercommunicating vesicles. Sometimes these are all increased in proportion; the enlargement is, however, generally at the expense of the connective tissue and the vessels. The size varies from mere fulness to that of a cocoa-nut.

It is peculiar to certain localities, and constitutes the goitre of the Swiss and the Derbyshire neck of England. It is also found in Nottinghamshire, Sussex, Yorkshire, and seems in all cases to depend on the water supply being greatly impregnated with the sulphate and carbonate of lime, with the addition also, according to Virchow, of some endemic malarial

influence not dependent on any of the causes mentioned. The enlargement is characterised by no pain. It is simply inconvenient by its bulk, which, however, may be attended with serious symptoms if there is pressure on the large veins, sympathetic, pneumogastric, or recurrent laryngeal nerves, or if the œsophagus or trachea is compressed. A peculiar enlargement of the thyroid body, occurring chiefly in young women, and associated with palpitation of the heart, uterine and menstrual derangements, and prominence of the eyeballs (exophthalmos), is termed Graves' or Basedow's disease.

This disease is rare in advanced life, and its origin sometimes dates from mental shock or some acute affection. Some deem it due to cardiac palpitation, others attribute its primary cause to goitre, but probably the best explanation is that it is connected with some affection of the sympathetic system, allowing passive dilatation of the vessels of the neck, the thyroid body, and implicating the blood supply of the orbit, and permitting an excited action of the heart. In fatal cases morbid conditions of the cervical sympathetic have been recorded.

The symptoms may be either gradual or sudden. In the latter case cardiac palpitation supervenes quickly, with distressing pulsation of the arteries of the neck, and then, after a variable period, changes in the eyes and thyroid body are observed. If gradual, the eyes may be first noticed as more prominent, glistening, and staring, this prominence becoming more pronounced, generally in both, but sometimes only in one eye, until the lids cannot be closed over them. The protrusion also is variable, being most marked during the menstrual period and times of excitement. The sight, moreover, is not much affected, and there is little danger of inflammation in the eye

or eyes though so little protected. Following on the prominence of the eye comes the gradual increase of the thyroid body, attended generally with a thrill and a more or less distinct arterial or venous murmur, and great nervous irritability.

Graves' disease is not usually fatal to life, for it may remain stationary, or actual recovery may ensue ; or it may be slowly progressive, and the patient may be cut off by some affection of the lungs.

Treatment.—In the endemic form the patient should be removed to another situation, and iodine and its preparations externally and internally should be given. Tincture of digitalis is useful for the excessive palpitation, in the exophthalmic form ; or belladonna combined with iron.

In obstinate cases operative measures, as passing a seton through, or even extirpation of the gland, have been recommended.

DISEASE OF THE SUPRA-RENAL CAPSULES, ADDISON'S DISEASE.

The function of the supra-renal capsules is a subject of great interest and obscurity. Their purpose in the economy of nature is as yet undetermined. They seem, like the spleen, the thymus and the thyroid glands, to be essential in a healthy state to the proper elaboration of the blood, and when diseased they lead, according to the investigations of the late Dr. Addison, to a peculiar series of phenomena. The conviction seems to have grown on Dr. Addison, that the supra-renal capsules were implicated, by observing that a peculiar form of anæmia with discoloration of the skin was not connected with disease of other organs usually associated with anæmia. The symptoms observed by him were great and increasing debility, a feeble

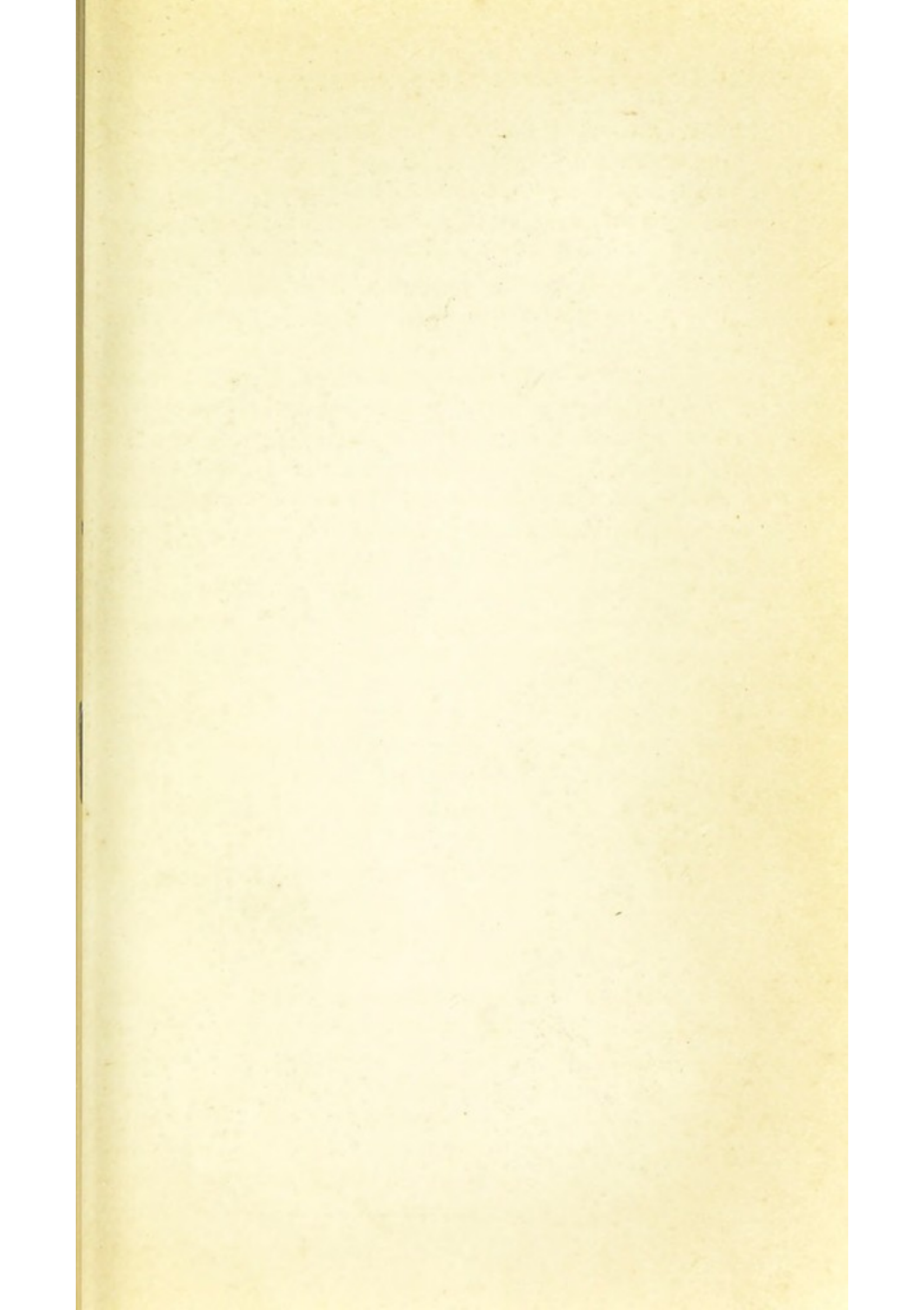
pulse, faintness on the slightest exertion, loss of appetite, a pain in the epigastrium, shooting through also between the scapulæ, and progressive emaciation. With these general symptoms the skin became gradually discoloured; this discoloration being most marked in the face, neck, superior extremities, penis, scrotum, and round the navel. The skin in the regions mentioned, and also in the hands, assumed a dingy, smoky hue, which in advanced cases deepened into a "bronzed" colour. So marked was this in one case recorded by Dr. Addison, "that, but for the features, the patient might have been mistaken for a mulatto."

Cases of Addison's disease progress to an unfavourable termination in the course of one or two years on an average. The disease is most frequently observed in the active period of adult life and in those employed in manual labour. Dr. Wilks says the morbid changes in the capsules are, "first, the deposition of a translucent softish homogeneous substance; subsequently the degeneration of this into a yellowish-white opaque matter; and afterwards a softening into a so-called abscess, or drying up into a chalky mass." The "bronzing" of the skin increases with the general debility.

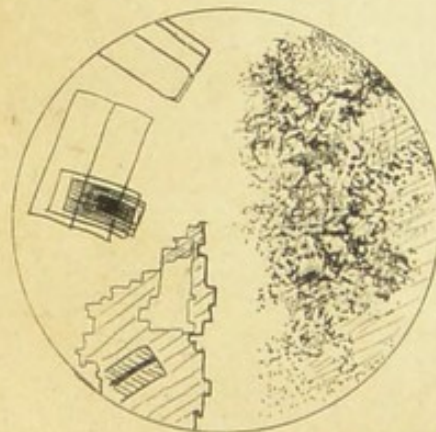
Treatment.—No treatment seems of any avail.

DISEASES OF THE KIDNEYS.

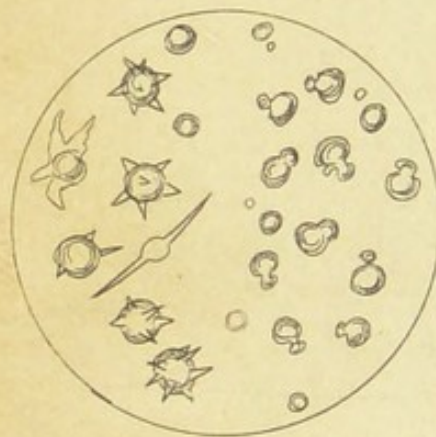
The quantity of urine passed in twenty-four hours in health is two pints and a half, or from forty to fifty ounces; in colour it is pale yellow, in reaction acid. The specific gravity is from 1020 to 1025, and is determined by an instrument termed the urinometer. What is meant by specific gravity is at once seen by placing the urinometer in distilled water, and afterwards in healthy urine. It will be observed in the



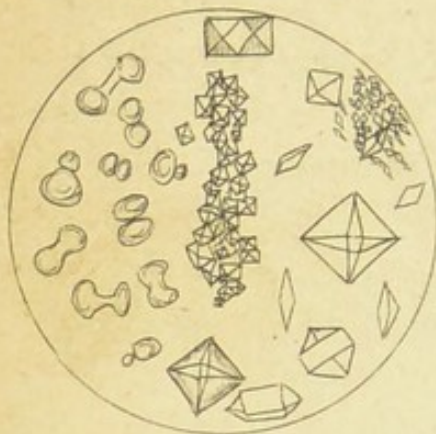
CRYSTALLINE AND AMORPHOUS URINARY DEPOSITS.



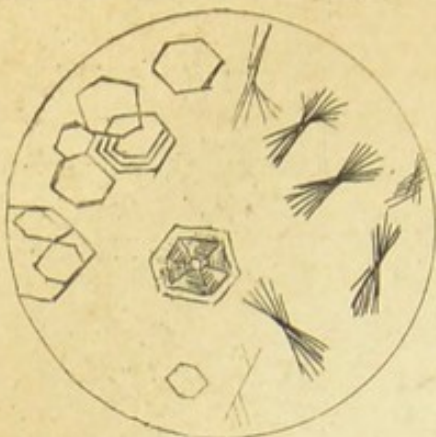
CHOLESTERINE
AMORPHOUS URATES



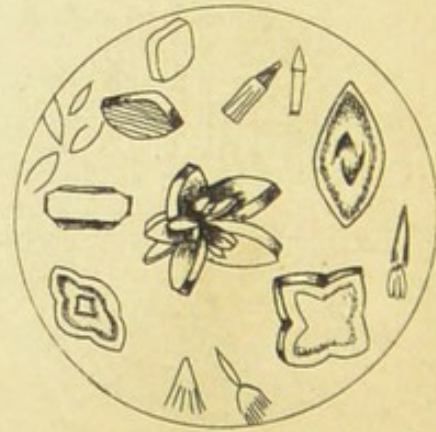
URATES OF SODA
URATES OF AMMONIA



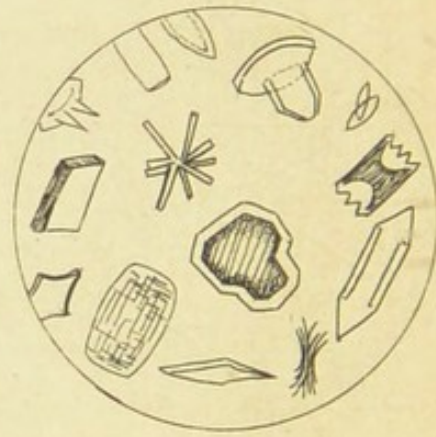
OXALATES OF LIME



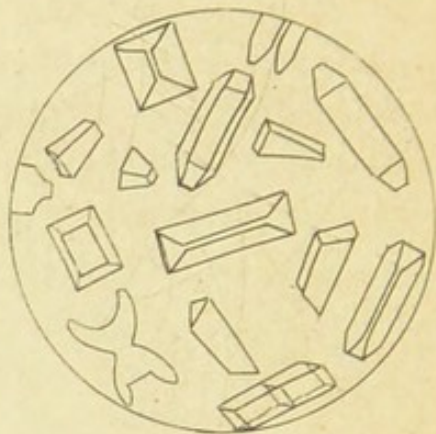
CYSTINE
TYROSINE



URIC ACID



URIC ACID



TRIPLE PHOSPHATES



TRIPLE PHOSPHATES

one case that the instrument floats at zero, while in the other at the figures mentioned before. The taking of the specific gravity is an important and essential step in determining the nature of diseases of the kidney; for if below the figures mentioned, there is probably albumen, if above, possibly sugar.

Healthy urine freshly passed and examined with the microscope is absolutely structureless; allowed to stand for twelve hours a slight cloudy precipitate may be observed, which, on microscopic examination, reveals a few epithelial scales from the bladder, amorphous urates, or a few crystals of triple phosphate.

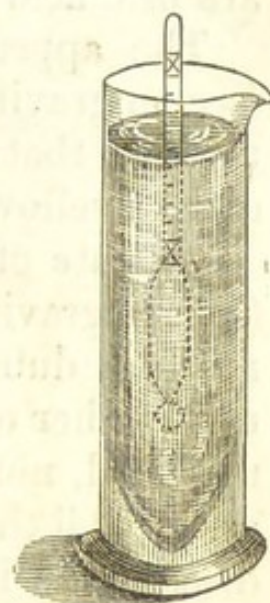


Fig. 13.

The appearances presented by the various deposits under the microscope are delineated in the engravings.

1st, Epithelial scales.

2d, Amorphous urates.

3d, Triple phosphates.

The amorphous urates consist of salts of potash, soda, and ammonia, in varying proportions.

The triple phosphate is a combination of phosphate of ammonia and magnesia.

Sometimes these deposits are present in what may be termed detectable excess, and it is necessary to ascertain the effect of reagents upon them, which may be summarised thus:—

Urine containing a superabundance of urates has a very acid reaction, and a pinkish-red deposit which heat at once dissolves, leaving the urine clear.

Urine containing phosphates has an alkaline reaction and a white deposit, which heat does not dissolve, but on the contrary makes the urine examined

cloudy ; this cloudiness disappearing on the addition of a drop of nitric acid.

The other crystalline deposits observed in urine are uric acid and oxalate of lime.

The appearances presented by the former vary (see engravings), but they may be remembered by the fact that they are always coloured either red or orange-yellow.

Oxalate of lime crystals present an octahedral form (see engravings), sometimes of various sizes ; but rarely a dumb-bell appearance. Heat has no effect upon either of these deposits, but liq. potassæ dissolves uric acid, not the oxalates, which require a mineral acid. All these deposits indicate no structural kidney disease, but it is different when what are termed tube-casts are observed under the microscope. Of these there are five distinct kinds ; 1st, blood-casts, or exudative ; 2d, desquamative, or epithelial ; 3d, granular ; 4th, fatty ; 5th, waxy or hyaline casts.

1. Exudative casts.

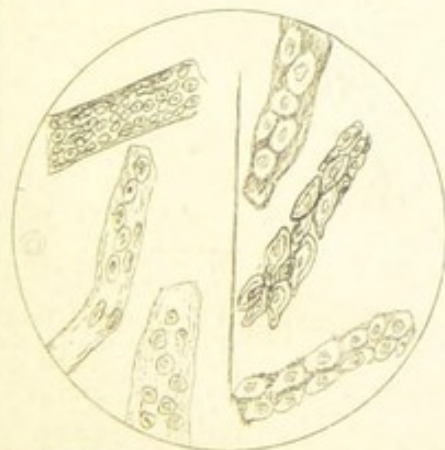
These consist of the coagulated exudation of fibrin, and present a mould of the uriniferous tubes. The fibrin is poured into the tubes as the result of inflammation ; hence these casts are only seen in acute diseases of the kidney.

2. Desquamative or epithelial casts consist of a cylinder of coagulable matter studded over with epithelial cells.

3. Granular casts are usually small, and consist of the usual cylinder studded with small masses of fat, epithelium, oxalates, etc., giving a granular appearance, and being characteristic of the most chronic forms of Bright's disease.

4. Fatty casts are the same as the preceding in their origin, only the cells have undergone fatty transforma-

RENAL TUBE CASTS. _PUS AND BLOOD CORPUSCLES.



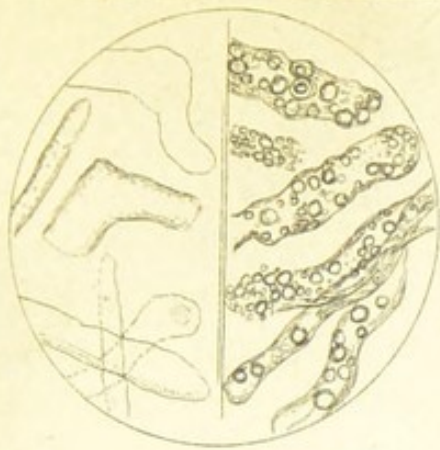
BLOOD CASTS
EPITHELIAL CASTS



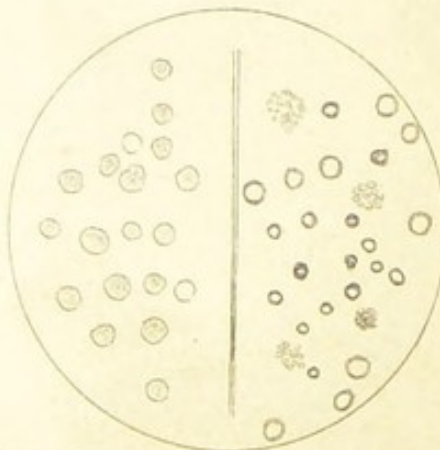
HYALINE CASTS



GRANULAR CASTS



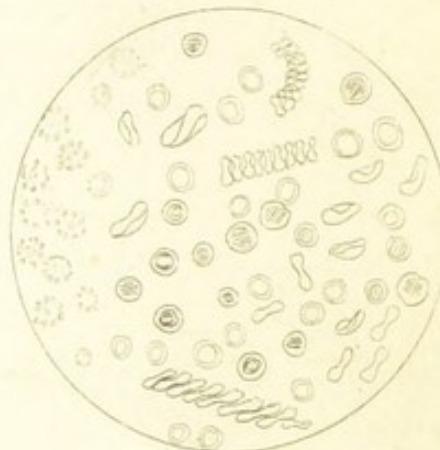
WAXY CASTS
FATTY CASTS



MUCOUS GLOBULES
FAT GLOBULES



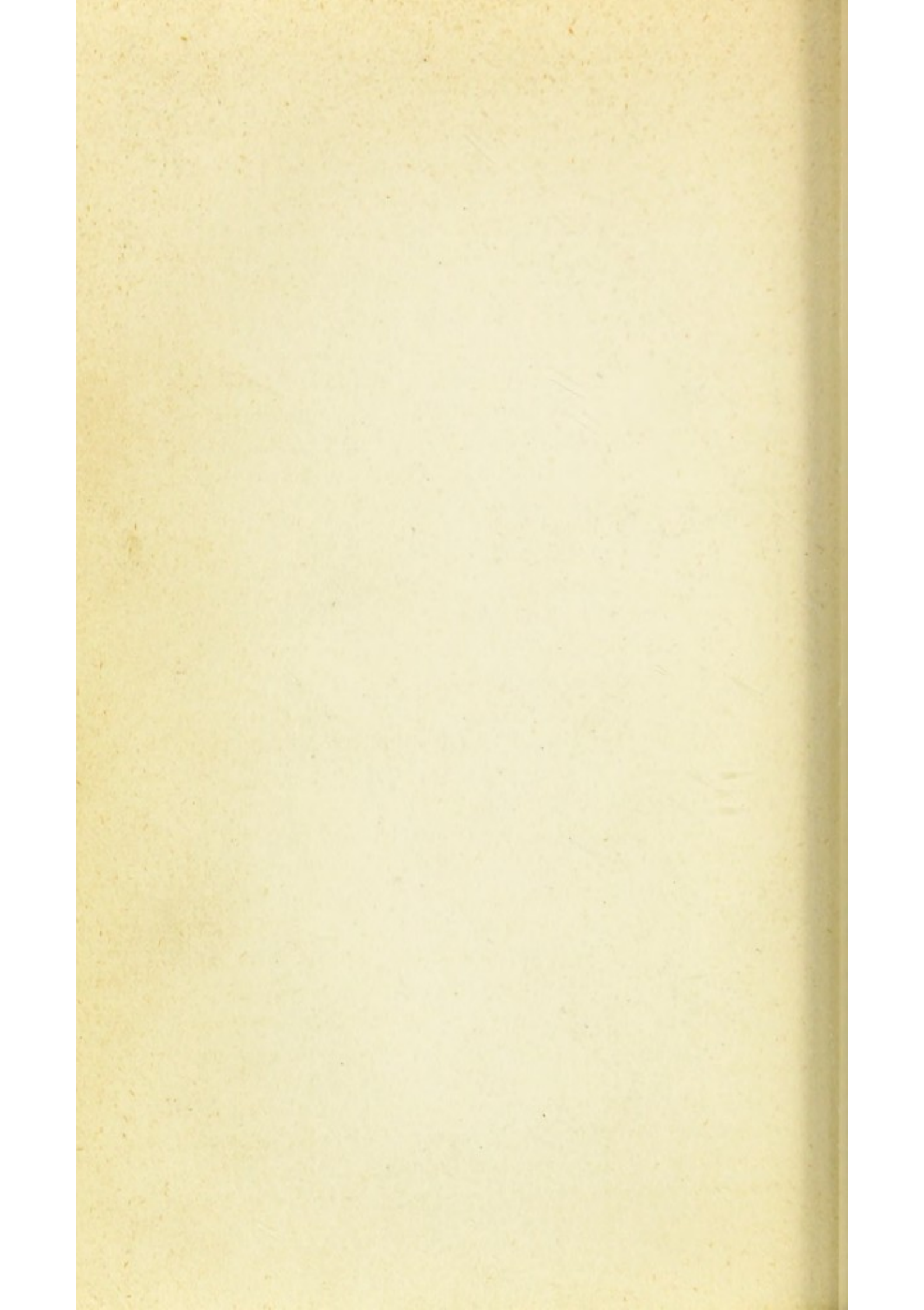
VIBRIOS BACTERIA
SPERMATOZOA



BLOOD CORPUSCLES



EPITHELIAL SCALES
PUS CORPUSCLES



tion, and the casts have the appearance of being studded over with oil globules.

5. Waxy casts are clear glassy cylinders presenting the appearance of a structureless substance.

It must be remembered that these three last forms of tube-casts are significant of chronic disease of the kidney, and may be seen in varying proportions on the same microscopical slide.

Unhealthy urine may also contain pus and blood, detected by their respective appearances under the microscope. Urine containing pus also becomes, on the addition of liq. potass., thick, sticky, ropy, which is evident on attempting to pour it from one vessel to another; while urine having blood in any but the smallest quantity has a smoky or red appearance, and coagulates on being heated. Bile can be detected in the urine by placing a few drops of strong nitric acid and urine on different parts of a white plate, and then allowing the one to run into the other. If bile is present when the fluids meet, there will be observed a play of colours—brown, green, blue, violet, red, and yellow.

The most important abnormal constituent in the urine is albumen, and it is essential that the tests for its presence there should be familiarly and practically known. For this purpose there are two great tests, heat and nitric acid. A test-tube should be filled to the depth of about an inch with the suspected urine, and heat applied by means of a spirit lamp to its upper stratum until it boils, when, if albumen be present, it becomes turbid and cloudy in various degrees. This cloudiness persists after the addition of nitric acid, and is thus distinguished from the phosphatic cloudiness which is also occasioned by heat, but disappears on the addition of the acid. It is important also to remember, that, if the urine is

alkaline, heat will not affect the albumen and make it coagulate until a few drops of acetic acid have been added. The preliminary test for the acidity of the urine is essential, and also the addition of nitric acid after boiling, to distinguish between phosphatic and albuminous cloudiness.

Nitric acid alone is also an excellent test for albumen. A test-tube being filled as before, and inclined, a little nitric acid is poured in so as to trickle slowly down the side to the bottom. If albumen is present three strata will be observed—one perfectly colourless of nitric acid at the bottom, another above this, coagulated albumen, and at the top the unaltered urine.

Albumen having been detected in the urine leads to the inquiry, What significance has it, and with what diseases is it associated? The answer to this is

Acute and chronic Bright's disease of the kidneys, although it may also be found accompanying pregnancy, any of the febrile diseases, heart or lung affections, or cirrhosis of liver.

NEPHRITIS.

Previous to entering on Bright's disease, it is necessary to mention that the kidney, like other organs of the body, may be the seat of congestion, which may terminate at that stage, or go on to inflammation, and constitute what is termed nephritis. Nephritis is, however, rare. Congestion may be the result of exposure to cold, of overdoses of special drugs, such as cantharides or turpentine, or it may appear during the various febrile and inflammatory diseases. It may be then considered active congestion; while if it results in consequence of cardiac or pulmonary disease

interfering with the general venous circulation, or from pregnancy, or tumours pressing on the renal veins or inferior vena cava above, then it is considered a passive congestion. Following from some of the above causes, or from the direct irritation of a renal calculus or embolus, or from inflammation of the bladder creeping along the ureter to the pelvis, infundibula, and calyces, the condition termed *pyelitis*, or inflammation of the lining membrane of the kidney, may be excited. The mucous membrane thus becomes congested, thickened, softened, and from its free surface is discharged mucus containing epithelium, pus corpuscles, and sometimes blood. If this affection is persistent, suppuration may be established, and even ulceration take place, not merely in the mucous membrane, but also in the substance of the kidney. This may be designated "suppurative nephritis." Supposing that the pus can escape easily by the ureter, and that one kidney is alone affected, the mischief may continue for years with little except local uneasiness, and it may ultimately become quiescent. In other cases, and whether or not the ureter is obstructed, an abscess may form, enlarging and burrowing in all directions, sometimes penetrating the diaphragm, pointing in the loins, bursting into the peritoneum, or descending along the psoas muscle and pointing under Poupart's ligament.

Symptoms.—Pain and tenderness in the loins, increased by pressure or movement, irritability of the bladder, with the passage of urine clouded from the presence of blood, mucus, or albumen, characterise active congestion of the kidneys,—these phenomena being preceded by sickness, feverishness, and thirst. These symptoms are intensified in *pyelitis*, and pus is also present in the urine; while, if suppurative nephritis is established, the local pain will be greatly

increased, and rigors and hectic fever will accompany, with, in most cases, a typhoid condition, suppression of the urine, and death by exhaustion.

Treatment.—In active congestion, if of independent origin, it is advisable to leech or cup the loins, and to follow this up by fomentations or the hot bath. The bowels should be kept freely open by a hydragogue cathartic, such as pulv. jalapæ co., if the urine is slight in quantity. If the pain is great, opium may in some cases be given. The treatment of pyelitis or suppurative nephritis is based very much on ascertaining the cause, and endeavouring to support the strength.

In chronic cases, astringents and mineral acids may be given (F. 78).

BRIGHT'S DISEASES.

The kidney has a thin translucent lightly-adhering capsule, and beneath this capsule is the kidney proper, containing a complicated and convoluted series of tubes lined with epithelium, and lying between the tubes, supporting and binding them, is a thin delicate web of fibrous tissue, and an abundant supply of blood-vessels to enable it to perform its secreting function. Each and all of these various parts may be affected with disease, but, as can be conceived from the intimate union existing between them, one cannot be affected without the other sympathising, from whatever may be the original starting-point. Diseases implicating the tubes, fibrous tissue, and blood-vessels, thus merge into one another.

The name Bright's disease is deservedly given in honour of the illustrious physician of Guy's Hospital, who, in 1827, threw the ægis of his name round all kidney affections associated with albumen in the urine. Bright's disease may be considered to be either acute or chronic.

ACUTE BRIGHT'S DISEASE,

under which term may be comprehended acute desquamative nephritis (Johnson), acute tubal nephritis (Dickinson).

The kidney is always enlarged, sometimes to twice its natural size, its capsule easily stripped off, its colour in the earlier stage deep red, and the section dripping with blood; in the later stage it is mottled red and white, and under the microscope there is observed an immense increase of the epithelial cells of the convoluted tubes, which are thus choked up to a greater or less extent, and compress the renal capillaries, while the intertubular stroma is unaffected. From this condition it may pass on to recovery, or remain what will be afterwards described as the large white kidney; or the disease may terminate in death by dropsy and other intercurrent affections, as pneumonia, pleurisy, and pericarditis.

Causes and Symptoms.—It may be the direct result of cold or intemperance, or occur during convalescence from scarlet fever or other blood-poisons. Fever, pain in the loins, marked diminution of urine—which is albuminous, smoky coloured, or dark brown from the admixture of blood, contains epithelial and blood-casts, and is of high specific gravity from decrease of water to increase of solid constituents—characterise the early stages of this affection. Dropsy supervenes. If a favourable termination ensues, the urine becomes more abundant, the skin moist, blood, albumen, and tube-casts disappear, and convalescence and recovery are established in a varying interval of weeks or months. A large proportion—Frerichs says two-thirds—recover.

Treatment is based on obvious principles to induce perspiration and to relieve the overloaded tubes.

Hence a warm blanket bath may be employed, the blanket being wrung out of warm water and wrapped round the patient, while an abundance of water should be drunk, and a mixture of acetate of potass, citrate of potash, and infusion of digitalis, ordered (F. 37). The bowels should also be freely acted on by jalap or elaterium (F. 27). A hot-air extemporised bath may be obtained in a private house by seating the patient on a wooden stool beneath which two or three lighted spirit-lamps are placed. Blankets should now be wrapped round the patient, and the head alone exposed. Perspiration is thus induced. A hot bath may also be employed for a similar purpose, the patient being placed in this, with the water at a temperature of 100° Fahr., which should be gradually raised to 107° Fahr. Here he should recline as long as he feels comfortable, not beyond a full hour, and then be packed in previously-warmed blankets for two hours. He is then finally to be rubbed down quickly and placed in a warm bed.

A less efficient but not to be despised method is simple packing in wet cloths, which should be relied on solely if the temperature is very high, for the baths previously mentioned have been suspected of hastening dreaded uræmic convulsions.

Locally dry-cup the loins and apply hot linseed-meal poultices. The diet should consist of milk, beef-tea, or nourishing soups. During convalescence all exposure to cold should be avoided, the wearing of flannel insisted on, and a mild preparation of iron, by preference the ammonio-citrate, given (F. 90). Change of air is also beneficial.

CHRONIC BRIGHT'S DISEASE.

Three chief types are recognised as post-mortem appearances of those dying of chronic Bright's disease :

A.—Kidney smooth, white, and enlarged, as resulting from previous disease. The cortical substance is increased, capsule easily stripped off, while on the white or mottled surface “conspicuous stellate patches of blood-vessels are seen.” Microscopically the epithelial lining of the tubes is swollen, the tubes distended, and the cells opaque and granular, and often loaded with oily particles. The intertubular stroma is unaltered.

B.—Kidney granular, brown or brownish red, small and contracted. The capsule is adherent, requiring force to peel it off; the fibrous stroma is increased, and cysts are frequently developed, most probably through obstruction to the uriniferous tubes. Microscopic examination shows that the decrease of the size of the kidney is attained by extensive wasting of the glandular structure proper, the renal tubes with their epithelium, and the vessels attached to them. The granules upon the surface of the kidney appear as remains of renal epithelium still beset with epithelium, which epithelium is sometimes here and there in a state of fatty degeneration, although more usually perfectly normal. In the straight tubes of the pyramids nothing abnormal is detected. Sometimes the degeneration is not complete but partial, the sound portion being perfectly smooth, with the capsule easily detached, while the diseased part is granular and knobby, and the capsule is firmly adherent. Dr. Bright's original description of this kidney is as follows:—“The kidney is rough and hard and gives resistance to the knife in attempting to cut into it. Numerous projections are seen to rise on the surface not much exceeding a pin's head. The tubular portions appear to be drawn near to the surface. It appears to be, in short, like a contraction of every part of the organ, with less interstitial deposit than in the last variety.”

Further, he indicates his belief that this second variety is but a modification of the first, an advanced stage of one and the same disease—an opinion entertained by most German pathologists, but not yet accepted by some English authorities.

C.—Waxy or lardaceous kidney, amyloid degeneration.

In well-marked cases the kidney is enlarged and smooth, and on section the cortex is bloodless, of a white or yellowish colour, with a waxy smooth appearance like bacon rind or white beeswax. In other cases the organ may be small. The degeneration seems to affect first the Malpighian bodies and small arteries, and to be followed by transudation of fibrin into the tubules, with subsequently, in some cases, atrophy. The proper test for this degeneration is iodine, which imparts, when applied, a deep mahogany brown colour to the parts affected, while it merely stains yellow the portions unimplicated.

The clinical history, course, and symptoms of these three forms vary.

THE LARGE WHITE KIDNEY,

following on the acute form or having a latent undetected origin, is attended with dropsy, the countenance being puffy and pasty. The urine is scanty, containing casts—epithelial, fatty, or hyaline; and the specific gravity normal or rather high, with albumen always present.

The average age of the patient is twenty-eight years. Recoveries and relapses are frequent. In fatal cases the ordinary duration of the disease is under six months, and in exceptional cases it may extend over some years.

THE GRANULAR CONTRACTING KIDNEY

is associated with middle age, not youth, being most common about fifty years, and more frequently observed in males than females in the proportion of two to one. Its commencement is insidious, the early symptoms slight, the progress slow, and the disease may run a latent course for months or years. The first evidence of the disease may be frequent and severe headache, or simply hemicrania, or loss of strength, or vertigo, palpitation, and difficult breathing. Any one of these symptoms occurring in a person of middle age is suspicious, and may attract attention to the kidneys. In others frequent micturition and some slight puffiness of the ankles lead to an examination of the urine, which is found to be copious in quantity (three to four pints), of low sp. gr., and with a comparatively small quantity of albumen. The tube-casts are few, and, if present, are chiefly hyaline or granular, with but little epithelium or fat. In later stages the urine becomes scanty and the albumen more abundant. The general health gives way, the pallor becomes pronounced, chest and stomach derangements increase, and death ensues through exhaustion, or with symptoms of œdema of the lungs, uræmia, or other intercurrent affection. As harbingers of speedy disease may be mentioned obstinate vomiting and diarrhœa, with itching of the skin and drowsiness. How the chronic nature of the disease gives rise to increase in the heart's structure is as yet an undetermined question; still in nearly fifty per cent of the cases there is hypertrophy of the left ventricle, and also a peculiar form of retinitis. The most consistent explanation of the hypertrophy is given by Traube, who attributes it to increased

tension in the arterial system, this tension of necessity taking place as soon as a great number of arterial branches in the kidneys, with the Malpighian tufts attached to them, become obliterated, thus reducing the channels through which the blood of the renal artery can drain away. The hypertrophy of the left ventricle he regards as being for some time a necessary and efficient compensation for the loss of renal secreting tissue, and so long as the hypertrophied heart labours energetically no uræmic symptoms occur, for an over-abundant secretion of urine is being carried on. To the high arterial pressure on the vascular tufts is also attributed the albuminuria.

Gull and Sutton go farther than this, and state that there is fibrous thickening of the coats of the small vessels through the whole arterial system, and thus deny the claim which the kidney has as the special factor of the ventricular hypertrophy. They state that this general arterio-capillary fibrosis leads to thickening of their walls, with loss of elasticity and subsequent wasting of the tissues, and so gives rise to the hypertrophy in question. Tube-casts are few in number, being either hyaline or finely granular.

THE WAXY KIDNEY

is associated usually with amyloid disease of other organs, as liver or spleen, and with a previous history of syphilis, caries, phthisis, long-continued suppuration, or other exhausting conditions. It is characterised by a large flow of urine, 100 to 200 ounces being passed in a day. The urine has a low sp. gr., with few tube-casts, generally hyaline in character. The albumen is at first slight, but as the disease advances, the urine, as in the previous form described, becomes of higher sp. gr., and the albumen more abundant.

Dropsy does not, until the late stages have been reached, form a prominent feature of the disease.

The disease may not be recognised at first, and hence may extend over a series of years. Indeed, it seems to form a part of various constitutional states, and upon these its ultimate issue depends.

Treatment of the various forms of chronic Bright's disease requires careful management, though based on certain obvious principles, hygienic, dietetic, and medicinal.

All exposure to cold should be avoided, and, if circumstances permit, a residence selected in a mild and sheltered spot, or, what is still better in the more chronic forms, a sea voyage should be made. The patient should be habitually clothed in flannel, moderate exercise insisted on, and the occasional use of warm baths and frictions to the skin.

Milk agrees well, and may be taken *ad libitum*. All spirits should be forbidden, but two or three glasses of claret or beer are permissible daily.

The constant draining away from the blood of one of its most important constituents necessitates the administration of strengthening medicines, and experience has shown iron to be the best of these. The tincture often causes headache, and hence the citrate of iron and quinine, or the syrups of the phosphate or iodide of iron, are recommended, and should be steadily persevered in (F. 76). No medicine seems as yet discovered to have any effect in diminishing directly the quantity of albumen, and hence other treatment must be symptomatic. Dropsy is the chief symptom, and the most effectual way to combat the dropsical effusions is by means of hydragogue cathartics and warm baths; the patient entering the bath at a temperature of 98°, which is gradually raised to 108°, and remaining in it for half an hour,

when he returns to bed and is enveloped in blankets. Compound jalap powder and bitartrate of potash may be ordered twice or thrice a week, or Friedrichshall or Hunyadi Janos water. More active means of the same nature are found in gamboge and elaterium (F. 27). Latterly, to combat the increased connective tissue growth of the granular kidney, Bartels recommends the iodide of potassium, 20 to 30 grains to be given daily for a considerable length of time. Further, he advises the drug to be taken on an empty stomach, as it will then be conveyed in a more concentrated and active form to the kidneys.

Opinions vary greatly as to the value of diuretics, but Christison recommends digitalis, and Rayer horse-radish tea.

In extreme dropsy punctures or incisions may be made into the skin of the legs or scrotum. Dr. Southey's drainage tubes, consisting of a perforated needle, which is inserted subcutaneously into the swollen legs, and to which gutta-percha tubing is attached and placed in a vessel below the bed, can be specially recommended as safe and useful.

Mercury, in any of its forms, is contra-indicated by most authorities. It rapidly produces salivation and most untoward consequences.

URÆMIA.

In the course of Bright's disease, or any other state attended with albumen in the urine, a group of phenomena termed uræmic are sometimes presented, owing, it is supposed, to a poisoned state of the blood. Generally they begin insidiously with headache and dimness of vision, followed by convulsive paroxysms, profound insensibility, stertorous breathing, pale face, and dilated pupils. In exceptional cases conscious-

ness is not wholly lost, and the patient can be roused from the deep drowsiness by being spoken to or shaken. In these cases there may be some chance of recovery, but in others, when the coma is complete, a fatal issue is almost certain.

Much controversy and many theories have been excited by uræmia. The original idea of Willis was that the special poison in the blood was urea. Frerichs supposed that urea is harmless, and that its conversion into carbonate of ammonia occasioned the uræmic phenomena. The more recent experiments of Oppler and Zalesky indicate that neither of these theories is correct, but that the chief poisonous agents are the accumulation in the blood of the first products of tissue-change—creatine, creatinine, and other extractives—which are converted in the kidneys into urea and uric acid. The question is as yet not satisfactorily determined; for, though the phenomena observed during life are plain enough, yet the absence of anatomical changes in the chief nervous centres must render the explanation of these a matter of theory and uncertainty.

Treatment.—When an uræmic attack has actually begun our resources are but limited, especially in anæmic patients, and consist chiefly of anæsthetics, and for this purpose inhalation of chloroform may be tried, or, better still, chloral injections. In a very marked case last year in my wards the subcutaneous injection of digitalin and the withdrawal of the ascitic fluid by tapping were alone and successfully trusted to. The quantity of chloral in the injection should be 45 grains to an adult, or 15 to a child, and it may be repeated if desirable. Should the attack be sudden, and the blood not greatly impoverished, as sometimes happens in pregnant women, free venesection has much to recommend it, and

should not be dismissed as absurd simply because it was the panacea of our forefathers. In all of the forms of Bright's disease I have, by means of the ureameter,* carefully noted the quantity of urea excreted daily, and when this notably diminishes I suspect the probability of an uræmic attack, and endeavour to ward it off by drastic cathartics and copious perspiration. Benzoic acid, on the supposition that ammonia is the cause of the convulsions, has likewise been recommended in seven-grain doses every three hours. The poisonous alkali, it is thus fancied, may be converted into a harmless acid.

CHYLOUS URINE

was first recognised and described by Dr. Prout, and has since been investigated by other observers. The urine is milky when voided; then coagulates into a tremulous mass like blancmange; then liquefies into a creamy scum with a brownish sediment. The urine, in fact, presents those characteristics which would result from the admixture of normal urine and normal chyle. It contains fibrin, albumen, fat in a molecular form like the fat of chyle, and occasionally a small proportion of red corpuscles.

No casts have, however, been detected; and the fat chiefly characterises the urine passed after meals.

Chylous urine is more common to tropical than temperate climates, to adults than to children, to females than to males.

Its presence is not inconsistent with good health. Intermissions are frequent. After lasting some time, it may disappear for years, or even for life.

Pathology.—Dr. Prout imagined it to be due to a faulty assimilation, by which the chyle was permitted to mingle with the blood; and combined with this

* See Appendix, p. 313.

was some renal disorder, by which the kidneys permitted the chyle to transude and mingle with the urine. The blood examined, however, presents no signs of chyle, and post-mortem examination reveals no disease of the kidneys.

Dr. Roberts says it is due to vesicular dilatation, and rupture of portion of the lymphatic vessels situated on the mucous surface of the bladder or urinary tract.

Treatment.—Numerous remedies have been suggested, and have failed in doing good, as can easily be imagined if Dr. Roberts' explanation is the correct one. Rest and local astringents are advisable, with tonics to combat the anæmia (F. 78).

HÆMATURIA,

as its name implies, means the admixture of blood with the urine ; and this mixture is easily recognised by the colour it imparts to the secretion, unless the quantity is very small, when it may require the aid of the microscope to detect it. Blood or blood pigment can be detected by Heller's test. This consists in adding caustic soda solution to urine in a test-tube and boiling. The earthy phosphates precipitate and entangle the hæmatin, which is thus carried to the bottom of the tube as a sediment of a brick dust or bright red colour. The guaiacum test consists in placing a few drops of urine in a test-tube, adding one drop of tincture of guaiac, and shaking up with a few drops of ozonic ether. The ether dissolves the precipitated resin, or goes to the surface and carries with it a distinct bluish colour if blood be present. Blood in the urine may originate from different sources, which, as a general rule, can be recognised

from the following considerations. If from the kidneys it is found equally diffused, giving to the urine a smoky reddish tint, and after standing a while a grumous-coloured deposit subsides. If from some other part of the urinary tract—*e.g.* if it comes from the ureter, bladder, or urethra—the colour is more bloody, more red, perhaps affecting only the part of the urine which is latest voided in micturition, and frequently distinct clots are observed in the deposit. If the clots are large and readily distinguishable, and there is no history of an injury, we may safely infer that the blood is not from the kidney or the renal vessels proper; for in true hæmorrhage of the kidney the coagula are formed within the renal tubes, and betoken their origin by the cylindrical cast and entangled blood-cells which they present. All urine containing blood is necessarily more or less albuminous.

By far the most common cause is congestion, due to some blow or injury in the renal region. It may also arise from acute Bright's disease, from malignant disease of the kidney or bladder, from the presence of a calculus either in kidney, ureter, or bladder; or from the taking of irritating medicines, as turpentine or cantharides. Sometimes it is symptomatic, and dependent on other than urinary diseases. Thus it is seen in purpura and scurvy; or it may be found in yellow fever, cholera, or any of the eruptive fevers; and when detected in the course of these diseases, the prognosis is most unfavourable. At other times it is supplementary to a normal state or diseased condition, *e.g.* it may accompany menstruation in a woman, or a hæmorrhoidal flux in either sex. The endemic hæmaturia of the Mauritius and Brazil is dependent on the presence of a small parasite which infests the mucous membrane of the pelvis, of the kidney, or bladder.

Hæmorrhage from the bladder, due to acute cystitis, fungoid growth, or calculi, is usually recognised by symptoms referred to that organ, viz. very frequent micturition and pain in the hypogastrium. Urethral hæmorrhage is known by the escape of blood during the intervals of micturition.

Treatment will vary with the causes and circumstances of the hæmorrhage, but when our object is to treat the hæmaturia for itself—to stay the loss of blood—perfect rest is absolutely necessary, and the application of ice to the seat of the hæmorrhage. Thus if the kidneys are the seat, put ice poultices to the loins; if the bladder, to the epigastrium and perineum. With the local application of ice give astringents internally, *e.g.* acetate of lead gr. iii., pulv. opii gr. $\frac{1}{4}$, in a pill every two hours, until six or eight doses have been administered; or ergotin may be injected subcutaneously.

In severe vesical hæmorrhage a solution of alum, 20 grains to the pint of water, may be injected into the bladder.

HÆMATINURIA

is a curious disorder, to which attention was first drawn by Dr. George Harley in 1865. The peculiar feature of the disease is the paroxysmal passing of dark-coloured urine, containing not blood, but merely the colouring matter of the blood—hæmatin. A sense of shivering or cold about the loins precedes the paroxysm. The intervals between these are irregular, and there is no certainty about their occurrence; for sometimes the urine at one micturition is clear, at another porter and bloody-coloured. Microscopically, the urine presents chiefly an immense mass of amorphous granular matter, with dark granular-coloured

tube-casts. The prognosis is favourable, though the duration of the disease cannot be defined.

Treatment.—During the cold stage send the patient to bed, and administer warm stimulating drinks. Tonics, as iron and quinine, are also indicated (F. 76).

GRAVEL, RENAL CALCULUS, OR COLIC.

Sometimes concretions of crystalline or amorphous sediments form in the pelvis of the kidney, and are accompanied with severe pain in their passage along the ureter to the bladder. There is also a frequent desire to micturate, retraction of the testicle, nausea, and vomiting, intense relief being obtained whenever the substance reaches the bladder. This may be termed a “fit of the gravel.” When there is merely gritty matter or sand, no pain whatever may be experienced. The most common forms of gravel are the urates of ammonia, uric acid, the triple phosphates of ammonia and magnesia, or oxalates of lime.

Treatment varies with the nature of the deposit. Vichy or Carlsbad waters and alkalies are useful when the urates predominate. If phosphates, the nitro-muriatic acid and a generous diet. If oxalates, dilute the urine by drinking plenty of cold water, which must not contain much lime, and avoid all saccharine substances.

During the passage of a calculus employ a warm bath, afterwards poultices or fomentations to the loins, also give barley-water to drink, along with spiritus ætheris nit., and vin. ipecac. To relieve the pain morphia subcutaneously; sometimes chloroform is necessary (F. 39, 40).

In addition to the diseases mentioned, it may also be stated in general terms that the kidney or kidneys may be attacked by cancer, either primary or second-

ary, usually of the encephaloid form, and that the leading symptoms of the former are a tumour in the abdomen, sometimes very large, and hæmaturia; that tubercle or hydatids may also originate in the organ, exhibiting in neither case very well defined symptoms, though resulting fatally in both; that when any impediment exists to the flow of urine from the kidney, dropsy of the kidney, or hydronephrosis, may ensue, through dilatation of the pelvis, with atrophy of the cones or whole substance of the organ; and that, finally, one or both kidneys may be shifted from their original position, occasioning the condition known as movable kidneys. To enter, however, further into details would be foreign to the object of this handbook.

DIABETES.

The word *diabetes*, derived from the two Greek words, *δια βαίω*, literally means that the water is constant in running through the patient's system. Used literally, diabetes may thus have a wide significance, but it is now employed as representing two distinct kinds of disease. In both there is an increased flow of urine; but in the one, Diabetes Mellitus, there is sugar in the urine, in the other, Diabetes Insipidus, this is absent.

Diabetes insipidus seems to depend on unknown causes attacking by preference the male sex, usually between the ages of five and thirty. It has certain permanent and characteristic features, viz. an excessive flow of uncoloured urine of low sp. gr., containing neither sugar nor albumen, and attended with a dry skin and great thirst. Its course is uncertain, and its treatment empirical.

Diabetes Mellitus, although it seems to have been

known in some measure to the ancient physicians, was practically unrecognised until Dr. Willis, in 1674, described it as a distinct disease ; “for in it the urine differed from all other fluids of the body, as if it had been mixed with honey or sugar, and having a powerfully sweet taste.” Passing over subsequent years, it may be mentioned that Dr. M’Gregor of Glasgow in 1837 discovered sugar in the blood as well as the urine, and that the stomach formed saccharine matter instead of healthy chyle, which entered into the blood, and instead of forming fat, bone, and muscle, was passed into the system as sugar, and thence eliminated by the kidney. Claud Bernard in 1848 opened up a new era in diabetes, when he pointed out that sugar was a normal secretion of the liver ; and further, if the eighth pair of nerves are irritated at their origin in the fourth ventricle, sugar is produced in an abnormal quantity by the liver. Sugar could also be produced in various other artificial ways. It was supposed that the sugar thus formed in health was carried by the hepatic veins and inferior vena cava into the heart, and thence by the pulmonary arteries to the lungs, where combustion ensued, and the sugar was consumed. If, however, the quantity of sugar were considerably increased, either by faulty digestion or nervous irritation, the lungs were unable to perform their function, sugar passed into the blood, and from thence found its way to the kidneys.

Dr. Pavy’s experiments led him to believe that the liver did not secrete sugar in health, but a substance termed hepatine ; that the detection of sugar in the blood leaving the liver was a post-mortem, not a living reality ; that if the hepatine were converted into sugar in diabetes, it was due to the curb being withdrawn from the liver, which was thus allowed, as after death, to run riot with its saccharine tendencies.

Dr. Pavy thus disturbed the belief in Bernard's theory, as Bernard had engendered scepticism in M'Gregor's.

Dr. Dickenson's theory supposes a dilatation of the arteries in the brain, followed by degeneration and excavation of the nervous substance in the neighbourhood. He thus argues that diabetes has a nervous, not a digestive origin.

It will thus be seen that no correct theory of diabetes has yet been obtained ; and this is not at all to be wondered at when post-mortem appearances are negative as to the special organ or organs at fault. In a case of death from diabetes, which occurred lately in the Glasgow Royal Infirmary, there was no confirmation of Dr. Dickenson's views.

Diabetes is best recognised by its symptoms, which are as patent as its pathology is obscure. The earliest symptoms which attract the patient's attention are thirst and hunger, and the passage of a great quantity of urine. To these may be added a dry skin, a faulty digestion, a parched or often a red, flabby, or inordinately clean and wrinkled tongue, and progressive emaciation and loss of strength ; the latter fact being in some cases rendered obvious by an inability or disinclination for sexual intercourse. The temperature is also low, and there is sometimes impaired vision. To this may be added the less important symptoms of constipated bowels and change of temper, going on to a general gloominess.

The urine passed may rise to 15, 20, 30 pints, or more, in the course of twenty-four hours, and it presents to the eye a pale colour, while its odour is sweet, like that of new-mown hay, or that detected in a chamber containing apples. Its specific gravity is high, in all cases being above 1030, while in some it rises to 1050.

There are three distinctive tests for detecting sugar in diabetic urine :—

Moore's Test.—Add half the volume of liq. potass. to the urine. Boil in a test-tube, when the mixture assumes a dark brown colour. Healthy urine is only slightly darkened by the same proceeding.

Trommer's Test.—Place some of the urine in a test-tube, add a drop or two of solution of sulphate of copper, when a pale blue tint is produced. Add to this liq. potass. in a proportion equal to half the volume of urine, when a pale blue precipitate of the hydrated oxide of copper is thrown down. Boil, and the result will be—

1st, The dissolving of the first precipitate ;

2d, The throwing down of a yellowish-brown precipitate of sub-oxide of copper.

If there is no sugar there will be merely a black precipitate of common oxide of copper.

Fehling's Solution.—A more delicate test consists in what is termed Fehling's solution—consisting of sulphate of copper, tartrate of potash, and caustic soda (F. 92). Boil a small quantity of the solution, then add a few drops of the urine, when, if sugar is abundant, the same yellowish-brown precipitate as in the former case will result. If equal quantities of urine and of the test are used, and no change ensues, then there is not $\frac{1}{40}$ of a grain of sugar present.

Fermentation Test.—Take some German yeast and place it in a test-tube containing urine. Now invert the tube and place it upright in a saucer also containing some of the urine. Placed at the side of the fire, or in a temperature of 80° Fahr., fermentation ensues, carbonic acid is liberated, and collects in bubbles at the top of the tube. No change takes place in healthy urine.

The average duration of diabetes, after its detection,

is from one to three years in the young ; in the old, it may be prolonged from five to twenty years. The prognosis is more grave in young subjects than in those after thirty. Various diseases may complicate diabetes and hasten a fatal issue, as phthisis, pneumonia, bronchitis, carbuncles, abscess, gangrene, phagedenic ulcers, dropsy. Cataract, which is sometimes associated with diabetes, seems due to the direct action of sugar on the crystalline lens. Lastly, inflammation of serous membranes of an asthenic type is a not unfrequent complication.

Treatment.—No drug seems to have any influence on diabetes. The diet must be carefully regulated. All substances containing sugar, or likely to produce sugar, should be avoided. A milk diet is by far the best, with animal food, fish, or eggs, and biscuits containing little or no starchy matter. Walker's Glasgow, or Camplin's London, are best for this purpose. Of vegetables, cabbage and cauliflower may be occasionally allowed. Whisky or brandy, to the extent of two glasses daily, are the most suitable stimulants.

The parched state of the mouth may be relieved, and perspiration induced, by wearing a respirator night and day, over which may be placed a knitted woollen cloth.

Of medicines which are recommended, only one or two require mention. Opium and some opium alkaloids, codeia being best, are frequently prescribed, but require care from the tendency to coma in some cases of diabetes. Alkaline and mineral springs, as Vichy, have been advocated, but these probably are only useful as diaphoretics, and thus merely temporary.

DISEASES OF THE NERVOUS SYSTEM.

We shall now attempt a brief description of diseases of the brain, and afterwards proceed to take up other affections connected with the nervous system. Insanity will not be spoken of except incidentally, as the subject is too special and complicated to be dealt with in a handbook such as this. The student must remember that our investigations of diseases connected with the nervous system are necessarily obscure during life, and that this obscurity is often not removed by post-mortem revelations. These so often clash, that any accurate classification seems at present dubious. The following synopsis of diseases of the brain may be found serviceable :—

1. Cerebral anæmia, from discharges of blood, and also from poor living.

2. Cerebral congestion, active or passive, as in diseases which obstruct the circulation, as tricuspid insufficiency, etc. etc.

3. Embolism and thrombosis, occluding the vessels at a point beyond the circle of Willis. The area supplied by the occluded vessels is at first pale, and then tinged, from the back flow of blood into it leading to red softening, and the subsequent degenerations of the tissue in the area.

4. Diseases in which the vessels burst, and which result in bleeding; *e.g.* fatty degeneration of the walls of the vessels, miliary or larger aneurisms; diseased states of the blood, as purpura, etc.

5. Inflammation of the membranes. Meningitis may be—1. Simple acute; 2. Simple chronic; 3. Tubercular.

6. Inflammation of the brain substance, or encephalitis, or local inflammation, often followed by abscess.

7. Tumours, especially syphilitic.
8. Grey degeneration of the nerve tissue of the brain and spinal cord, with increase of the interstitial tissue in areas here and there.
9. Dropsy of the brain and membranes, hydrocephalus, etc. etc.

CEREBRAL ANÆMIA.

In cases of death from cerebral anæmia, a pale colour of the brain is observed, most marked in the grey substance, but also making the white matter look more pale than normal. There is also an absence of the usual red points, combined with a diminished quantity of blood in the vessels.

Symptoms.—Giddiness, ringing and buzzing in the ear, paleness of the face, faintness and loss of consciousness, characterise the lighter forms of cerebral anæmia, as in the faintness which attacks the student on his first sight of an operation. The graver forms may be due to sudden hæmorrhage, and may be attended with convulsions and coma. The state of the pupils is first contraction, next dilatation, and, finally, the normal condition if the issue is to be favourable. By many authorities, death from sudden shock is considered as due to cerebral anæmia.

CEREBRAL CONGESTION

may be either active or passive, and certain appearances, which may, however, be all or in part absent, are observed on post-mortem examination. In the active form the capillaries and large blood-vessels of the brain and pia mater are increased in size, hence the blood points are observed to be larger and more numerous than usual, while the pia mater has a red or rose-coloured appearance, in spots, or throughout

its whole extent. The grey matter is red or violet in hue, the choroid plexuses are enlarged, and the ventricles contain an excessive amount of fluid. In the passive form, when the quantity of venous blood is augmented, the veins generally are distended.

Symptoms.—In the active form there is pain, dizziness, and confusion of the intellect, which may last from half an hour to two or three days; sleeplessness, irritability of temper, and inability to do any mental work, with a sense of flying heat shooting over the head and neck, and redness of the face, are also prominent symptoms. In the passive form there is the same confusion of ideas, but with mental torpor instead of irritability, and drowsiness instead of sleeplessness. In the very severe forms there may be loss of consciousness, or delirium, or convulsions. The slight forms are rarely dangerous in themselves, and may be recovered from under treatment. In the severe forms the prognosis is grave, and when death occurs it is during coma.

Treatment.—General blood-letting, once so common in cerebral congestion, is now abandoned, except in cases attended with delirium. Local leeching behind the ears is in some cases advisable. The object of treatment is to draw blood away from the head, hence quickly-acting purgatives, such as croton oil, or calomel and jalap, are employed; while, at the same time, mustard and vinegar should be rubbed on the legs and arms, or the feet may be placed in a warm bath. In the lighter cases ice should be applied to the head. The diet should be light, and all alcoholic stimulants forbidden. Bromide of potassium and ergot are recommended by Hammond, followed by strychnia (F. 71a).

In cerebral anæmia a horizontal position is indi-

cated, with nourishing soups and wine, and the avoidance of all mental disturbance. Tonics containing quinine and iron are also useful.

CEREBRAL EMBOLISM AND THROMBOSIS.

If the occlusion, the shutting up of a vessel in the cerebral circulation, is due to a something being carried away from a distant part of the system and lodged at the point of occlusion, we say it is due to embolism. If, on the other hand, a clot is formed locally at the spot occluded, we consider it is the result of thrombosis. The result in either case will be the same to the substance of the brain unless the obstruction be removed. It must lead to deficient supply of nourishment in that particular place, to softening, and to the loss of functional power in the parts thus deprived of their nutriment. The symptoms which, however, characterise the first step of the occlusion—the wedging in—vary somewhat. In embolism the onset is sudden; there are no premonitory warnings, but rapid giddiness, or an involuntary cry, or immediate loss of consciousness. In thrombosis the symptoms are slowly developed, preceded by pains in the head, general confusion, loss of memory, perhaps numbness, and these show the occlusion is complete, that the vessel is fairly dammed up. The further symptoms between the two must be the same, being dependent on the same circumstances. Hemiplegia may follow, or the paralysis may only affect the tongue, or there may be simply a loss of the faculty of speech. Further, it may be mentioned that thrombosis is usually associated with advanced age and feebleness of the heart's action; while in embolism there is valvular disease of the heart, which, of course, may occur at any age.

CEREBRAL HÆMORRHAGE.

Cerebral Hæmorrhage, by which is meant extravasation of blood in the substance of the brain, depends essentially, according to recent authorities, on miliary aneurisms, which appear as little globular masses in the small intracranial vessels, and are due to a diffuse arteritis proceeding from without inwards. Although this statement may in the main be true, yet hæmorrhage may also arise from softening of the cerebral tissue, from atrophy of the brain substance, and from tension of the blood-vessels, the result of mental and physical causes. In the majority of cases the seat of cerebral hæmorrhage is the corpora striata, the optic thalami, the crura cerebri, and the medulla oblongata, on the right side more frequently than the left. The blood poured forth, varying according to the causes, dislodges part of the brain substance and lies in the cavity thus produced. If death does not occur, the further behaviour of the extravasated blood is the absorption of the serum, the contraction and degeneration of the red corpuscles and the fibrin, the contraction of the cavity, and eventually the formation of a cicatrix which encloses the remains of the clot.

Symptoms.—Often previous to the attack a group of symptoms may forewarn the patient, as sudden difficulty of speech, defects of vision, dizziness, faintness, sickness. There may, however, be none of these prodromata, the patient being struck down abruptly, as if shot, and rendered thoroughly unconscious, with loss of sensibility and power of motion; the breathing stertorous, lips and cheeks puffed out with expiration, the pupils largely dilated and insensible to light. • After a time, if death does not occur, consciousness returns, the patient attempts to turn in bed, and endeavours to speak. He finds, however, that articu-

lation is indistinct, that the muscles of one side of the face are paralysed, and the power of motion of the limbs and body of the opposite side is lost.

The temperature is found at first to be low, 96.8° , next normal, 98.5° , so continuing if recovery is to be complete; but if a fatal result is to ensue, it will rise markedly to 104° or 106° .

There is another form of cerebral hæmorrhage unattended with unconsciousness, and in which the patient is sensible of his condition, but unable to avert the hemiplegia which ensues.

Causes.—A long list of exciting causes may be made out. It will suffice simply to mention drunkenness, excessive venery in old people, extreme joy or anger, and straining at stool. It is also found that winter is more favourable to the occurrence of cerebral hæmorrhage than summer, and that neither a thin nor plethoric frame, neither poverty nor riches, specially provoke it. The chief predisposing causes are diseases of the heart and vessels, and an occupation necessitating great exertion.

Prognosis.—In the severe seizures death may occur within a few hours, in the less severe about one third of those attacked die; while in the mild form the prognosis is generally favourable, although the patient cannot be considered free from danger until after the eighth day.

Treatment.—If there are any forewarnings, the bowels should be opened by a brisk purgative, the head kept cool and well raised, every mental strain avoided, and the bromide of potassium given in thirty-grain doses.

During the attack, symptoms should be met as they arise. If the bowels have not been recently opened, place two drops of croton oil on the tongue; if the urine is not passed naturally, draw it off with a

catheter ; if hæmorrhage is still supposed to be going on, inject ergotin subcutaneously. The patient should also be kept quiet, with the head well raised, and in a well-ventilated room of an even temperature.

After the eighth day remedial measures may be put in force to restore the power of motion and prevent contraction. The agents best suited for this purpose are passive motion, strychnia, phosphorus, and electricity (F. 85).

APOPLEXY

is a term significant chiefly of a prominent symptom in the last three affections of the brain described—embolism, thrombosis, and cerebral hæmorrhage. It denotes a clinical fact, a stroke, a beating down suddenly ; and as this was accompanied by loss of consciousness and motor power, with stertorous breathing and peculiar countenance, older writers attempted to establish and did name as a disease what is in truth only a symptom. They distinguish between several varieties, as sanguineous, nervous, and serous apoplexy. This nomenclature has now been abandoned, and the various clinical phenomena are classified under the term “an apoplectic attack.” The question may be asked, Is it possible to distinguish between the causes which may produce this ? The answer to this question is simply a matter of conjecture, but something may be learned from a careful examination of the state of the heart in certain cases, and from the inspection of the peripheral arteries.

A person may, however, be discovered in an unconscious state, resembling an apoplectic seizure, and it is of great importance that a diagnosis should, if possible, be clearly established, as serious mistakes may otherwise occur. This unconsciousness may be

due to drunkenness, to uræmia, to narcotic poisoning, to epilepsy, or to concussion from a fall or blow. In all cases the history will form a marked determining distinction, and especially is this true in the two last; for if dependent on epilepsy, the attack will not be long, and there will be an account of former seizures; if from concussion, there may be injuries or bruises on other parts of the body, probably bleeding from the ears or nose, and other circumstances tending to the supposition that the insensibility is due to wilfulness or accident. In drunkenness the patient can be aroused to some extent, the insensibility not being complete; there is no hemiplegia, and the smell of the breath will betray alcohol; yet as drunkenness and an apoplectic seizure may exist together, the diagnosis should be guarded, and if a doubt exists, it is better to err on the safe side and act as if they were combined. In uræmia there is no hemiplegia; the urine, if drawn off by a catheter, will be found to be albuminous; and there will in all probability be indications of dropsy in other parts of the body.

In narcotic poisoning the pupils are contracted, with no hemiplegia, no remissions in the insensibility, but on the contrary deepening coma.

In all doubtful cases it is advisable to use the stomach-pump.

CEREBRAL SOFTENING.

Cerebral softening may be caused either by anæmia or inflammation, and is a result of some of the lesions already described, or it may proceed without any of them, as, for instance, from long-continued intellectual exertion or mental emotion. It is most apt to occur between fifty and eighty. Cerebral softening, the result of anæmia and due to imperfect nutrition of

the part affected, is designated *white, yellow, or non-inflammatory softening*, and seems to be dependent on the brain cells being turned into fat—the colour being due to the fat granules being mixed with the colouring matter of the blood. In advanced cases the softened brain matter is white and cream-like, and so soft that a weak stream of water washes it away. In the softening due to inflammation the broken-down nervous substance, with the albuminous exudation and blood corpuscles, causes the centre of the softening to present the appearance of a red pulpy mass, and hence the term *red or inflammatory softening*.

The symptoms vary according to the cause which produced them, but, generally speaking, are loss of intelligence and memory, affection of the speech, delusions, drowsiness, headache, and slowly advancing paralysis.

SCLEROSIS.

In contradistinction to softening of the brain, it is convenient here to consider an affection which of late years has attracted considerable attention. In order to understand what is meant, it is well to remember that in the nervous tissue of the brain or spinal cord there is, besides nerve cells and nerve fibres, another element present, which binds these together, and gives the whole substance its normal degree of consistence. This substance fulfils, to all intents, the purposes of connective tissue in other organs of the body, and has been termed *neuroglia* or *nerve-cement*. In sclerosis this tissue is increased or hypertrophied, the proper nervous substance being in consequence compressed and atrophied; the result is increased hardness and density over a greater or less extent of the nervous system. Hence different names are given.

Thus, if it involves both the brain and spinal cord it is called "multiple cerebro-spinal sclerosis," if brain alone, "multiple sclerosis"—the sclerotic or hardened parts in these two cases being diffused through the respective areas mentioned as plates or nodules of varying size, and to a certain extent circumscribed; while in a third form affecting the brain, and termed "diffuse sclerosis," there are no such boundary lines, the hardness affecting one lobe, or even a whole hemisphere. Without entering further into a subject which may be said to be still in its infancy, it may be useful for the student to recollect that diffuse sclerosis commences in infancy, and terminates always in imbecility, and often in idiocy; multiple cerebral sclerosis is a disease of male advanced life, with pain and trembling of individual or combined muscles, of arms or hands, or other parts, followed by paralysis, which ultimately extends to the trunk; in multiple cerebro-spinal sclerosis, paralysis is noticed before trembling, the latter being only evidenced when a voluntary movement is made.

These two latter affections were at one time described under their most prominent symptom, "paralysis agitans," particular attention being also drawn to the fact that the victims would run or plunge eagerly forward in a jog-trot style to any tangible object, while they were unable to walk slowly. This mode of progression is now termed "festination."

APHASIA.

By aphasia is meant not merely loss of voice or aphonia, proceeding from the larynx; not merely impairment of articulation, as in the outbreak of hemiplegia from paralysis of the muscles employed in

speaking; but an impairment or loss of the intellectual, as distinguished from the mechanical, element of speech. It is an attack on that peculiar gift of man—articulate speech—the power by which he expresses his ideas, and clothes them in words.

Although it is most frequently a combination of loss of power of speech, loss or impairment of the power of writing, and of gestures (pantomimic gestures), yet in its simplest form it appears to be a sudden rupture between the formation of the idea in the mind and the expression of it in words, without being necessarily accompanied by any loss of muscular power. Hence the division into—1, *Amnesic aphasia* (forgetting or confusing words); and, 2, *Ataxic aphasia* (defective action of the muscles of articulation—inability to form even those words which are remembered).

Etiology.—The cause of aphasia is obscure. It may occur during convalescence from fever, and is temporary, or from cerebral softening or hæmorrhage, and is then often permanent.

Symptoms.—The patient has plenty of words sometimes at his disposal, but not the right words. Speech is then conducted in a Malaprop fashion, or simply questions are answered in monosyllables, as by yes or no. The face is intelligent. Remembering faces and events, the patient is unable, either by writing or speaking, to find words to express ideas. Nouns are substituted for nouns, verbs for verbs, numerals for numerals, and proper names for proper names. Examples are given where patients forget their own names, or at least are unable to express them. Yet an aphasic patient may be able to play at cards correctly, and even to read, without, however, being able to recollect what has been read. Though attacks of temporary aphasia are recovered

from perfectly, yet, if they are in any way permanent, the prognosis is very doubtful.

Pathology.—Aphasia is most commonly associated with hemiplegia of the right side, and M. Broca has attempted to prove that this is due to the fact that the power of language is situated in the posterior portion of the third left frontal convolution of the brain. This view has received some confirmation from post-mortem and clinical observation. Ingenious theories have been founded on this supposition, the most practical result being, if it is true, that on the right side the same part has also latent power of language, and that we should not despair but that this may, in the course of time, be evoked, and a moderately intelligent life be the result.

Treatment.—Rest, bodily and mental, is all we can do for an aphasic patient. All excitement should be avoided, the bowels attended to, and the digestion carefully regulated.

Blistering or drugging seems of little avail in aphasia with hemiplegia. Yet, if there is any syphilitic history, iodide of potassium should be given (F. 5).

ACUTE MENINGITIS.

By this is understood acute inflammation of two membranes of the brain—the pia mater and the arachnoid. It is generally the result of injuries to the head, exposure to great heat, spirit-drinking, mental anxiety, or retrocession of an exanthematous eruption.

Symptoms.—Headache, vomiting, and rigors usher in the disease, followed by fever, flushed face, and red eyes, contracted pupils, and intolerance of light or noise. Delirium of a furious character is an early and pretty constant symptom. The tongue is coated, and the bowels are confined. If the disease is to

terminate fatally, muscular twitchings ensue, sometimes convulsions, and the delirium merges into coma and collapse.

Treatment.—Local blood-letting in the early stages, with an active cathartic, is useful (F. 23). The head should be shaved, ice applied to it, and light excluded from the room. Beef-tea may be given at regular intervals. Calomel is recommended by some to be given every two hours until salivation is produced. Should mercury not be decided on, the bromide of potass may be ordered in large doses, with or without the iodide. In cases where the patient cannot swallow, fluid nourishment may be administered by means of a tube passed through the nose.

TUBERCULAR MENINGITIS

is a disease not uncommon in children under five years. The ventricles are found distended with serum, with the convolutions much flattened, and this characteristic appearance in post-mortem examinations led to its being called “acute hydrocephalus,” before it was understood that the essential causes of the disease were the tubercles and subsequent inflammation. Grey miliary tubercles are found at the base of the brain, along the course of the middle meningeal artery and its branches. These tubercles may be so minute as to defy detection unless aided by the microscope, or they may be so abundant as to form large granular masses, or blend into cheesy patches of considerable extent and thickness. They appear to originate in the walls of the small arteries of the brain, whose channels they invade and block up in parts, and hence intense hyperæmia is caused in collateral vessels, and the pia mater at the base of the brain is very vascular. The disease always terminates fatally.

Symptoms.—Tubercular meningitis is preceded by signs of failing health for some weeks or months before the attack sets in, which it does generally with obstinate vomiting and intense pain in the head. The child screams, the belly is drawn up, and there is great intolerance of light and sound. The temperature varies from 101° to 103° . This may be called "the stage of excitement," which lasts from seven to fourteen days, and is succeeded by "a stage of depression," with a strong tendency to sleep. The child lies quietly on its back, with its pupils dilated, and takes no notice of external objects. Occasionally there is a peculiar scream, called the "hydrocephalic cry." Respiration is irregular and sighing, pulse low, temperature subnormal, bowels constipated. This stage may last from two or three days to as many weeks, and is followed by a further "stage of paralysis," characterised by the temperature again rising above the normal, by frequent and possibly violent convulsions, heavy dull eyes, paralysis and coma.

In accordance with the pathology of the disease advanced, it may, generally speaking, be stated that the "first stage of excitement" depends on the implication of the pia mater of the convexity and of the surface; "the second stage of depression" to the development of the hydrocephalic effusion; the "third stage of paralysis" to the gradual paralysis of the centres of the medulla oblongata. Convulsions, to a greater or less extent, may also be present during the whole course of the disease, and cannot be referred to any one stage. Tubercular meningitis in its later stages simulates no other disease, yet at first it may be mistaken for typhoid fever more readily than anything else.

Treatment.—The line of treatment is indicated under "Tuberculosis," and is simply prophylactic. When

the disease has become established, it seems obvious, from the nature of it, that little improvement can be obtained. Niemeyer advocates iodide of potass, and Hammond advises to refrain from all leeching and mercurial purgatives, as only tending to make existence more intolerable.

CHRONIC HYDROCEPHALUS can scarcely be mistaken for any other disease, as it consists essentially of an accumulation of fluid in the ventricles, or in and beneath the arachnoid. The head is in consequence altered in form, enlarged in size, the fontanelles open, the forehead prominent, and the face and body thin and wasted.

In many cases it is congenital, or the result of chronic inflammatory disease of the membranes, appearing generally about the sixth month, and lasting for a varying term of months or years, with a fatal termination either from exhaustion or coma.

Treatment.—Compression, by means of adhesive plaster applied over the whole cranium, seems serviceable; and if that fails, puncturing and drawing off the fluid may be tried. Cases have been recorded where mercury was beneficial, followed by iron. Any tendency to this disease should be met by fresh air, regulated strengthening diet, and cod-liver oil. All attempts to exercise the brain should be discouraged.

ENCEPHALITIS is a local inflammation often followed by abscess. The part most frequently involved is the grey matter of the cerebrum or cerebellum, and the size of the affected part varies from that of a walnut to that of the closed fist. It is caused by injuries, or from extension of inflammation from the ear, and is said always to terminate in death.

The symptoms during life are increase and afterwards decrease of the sensibility, with headache, convulsions, paralysis, or coma.

TUMOURS OF BRAIN may be of various kinds, vascular, parasitic, cancerous, tubercular, or syphilitic, etc. etc.

The growth of a tumour is at the expense of the brain, which in health nearly fills the cranial cavity; hence pain, usually fixed and severe, is in the majority of cases a prominent symptom, with disordered sight, hearing, and taste. Convulsions, local paralysis, and giddiness, are frequent concomitants. If the pain in the head is severe, fixed, and intense, and there is also a history of syphilis, there is every probability of the tumour being of syphilitic origin, and this is strengthened by finding nodes on the surface of the body.

PARALYSIS.

Paralysis or palsy denotes loss of motor power and sensibility in one or more parts of the body. The loss of motor power in the parts affected, the most striking characteristic, may vary from the slightest feebleness to the most complete inability of movement. The former, the incomplete, is now often termed "paresis," while "paralysis" is reserved for the complete or nearly complete. Paralysis may be general or partial, as the whole or only part of the body is affected, and various names indicate when the paralysis is only partial. Thus, when it is limited to one side, it is termed "hemiplegia;" if confined to the lower half of the body, "paraplegia;" if only affecting a small portion of the body, as face, foot, or leg, it is designated "local paralysis;" and if the nerve specially implicated in causing this is known, it can be fitly designated accordingly, *e.g.* "facial paralysis," "paralysis motor oculi." Again, paralysis may be due to certain occupations, hence the names "mercurial paralysis," "lead paralysis;" or, if associated with

certain symptoms, it is known by these, hence "wasting paralysis," "paralysis agitans."

The more prominent of these affections will now be briefly considered.

GENERAL PARALYSIS.—In the course of some forms of mental derangement a gradually advancing paralysis sooner or later involves nearly every muscle of the body, and hence it has been called "general paralysis." Paralysis of the lips and tongue leads to defective blurred articulation, and the invasion also of the facial muscles gives the face a sad or blank look. As the disease progresses to its almost invariably fatal termination, the physical powers diminish, and the patient, unable to walk, stand, or sit, is confined to bed for the rest of his existence; death occurring either from the difficult deglutition leading to choking, or from sheer exhaustion, or other intercurrent affection. Atrophy of the optic nerve can often be detected by the ophthalmoscope.

HEMIPLEGIA.—This is generally spoken of as a paralytic stroke, and though it may be associated with many of the affections previously mentioned, it is most commonly due to cerebral hæmorrhage. As the result of this or of some of the other cerebral diseases, the left side of the body is most commonly found paralysed, although the actual seat of the lesion in the brain is on the right side in the great majority of cases. The decussation of the pyramids accounts for this phenomenon. Owing to the affection of the facial nerve, the cheek hangs loosely, with the angle of the mouth slightly drawn upwards to the sound side, and the tip of the tongue, when protruded, by the implication of the hypoglossal is pushed to the sound side, owing to the counterbalancing power of the corresponding muscles being lost. The articulation is imperfect, and if the third nerve is also

involved, the upper eyelid drops, the pupil is dilated, and there is a divergent squint. The loss of motion may be complete in the arm and leg, and the patient lies in bed helpless. If it is partial, or if the original attack is being recovered from, the gait is peculiar, the affected leg being drawn after the sound one in a shuffling way, with, if the patient is able to lift the foot so far, the toes pointed to the ground. In most cases there is loss of sensibility as well as motion.

Hemiplegia may be permanent, or it may tend to recovery, which commences in the leg.

Treatment.—Two weeks after the original seizure, but not sooner, it is by some recommended daily to use friction over the paralysed parts, with flexion and extension of the joints. Subsequently the subcutaneous injection of strychnia is recommended, or preparations of phosphorus (F. 85) may be taken internally. The most valuable agent is, however, the application of the constant current.

PARAPLEGIA has usually an insidious commencement; the feet and legs feeling weak, cold, or tingling. As the disease advances, the weakness increases, sensibility and power of motion are gone, and the patient is obliged to remain in a horizontal position, having lost also control over the bladder and rectum. Rest is frequently disturbed by involuntary movements of the limbs.

Paraplegia may be due to caries of the vertebræ, to concussion or compression,^m congestion, inflammation, or softening of the spinal cord or its membranes. It may also accompany other affections, as hysteria, pregnancy, worms, or urinary diseases. The history must be the chief guide to the diagnosis as to whether the paraplegia is primary or secondary, dependent on congestion or diminished nutrition.

Treatment.—If from the nature of the symptoms it

is considered that congestion, or too much blood being sent to the cord, originates the paraplegia, it is desirable to administer the ergot of rye internally, and belladonna externally. Both these remedies contract the vessels of the cord and membranes. If, on the other hand, there are evidences of mal-nutrition or of reflex paraplegia, strychnia is to be preferred, combined, if there is much restlessness, with opium and a generous diet. In addition to this, if the paraplegia seems of reflex origin, the cause should, if possible, be removed. Thus worms must be expelled, the bladder relieved, and hysteria obviated.

FACIAL PARALYSIS, or BELL'S PARALYSIS, is an affection of the portio dura or facial portion of the seventh pair of nerves, either at its origin or in its course, or as the result of pressure. The appearances are characteristic, as there is paralysis of motion, more or less complete, of the muscles supplied by the nerve. Hence the face has a blank unmeaning expression. The eye of the side affected cannot be closed, tears run over the cheek, the mouth cannot be pursed up to whistle, nor expanded to smile. In accordance with the anatomy of the facial nerve, it will be found that if the morbid process originates above the origin of the chorda tympani nerve, there will be a diminution of the sense of taste in the corresponding side of the tongue; if behind the gangliform enlargement of the petrosal nerves, there will be, in addition to the other symptoms, paralysis of the parts supplied by these—the uvula will be drawn to the sound side, and the palatine arch will fall down and become straight instead of curved.

By the tongue being unparalysed and deglutition unimpaired it is distinguished from glosso-labial paralysis, and by the fact that the patient cannot close the eye, from the facial paralysis of hemiplegia.

Facial paralysis is often the result of cold, debility, or syphilis, and tends to recovery in from six to ten weeks. If dependent on cerebral or intracranial lesion, the prospect of cure is remote.

Treatment.—The persistent use of electricity is of great importance, one pole of the induced current being placed over the point of exit of the nerve, while the other is applied in succession over the various muscles supplied by it. The healthy nutrition of the system should be secured by hygiene and tonics, especially strychnia. If there is reason to suspect a syphilitic taint, give potash and mercury (F. 1).

PARALYSIS OF THE THIRD NERVE, MOTOR OCULI.—The paralysis of this nerve depends upon tumours or exudations pressing on it, or cold, or reflex irritation, such as worms or indigestible food. The upper eyelid in consequence falls down, occasioning the condition termed ptosis; and, if of intracranial origin, the eyeball is turned outward and the pupil is dilated.

If due to cold and not dependent on cerebral causes, recovery is the rule.

GLOSSO-LABIO-LARYNGEAL PARALYSIS.—The essential lesion here is found in the medulla oblongata and upper part of the spinal cord, and consists of atrophy of nerve cells connected with the origin of the hypoglossal, spinal accessory, and pneumogastric nerves. As a consequence there is a slow yet steady loss of power of the muscles of the tongue, soft palate, pharynx and larynx, and also of the orbicularis. The disease, dependent on unknown causes, invariably results in death from asphyxia or cessation of the heart's action through implication of the cells of the pneumogastric.

MERCURIAL PALSY or TREMOR is caused by long-continued exposure to the fumes of mercury, and is characterised by tremors and jerkings of the voluntary

muscles, beginning in the arms, but extending sometimes to the legs, tongue, and jaws. These movements are increased by the mind being brought to bear upon them or by attempts at exertion.

Permanent bad health is often the result.

Treatment.—This consists in withdrawal from the cause to a fresh, pure atmosphere, and giving iodide of potassium.

LEAD PARALYSIS has been considered under "Colic," page 167.

WASTING PALSY, PROGRESSIVE MUSCULAR ATROPHY.—In this peculiar disease, loss of strength in certain muscles of the body, particularly the shoulder, arms, and hands, attracts first the patient's attention, and this is followed by atrophy of the muscular tissue, not merely of the parts primarily affected, but progressing until every voluntary muscle of the body may be involved, with the exception of the muscles of the eyeball or the levator palpebræ superioris. The affection seems peculiar to males from twenty-five to thirty-five years, and in some instances to be hereditary. The cells of the anterior tract of grey matter of the spinal cord appear to be destroyed by a slow chronic inflammation; and the presumption is, since the disease is unaccompanied by paralysis, that the cells involved are not motor cells, but those which are supposed to govern the nutrition of muscles—trophic cells. The prognosis is very unfavourable, especially if the disease is hereditary.

Treatment.—This must be based on the steady employment of the continuous and interrupted currents, with tonics or iodide of potassium if there is any suspicion of syphilis.

WRITER'S CRAMP is a form of nervous disorder attacking those who are engaged in writing a great deal. It is first attended with fatigue and inability

to hold the pen firmly, and ultimately, if it progresses, by spasmodic irregular movements of the fingers and thumb when any attempt at writing is made.

Half-measures are of little avail in writer's cramp, and complete abstinence from work is necessary to restore nervous vigour.

INFANTILE SPINAL PARALYSIS is generally ushered in with fever, convulsions, and pain in the back, marking the seat of the disease as being in the spinal cord. Then it is noticed that the child does not use one hand or kick with one leg; or the paralysis observed may be restricted to a group of muscles, or embrace the four limbs. The temperature of the affected limbs is lower than the corresponding sound ones. This loss of power may last a month or six months, and is succeeded by atrophy, with loss of the electric contractility of the affected muscles, and in some cases even by arrest of development and degeneration of the bones. The essential lesion appears to be situated in the anterior horns of grey matter consisting of an inflammatory softening leading to degeneration and atrophy of the part affected.

Treatment.—This is local and general. The induced current should be applied directly to the skin over the paralysed muscles, and afterwards friction with a dry towel or flesh-brush should be practised several times in the course of a day. Ergot should also be given in ten-drop doses of the fluid extract thrice daily, and may be increased up to half a drachm. If the stage of atrophy is reached, ergot is useless, and strychnia must be administered (F. 80), with the persevering use of the induced current should the muscular contractility still continue. "If this is lost to the induced current, the cure will be difficult and the treatment protracted; if the primary current is also powerless, a cure is impossible." (Hammond.)

NEURALGIA.

Under this head should be included affections which, so far as can be ascertained, are not due to diseases of the brain or spinal cord, but the seat of which is in the nerves themselves.

Different names are given, according to the site of the nerves affected. Thus we have facial neuralgia or tic-doloureux, sciatica, and lumbago.

FACIAL NEURALGIA is more apt to attack females than males during adult life, and seems often to have some connection with menstruation, lactation, mental excitement, or exposure to cold. The pain is frequently excruciating, coming on and disappearing at fixed hours of the day. It may attack the nerve at any or all of its divisions.

SCIATICA.—The pain is referred to the course of the sciatic nerve or its branches, and may be restricted to the gluteal region or upper part of the thigh, or it may extend to the soles of the feet. It generally lasts from two to three months, but is apt to recur. It is often associated with a lowered physical stamina, and sometimes there is a previous history of gout, rheumatism, or syphilis.

LUMBAGO and PLEURODYNIA.—The dorsal and intercostal nerves are here the seat of pain, which is continuous in character and much increased by exertion. The mere act of straightening the back in lumbago often causes great agony.

Treatment.—In facial neuralgia quinine and arsenic are efficacious, with the addition of colchicum if there is a history of gout, or liquor potass. if rheumatism. Locally, to arrest the paroxysms morphia may be subcutaneously injected. A fresh pure air is indispensable to any treatment. Cod-liver oil, iron, and strychnia, are often useful (F. 4, 75, 78).

In sciatica one injection or two daily of morphia into the tissue of the nerve, or as near to it as possible, seems not only palliative, but even curative. Among other remedies which may be mentioned, stand strychnia, phosphorus, and iron, acupuncture, repeated blisters, Turkish baths, or the local application of aconite and veratria in the form of an ointment. The induced current, continued for half an hour, is sometimes singularly beneficial in this as in the other forms of neuralgia (F. 63). I have seen marked benefit follow hot and cold douches played alternately over the course of the nerve after other means had failed.

HEMICRANIA OR SICK HEADACHE.

In the course of various diseases, headache forms a prominent symptom, as in the commencement of all fevers. It is attendant on various nervous disorders (of more or less grave character), and it is also associated with gastro-hepatic derangements and diseases of the kidney and circulatory system. If the pain is in the forehead, Dr. Hughlings Jackson says it is most probably due to abdominal affections; if at the vertex, to cerebral disturbance; if at the back, to disorders of the circulation, and more especially to anæmia; if fixed, intense, localised, and attended with tenderness of the scalp, a cerebral tumour may be suspected.

In the affection called Hemicrania or Migraine, the pain is on one side and fixed to one spot, as the temples, although it may commence as a dull pain over the forehead. The pain is more dull and sickening than neuralgia, and its great peculiarity is the throbbing which occurs with every beat of the heart, and is aggravated by every movement of the body, especially of the head. The great desire of the

sufferer is to be let alone and not be spoken to. Sometimes even lying down is out of the question, and the patient can only obtain comparative ease by sitting in an easy chair. The body is cold, but the head is hot, and whilst the radial artery feels small the carotid is full. In this distended throbbing carotid, and its influence on the cerebral circulation, it is supposed, lies the source of the malady, and this again seems dependent on paralysis of the vaso-motor nerves of the same side.

The duration of a bad attack is usually several hours. It is often hereditary. It rarely commences after thirty, and subsides with advance of years. Females are more prone to it than males.

Treatment.—The patient should be kept in a darkened room and afforded complete rest during the paroxysm. Guarana is specially recommended. Strong tea or coffee also sometimes gives relief, and pressure on the carotid or temporal artery of the same side may soothe the headache.

As prophylactic measures, mental or bodily worry should be avoided, and gastric derangement obviated.

EPILEPSY,

sometimes also termed falling sickness, and popularly, fits.

No definition can be given of epilepsy, because no definition would embrace all its phenomena. Yet it may be stated generally to be a disease characterised by certain leading features, viz.—sudden loss of consciousness and sensation, with clonic spasms of the voluntary muscles, usually followed by exhaustion and coma. The essential element of epileptic paroxysms is loss of consciousness.

Etiology.—The tendency to epilepsy is often hereditary, but various other causes may be mentioned.

Occurring often at puberty, it is justly considered in many cases to be a lamentable corollary of masturbation, of too early and frequent sexual intercourse, of malformations of the head, of the scrofulous diathesis, or it may be the direct result, either to himself or children, of an habitual drunkard's habits.

These are centric causes; while as eccentric sympathetic causes may be mentioned, uterine derangements, irritation of teething, and a disordered state of the stomach and intestines. Fright is a prominent exciting cause in a person predisposed to epilepsy. The first seizure occurs usually betwixt the tenth and twentieth year.

Symptoms.—These are best divided into what occurs before, during, and after, a fit.

Warnings of various kinds may precede the attack. Spectral illusions, confusion of thought or speech, headache, dimness of vision, or what the patient describes as the indescribable sensation of an inward working. The most curious forerunner of a fit is what is termed the "epileptic aura or vapour." It seems to come from some distant part of the body, and patients describe it creeping along, as water may trickle or a serpent crawl, until it reaches the head or stomach, when consciousness is lost in the fit; or there may be what is termed a "motor aura" in contradistinction to this, the sensory aura, recognised by twitching or palsy of some part of the body.

With or without these precursors the fit is ushered in by a shrill cry, and the patient falls down unconscious, and struggles hard in convulsions. Unable to select a convenient place, the fall in itself may seriously hurt him. The patient gnashes his teeth, pushes out and often bites his tongue, foam gathers at his mouth, forehead and eyebrows twitch, eyes are partly open and partly shut, and the pupils are insensible to light, and dilated.

The body writhes in convulsions, or is jerked from side to side, and what is popularly thought to be characteristic of the disease may be observed, viz.—“the flexing of the fingers, and more especially the flexing of the thumb into the palm of the hand.” The urine and fæces are often passed involuntarily. The fierceness and alarming nature of the attack renders minutes hours to the bystanders, as a fit averages only five to eight minutes in its duration, although it may last half an hour or more.

After perhaps a more sharp convulsive movement, there is deep sleep, from which the patient awakens with utter unconsciousness of what had occurred; with headache, red eyes, dilated pupils, and a peculiar stupid expression of countenance. This is succeeded by seemingly restored health, but ultimately by other seizures, the interval between the occurrence of which varies. Usually an interval of four or five weeks elapses, and this is followed by a series of fits, occurring at short intervals. Although epileptic attacks are not primarily fatal, yet gradually the constitution is sapped, the mental and bodily vigour impaired, and not unfrequently the unhappy victim of epilepsy ends his days in an asylum. Such is a description of what is termed the “Grand Mal,” and from which a sliding scale can be traced to what is known as the “Petit Mal.” Here unconsciousness may be as complete as in the severer forms, but the fits may last only a second or two, as, for instance, the person stopping in the middle of a conversation for a few moments, to resume talking where he left off, quite unconscious of the fit.

Pathology.—Should death occur during a paroxysm, the brain is found more or less congested, while, in long-standing cases, it may be softened or indurated, and increased in weight. The researches of Schroeder

van der Kolk point to the medulla oblongata as the seat of the disease, which is supposed to be more excitable and sensible, by an increased afflux of arterial blood, or from the accumulation in the system of some materies morbi, which leads to an explosion, as seen by the epileptic fit. Hughlings Jackson and Ferrier have given rise to epileptiform fits in animals by stimulating (galvanic) certain convolutions of the brain, which if removed do not cause paralysis, but yet when stimulated give rise to these convulsions. Hence, epilepsy seems to have an explosive lesion, like the discharge of a battery, although we cannot say that an excess of energy is manifested, for we must take into account the energy required for constraint, which is taken away, and thus all energy is concentrated in the abnormal convulsion.

Treatment.—This consists of two points:—

1st, What to do during, and 2d, after a fit.

1. Chloroform may stop a fit, but it leaves the person more stupid and afflicted afterwards, and is thus inadvisable. Certain obvious duties are necessary. If the head is hot, apply wet cloths, if feet cold, warmth. The necktie should be unloosened, and the patient placed in such a way, with head somewhat elevated, as to prevent him doing himself injury against articles of furniture. If possible a piece of wood, cork, or india-rubber, should be placed between the teeth to prevent the tongue being bitten.

2. It is impossible to get rid of certain predispositions, such as a strumous diathesis, a misshapen head, or organic lesion of the brain or spinal cord. At the same time some eccentric causes are remediable. If due to worms, give a vermifuge. If a syphilitic history is told, iodide of potass and the bichloride of mercury are serviceable. If dependent on vicious habits, the patient must be warned against these. The system

should also be braced up by good air, cheerful society, and the shower bath, if it produces after using it a genial glow of warmth.

With regard to other remedies, the following are the most noteworthy. Counter-irritation to the nape of the neck, either by cupping, leeching, setons, or blisters. Atropine gr. ii., spt. vin. rect. ʒij. Begin with one drop and increase to 20 daily, continuing this for months, and gradually diminishing the dose. Nitrate of silver and acetate of zinc have also been recommended.

Latterly, the favourite and most useful drug seems to be bromide of potassium, given in 10, 20, or 30 grains thrice daily, and continued for some time.

Numerous other supposed specifics might be mentioned, the fact being, as Esquirol remarks, "that epileptics are apt to improve for a time under every new form of treatment."

Careful watching is important in epilepsy, so that patients may not be in a dangerous position when a fit occurs.

CHOREA

literally means a dancing or jumping, being derived from the Greek word *χορεία*. It is the "Saint Vitus's dance" of this country, the "Saint Weit" of Germany, and "Saint Guy" of France. It may be defined as a disease most commonly affecting girls between the sixth and the sixteenth years, and characterised by irregular action and restlessness of the voluntary muscles of the face and limbs. It sometimes attacks boys. As a rule it is confined, in either sex, to the left side.

Etiology.—The exciting cause is usually fright, by which the stability of the nervous system is disturbed. Sometimes it is due to worms and to carious teeth;

and, as it is often associated with a previous history of rheumatism, and with a systolic murmur at the apex of the heart, it is by many considered due to this disease, or to embolism in some part of the cerebral circulation. More recent information with regard to chorea, based on the researches of Dr. Dickinson, show that the clinical phenomena of chorea cannot be referred to any circumscribed region of the nervous centres, for they affect so many different functions of the body, and seem to be connected at the same time, or successively, and in different degrees, with the cerebral convolutions, the ganglia at the base, the medulla, and the spinal cord. On the basis of post-mortem facts, he thinks that chorea depends on a "wide-spread hyperæmia of the nervous centres, produced by causes mainly of two kinds, one being the rheumatic condition, the other comprising various forms of irritation, mental and reflex, belonging chiefly to the nervous system." The general health is usually below par at the time of the attack.

Symptoms.—Twitching of the muscles of the face is generally first observed. This is followed by a halting or unsteady movement of the leg, which the patient drags. Then the hand of the same side is affected, and the patient is unable to keep it in the same position for any length of time. It is jerked away from any position in which it is placed, and it is unable to retain anything within its grasp. The patient has power, but not control. The articulation is impeded, and in severe cases the tongue, when protruded, is drawn back again with a sudden snap; but consciousness is not affected. Looking at, or drawing attention to, the patient increases the irregular movements. It may be unilateral or bilateral,—in the former case being called Hemichorea. During sleep the movements usually cease.

The duration of the disease may be stated to be from five to six weeks, although it sometimes becomes chronic and lasts several months. The disease seldom terminates fatally, except when, as rarely happens, it is very acute, and complicated with other affections, as cholera or acute rheumatism. In such cases it is attended with fever, the spasms being of excessive intensity ; not painful, but still prohibiting sleep, and thus exhausting the system.

Pathology.—The post-mortem appearances in those cases which do prove fatal give little insight into the nature of the malady. In some the brain seemed perfectly healthy, in others there has been noted a serous effusion beneath the arachnoid and into the ventricles. In one case, related by Dr. Aitken, the specific gravity of the corpus striatum of the right side was increased.

Treatment.—After a brisk cathartic, combined, if there is any suspicion of worms, with an anthelmintic, the patient should have a carefully regulated, easily digested diet ; and, if unable to feed herself, should be assisted to do so.

Various remedies have been recommended, as steel, oxide of zinc, sulphate of copper, nitrate of silver, bromide of potass, and chloral. None of these has been in my hands nearly so useful as arsenic, given in the form of liq. arsenicalis thrice daily.

In the very acute cases, where a fatal issue may be feared from sheer exhaustion, it would be proper to keep the patient under the influence of chloroform for protracted periods.

It may here not be inappropriate to state that a peculiar affection of the nervous system, characterised by inability to retain the fingers and toes in any position in which they may be placed, and by their continual motion, has been termed by Hammond

athetosis (*αθετος*, without fixed position). The conditions which occasion it are as yet unknown. It seems, however, to resist all therapeutic efforts.

DELIRIUM TREMENS

may be defined as alcoholic poisoning, attended with a delirium in which there are great restlessness, suspicion, trembling, and various delusions.

Etiology.—The cause is drink. Distilled spirits more surely than wine; wine than beer. The man, it may be added, who, with a highly-wrought nervous organism, drinks to excess to drown the consciousness that he is drinking, is more likely to be affected with delirium than the habitual swiller, who may drink to excess, but is able to sleep it off.

Symptoms.—Sleeplessness is the most characteristic symptom, and this sleeplessness is associated with busy restlessness, a chattering tongue, fidgety hands, and imaginary spectra. The tongue is protruded in a tremulous way, as in fever, but it is not brown and parched, but moist and creamy. The pulse is soft and compressible; the skin often bathed in perspiration.

The patient may coherently reply to a question or two, but soon after relapses into the fancies characteristic of the disease. These fancies are not pleasant, but associated with the lowest and most repulsive forms. Thus rats, mice, serpents, and imaginary demons, are crawling about him, and, in endeavouring to escape or to destroy these, his mind is sorely tried. Often he peeps suspiciously behind the curtain, draws the bedclothes over him, or attempts to leave his bed. Cowardice rather than violence is exhibited both with regard to himself and his actions towards others.

The disease tends to recovery, on the third or

fourth day, by a sleep from which the patient awakes refreshed. In fatal cases the symptoms are aggravated, and attended with intense watchfulness, low muttering delirium, subsultus tendinum, and great exhaustion.

Pathology.—In fatal cases the subarachnoid tissue has been found so infiltrated with fluid as to raise the arachnoid above the level of the convolutions. The cerebral arachnoid exhibited considerable opacity all over the hemisphere, and the ventricles contained a small amount of fluid; while the cerebral arteries and other parts of the brain were perfectly healthy.

Treatment.—The objects in treatment are, to prevent the further introduction of the poison into the system, to quiet the nervous excitement, and to sustain the strength while the accumulation of alcohol is being thus eliminated from the system.

To fulfil these indications, all stimulants should be forbidden if the patient is young and strong. If there is a history of previous attacks, and the patient is weak, it is advisable to taper off their withdrawal.

If the patient can be persuaded to take some beef-tea or chicken soup, there is not much danger in the disease nor necessity for medicinal treatment. If, as often happens, there is loathing of food, it seems advisable to place six grains of calomel on the back of the tongue. The liver is thus stimulated to action. Opium must also be given afterwards, combined with antimonial wine, or, if the stomach cannot retain these, morphia must be injected hypodermically until sleep is induced. If the pupils are contracted under its use without sleep, it has been pushed far enough and should not be continued. Bromide of potass and chloral are sometimes substituted for opium beneficially. Nourishment as indicated should be given often and cautiously (F. 69, 70).

All force, as in the form of strait jackets, should be discountenanced. The services of well-skilled attendants, combined with kindness and humouring of the fancies, seem to be sufficient, even in the most violent cases. It is well not to restrict the patient from reasonable muscular exercise, as this conduces to sleep and appetite.

SUNSTROKE.

Coup de soleil and heat apoplexy are synonyms applied to a disease peculiar to warm climates, but occurring also in this country. Two forms are observed, one in which the disease is due to the direct influence of the sun's rays, the person being struck down suddenly, with stertorous breathing, slow, full pulse, unconsciousness, and marked heat of head. In the other form excessive heat without exposure to the sun may produce, by some blood-change, phenomena similar to syncope, with weak pulse, and no stertor of the breathing.

Nothing characteristic is detected after death in the brain.

Treatment.—Apply ice or iced water freely to the head, which should be raised. Afterwards leech or cup behind the ears, and administer a purgative enema, for the first form, the true coup de soleil. For the second, cool the body by means of cold douches, afterwards apply sinapisms to the spine, epigastrium, and limbs; administer also stimulants.

HYSTERIA.

Hysteria is best known by its clinical history, as evidenced by its affecting the mind, the sensibility, motor or visceral action, or as it counterfeits other disorders.

Mental Symptoms.—These may be of the most varied character.

There may be extreme talkativeness or utter silence ; depression of spirits to the shedding of tears succeeded by immoderate laughter, from one and the same cause. Emotions exactly opposite to the proper ones for the occasion may be excited. A tale of grief directly affecting the patient may be greeted with every semblance of joy. Good fortune may awaken a wringing of the hands, and a shedding of tears. The news that burglars have entered the house may induce stoical indifference.

Illusions are common,—a ball rolling over the floor is mistaken for a rat ; rain on the roof for burglars entering the room.

Hallucinations are equally frequent.

“One patient sees angels, another demons, another animals of various kinds.”

That these disordered mental emotions, illusions, hallucinations, and other allied phenomena, are not due to insanity, is evidenced by the fact that they do not last long, nor colour much the conduct of life.

Sensibility may be increased or diminished.

Pain is felt in varying situations, rarely fixed to one place, and generally described as excessively acute. Pain in the joints, especially the knee, is a common hysterical affection ; though this may be accompanied with swelling, there is no accumulation of fluid in the synovial membrane. The pain in this, as in other parts, also ceases at night ; is increased by handling rather than by severe pressure ; and may be cured spontaneously by prayer, by sudden movements, or other causes.

The organs of the special senses may be sensibly exalted, vision more keen, hearing more acute, and smell morbidly sensitive.

Anæsthesia, though not so common as hyperæsthesia, may yet be a phenomenon of hysteria. Its most common seat is the skin, and to such an extent may this be the case that no irritation of the particular part affected is of any avail, not even the wire-twist of the electric coil. It is to be noted that the attacks are not preceded or accompanied by numbness.

Alterations of motion, as evidenced by paralysis, or clonic or tonic spasm. Thus there may be loss of voice, suddenly appearing and disappearing, or partial or complete paraplegia.

Spasm, fixed (tonic), frequently affects the pharynx, giving rise to the sensation of a ball in the throat, "globus hystericus."

Spasms (clonic), simulating chorea and epilepsy, are the frequent outcome of attendance on spiritualistic or revival meetings.

Digestive Symptoms are various and not uncommon; the urine is usually increased in quantity, of a low specific gravity and light colour. It is frequently voided unconsciously during a paroxysm.

Causes.—The affection is peculiar to females, especially between the ages of sixteen and twenty-five. Above all causes may be mentioned lack of aim in life, thus throwing the mind and the emotions back upon self. Hysteria is not common in savage countries, and it seems to be a direct attendant frequently of luxurious habits and perhaps ungratified desires. It is frequently met with in patients suffering from uterine or menstrual affections.

It is often hereditary.

Morbid Anatomy and Pathology contribute nothing to elucidate the mystery of hysteria. Brain, spinal cord, and sympathetic nerve, give no evidence of its former presence; neither do the generative organs, the stomach, or intestines. It seems essentially to

consist in the predominance of the emotions over the intellect, and especially over the will; the intensified character of this interfering with the sensibility of various parts of the body, and sometimes deranging the contractility of the muscles.

Treatment.—Gain the confidence of the patient, and thus treatment, medicinal, moral, or dietetic, will be more apt to produce the desired effect. During the paroxysms nothing equals chloroform, though sometimes dashing water on the face and moral suasion may be sufficient.

During the period between the paroxysms the treatment must be mainly directed against symptoms. If hyperæsthesia, a full course of bromides is essential; if anæsthesia, the induced current over the affected region.

For hysterical paralysis, strychnia and phosphorus, together with the use of electricity both of the primary and induced forms, should be tried. In hysterical vomiting, bismuth or hydrocyanic acid (F. 9).

Finally, valerian, or valerianate of zinc, is a favourite remedy; and careful attention to any menstrual disorder is necessary, should such exist (F. 14).

DISEASES OF THE SPINAL CORD.

SPINAL MENINGITIS.—Inflammation of the membranes of the cord may be either acute or chronic. It is generally caused by exposure to cold or moisture, or injuries.

It is characterised in both forms by pain in the back, which is increased by movement, and follows the course of the nerves proceeding from the diseased region; by spasms in the muscles of the back, reflex motion unaffected, and paralysis, varying in extent

and intensity, but generally progressive to a fatal termination.

Pathology.—The lesions found after death are generally restricted to the pia mater and subarachnoid space, and consist in thickening of the membrane, turgidity of the vessels, and the effusion of fluid or of lymph.

MYELITIS.—Inflammation of the spinal cord may either be general, affecting the whole extent of the cord, or partial, restricted to a limited portion. It is more frequently the result of an injury than anything else. The symptoms vary with the seat of the disease. The most prominent, however, are pain in the back, a feeling as of a tight cord tied round the body, rapid and complete paralysis, alkaline urine, a marked tendency to sloughing of the skin, speedy loss of electric contractility, and depression of temperature in the paralysed parts.

The termination of acute general myelitis is in death, sooner or later. In the partial variety life may be prolonged, but at the expense of loss of motion and sensibility below the diseased portions.

HÆMORRHAGES INTO SPINAL CORD.—Extravasation of blood may occur into and around the cord through disease of the vessels with increased blood-pressure. It is characterised by a sudden onset, local pain, reflex and motor paralysis of varying amount, and occasional jerkings of the muscles. The bladder and rectum are frequently paralysed. Recovery often occurs if the hæmorrhage is not very extensive.

CONGESTION.—As the result of cold or over-exertion, congestion of the spinal cord may ensue, the chief symptoms of which are some pain in the spine,

with tingling of the extremities, and paraplegia, which is, however, rarely complete. Paralysis of the bladder, with constipation, is common, but there is no tendency to sloughing or wasting of the muscles. The result is sometimes recovery, sometimes permanent paraplegia.

SOFTENING OF THE CORD is the common termination of acute myelitis, but it may originate primarily, without any evidence of inflammation, hence it has been termed "non-inflammatory softening." The first symptom observed is numbness of those parts of the body below the seat of lesion ; this is followed by want of motor power, and the two advancing together afterwards become more and more marked. The disease progresses to utter helplessness. The functions of the bladder and bowels are interfered with, and there is a marked tendency to sloughing of the skin.

The nerve cells in the grey substance are destroyed, and the nerve tubules of the white substance have their place taken by oil globules and granule masses, the constituents of which are fat.

SPINAL IRRITATION.—The term spinal irritation seems first to have been used by Dr. C. Brown of Glasgow in 1828. Its existence as a distinct disease has given rise to much controversy. Hammond, while retaining the term, thinks that it is due to anæmia of the posterior columns. It is specially recognised by the occurrence of tender spots in the skin or deeper tissues over one or more parts of the spine, and by neuralgic pains shooting over different regions of the back. It is peculiar to females of a weak habit of body between the ages of fifteen and twenty-five. "In general terms, it may be stated that any cause capable

of reducing the system may produce spinal irritation." In doubtful cases, where it may be confounded with myelitis, meningitis, or congestion, it is said that a hypodermic injection of one-thirtieth of a grain of strychnia will settle the difference. This invariably aggravates the symptoms of the other diseases, while it is the efficient means of cure in spinal irritation.

LOCOMOTOR ATAXY

is a peculiar form of paralysis, due to disturbed co-ordination of muscular movements. In health the muscles must contract and relax together, in unison with the movements we may desire. If one muscle contracts too soon, and another relaxes too quickly, then there is disturbed co-ordination of muscular movements.

Etiology.—The cause of locomotor ataxy is obscure, yet undue exposure to cold or damp after a long journey, venereal excesses, mental exhaustion, and syphilis, seem in some cases to lead to its occurrence.

Symptoms.—The origin is insidious. The first suspicion of there being anything wrong is frequently awakened by an inability to run, through a feeling of the legs being too heavy. This is followed by fatigue after any exertion, and by increased micturition. The desire for sexual intercourse is at this stage of the disease increased. The disease progresses often slowly, and months or years may intervene before the patient presents the well-marked symptoms of locomotor ataxy, viz. a straddling gait in movement, the foot being lifted high in the air and planted down heel first. To support his balance the patient grasps at anything that may be near, as a friend's arm or a convenient chair. He is unable to walk in the dark, or with his eyes shut. A feeling of constriction

round the waist is also complained of, as if a cord were drawn tightly round it.

In severe cases the patient cannot stand steady, certainly not with eyes shut, nor can he walk on a narrow board, the breadth required being a gauge of the severity of the affection. Usually there is diminished tactile and muscular sensibility of the lower extremities, with numbness or formication. These symptoms may be preceded by transitory pains, as well as fleeting phenomena, referable to the cerebrum, or amaurosis, difficult deglutition, etc. Electro-muscular contractility remains intact to the last.

There is no palsy or wasting of the muscles, and, if the patient is placed on a chair, you cannot bend his legs against his will.

As the disease progresses it does not stop at the legs, but creeps upwards. Arms, hands, and fingers, are involved. The coat cannot be buttoned, the pin put into the cravat, or the spoon carried to the mouth. The urine is passed involuntarily in bed, and now the sexual power and appetite are diminished. Thus the patient may remain for years. Ultimately the lower extremities become thinner, emaciation attacks the whole body, and death results from general weakness, consumption, or other intercurrent disease.

It is especially a disease of males, and is rarely met with in youth, usually occurring between the ages of thirty and fifty years.

Pathology.—Locomotor ataxy depends on disease of the posterior columns of the spinal cord and posterior roots of the spinal nerves. There is atrophy and degeneration of the nerve fibres to a greater or less extent, and they become ultimately thin, translucent connective tissue cords. The anterior roots of all the nerves are normal, and there is also a healthy condition of other parts of the nervous system.

Treatment.—The patient should carefully avoid overstraining his limbs. Medicinal treatment is essentially tonic and strengthening. The metallic tonics, especially silver, are frequently prescribed. Probably the best chance will be afforded by a prolonged and careful application of the constant current to the back and limbs, which often at least gives relief to the neuralgic pains which are frequently so troublesome.

CEREBRO-SPINAL FEVER, EPIDEMIC CEREBRO-SPINAL MENINGITIS.

This peculiar disease appears to consist in an inflammation of the membranes, and sometimes also of the substance of the brain and spinal cord. Its origin is unknown, its epidemic character undoubted; but its contagiousness is questioned. It affects chiefly the male sex between fifteen and thirty, if crowded together during cold weather, as in barracks or workhouses.

Symptoms.—The attack is sudden and characterised by intense pain in the head, prostration, with spasm and rigidity of the muscles of the back of the neck, and great sensitiveness of the whole surface of the body. The temperature of the body is abnormally low at first, and never reaches any great height. A peculiar petechial eruption is often present on the neck, breast, or limbs, of a red, purple, or black colour, and varying in size from a pin's head to three-quarters of an inch in diameter. The course of the disease is rapid, as some die within a few hours, many within twelve or twenty-four. The first four days are most dangerous; after that time there appears to be a fair prospect of recovery. About half of those attacked die.

Treatment is unsatisfactory. Stimulants are recommended from the outset, with the application of

leeches behind the ears to relieve the headache, and ice to the spine and head to mitigate the spasm. The hypodermic injection of morphia; chloral and bromide of potassium have been strongly urged; and its resemblance to malarial fever has suggested the use of quinine.

HYDROPHOBIA.

The term hydrophobia was first used by Celsus 200 B.C., and simply expressed one prominent feature of an affection, the pathology of which has ever remained obscure, viz. dread of water, or, it may be added, of liquids in any form. It is the result of the implantation of a specific virus; this inoculation taking place most frequently from the bite of a rabid animal, especially the dog. The skin must be wounded, and its spontaneous development is never known. Wounds so occasioned are more dangerous on the hands and face than on the lower extremities, probably because the clothing worn intercepts the virus.

After the infliction of the wound there is a stage of incubation, varying from six weeks to as many months, during which time the wound heals perfectly. After this a peculiar prickling sensation is felt over the site of the cicatrix, accompanied with general symptoms of restlessness, depression, and disturbed sleep. On these supervene the terribly significant phenomenon of dread of liquids and intense thirst. As the disease progresses all attempts to drink are avoided. The sight even of a drinking-vessel containing water is intolerable, and the patient turns away his face, shrieking out at the slightest touch or breath of air. The muscles of the neck and trunk, and even the whole muscular system, contract spasmodically, with convulsive trembling of the limbs; at times, during the frenzical fits, snapping motions

are made with the jaws, like biting. Although during the convulsions mental hallucinations occur, yet in the temporary cessation from these the patient responds correctly to questions, begs friends not to leave him, and, with a consciousness of impending death, may ask them to pray for him. The saliva is now greatly increased in quantity, and, as it cannot be swallowed, is ejected in all directions. The respiration is hurried, and accompanied with a sighing sob. This state may continue from one and a half to three days, and is succeeded by a stage of paralysis lasting two to eighteen hours, with an abatement of the distressing symptoms, but greatly increased weakness, which deepens into death. The skin is covered with a clammy sweat, pulse small and irregular, saliva running from the mouth, and accelerated breathing.

The duration of the disease in hydrophobia is only from two to four days. It always terminates fatally.

Treatment.—This is of no avail, although many remedies have been tried; yet humanity dictates the removal of every cause of excitement, the separation of the patient from everything calculated to disturb or render him anxious, and the maintenance of the strength by nutritious enemata during the temporary abatement of the spasms, or while under the influence of chloroform.

TETANUS.

Tetanus may be either idiopathic or traumatic, and, speaking generally, in both cases seems essentially to consist in an inflammatory affection of the spinal cord. It is one of the most fatal of maladies, and in its idiopathic form appears to be induced by exposure to cold or damp, especially in those who have suffered from wounds; it has also apparently been caused by worms, by abortion, and by diseases of the womb.

The first symptom is pain in the epigastric region, extending backwards to the spinal column, and due to spasm of the diaphragm. Succeeding this are stiffness of the throat, fixedness of the jaws, and difficulty of swallowing. Sooner or later there follows tonic, *i.e.* continuous, spasm of the neck, back, and loins, causing the body to assume the form of an arch (*opisthotonos*). The skin is hot, the temperature high, from 105° Fahr. to 110° Fahr.; wakefulness, thirst, and constipation are also prominent symptoms. Strychnia poisoning may be mistaken for tetanus, but it is distinguished from it by this, that there is no epigastric pain, spasms are more rapidly developed, and do not commence in the jaw. The average duration of the disease is from three to five days. Hopes of recovery may be entertained if it extends over a week. Death results from apnœa or exhaustion.

Treatment.—This is very unsatisfactory. The favourite remedies, however, are Calabar bean, aconite, chloral, bromide of potassium, opium, and chloroform.

DISEASES OF THE SKIN.

A few general observations on terms used in skin nomenclature will prepare the student for understanding the classification adopted and the descriptions, necessarily brief, of the various diseases. A series of interrogatories may more fully bring out what is meant. What is the essential character of an exanthematous affection, apart from the fever which sometimes accompanies it? It is superficial and red, the eruption not being uniform but occurring in patches, varying in size and severity, and disappearing under pressure. How does it terminate? In resolution, the whole exanthem dying away; or in desquamation,

scales forming where the eruption formerly was. Thus the exanthemata are said to consist of superficial red patches, varying in size and severity, disappearing under pressure, and terminating in resolution or desquamation. Included under this division are *Erythema*, *Urticaria*, and *Roseola*. The former, speaking generally, terminating in resolution; the latter, as in syphilitic roseola, in desquamation.

What is a vesicle? is it large or small? Small, and consisting of a slight elevation of the epidermis. But it is more than a slight elevation. It is not solid. Prick it and fluid exudes, which is generally transparent, but sometimes cloudy or sero-purulent. Cover one or more rain-drops with skin, and an idea may be formed of a vesicular eruption, if you suppose further that it may be placed upon skin uninflamed, not red, at other times on a red patch. Sometimes the vesicles are single, at other times in clusters; sometimes they come out at once, sometimes irregularly. With these irregularities in situation and in appearance they also combine an irregularity in their mode of termination. There is fluid in the vesicle. How is it got rid of? By absorption or resolution in some instances, the result of this being probably a scale where the vesicle was; or it may burst externally, causing excoriation of the neighbouring parts, and where the vesicle was a scab may form, under whose protecting influence the new skin is produced. The definition of a vesicle is thus seen to be a raising of the epidermis, containing fluid, generally serous and transparent, sometimes cloudy and sero-purulent. The class vesiculæ comprises *Sudamina*, *Herpes*, *Eczema*.

Bullæ may be considered as a sub-order of the vesiculæ, differing from these as a large umbrella does from a small parasol. The bullæ or blebs form bladder-like prominences, coming out rapidly, and

containing at first serous fluid, which becomes purulent or sero-purulent. The blebs burst, and on the seat of the former elevation large black crusts form. The rapid formation, the larger size, the more distinct, black, crusty scab, and the bad health usually associated with them, alone distinguish bullæ from vesiculæ. Under this class are *Rupia* and *Pemphigus*.

In what way do pustules differ from vesicles? The difference seems only one of degree. They are situated on a hard, indurated, inflamed base, and the true pustule is by Willan said to differ from a vesicle in this, that it contains pus from the first moment of its formation. Pus cannot be absorbed, and so it seeks the surface naturally, aided, as in the case of boils, by the lancet, and is followed by scabs or a permanent cicatrix on its former site.

Pustules are therefore defined to be the formation between the cuticle and the cutis vera of small tumours containing purulent fluid, and terminating by a scab or a permanent cicatrix. To this order belong *Ecthyma* and *Impetigo*.

What is a papule or pimple? It is solid; it is small; it is pointed; it is raised somewhat above the surrounding skin, and as such it can be felt and recognised. Retaining its elevated character, in colour either white or red, attended, as a rule, with itching, how does it terminate? Generally by resolution, at other times by slight desquamation, and occasionally by ulceration. In addition to these characteristics, it may be stated that papular diseases are chronic in their course, non-contagious, and attended sometimes with itching. The diseases under this order are *Lichen* and *Prurigo*.

A scale in skin nomenclature means an altered epithelial cell, and it may either be primary or secondary, *i.e.* the product of the original disease, or

coming on as the termination of another skin complaint. Scales may be produced either by increased formation or hypertrophic growth, and may be large or small, thick or thin, clear or opaque, crowded together in patches or separate.

The term *squamæ* is applied to scales of degenerated, thickened, dry epidermis, easily detached and easily reproduced. *Psoriasis*, *Pityriasis*, and *Ichthyosis* belong to this order.

The term *tubercle*, in skin diseases, must be associated with degeneration, this degeneration assuming the form of a tumour, which may be small or large, more or less prominent, circumscribed in form, and persistent, and may lead either to ulceration or suppuration at the summits of the tubercles. The *tuberculæ* are chronic, sometimes hereditary, and in their graver forms are peculiar to tropical climates. Under the *tuberculæ* are *Elephantiasis*, *Acne*, *Lupus*, *Molluscum*, *Frambæsia*, *Keloid*.

The following classification of skin diseases is that of Willan considerably modified:—

- Order 1. Exanthemata: Erythema, Roseola, Urticaria.
 „ 2. Vesiculæ: Sudamina, Herpes, Eczema.
 „ 3. Bullæ: Pemphigus, Rupia.
 „ 4. Pustular: Ecthyma, Impetigo.
 „ 5. Parasitici: Tinea tonsurans, Tinea favosa,
 Tinea decalvans, Tinea sycosis, Chloasma,
 Scabies.
 „ 6. Papulæ: Lichen, Prurigo.
 „ 7. Squamæ: Psoriasis, Pityriasis, Ichthyosis.
 „ 8. Tuberculæ: Elephantiasis, Molluscum, Acne,
 Lupus, Frambæsia, Keloid.

ERYTHEMA.—There are three chief varieties of erythema—1. Simple erythema, of which a general description has been given in the preceding remarks.

It has a sub-variety, "erythema fugax," so called from its shifting character, and its appearing and disappearing at intervals on different parts of the body. Sometimes it is observed in fevers on the face, trunk, and upper extremities, and its appearance on such occasions forms an element in determining an unfavourable prognosis. 2. Erythema papulatum is often seen in young persons at the age of puberty, and is usually associated with some disorder of the menstrual or digestive functions. Small papules may appear on any part of the body, but, as a rule, the sites selected are the back of the hands, neck, or face. These papules spread and coalesce with one another until the parts affected are covered with a red blush, which lasts for a few days and then disappears, with some itching. 3. Erythema nodosum has a knotty appearance, the knots or patches being about one or two inches in diameter, and attacks the surface of the legs between the knee and the ankle. The constitutional disturbance is considerable. It is peculiar to females between fourteen and twenty, and sometimes occurs in an epidemic form.

Treatment.—Mild saline aperients are serviceable for simple erythema (F. 24). Rest in bed and a low diet are recommended for "erythema nodosum." Greasy applications in all the varieties mentioned aggravate the disease. Cloths soaked in whisky and water are especially useful in the simple or papular form.

ROSEOLA.—Rose-coloured, bright spots, small and of various shapes, not much elevated above the surrounding skin, distributed more or less over the body, and accompanied by some fever, characterise this affection. The roseola seen in infants might be mistaken for measles, but it has no regular site for its eruption, at times being on the neck or buttocks, and it is unaccom-

panied by catarrhal symptoms but attended with some itching.

Treatment.—Alteratives, laxatives, and tonics, may be required, according to the state of the system at the time of the roseolar eruption (F. 8).

URTICARIA, or nettle-rash, bears, as its name indicates, more or less resemblance to the eruption produced by the application of a common nettle to the skin. Hence, wheals or raised elevations are observed, of irregular form and uncertain duration, with a white centre and red margin, and accompanied by more or less tingling and itching. Urticaria may be either acute or chronic. In the former the disease runs a rapid course and is attended with a smart fever; in the latter it is slow, obstinate, persistent, or tending to come and go. Both forms seem to be due to errors of diet, as eating shell-fish, cucumbers, almonds; or indigestion and uterine derangements of various kinds.

Treatment.—In the acute form give an emetic, and follow it up by a purgative. In the chronic form attend carefully to the digestion by ordering a simple diet without wine, beer, or spirits, and administer laxatives or antacids, with occasional tepid baths. A lotion containing prussic acid or perchloride of mercury is useful in relieving the local irritation (F. 55).

SUDAMINA are often seen in the form of round, pearly vesicles, like drops of water, in the course of rheumatic or typhoid fever, phthisis, or any other disease with excessive perspiration.

HERPES.—Groups of vesicles, varying in size from a millet seed to that of a pea, are formed on inflamed skin, and these vesicles pursue an acute course and spontaneously disappear in from six days in the simpler forms, to twenty days in the more complicated.

Herpes, in its simplest form, is seen on the lip, sometimes in acute pneumonia, or during the progress of a common cold, or on the prepuce as the result of connection. Hence the terms, Herpes Labialis and Herpes Preputialis. A variety called Herpes Circinatus has a circular ring ($\frac{1}{2}$ to $\frac{1}{3}$ of an inch), with smooth skin in the centre, varying from $\frac{1}{4}$ of an inch to 2 inches. The vesicles are often very minute, and when they dry up seem covered with small scales. Another variety to which considerable interest is attached, from its peculiar situation and its antiquity, for it was known to the ancients, is popularly denominated "shingles," or technically "herpes zoster." The vesicles in this case form a band half encircling the body, and following, in nineteen cases out of twenty, the course of the intercostal nerves on the right side, in the position that would be occupied by a sword-belt. The eruption of herpes zoster is usually preceded by some constitutional disturbance, and attended by considerable local pain. The patches vary in size from 2 to 3 inches; are red, irregularly oval, and distinct, and on this ground-work the vesicles are situated sometimes distinct, in others run into one another. The disease lasts from fourteen to twenty days, and is succeeded by scabs. Before the eruption appears, the fever and the situation of the pain has led to its being mistaken for pleurisy.

Treatment.—Regulate the diet and attend to the bowels. Employ locally the prussic acid lotion, or dust the part with starch three parts, and oxide of zinc one part. If pain be severe, as it sometimes is in shingles, it may be necessary to use aconite ointment, or to inject morphia in the course of the nerve. Protecting the part by means of cotton wool is frequently very beneficial.

ECZEMA is the most common of all skin affections, forming from 30 to 50 per cent of skin diseases. It consists of an eruption of very minute vesicles on various parts of the skin, crowded together, and often running into one another in such a manner as to present a combination of the various appearances of vesicles, pustules, fissures, on an inflamed patch of skin. The most distinctive feature of this affection is that the vesicles burst, discharging a thin fluid, which dries up into yellow crusts. The irritation produced by the itching occasions restlessness, and sometimes a considerable amount of fever. Various names have been given to different varieties. Thus it is termed eczema simplex if the vesicles are placed on different parts of the skin without any inflammation; eczema rubrum if the skin is inflamed, with heat and swelling; if engendered by the heat of the sun, it is termed eczema solare; if by mercury, eczema mercuriale. Eczema rubrum is the most usual form, and is often preceded by gastric derangements and smart fever. The part affected first becomes red and tingling, and in the early stage it may be mistaken for erysipelas, but doubt is solved on the appearance of the vesicles, and also by the fact that it rarely attacks the face, the common site of untraumatic erysipelas. The vesicles enlarge, become confluent, and form a crust. This crust, soft at some parts, hard at others, may, if it is stretched, become cracked and fissured, while the serous fluid escaping from the raw surface to neighbouring parts causes inflammation and extension of the disease.

Treatment.—For the eczema which occurs in infants, Dr. Erasmus Wilson considers small doses of calomel at moderate intervals a specific, followed by Fowler's solution, in doses proportionate to the age of the child, while the oxide of zinc ointment should

be applied externally. In the other varieties general measures must be trusted to ; saline laxatives, mineral acids, sarsaparilla, cod-liver oil. In severe and chronic cases the iodide of potass or Fowler's solution should be tried. Locally employ glycerine, carron oil, or ointments of oxide of zinc, with prussic acid, or if chronic and scaly, the oil of cade may be used. Iodide of sulphur ointment has been recommended, but Dr. M'Call Anderson prefers soothing applications, of which the ungt. diachyli, composed of lead plaster and olive oil, is to be preferred. In any case the patient should be strictly enjoined never to bring water in contact with the affected part (F. 59, 60, 61, 4).

PEMPHIGUS. — The eruption, consisting of large bullæ, is usually preceded by fever and constitutional disturbance, and locally by irritation and itching. The bullæ may be two or three inches in diameter, and are either separate or run into one another, and when they burst are succeeded by large brown crusts. The disease is one of debility, favoured by intemperance, bad diet, or cold, or it may be due to syphilis. The course is chronic.

RUPIA is generally syphilitic in its origin. Small flat bullæ arise, containing serous fluid at first, which degenerates into blood and pus. A thick black scab is formed, and beneath it unhealthy ulceration progresses, as evidenced by a nasty-smelling discharge. The margins of the surrounding skin inflame, more serum is poured out, and the incrustation takes on a stratified appearance, resembling a limpet shell. The lower limbs and loins are the usual sites of Rupia. Its duration may vary from two or three weeks to several months.

Treatment. — Both these diseases being attended with debility, a generous diet and fresh air, with

wine and tonics, are essential. If of syphilitic origin, iodide of potassium, with Plummer's pill or the perchloride of mercury, may be administered. Locally, poultice, and use antiseptic dressings (F. 3, 5). Or better, dust the sore with iodoform, the smell of which may be concealed by dissolving in an ether solution.

IMPETIGO. — The pustules characteristic of this disease are sometimes crowded together, at other times distinct,—hence the division into impetigo *figurata* and *sparsa*. In both divisions the pustules break, and are succeeded by scabs, with a peculiar candy-sugar appearance, if observed on the face. The crusta lactea of young children is simply an impetiginous eruptive mask. The variety “*sparsa*” is sometimes distributed over a wide area, as the limbs, the body, or buttocks.

Impetigo generally attacks young, scrofulous, ill-fed children, or elderly debilitated people.

ECTHYMA may be confounded with impetigo, as both diseases are pustular and attended with scabs; but in ecthyma the inflammation is of a more severe type, and there is more constitutional disturbance. The pustules are usually separate, with a hard inflamed base, and terminate with a dark-coloured scab. The latter leaves superficial ulcers, followed by cicatrices. Ecthyma may occur spontaneously, or follow the application of some irritant to the skin.

Treatment.—This is similar to what was mentioned in the previous diseases, viz. cleanliness, good living, and good air, with wine and bark. If the scabs are large, apply a charcoal poultice and a sedative ointment of acetate of lead and lard, or (F. 61).

LICHEN.—There are two great varieties of lichen, “*simplex*” and “*agrius*.”

In the former, papules about the size of a millet seed are thickly crowded together. In the latter the papules are situated on red inflamed skin, and there is pain, itching, and tingling, with sometimes fever, nausea, and vomiting. The inflammation subsides, the papule scales and heals; or by scratching, the point of the elevation is torn off, and in consequence there is a thin serous discharge, and the skin is left fissured with deep and painful cracks. The eruption of lichen sometimes subsides in a fortnight, in other instances it may extend over some months. It is seen most frequently on the hands, arms, and body, and constitutes the grocers', bakers', and bricklayers' itch.

PRURIGO is a chronic papular affection associated with old age and uncleanness, accompanied with intense itching, as the result of which the tops of the papules are torn off to the effusion of blood, and the blood hardens on the top of the pimple. The appearance presented by the skin is thus somewhat piebald—the bloody-topped papules being situated on dirty hard skin. Prurigo may be mistaken for flea-bites, but the history of the case will guide to a proper decision.

Treatment.—This, in lichen, is similar to what has been mentioned in the other forms of skin disease, and consists in the allaying of irritation by baths, ointments, etc. etc.; while the digestion is aided by mild laxatives and a simple diet. In prurigo, cleanliness must be insisted on by means of baths, to which the addition of four ounces of carbonate of soda is useful. In obstinate cases arsenic or strychnia may be given (F. 57, 55).

PSORIASIS is a common chronic skin eruption characterised by thickened patches of skin varying in

size, covered by silvery scales, and with a red base. Healing commences from the centre to the circumference, and there is no tendency in any stage of its course to suppuration or ulceration. There are two great varieties of psoriasis, syphilitic and non-syphilitic—the former occurring most frequently on the hands or soles of the feet, the latter on the outer aspect of the elbows or knees, where the eruption is specially marked and persistent. Non-syphilitic psoriasis is frequently hereditary, apt to recur, and seems in no way to affect the general health. The most common ages for its appearance are between twelve and twenty years. A further division has also been made into *guttata* and *aggregata*, according as the patches or scales are put down in a drop form or crowded together.

PITYRIASIS RUBRA.—In the only case I ever saw the man stated that his body commenced to itch, and he observed in the morning that it was red all over. This was followed by thin branny scales, which were situated on erythematous skin. It was the second attack the man had, the first having occurred twenty years previously. Since writing this, three years ago, the man returned with his old complaint, and his skin went through the same satisfactory process of desquamation as before, his general health being in no way impaired. There was no itching, and *pari passu* with the cuticle desquamation new nails formed, gradually detaching the old. The epidermis desquamates in large pieces, so much so that it may separate from the foot in the form of a slipper. Another variety of pityriasis, called dandriff, is characterised by the production of minute white scales, especially on the scalp, or parts covered with hair. Another form of scaly skin affections is termed *ichthyosis*, or the fish-skin

disease, in which the scales are large, hard, and dry, resting on an uninflamed surface, and unattended with itching or pain.

Treatment. — In psoriasis, non-syphilitic, arsenic should be given. In the syphilitic variety the triple compound of iodine, arsenic, and mercury (Donovan's solution) is requisite. Locally apply, after the scales have been removed by poulticing, the oil of cade or tar ointment. Tar capsules have also been given with advantage. Latterly an ointment containing chrysophanic acid has been employed with wonderful success, even without any internal medicine, and seems likely to supersede all other remedies. Like many others, I can corroborate Mr. Balmanno Squire's statements as to its marvellous efficacy (F. 65*a*). In dandriff, citrine ointment, glycerine, or (F. 64), does much good. Ichthyosis is considered a congenital disease, and hence treatment, by means of simple warm and alkaline baths, can only be employed in a palliative manner.

Of the forms of tubercular skin diseases two are seen in this country, acne and lupus.

ACNE.—Acne simplex and acne indurata are common at puberty, on the forehead or cheeks. Acne rosacea is most frequently associated with good living, or with stomach or liver disease. It is sometimes the signal-flag of the intemperate.

LUPUS.—Two varieties are lupus exedens and lupus non-exedens. The disease in both instances consists in nodular elevations, which ulcerate in the one case, but not in the other. In the non-ulcerative form the nodules, which are small, softish, and red, and attended with no pain, become covered with little white scales, then a sort of fatty degeneration occurs, the nodules shrink and die away, leaving a loss of sub-

stance in the form of a depression. In the other form, instead of absorption, ulceration sets in, the neighbouring tissues are invaded, and the edges are thick and red. It sometimes destroys the whole nose, including the mucous membrane and bones. In both varieties it appears to be connected with scrofula, to be most common between the ages of fifteen and twenty-five, and to affect the face, especially the nose. Another variety of lupus is "lupus erythematosus." It is superficial in character, most frequent in females, of a deep red or violet colour, and from a size at first of a fourpenny piece may extend until the whole face or cheek is covered. It runs a slow course, and when the cuticle has been partially detached, small horny scales, not easily rubbed off, form.

Treatment.—In acne rosacea, if a cure is attempted, it is obvious that the diet must be attended to and drinking habits stopped; while in the other varieties of acne, friction and gentle stimulation are useful, which in the severer forms may be combined with the iodide of sulphur ointment (F. 65). In ordinary acne the evacuation of the follicles by pressure, succeeded by the application of acetic acid lotion, will be followed by good results. The scrofulous nature of lupus necessitates tonics, especially cod-liver oil combined with acids and bitters. In the severe form, if there is any history of syphilis, use Donovan's solution or iodide of potass, with sarsaparilla. Locally, for the non-ulcerating form Mr. Wilson recommends the acetum cantharidis; while for the ulcerating type caustic applications are called for, such as chloride of zinc, nitric acid, and potassa fusa, or the surface may be scraped by means of a curette. The thermo-cautery applied under chloroform is specially serviceable, and leaves little after pain.

For lupus erythematosus, a local application of tincture of iodine, or equal parts of carbolic acid and glycerine, may be employed.

PARASITICI.

Parasitic diseases may either be of animal or vegetable origin, and all are contagious provided the parasite is implanted on a suitable soil.

SCABIES depends on the presence of a parasite of animal origin—viz. the “*acarus scabiei*.” It most frequently attacks the flexures of joints; notably it is first observed between the fingers, and from thence may extend over the whole body with the exception of the face, where it is rarely if ever seen. The deposition of the *acarus* acts as an irritant; a vesicular eruption is formed, and this is attended with much itching, and is specially increased by warmth. Practically few people go in for the scientific hunt of the *acarus*, which is the only true evidence of the disease, and it is sufficient proof of it if small pointed vesicles are observed between the fingers, on the anterior aspect of the forearm, and a pruriginous eruption on the inner part of the thigh, attended with much itching. A valuable diagnostic sign is the existence of a marked eruption at the ulnar side of the wrist and around the ankles in children. The presence of furrows with folliculi (being the female insect covered by epidermis) at their extremities is of considerable diagnostic importance.

Treatment.—The *acarus* is most easily destroyed by the application of sulphur ointment to which a little bergamot has been added to disguise the smell. Two or three applications will be sufficient. The

clothes should afterwards be fumigated by sulphurous acid gas, or destroyed.

The generic term given to the parasites of vegetable origin is *Tinea*.

TINEA FAVOSA commonly affects the scalp in the form of a small cup-shaped yellow crust, giving it a honeycombed appearance. Each crust contains a hair in its centre, and the spores of the fungus are implanted within the follicle. The odour detected is said to be like that of cats or mice.

TINEA TRICOPHYTINA.—The parasite may attack the scalp, the hairy part of the face, or general surface of the body. It is popularly known as ring-worm, more especially when it attacks the head or body. When it affects the scalp there are observed round or oval patches of comparative baldness, round which there are diffused fine scales, and on which are observed the brittle or diseased hairs, either broken off at the surface of the scalp, or a line or two above it. The resemblance to a stubble-field has suggested the name (*Tinea tonsurans*). When it invades the hairy parts of the face, as in the beard or moustache, it is characterised by pustular inflammation of the hair follicles, the pustules being placed on little hard eminences, and terminating in yellowish-brown crusts. When fully formed it resembles the pulp of a fig, hence the term *Sycosis*. When it attacks the general surface of the body it assumes a distinctly circular form from the size of a shilling to half-a-crown, the margins being red and raised, while the centre has a yellow-brown colour, with a tendency to scale. These rings may creep over the face or chest, especially in children, as the disease rarely attacks adults.

TINEA DECALVANS (*Alopecia areata*) affects the beard and scalp and eyebrows, and presents smooth bald patches of a circular form, which, however, may so extend as to cover a large surface, and leave the patient absolutely destitute of hairs. It runs a chronic course, and attacks persons of all ages. Its parasitic character is doubted by some authorities, who attribute its occurrence to a wave of inflammatory or other influence, which, as it passes over each hair papilla, leaves it enfeebled and dying.

TINEA VERSICOLOR (*Pityriasis versicolor*, *Chloasma*) is characterised by the appearance of fawn-coloured patches on the chest or abdomen, which are rough to the touch, and covered with fine branny scales. It is a disease of adult life, and never attacks uncovered parts.

Treatment.—This must be local and general in all the varieties of tinea—local to destroy the parasites, general to strengthen the system and prevent the skin forming a suitable soil for its development. Thus poultice to remove the scabs, then pull out the hairs in and around the diseased patches. Afterwards employ a parasiticide ointment, oil of cade, or sulphurous acid lotion daily after careful washing. In ringworm of the body a solution of nitrate of silver, or of tincture of iodine or acetic acid, applied to diseased parts, is sufficient. For Sycosis employ (F. 65), for Tinea versicolor (F. 58), for Favus (65*a*), or use lint soaked in cod-liver oil, over which is placed an oiled silk cap. For Tinea decalvans occasionally blister or use (F. 62).

The general treatment consists in cleanliness, good hygienic conditions, nourishing food, cod-liver oil, syrups of the phosphate or iodide of iron (F. 81), (F. 93).

APPENDIX.



METHOD OF PERFORMING POST-MORTEM EXAMINATIONS.

BEFORE opening the body the external appearances are to be observed—the presence of injuries or marks of any sort, the state of the post-mortem rigor, and the cadaveric lividity, as well as the degree of coldness of the body, are to be carefully noted.

Head.—It is better to begin by opening the head, for the condition of the blood-vessels in the meninges can thus be more accurately examined, than if, the chest having been opened, the blood is permitted to flow out at the cut ends of the large veins. To open the head, make an incision across the vertex from ear to ear, quite down to the skull. In making this incision the most ready means of parting the hair is to cut the skin from one ear to the other, from within outwards with the back of the knife to the skull: and this preliminary cut having been made, it can be deepened by a second sweep of the knife. With the chisel, the scalp, including the periosteum, is now pushed forwards over the brow, and backwards over the occiput, giving room for the saw to pass round the skull in a horizontal plane about $\frac{3}{4}$ inch above the orbit, and $\frac{1}{2}$ inch above the occipital protuberance. The saw-cut should not go quite through the two tables; the inner one is to be cracked in the line of the saw-cut with the chisel and mallet, the latter of which may then be used to prize the skull-cap off.

Split up the longitudinal sinus with fine scissors, and with a probe-pointed bistoury divide the dura mater all round along the edge of the skull, and cut the attachment to the crista galli. Then pull the dura mater backwards, exposing the surface of the arachnoid. Now remove the brain from before backwards, taking care not to tear any part of it, and divide the spinal cord as low down as possible. Examine the base of the brain, remove the dura mater from the base of the skull, and examine the bone, opening the internal ear if necessary with the chisel.

The examination of the interior of the brain itself is begun by opening the lateral ventricles by two longitudinal incisions along the corpus callosum ; after which the knife is laid parallel to the corpus callosum, and the brain is sliced laterally in such a way that each cut stops just short of the convex surface of the hemisphere. The third, fifth, and fourth ventricles may now be opened : and finally a series of closely placed transverse incisions may be made across the corpora striata and optic thalami, to expose their texture in every part. The medulla oblongata is split longitudinally, and a cut through each half of the cerebellum may be made.

Trunk.—With a strong knife an incision is made down the middle line of the trunk, from the suprasternal notch to the pubes, opening the abdominal cavity. The soft parts are held back from the lower edge of the thorax, and an incision carried through the peritoneum along the lower costal cartilages, after which the dissection of the flesh from the front of the thorax can be done with long sweeping cuts. The costal cartilages are then cut half an inch from the anterior ends of the ribs, beginning with the second cartilage, and thence downwards to the lower margin of the thorax, the cut passing outwards as it descends. In cutting these cartilages, hold the knife with the handle level, so that as each cartilage is cut the edge of the knife may fall on the next cartilage and not plunge into the lung ; but in cutting the first costal cartilage, which must next be done, the knife is to be held perpendicularly with the edge towards the clavicle, and directed rather outwards to avoid the manubrium sterni. Then cut the sterno-clavicular and costo-clavicular ligaments by an incision curved from above downwards and outwards, and remove the sternum. Note the position of the heart, etc., and the state of the pleuræ and peritoneum, and open the pericardium, pinching up a part of it and cutting it horizontally. Having observed its contents, open the heart. This may be done *in situ* by two incisions along the anterior and posterior borders into the ventricles ; or the heart may be removed, and afterwards opened by the incisions just mentioned, followed by a cut along each side of the septum ventriculorum from the apex into the pulmonary artery and aorta. The state of the valves and of the heart tissue, and of the ascending arch of the aorta, can then be studied. The lungs may now be removed and divided by one long cut from

apex to base. The bronchi are split up with scissors, and the trachea and larynx similarly split up with the knife. If desired, the great median incision first described may be continued up to the chin, and the tongue, fauces, larynx, and upper half of the gullet, can be removed bodily and examined in detail afterwards.

Now divide the diaphragm so as to let the liver fall back into the chest, open the stomach (if this has not already been done), and clean out its contents. Then examine the spleen, kidneys, ureters, bladder, and urethra, not forgetting the suprarenal capsules. The state of the gall bladder and its duct must now be ascertained. For this purpose carry the incision in the stomach along the duodenum, past the orifice of the ductus communis, wipe the surface of the mucous membrane, and putting gentle pressure on the gall bladder, note whether the bile flows freely from the duct. Then examine the portal vein and remove the liver, which you may divide by long transverse incisions. To examine the bowels, remove them from the body, separating them with the knife along the edge of the mesentery as close as possible to the gut. Split the gut from end to end with the gut scissors, and examine the mucous surface under a stream of water.

The mesenteric glands, aorta, and pancreas may next be looked at, and then the front of the spine should be cleared of all soft tissue. Any lateral curvature or exostosis will thus come into view, and the spinal canal can then more readily be opened. This may be done from before or behind. If from before, the bodies of the vertebræ are to be separated by saw or chisel; if from behind, the cadaver must be laid prone, and a longitudinal incision made from the occiput to the pubes, the soft tissues removed from the spinal arches, which are then to be cut with the saw and forceps.

WEIGHT OF ADULT ORGANS.

	MALE.	FEMALE.
Brain	49 oz.	44 oz.
Heart	10 oz.	9 oz.
Lungs { right	24 oz.	17 oz.
{ left	21 oz.	15 oz.
Liver	53 oz.	45 oz.
Spleen	4 to 10 oz.	4 to 10 oz.
Kidney	4½ oz.	4 oz.

TABULAR STATEMENT OF CHIEF POINTS IN FEVERS.

	Incubation	Eruption appears on		Eruption fades on
TYPHUS	Usually 1 to 14 days	{ 5th day of fever	{ on back and sides	{ 14th day of fever.
TYPHOID	14 to 21 days	{ 7th or 8th day of fever	{ on abdomen	{ 21st to 30th day of fever.
SCARLET FEVER	4 to 6 days	{ 2d day of fever	{ on trunk	{ 5th day of fever.
SMALLPOX	12 to 14 days	{ 3d day of fever	{ on face and forehead	{ scabs form on 9th or 10th day of fever, and fall off about the 14th.
MEASLES	10 to 14 days	{ 4th day of fever	{ on forehead	{ 7th day of fever.
GERMAN MEASLES (Rötheln)	7 to 14 days	{ 2d to 4th day of fever	{ on face	{ 4th to 6th day of fever.
CHICKEN-POX	10 to 14 days	{ 1st day of fever	{ on shoulders	{ on 4th day of fever the vesicles form scabs.

FORMULÆ.

THE doses in the following prescriptions are intended for adults, and it is well for the student to remember that, if used for children, the rule suffices to divide the dose for an adult, in proportion to the number of years of the child's age, increased by 12.

Thus, for a child of two years, it will be $2 + 12 = 14$, and this divided by 2 (*e.g.* $\frac{2}{14}$ ths) will make the dose $\frac{1}{7}$ th of that of an adult.

If for a child of three years, $3 + 12 = 15$ ($\frac{3}{15}$ ths), or $\frac{1}{5}$ th, etc.

Opium and its preparations act powerfully on children, and hence the dose must be reduced to a greater extent.

Principal Preparations containing Opium, Mercury, Arsenic, etc., with the proportions.

Tinct. Opii contains gr. i. in min. xiv.

Tinct. Camph. Co. contains gr. i. in \mathfrak{z} ss.

Pil. Plumbi c. Opio contains gr. i. in gr. viij.

Pulv. Ipecac. Co. contains gr. i. in gr. x.

Pulv. Kino Co. contains gr. i. in gr. xx.

Enema Opii contains min. xv. Tinct., or gr. i., in \mathfrak{z} j.

Liniment. Opii contains two fl. ounces of tincture in \mathfrak{z} iv.

Morph. Acet. Liquor contains gr. iv. in one fl. ounce.

Morph. Hydrochlor. Liq. contains gr. iv. in one fl. ounce.

Inject. Morph. Hypodermica contains gr. i. in min. xii.

MERCURY.

Hydrarg. c. Cretâ contains gr. i. in gr. iiij.

Pil. Hydrarg. contains gr. i. in gr. iii.

Liq. Hydrarg. Perchlor. contains gr. $\frac{1}{16}$ in \mathfrak{z} i.

ARSENIC.

(Fowler's Solution.)

Liquor Arsenicalis contains gr. $\frac{1}{24}$ in min. v.

Liquor Sodæ Arseniat, contains gr. $\frac{1}{24}$ in min. v.

Liquor Arsenici Hydrochlor. contains gr. $\frac{1}{24}$ in min. v.

STRYCHNIA.

Liquor Strychniæ contains gr. $\frac{1}{24}$ in min. v.

(Donovan's Solution.)

A fluid drachm contains $\frac{1}{12}$ of a grain of arsenic, gr. $\frac{1}{4}$ mercury, and gr. $\frac{3}{4}$ of iodine. Dose min. x. to xxx.

1.—ALTERATIVES AND RESOLVENTS.

Mercury and Iodide of Potassium.

1. R Hydrarg. Perchlorid. gr. i., Potass. Iodid. ℥iij., Decoct. Sarsæ. Co. ℥vj. M.—A tablespoonful thrice daily after food.

Mercury and Gentian.

2. R Hydrarg. Perchlor. gr. i., Ext. Gentian. ℥ss. Misce.—Divide into twelve pills; one thrice daily.
Useful in secondary syphilis.

Donovan's Triple Solution.

3. R Liquoris Hydriodatis Arsenici et Hydrarg. ℥iij., Tinct. Zingib. ℥iij., Aquæ ad ℥vj. Misce.—A tablespoonful thrice daily after food.
Useful in secondary syphilis and some skin eruptions.

Arsenic and Cinchona.

4. R Liquor. Sodæ Arseniatis ℥j., Tinct. Cardamom. Co. ℥iij., Decoct. Cinchon. ad ℥vj. Misce.—A tablespoonful thrice daily after food.
Useful in various skin affections.

Iodide of Potassium and Calumba.

5. R Potass. Iodid. ℥ij., Infus. Calumbæ ad ℥vj. Misce.—A dessert-spoonful thrice daily.
Useful in various diseases, syphilitic or otherwise.

Guaiacum Mixture.

6. R Tinct. Guaiaci Ammon. Co. ℥iij., Tinct. Aconiti m. xx., Mist. Camph. ad ℥vj. Misce.—Two tablespoonfuls thrice daily.
Recommended in Cynanche tonsillaris and some skin affections.

Chlorate of Potash.

7. R Potass. Chlorat. ℥ij., Syrupi Simplicis ℥iij., Aquæ Camph. ad ℥viij. M.—A tablespoonful every four hours.
Recommended in inflammatory affections of the mouth, etc.

Mercury, Rhubarb, and Soda.

8. R Hydrarg. c. Cretâ gr. ij., Pulv. Rhei gr. ij., Sodæ Bicarb. gr. iij. M.—Make a powder. One at bedtime.
Recommended in various infantile or children's diseases.

II.—ANTACIDS.

Bismuth, Hydrocyanic Acid, etc.

9. R Liq. Bismuth. (Scht.) ℥ss., Acid. Hydrocyanic. dil. m. xl., Tinct. Card. Co. ℥iij., Spt. Chloroform. ℥iss., Aquæ ad ℥vj. Misce.—A tablespoonful thrice daily before food.
Recommended in dyspepsia for vomiting and pain.

Ammonia, Potash, and Chiretta.

10. R Ammon. Sesquicarb. ℥j., Potass. Bicarb. ℥iss., Inf. Chirettæ ad ℥vj. Misce.—A tablespoonful thrice daily before food.
Useful for the acid eructations of dyspepia, and debility.

Magnesia and Soda.

11. R Magnes. Levis ℥ss., Sodæ Carb. gr. xx., Tinct. Aurantii ℥ss., Aquæ Menth. Pip. ℥ijss. Misce.—The draught to be taken in heartburn, etc.

III.—ANTISPASMODICS.

Lobelia, Ether.

12. R Tinct. Lobel. ℥ij., Spt. Ether. Sulph. ℥iij., Tinct. Conii ℥ij., Mist. Amygdalæ ad ℥vj. M.—A tablespoonful every three hours.
In asthma and paroxysmal coughs.

Cardamoms and Ammonia.

13. R Tinct. Card. Co. ℥iv., Acid. Hydrocyan. dil. m. xl., Spt. Ammon. Arom. ℥ij., Tinct. Zingib. ℥iij., Spt. Chloro-

form. ℥ij., Aquæ Carui ad ℥vj. M.—A tablespoonful taken occasionally.

For flatulence or colic.

Valerian and Asafœtida.

14. R Tinct. Valerian. Tinct. Asafœt. āā ℥ij., Spt. Lavand. Co. ℥iss., Aquæ ad ℥vj. M.—A tablespoonful every three hours.

For hysteria, etc.

Gibb's Nitric Acid Mixture.

15. R Acid. Nit. dil. ℥xii., Tinct. Card. Co. ℥iij., Syrup. Simplicis ℥iiiss., Aquæ ℥j. M.—A teaspoonful every two hours.

For whooping-cough.

Dr. Fuller's Belladonna Mixture.

- 15a. R Zinc. Sulphat. gr. viii., Ext. Belladon. gr. vii., Aq. ℥iv. M.—A tablespoonful four times daily, and increased by the proportion of one dose daily to a child above three years old.

IV.—ASTRINGENTS.

Sulphuric Acid and Opium.

16. R Acid Sulph. dil. ℥iiss., Tinct. Opii ℥j., Spt. Chloroform. ℥ij., Aquæ Menth. Pip. ad ℥vj. M.—A tablespoonful after every liquid stool of adults.

For diarrhœa.

Catechu, Opium, and Chalk.

17. R Tinct. Catechu ℥iij., Tinct. Opii ℥j., Pulv. Aromat. ℥iss., Mist. Cretæ ad ℥vj. M.—A tablespoonful after every liquid stool of adults.

For excessive diarrhœa of typhoid fever.

Chalk Mixture, Cinnamon, and Opium.

18. R Tinct. Opii m. x., Pulv. Aromat. ℥j., Mist. Cretæ ℥vi., Aquæ Cinnamomi ad ℥iv. M.—A teaspoonful may be given every hour.

For diarrhœa of children.

- 18a. R. Ol. Anisi, Ol. Cajeput, Ol. Juniper, āā ℥ss., Aether ℥ss., Liq. Acid Halleri ℥ss., Tinct. Cinnam. ℥ii. M.—Ten drops every quarter of an hour in a little water. An opiate may be given with the first and second dose. Used to promote reaction in cholera and diarrhœa.

Gallic Acid.

- 19 R. Acid. Gallici gr. x., Aquæ ℥iss. M.—To be taken every four hours. Useful in hæmoptysis and various hæmorrhages.

Bismuth Mixture.

20. R. Bismuth. Subnitrat. ℥j., Mucilag. Acaciæ ℥vj. M.—A tablespoonful every three hours. Useful in diarrhœa and phthisis.

Cascarilla, Squills, Dilute Sulphuric Acid.

- 21 R. Tinct. Scillæ ℥iss., Acid. Sulph. dil. ℥iss., Tinct. Opii ℥ss., Inf. Cascarillæ ad ℥vj. M.—A tablespoonful every three hours.

Useful in chronic bronchitis to check excessive expectoration.

Starch and Laudanum Enema.

22. R. Tinct. Opii ℥ss., Ol. Terebinth. m. x., Mucilag. Amyli ℥ii. M.

It may be employed to check the diarrhœa of typhoid fever when excessive.

V.—CATHARTICS AND ANTHELMINTICS.

Calomel and Jalap.

23. R. Calomel gr. v., Pulv. Jalapæ gr. xv. M. An active purgative.

Sulphate of Magnesia and Sulphuric Acid.

24. R. Magnes. Sulph. ℥ij., Acid. Sulph. dil. ℥iss., Tinct. Card. Co. ℥iss., Aquæ Menth. Pip. ad ℥vj. M.—A wine glassful every half-hour until bowels act freely.

Aloes, Senna, and Jalap.

25. R. Tinct. Sennæ, Tinct. Jalapæ, āā ℥ij., Decoct. Aloes Co. ad ℥vj. M.—An ounce night and morning. Useful in bilious headache and constipation.

Rhubarb, Soda, and Aloes.

26. R Extract Rhei gr. x., Sodæ Phosphat. ℥j., Decoct. Aloes Co. ℥ss., Aquæ Menth. Pip. ℥j. M.
A warm aperient, useful in the early stage of gout.

Elaterium and Colocynth.

27. R Extract Elaterii gr. i., Ext. Colocynth. Co. ℥ss., Ext. Hyoscyam. gr. xii. Misce, and divide into twelve pills; one night and morning.
Useful in cardiac or other forms of dropsy.

Antimony, Sulphate of Magnesia, Citrate of Ammonia.

28. R Vin. Antimon. ℥j., Magnes. Sulph. ℥ss., Liquor Ammon. Citrat. ℥iss., Aquæ ad ℥vj. M.—Two table-spoonfuls twice or thrice daily.
Useful as an aperient in the early stages of various disorders.
29. R Extracti Filicis Liquidi m. xxx., Pulv. Gum. Acaciæ ℥i., Aquæ Menth. Pip. ℥j.—Make emulsion.
Considered a specific in tapeworm.
30. R Santonin. gr. ij., Pulv. Scammon. gr. iij. M.
Very effectual in expelling the round worm or thread-worm in children.

VI.—DIAPHORETICS.

Acetate of Ammonia c. Ether.

31. R Liquor. Ammon. Acetat. ℥j., Spt. Ether Nit. ℥ss., Tinct. Hyoscyam. ℥iij., Aquæ Camph. ad ℥vj. M.—A table-spoonful every three hours.
Useful in febricular and some inflammatory disorders.

Dover's Powder and Antimony.

32. R Pulv. Ipecacuanhæ Comp. gr. vj., Antimon. Tartrat. gr. ¼. M.—One powder every six hours.

Guaiacum and Nitre.

33. R Pulv. Guaiac. ℥ss., Pulv. Potass. Nitrat. ℥j. M.—To be taken at bed time (some warm gruel to be taken after it).
Useful in chronic rheumatism.

Ipecac. c. Citrate of Ammonia.

34. R Vini Ipecac. ℥iss., Syrupi ℥ss., Tinct. Camph. Co. ℥iij.,
Liquor. Ammon. Cit. ℥ss., Aquæ ad ℥ij. M.—A tea-
spoonful every two hours.

Useful in catarrhal and febrile affections of children.

VII.—DIURETICS.

Squills, Broom, and Acetate of Ammonia.

35. R Tinct. Scillæ ℥ij., Liq. Ammon. Acet. ℥ij., Decoct.
Scoparii ad ℥vj. M.—Two tablespoonfuls thrice daily.
Useful in dropsy dependent on heart, liver, etc.

Mercury, Squills, and Digitalis.

36. R Pil. Hydrarg. ℥ss., Pulv. Scillæ gr. vj., Pulv. Digitalis
gr. xii. M.—Divide into twelve pills. One twice
daily.

Useful in pleurisy or pericarditis to remove effusion.

Acetate of Potass, Squills, and Digitalis.

37. R Potass. Acet. ℥ss., Acet. Scillæ ℥ss., Spt. Ether. Nit.
m. xx., Tinct. Digitalis m. v., Decoct. Scoparii ℥iss.
M.—The draught thrice daily.

- 37a. R Potass. Acetat. ℥iij., Potass. Citrat. ℥iij., Inf. Digitalis
ad ℥vj. M.—A teaspoonful every three hours.

Bitartrate of Potass and Buchu.

38. R Potass. Bitart. ℥iij., Inf. Buchu ad ℥vj. M.—Two table-
spoonfuls thrice daily.

Useful as a diuretic, and where there is very acid urine
with an excessive secretion of uric acid.

Oil of Juniper, Nitric Ether, and Digitalis.

39. R Olei Juniperi ℥ss., Spt. Ætheris Nit., Vini Ipecac., Tinct.
Digitalis, āā ℥iij. M.—Twenty-five drops every three
hours.

Diuretic, and in some cases also useful as an emmenagogue.

Nitrate of Potass and Barley Water.

40. R Potass. Nitrat. ℥ij., Acid. Nit. dil. ℥j.—To be put into a
pint of barley water and drunk daily.

Useful in the early stages of fever.

VIII.—EMETICS AND EXPECTORANTS.

Antimonial or Ipecacuan Emetic.

41. R Antimon. Tartratis gr. i., Vin. Ipecac. ℥j., Aquæ ad ℥iss. M.

vel

42. Vin. Ipecac. ℥j.

Either of these draughts will relieve the stomach. They are sometimes recommended in the early stages of fevers, etc.

Tolu, Ammoniacum, and Opium.

43. R Syrupi Tolutani ℥ss., Mist. Ammoniaci ℥ij., Tinct. Camph. Co. ℥iij., Aquæ ad ℥vj. M.—A tablespoonful three times a day.

Useful in chronic bronchitis.

Ammonia, Squills, and Senega.

44. R Ammoniæ Carbonatis ℥j., Tinct. Scillæ ℥iij., Tinct. Camph. Co. ℥ss., Decoct. Senegæ ad ℥vj. M.—A tablespoonful every four hours.

A stimulating expectorant in various chest affections.

Ipecac., Tolu, and Acacia.

45. R Vin. Ipecac. ℥ij., Syrup. Tolutani ℥iv., Mucilag. Acaciæ ad ℥ij. M.—A teaspoonful every hour or every second hour.

Useful in acute bronchitis or measles with chest symptoms.

Lobelia, Spirit Chloroform, and Conium.

46. R Tinct. Lobeliæ ℥ij., Spt. Chloroform. ℥iij., Tinct. Conii ℥iij., Mist. Amygdalæ ad ℥vj. M.—A tablespoonful three times a day.

Useful in asthma, etc.

IX.—GARGLES AND INHALATIONS.

Tannin Gargle.

47. R Tannin. ℥j., Aquæ Camph. ℥vj. M.—The gargle to be used frequently.
48. R Tinct. Myrrhæ ℥iij., Aluminis ℥j., Infusi Rosæ Acidi ad ℥vj. M.—To be used frequently in mercurial saliva-

tion, or scarlatinous or apthous ulceration of the throat.

Tannin and Glycerine.

49. R Tannin. ℥ss., Glycerini ℥iv. M.—The throat to be touched with this twice or thrice daily in scarlet fever, etc.

Borax and Glycerine.

50. R Sodæ Biborat. ℥j., Glycerini ℥ij. M.
Useful in ulceration of mouth and throat.

Nitrate of Potash.

51. R Potass Nitrat. ℥j., Aquæ ℥j.—Saturate white blotting paper in this solution, and dry it; cut the paper into pieces 3 inches long, $\frac{1}{2}$ inch broad. One piece may be lighted, and the smoke inhaled. One to six papers may be used in succession for each inhalation.
Recommended as an anti-spasmodic in asthma.

Hop Inhalation.

52. R Ol. Humuli ℥ss., Magnesiae Carb. Pond. ℥j. M.; Aquæ ad. ℥iij. M.—A teaspoonful to be put into a pint of boiling water, afterwards used by Maw's inhaler.
Useful in phthisis, where cough is irritable, and in various chest affections.

Creosote and Carbolic Acid Inhalation.

53. R Creosot. ℥iij., Magnes. Carb. Pond. ℥iss., Aquæ ad. ℥iij. M.; or,
53a. R Acid. Carbolicum ℥i., Aquæ ℥vij. M.—A teaspoonful in a pint of water at 150° F. for each inhalation.
Useful in chronic congestion of the larynx.

Pine Inhalation.

54. R Ol. Pini Sylvestris ℥ij., Carb. Magnes. Pond. ℥j., Aquæ ad. ℥iij. M.—A teaspoonful in a pint of water at 150° F. for each inhalation.

X.—LOTIONS, LINIMENTS, ETC.

Prussic Acid and Perchloride of Mercury.

55. R Hydrarg. Perchlor. gr. ij., Acid. Hydrocyanici dil. ℥j., Mist. Amygdalæ ad. ℥vij. M.

Useful in prurigo, and various skin affections attended with itching.

Prussic Acid and Potass.

56. R Liquoris Potassæ ʒij., Acid. Hydrocyanici dil. ʒj., Aquæ ad. ʒvj. M.

Useful in pityriasis.

- 56a. R Acid. Carbolici gr. viij., Glycerini ʒss., Aquæ ad. ʒj. M.
Applied to pustules in small-pox.

Soda and Glycerine.

57. R Sodæ Bicarb. ʒj., Glycerini ʒiss. M.

Useful in the itching of cutaneous diseases.

Perchloride of Mercury.

58. R Hydrarg. Perchlor. gr. i., Aquæ ad ʒijs.

Useful in Tinea favosa in children, or in Chloasma of adults.

XI.—OINTMENTS.

59. R Ol. Olivæ ʒxii., Litharg. ʒiij. M. S. A., and add Ol. Lavand. ʒij.

Apply on linen twice daily in eczema.

60. R Ol. Cadini, Spt. Vini Rect., Sapon. Mollis, āā ʒj., Spt. Lavand. ʒiiss. M.

Recommended by Dr. M'Call Anderson in eczema.

Bismuth, Zinc, Prussic Acid.

61. R Bismuthi Trisnitrat. ʒj., Ungt. Zinc. Ox. ʒj., Acid. Hydrocyanici dil. ʒj. M.

Useful in various skin affections.

62. R Balsami Tolutani ʒij., Olei Rosmarini m. xx., Tinct. Cantharid. ʒj., Olei Ricini ʒss., Adipis Prep. ʒiss. M.
To be rubbed on night and morning to roots of hair in cases of baldness, after syphilis, fevers, etc.

Aconitia and Iodine.

63. R Aconitiæ gr. ij., Ungt. Iodi ʒj. M.—To be painted over part in severe neuralgia (tic-doloureux).

Citrine Ointment.

64. R Ungt. Hydrarg. Nit. ʒi., Adipis ʒi. M.

Used in vesicular, squamous, and some parasitic affections.

Iodide of Sulphur Ointment.

65. R Iod. Sulph. gr. x., Sulph. Sublim. gr. x., Acid. Hydrocyan. dil. m. x., Adipis ℥i. M.

Used in acne and other skin affections.

Chrysophanic Acid Ointment.

- 65a. R Acid. Chrysophanic. ℥i., Adipis ℥i. About the size of a bean to be rubbed into each patch of psoriasis daily.

XII.—SALINES.

66. R Spt. Ammon. Aromat. ℥iij., Liq. Ammon. Cit. ℥iv., Syrup. Limon. ℥j., Aquæ ad ℥viij. M.—A tablespoonful every three or four hours.

Useful in early stages of tonsillitis, diphtheria, or in febricula.

Chlorate of Potash (Fever drink).

67. R Potass. Chlorat. ℥j., Aquæ ad Oj. M.

Recommended as a daily drink in scarlet or other fevers.

Colchicum and Magnesia.

68. R Vini Colchici ℥iss., Magnes. Carb. ℥ij., Aquæ ad ℥vj. M.
—A tablespoonful every three hours.

Useful in gout.

Or,

- 68a. R Vini Colchici ℥ss., Magnes. gr. xv., Magnes. Sulphat. ℥j., Aquæ Cinnamom. ad ℥ij. M.

This draught is recommended by Sir Charles Scudamore during the paroxysm of gout.

XIII.—SEDATIVES.

Bromide of Potash and Chloral.

69. R Potass. Bromid. ℥iij., Chloral Hydrate ℥i., Aquæ ad ℥vj.
—A tablespoonful every two hours.

Useful in delirium tremens, and also in fevers when great restlessness.

Opium and Antimony.

70. R Tinct. Opii. ℥ij., Antimonii Tartar. gr. iv., Aquæ Camph. ad ℥vj. M.—Tablespoonful every two hours until sleep is produced.

Useful in delirium tremens.

Morphia and Hydrocyanic Acid.

71. R Morphiæ Hydrochlor. gr. i., Acid. Hydrochlor. dil. m. v., Acid. Hydrocyanic. dil. ℥ss., Syrup. Scillæ ℥j. Aquæ ℥j. M.—One teaspoonful to be taken when cough is very severe, as in advanced cases of phthisis.

Bromide of Potass and Ergot.

- 71a. R Potass. Bromid. ℥ij., Extract. Ergotæ Liquid. ℥ij., Aquæ ad ℥vj. M.—A tablespoonful three times a day.
Useful in cerebral congestion, and also in infantile spinal paralysis in early stage.

XIV.—STIMULANTS.

Spirit of Chloroform and Brandy Mixture.

72. R Spt. Chloroform. ℥ij., Mist. Spt. Vini Gallici ad ℥vj. M.—A tablespoonful every two hours in the low stages of fevers or other exhausting diseases.

Ammonia, Potass, and Rhubarb.

73. R Spt. Ammon. Arom., Liquor. Potass., Tinct. Rhei, āā ℥j. M.—A teaspoonful twice a day in water, as an antacid stimulant and stomachic.

Soda and Calumba.

74. R Sodæ Bicarb. ℥j., Tinct. Calumb. ℥vj., Aquæ Anethi ad ℥vj. M.—A tablespoonful every three hours.
Useful to relieve heartburn and nausea.

XV.—TONICS.

Quinine Mixture.

- 75.—R Quiniæ Sulphatis ℥j., Acid. Sulph. dil. ℥iss., Syrup. Aurant. Tinct. Aurant., āā ℥iv., Aquæ ad ℥vj. M.—A dessert-spoonful three times a day.

Quinine and Ammonia.

76. R Ferri et Quiniæ Citratis ℥iss., Ammon. Carbonatis ℥ij., Tinct. Aurantii ℥ij., Aquæ ad ℥vi. M.—A tablespoonful three times a day.

Quinine and Gentian.

- 77.—R Ferri et Quiniæ Citratis, Ext. Gentian., āā ℥ss. M.—To be divided into twelve pills. One to be taken twice a day.

Iron and Hydrochloric Acid.

78. R Tinct. Ferri Perchlor. ℥iss., Acid. Hydrochlor. dil. ℥j., Tinct. Hyoscyam. ℥iii., Inf. Calumb. ad ℥vj. M.—A tablespoonful three times a day.

Iron, Calumba, and Glycerine.

79. R Tinct. Ferri Perchlor. ℥ij., Tinct. Calumbæ ℥ij., Glycerini ℥ij., Aquæ ad ℥vj. M.—A tablespoonful three times a day.

Useful in anæmia, and sometimes also in phthisis.

Strychnia and Nitric Acid.

80. R Liquor. Strychniæ ℥j., Acid. Nitric. dil. ℥iss., Acid. Hydrochlor. dil. ℥iss., Tinct. Zingiber. ℥ijss., Syrup. Croci ℥ij., Aquæ ad ℥vj. M.—A tablespoonful three times a day.
Useful in some special affections.

Syrup of Iodide of Iron and Cod-Liver Oil.

81. R Syrupi Ferri Iodidi ℥ij., Mucilag. Acaciæ ℥j., Ol. Morrhue ad ℥vi. M.—A tablespoonful three times a day.

Hypophosphite of Lime and Glycerine.

82. R Calcis Hypophosphitis ℥j., Glycerini ad ℥vj. M.—A tablespoonful three times a day.

Iron and Gentian.

83. R Ferri Sulphatis Ext. Gentian., āā ℥ss. M.—Divide into twelve pills; one twice daily.

Citric Acid, Citrate of Iron, Bismuth, and Prussic Acid.

84. R Ferri Citratis ℥iss., Acid. Citrici ℥vj., Aquæ ad ℥vj. M. Acid. Hydrocyanici dil. m. lxxij., Potass. Bicarb. ℥vj., Liq. Bismuth., Syrup. Aurantii, āā ℥ij. M.—A dessert-spoonful of the contents of each in a glass of water thrice daily.

Recommended in dropsy from granular kidney.

85. R Strychniæ gr. i., Ferri Pyrophosphatis, Quiniæ Sulph., āā ʒi.; Acid. Phos. dilut., Syrup. Zingiber., āā ʒij. M.
—A teaspoonful three times a day in a little water.

Recommended in some nervous affections when strychnia is required.

86. R Olei Phosphorat. ʒss., Mucilag. Acaciæ ʒj., Olei Bergamot. gtt. xl. M.—Twenty-five drops three times a day.

Useful in nervous affections requiring phosphorus.

Salicylic Acid Mixture.

87. R Acid. Salicylici ʒij., Potass. Acetat. ʒiss., Aquæ ad ʒvj. M.—A tablespoonful every three hours.

Recommended in rheumatic fever.

88. R Salicin gr. xx.—One every three hours.

Digitalis and Iron.

89. R Tinct. Ferri Perchlor. ʒii., Inf. Digital. ad ʒvi. M.—A dessert-spoonful thrice daily.

Ammonia, Citrate of Iron, and Calumba.

90. R Ferri Ammon. Citrat. ʒj., Tinct. Calumbæ ʒiii., Aquæ Camph. ad ʒvj. M.—A tablespoonful thrice daily.

Useful tonic in kidney disease, etc.

Rhubarb and Pepsin.

91. R Pulv. Rhei gr. iv., Pepsin gr. iij. M.

Useful in dyspepsia with flatulence. To be taken after meals.

Test for Diabetic Urine.

92. Fehling's Standard Solution is prepared according to the following prescription:—Sulphate of Copper, 90½ grains; Neutral Tartrate of Potash, 364 grains; Solution of Caustic Soda, sp. gr. 1·2, four fluid ounces; add water to make up exactly six fluid ounces. 200 grains of this solution are exactly decomposed by *one* grain of sugar.

The Ureameter.

93. To estimate the quantity of urea, the following apparatus is useful. The principle of the process depends on the

evolution of nitrogen gas which ensues when urine comes in contact with hypobromite of soda. The first step is to make a solution of caustic soda, which is done by taking of Caustic Soda 1 oz., Water $2\frac{1}{2}$ oz. Measure of this solution, as per mark on bottle, minims 420 ; add 40 minims of bromide. Shake well, and allow the mixture to cool thoroughly. We have now a solution of Hypobromite of Soda.

Next take of the urine to be tested, as per pipette, "M" 65, which place in a small tube. Insert this into the bottle containing the Hypobromite of Soda solution. Cork, and read off the marking of the graduated tube.

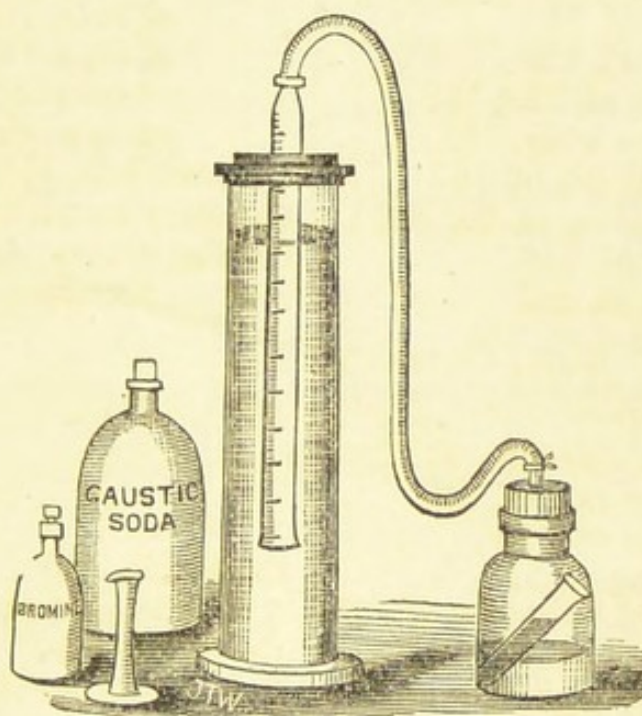


Fig. 14.

Next allow the urine and hypobromite of soda to mix. The result is the evolution of nitrogen gas. After the decomposition has ensued, the graduated index, after deducting the first from the last reading, will reveal the volume of nitrogen gas.

Mr. Ditmar, Professor of Chemistry at Anderson's College, has so constructed the index that each degree of it corresponds to one grain of urea per ounce in the urine. It is thus only necessary to take and measure the whole quantity of urine passed in the twenty-four

hours, and then multiply that by what the index shows, after the evolution of nitrogen gas, to tell the quantity of urea excreted daily.

Thus, supposing the quantity of urine passed in twenty-four hours to be 50 ounces, and the number of grains per ounce of urine as read off to be 8, the total quantity of urea will be $50 \times 8 = 400$ grains.

The apparatus can be obtained from Mr. Motherwell, 295 Argyle Street, Glasgow.

GLOSSARY.



ACARUS SCABIEI.—From *á* neg., *κείρω* to cut, and *scabere* to scratch.—A contagious disease of the skin attended with great itching.

ACNE.—From *ἀκμή*, strength.—An eruption of hard, distinct, and inflamed tubercles appearing on the forehead, temples, etc.

ÆGOPHONY.—From *αἶξ* a goat, and *φωνή* voice.—A sound similar to the bleating of a goat. Heard through the stethoscope, when applied to the inferior angle of the scapula, in case of pleurisy with effusion.

ALOPECIA AREATA.—From *ἀλώπηξ* a fox (a common affection of this animal), and *area* an open space.—Loss of hair, leaving little circular or oval bald patches.

ALTERATIVES.—From *altero*, to vary.—Medicines which promote a salutary effect on the functions of the system without causing apparent evacuations.

AMENORRHŒA.—From *á* neg., *μήν* a month, *ρέω* to flow.—A suppression of the monthly discharge.

AMPHORIC.—From *ἀμφορεύς*, a Greek wine-vessel.—In auscultation, a sound similar to that produced by blowing into a decanter a little distance from the aperture.

AMYLOID.—From *á* neg., *μύλη* a mill, *i.e.* not ground in a mill.—Resembling starch. If iodine be applied to an amyloid organ, the affected portions change to a brown colour, but, on the subsequent application of sulphuric acid, a bluish tint is produced.

ANÆSTHESIA.—From *á* neg., *αἰσθάνομαι* to feel.—Loss of sensation.

ANASARCA.—From *ἀνά* through, *σάρξ* flesh.—A collection of serum in the integuments of the body, characterised by pitting on the application of pressure.

ANEURISM.—From *ἀνευρύνω*, to make wide.—A swelling produced by the dilatation of an artery.

ANGINA PECTORIS.—From *ἀγχω* to strangle, and *pectus* the

breast.—A dangerous affection, characterised by a sense of suffocation, severe pain at the chest, and great anxiety.

ANTHELMINTICS.—From *ἀντί* against, *ἐλμυς* a worm.—Medicines which expel worms from the intestines.

ANTIPYRETICS.—From *ἀντί* against, *πυρετός* fever.—Remedies used for allaying fever.

APHASIA.—From *ἀ* neg., *φάσις* speech.—A partial or complete loss of the power of speech, due to cerebral causes.

APHONIA.—From *ἀ* neg., *φωνή* voice.—Loss of voice.

APHTHA.—From *ἄπτω*, to fix upon.—Thrush. Small round white vesicles affecting lips, mouth, and intestinal canal.

APOPLEXY.—From *ἀπό* of the cause, *πλήσσω* to strike.—Loss of sensation and voluntary motion, whilst the respiration and heart's action are slightly, or not at all affected.

ARCUS SENILIS.—From *arcus* anything arched or curved, and *senilis* aged.—An opaque ring round the margin of the cornea observed in old people.

ASCARIDES.—From *ἀ* intensivum, *σκαίρω* to bound, jump.—Intestinal worms.

ASCITES.—From *ἄσκος*, a leather sack or wine-skin.—A collection of serous fluid within the peritoneum.

ASTHMA.—From *ἄσθμάζω*, to gasp for breath.—A sensation of suffocation, or constriction of the chest with cough and expectoration.

ATROPHY.—From *ἀ* neg., *τρέφω* to nourish.—Progressive wasting of the whole or portion of the body, caused by decrease in size or number of its histological elements.

BOTHRIOCEPHALUS LATUS.—From *βοθρίον* a small pit, *κεφαλή* a head.—The broad tape-worm.

BRONCHIECTASIS.—From *βρόγχος* the windpipe, *ἐκτασις* a stretching out.—Dilatation of the bronchi.

BRONCHOCELE.—From *βρόγχος* the windpipe, *κήλη* swelling.—An inaccurate term for an enlargement of the thyroid gland.

BRONCHOPHONY.—From *βρόγχος* the windpipe, *φωνή* voice.—A distinct, but not loud, sound of the voice heard when the stethoscope is applied to the chest in cases of pneumonia, phthisis, and other consolidations.

BRUIT DE POT FÊLÉ.—Sound of a cracked vessel, heard sometimes on percussing over a cavity in the lung, when it is near the surface, and communicates with an open bronchus.

CACHEXIA.—From *κακός* evil, *ἔξις* habit.—A depraved condition of the body, which is usually the result, and not the cause, of disease.

CARDIALGIA.—From *καρδία* the heart, *ἄλγος* pain.—A burning pain referred to the stomach. Heartburn.

CASEATION.—From *caseus*, cheese. A pathological process observed in tuberculosis, when the inflammatory product becomes yellow, friable, and dry.

CATAMENIA.—From *κατά* answering to, *μήν* a month.—The menstrual discharge of females.

CATARRH.—From *καταρρέω*, to flow down.—Inflammation of, and discharge of fluid from, a mucous membrane. Generally used to denote a common cold affecting the nose (*Coryza*), the frontal sinuses (*Gravedo*), and trachea and bronchial tubes (*Bronchitis*).

CATHARTICS.—From *καθαίρω*, to purge.—Medicines which increase the number of intestinal evacuations.

CAVERNOUS RESPIRATION.—From *caverna*, a cave, grotto.—A hollow sound heard during auscultation, in dilated bronchi, and diseases causing excavation in the lung tissue. Tracheal respiration.

CHLOASMA.—From *χλοάω*, to be of a pale, light green.—An eruption of light yellowish-brown patches on the chest and abdomen. Dark circles round the eyes.

CHLOROSIS.—From *χλωρός*, green—generally pale, pallid.—Green sickness. Peculiar to young girls suffering from disordered or arrested menstrual flow. There is frequently a green tint of the complexion.

CHOREA.—From *χορεία*, a dancing.—A disease attended with erratic movements, grimaces, twitchings, and gesticulations of an involuntary character.

CIRRHOSIS.—From *κιρρός*, yellow.—An increase of connective tissue in the liver or lungs, which may be so excessive as to absorb or destroy the natural structure by pressure. In cirrhosis of the liver the pale colour is due to the large amount of yellow pigment in the secreting cells; the liver is also smaller and puckered, producing the hob-nailed condition.

CLONIC.—From *κλόνος*, any violent motion, tumult.—A term applied to convulsive movements in which contraction and relaxations alternate.

CONDYLOMATA, pl. of *Condyloma*.—From *κόνδυλος*, a knuckle.

—Indolent wart-like protuberances about the genital organs and anus.

CORYMBOSE.—From *κόρυμβος*, a cluster of fruit or flowers terminating in a flat plane.

CORYZA.—From *κάρα* the head, and *ζέω* to boil.—A mucous, ropy discharge from the nostrils, caused by inflammation of the Schneiderian membrane.

CREPITATION.—From *crepito*, to crackle.—A sound heard in the first stage of pneumonia, prior to consolidation, and in the third stage of resolution. It is also manifest in acute capillary bronchitis and pulmonary œdema.

CUTIS ANSERINA.—*Cutis* skin, *anser* a goose.—A condition of the skin observed in the early stage of fever and in various nervous affections, and resembling the skin of a plucked goose.

CYNANCHE PAROTIDEA.—From *κύων* a dog, *ἄγχω* to choke ; *παρά* belonging to, *ὄψ* the ear.—Mumps. Inflammation of the parotid gland.

CYANOSIS.—From *κύανος*, blue.—Lividity or duskiness of the face. Observed in affections interfering with the entrance of air into the lungs.

CYSTICERCUS.—From *κύστις* the bladder, *κέρκος* a tail.—A genus of the Entozoa of the family of the hydatids. The tailed-bladder worm.

DESQUAMATION.—From *desquamo*, to scale off.—Separation of the epidermis in the form of scales.

DIABETES.—From *διά* through, *βαίνω* pass.—Great increase of the secretion of urine.

DIAPHORETICS.—From *διά* through, *φορέω* to carry.—Remedies which promote perspiration.

DIATHESIS.—From *διατίθημι*, to arrange, dispose.—A morbid tendency. A peculiar predisposition to certain diseases.

DIPSOMANIA.—From *δίψα* thirst, *μανία* rage.—An insatiable desire for alcohol, observed in habitual drunkards.

DIPHTHERIA.—From *διφθέρα*, a skin or membrane.—An epidemic disease of the throat, consisting of the formation of false membranes, which appear on uvula and palate, tonsils and pharynx, extending into pharynx and larynx, and are at first white, but afterwards become darker. These diphtheritic patches separate by sloughing.

DIURETICS.—From *διά* through, *οὐρέω* to pass urine.—Medicines which promote an increased flow of urine.

DYSENTERY.—From *δύς* with difficulty, *ἐντερον* bowel.—Inflammation and ulceration of the mucous membrane of large intestine and rectum, attended with griping, and mucous and bloody stools.

DYSPEPSIA.—From *δύς* with difficulty, *πέπτω* or *πέσσω* to soften, digest.—A disordered condition of the functions of the stomach. Indigestion.

DYSPNŒA.—From *δύς* with difficulty, *πνέω* to breathe.—Difficult, laboured, obstructed breathing.

ECCHYMOSIS.—From *ἐκχυμώω*, to pour out.—A blue or black discoloration from an extravasation of blood into the areolar tissue.

ECHINOCOCCI.—From *ἐχῖνος* hedgehog, *κόκκος* a berry.—Immature tape-worms or hooklets, found in hydatid cysts, most commonly in the liver.

ECTHYMA.—From *ἐκθύω*, to break out.—Skin disease characterised by large pustules and inflammation of a severe type.

ECZEMA.—From *ἐκζέω*, to boil up.—An inflammatory disease of the skin, with formation of vesicles, which, from irritation or other causes, may become pustules.

EMBOLISM.—From *ἐμβόλη*, a wedge or plug.—The obstruction of a blood-vessel by a fibrinous concretion, which has been detached from the heart or one of the vessels.

EMPHYSEMA.—From *ἐμφυσάω*, to inflate.—1. Infiltration of air into the interlobular areolar tissue. 2. Dilatation of air-cells, which assume the size of hemp seeds.

EMPYEMA.—From *ἐν* within, *πύον* pus.—A collection of pus within the cavity of the pleura.

ENCEPHALITIS.—From *ἐγκέφαλος* brain, terminal *-itis*.—Inflammation of the brain and its membranes.

ENDEMIC.—From *ἐν* amongst, *δῆμος* people.—Referring to diseases peculiar to certain localities.

ENDOCARDITIS.—From *ἐνδον* within, *καρδία* the heart, terminal *-itis*.—Inflammation of the serous membrane which lines the interior of the heart.

EPIDEMIC.—From *ἐπί* upon, *δῆμος* people.—Applicable to diseases which attack large numbers simultaneously.

EPILEPSY.—From *ἐπιλαμβάνω*, to seize, attack.—Sudden and complete unconsciousness, with a series of convulsive movements.

ERUCTION.—From *eructo*, to belch.—Expulsion of wind from the stomach by the mouth.

ERYTHEMA.—From *ἐρυθαίνω*, to redden.—Arises from some derangement of the system, and consists of a mere redness of the skin, not extending to the cellular tissue.

ETIOLOGY.—From *αἰτία* cause, *λόγος* discourse.—An account of the causes of disease.

EXACERBATION.—From *exacerbo*, to make angry.—An increase of the strength and fury of the symptoms of a disease.

EXANTHEMATA.—From *ἐξανθέω*, to break out, to bloom.—Diseases of the skin, consisting of an eruption of red patches, which disappear transiently under pressure.

EXOPHTHALMIC GOITRE.—From *ἐξ* out, *ὀφθαλμος* the eye.—Protrusion of the eyeball, accompanied by goitre.

EXPECTORANTS.—From *expectoro*, to discharge from the chest.—Medicines which facilitate the removal of secretions collected in the chest.

FEBRIFUGE.—From *febris* fever, *fugo* to drive away.—A medicine which possesses the power of diminishing the severity of fever.

FISTULA, a pipe, tube, reed.—A passage with narrow opening, the result, generally, of ulcer or abscess.

FOMITES, pl. of *fomes*, touchwood, tinder.—Porous substances which absorb and retain contagious effluvia, as woollen clothing, cotton materials, etc.

FREMITUS, murmuring, growling.—Vocal fremitus is a vibration communicated to the hand when placed on the chest whilst the patient is speaking. It is absent or diminished in pleuritic effusion, and increased in pulmonary consolidation.

GASTRALGIA.—From *γαστήρ* stomach, *ἄλγος* pain.—A sensation of pain in the stomach of a burning character.

GASTRODYNIA.—From *γαστήρ* stomach, *ὀδύνη* pain.—Cramp or spasmodic pain in the stomach.

GASTROTOMY.—From *γαστήρ* stomach, *τέμνω* to cut.—The operation of opening the stomach.

GLYCOSURIA.—From *γλυκὺς* sweet, *οὖρον* urine.—Sugar in the urine.

GRAVEDO.—From *gravis*, heavy.—Inflammation of membrane lining the frontal sinuses.

GUMMATA.—From *gumma*, an elastic tumour containing a substance like gum.—Small, firm, yellow-whitish tumours surrounded by a capsule formed of degenerated tissues. Characteristic of syphilis.

HÆMATEMESIS.—From αἷμα blood, ἐμέω to vomit.—Vomiting of blood from the stomach.

HÆMATINURIA.—From hæmatin, the red colouring matter of the blood, οὔρον urine.—Dark-coloured urine, containing no blood, but merely the colouring-matter of the blood.

HÆMOPTYSIS.—From αἷμα blood, πτύω to spit.—Bleeding from the lungs.

HÆMORRHAGE.—From αἷμα blood, ῥήγνυμι to break forth.—Bursting forth or discharge of blood.

HEMIPLEGIA.—From ἥμισυς half, πλήσσω to strike.—Paralysis affecting one side of the body.

HEPATISATION.—From ἥπαρ, the liver.—A term applied to the lungs when impervious to air, and the structure assuming a liver-like appearance.

HERPES.—From ἔρπω, to creep.—A skin disease consisting of small vesicles upon inflamed bases.

HYALINE.—From ὑαλος, glass.—A transparent, colourless substance.

HYDATIDS.—From ὕδωρ, water.—Cysts filled with a limpid fluid, floating in which are the immature tape-worms.

HYDRAGOGUES.—From ὕδωρ water, ἄγω to expel.—Medicines which cause watery evacuations.

HYDROCEPHALUS.—From ὕδωρ water, κεφαλή the head.—A collection of water within the head.

HYDRONEPHROSIS.—From ὕδωρ water, νεφρός the kidney.—Dropsy of the kidney.

HYDROPHOBIA.—From ὕδωρ water, φοβέω to fear.—Madness caused by the bite of a rabid animal.

HYSTERIA.—From ὑστέρα, the womb.—A nervous disorder, confined almost entirely to susceptible females, consisting of a morbid imagination, peculiar deceptions, and amorous excitement.

HYPERTROPHY.—From ὑπέρ above, increase, τρέφω to nourish.—Excessive growth or enlargement of a part, caused by increase in size or number (or both) of tissue elements.

HYPOCHONDRIASIS.—From ὑπό under, χόνδρος cartilage.—Morbid sensibility, mental alienation. Probably derives its name from an uneasy feeling experienced in the hypochondriac regions.

ICHTHYOSIS.—From ἰχθύα, skin of a fish.—A hard, dry, scaly, not contagious, disease of the skin.

IDIOPATHIC.—From *ἴδιος*, peculiar, separate.—A spontaneous or primary disease. Not dependent upon another.

IMPETIGO.—From *impeto*, to attack.—A pustular disease of the skin, forming thick yellowish incrustations.

INSOLATIO.—From *in, sol*, the sun.—An affection due to the direct action of the sun's rays.—Sunstroke.

INTERSTITIAL.—From *inter* between, *sto* to stand.—By some called fibroid. Pertaining to an increase and hardening of the connective tissue.

INTUSSUSCEPTION.—From *intus* within, *suscipio* to receive.—Introduction of one part of the bowel into another, just as the finger of a glove is pulled within itself.

LARYNGISMUS STRIDULUS.—From *λαρυγγίζω* to bawl, *stridulus* a hissing sound.—Spasm of the muscles of the glottis, usually nocturnal, preventing the entrance of air, and hoarse, croupy cough. False croup.

LARYNGITIS.—From *λάρυγξ* the windpipe, terminal *-itis*.—Inflammation of the larynx.

LEUCOCYTHÆMIA.—From *λευκός* white, *κύτος* a cell, *αἷμα* blood.—A superabundant development of the colourless corpuscles of the blood. White-cell-blood.

LICHEN.—From *λειχήν* moss.—A skin disease in which the papules are distinct or arranged in clusters. Very irritating and obstinate.

LOCOMOTOR ATAXY.—From *ἀ* neg., *τάσσω* to order.—An absence of co-ordination in the movements of the muscles.

LUPUS.—From *lupus*, the wolf.—A spreading, corroding, tuberculous disease.

LYSIS.—From *λύω*, to dissolve.—The gradual diminution and termination of a fever without critical symptoms.

MACULA.—From the Latin *Macula*.—A permanent discoloration of some portion of the skin, and sometimes associated with alteration of its texture. It is not dependent on any disease of the constitution.

MARASMUS.—From *μαραινω*, to waste or pine away.—Progressive wasting.

METALLIC TINKLING.—A sound like that caused by striking glass or metal with a pin. A pathognomonic symptom of pneumothorax with effusion.

MENINGITIS.—From *meningium*, terminal *-itis*.—Acute inflammation of the pia mater and arachnoid.

MYALGIA.—From *μῦς* a muscle, *ἄλγος* pain.—Muscular soreness, stiffness, or pain. Cramp.

MYELITIS.—From *μυελός* marrow, terminal *-itis*.—Inflammation of the spinal cord.

NEPHRALGIA.—From *νεφρός* the kidney, *ἄλγος* pain.—Pain and neuralgia in the kidney.

NEPHRITIS.—From *νεφρός*, the kidney, terminal *-itis*.—Inflammation of the kidney.

NUMMULAR.—From *nummula*, a little coin.—Applied to sputa lying flat at the bottom of a vessel, and having the appearance of small coins.

CEDEMA.—From *οἰδέω*, to swell.—Dropsical swelling, from accumulation of serous fluid in the subcutaneous areolar tissue.

OIDIUM ALBICANS.—From *ὠόν* an egg, *εἶδος* resemblance.—A vegetable parasite, seen on the mucous membrane of cheek and throat, as white spots and patches.

OPISTHOTONOS.—From *ὀπισθε* behind, *τείνω* to stretch.—Spasm of the neck, back, and loins, causing arch-like appearance of the back.

OXYURIS.—From *ὀξύς* sharp, *οὐρά* a tail.—Small thread-worm.

PARACENTESIS.—From *παρά* by the side, *κεντέω* to stab.—The operation of removing fluid from the chest by tapping.

PARALYSIS.—From *παράλύω*, to relax or disable.—Diminution or total loss of voluntary motion, or sensibility, or of both.

PARAPLEGIA.—From *παραπλήσσω*, to strike badly.—Palsy affecting the lower half of the body.

PAREISIS.—From *παρίημι*, to unloose, relax.—Partial paralysis, consisting of a slight inability of movement.

PATHOGNOMONIC.—From *πάθος* suffering, sickness, *γινώσκω* to perceive. Applied to the distinguishing symptom or symptoms of a disease.

PECTORILOQUY.—From *pectus* the breast, *loquor* to speak.—The sound of the voice heard during auscultation, which appears to be transmitted directly from the chest into the ear.

PERICARDITIS. From *περί* about, *καρδία* the heart, terminal *-itis*.—Inflammation of the sero-fibrous membrane covering the heart.

PERITONITIS.—From *περιτείνω*, to stretch all round, terminal *-itis*.—Inflammation of the serous membrane lining the walls of the abdomen.

PERITYPHLITIS.—From *περί* around, *τυφλός* blind, terminal *-itis*.—Inflammation of the areolar tissue which connects the psoas and iliacus muscles with the cæcum.

PETECHIA.—From *petechio*, a flea-bite.—A small red or purplish spot, in shape and colour similar to a flea-bite, and due to subcutaneous hæmorrhage.

PHOTOPHOBIA.—From *φῶς* light, *φόβος* fear.—Aversion to and intolerance of light. Found in certain stages of meningitis, measles, typhus, and many diseases of the eye.

PHTHISIS.—From *φθίω*, to pine or waste away.—Progressive emaciation. Consumption of the lungs. Decline.

PLEURISY.—From *pleuritis*, *πλευρά* the side, terminal *-itis*.—Inflammation of the serous membrane lining the walls of the chest, and reflected upon each lung.

PLEURODYNIA.—From *πλευρά* the side, *ὀδύνη* pain.—Pain, seated in the walls of the chest, and ordinarily in the intercostals.

PLEXIMETER.—From *πλήσσω* to stride, *μέτρον* a measure.—An ivory plate used in mediate percussion of the chest.

PNEUMONIA.—From *πνευμονία*, a disease of the lungs.—Acute inflammation of the substance of the lung.

PNEUMOTHORAX.—From *πνεῦμα* air, *θώραξ* the chest.—A collection of air in the pleural cavity. If serum, also Hydro-pneumothorax; if effusion purulent Pyopneumothorax.

PODAGRA.—From *πούς* the foot, *ἄγρᾱ* seizure.—Gout situated in the joints of the foot.

PROPHYLACTIC.—From *πρὸ* before, *φυλάσσω* to avoid.—The preventive treatment of disease.

PRURIGO.—From *prurio*, to itch.—A papular eruption, attended with severe itching.

PSORIASIS.—From *ψώρα*, itch, mange.—A disease of the skin characterised by patches of rough scales.

PTOSIS.—From *πτύω*, to fall.—A falling of, or inability to raise the upper eyelid.

PUERPERAL.—From *puer* a child, *pario* to bring forth.—Relating to women recently delivered.

PURPURA.—From *πορφύρα*, the purple fish.—Purple spots and patches on the skin from extravasation, due to a morbid condition of blood and capillary vessels.

PYÆMIA.—From *πύον* pus, *αἷμα* blood.—Contamination of the blood from absorption of pus.

PYELITIS.—From *πέλος*, a tub, trough, terminal *-itis*.—Inflammation of the pelvis, infundibula, and calyces of the kidney.

PYROSIS.—From *πυρώ*, to burn.—A disease consisting of a hot sensation in the stomach, and copious eructation of thin, watery, acid, or insipid fluid.

PYTHOGENIC.—From *πύθω* to rot, *γεννᾶω* to generate.—A term applied to typhoid, gastric, or enteric fever.

RABIES.—From *rabio*, to be furious.—A disease of dogs and other animals, which, if implanted by means of the saliva into the human system, produces Hydrophobia.

RALES.—From *raler*, to rattle in the throat.—Liquid sounds produced by the air passing through mucus or other fluids.

RESOLVENTS.—From *resolvo*, to relax, undo.—Substances possessing the power of promoting the resolution of tumours.

RHONCHUS.—From *ρόγχος*, a rattling sound in the throat.—*Sonorous* rhonchus is a dry deep-toned sound produced by obstruction to the tide of air in a large bronchial tube. In the smaller tubes the pitch is higher, and whistling, hissing sounds are heard, called *sibilant* rhonchi.

ROSEOLA.—Diminutive of *rosa*, a rose.—An efflorescence of transient patches of redness. Non-contagious.

RUBEOLA.—From *rubeo*, to blush.—A disease combining certain symptoms of scarlatina, with symptoms resembling those of measles.

RUPIA.—From *ρύπος*, dirt, uncleanness.—A non-contagious eruptive disease, characterised by flat vesicles, succeeded by dark and rough crusts.

SARCINA VENTRICULI.—From *σάρκινος*, fleshy.—A microscopic cryptogamous plant, found in the contents of the stomach in pyrosis.

SCABIES.—From *scabo*, to scratch.—A contagious cutaneous disease, attended with severe itching.

SCIATICA.—From *ισχίον*, the hip.—Pain in the sciatic nerve.

SCLEROSIS.—From *σκληρός*, hard, tough.—An increase of connective tissue, which may destroy the natural structure by pressure.

SCROFULA.—From *scrofa*, a sow.—A morbid state of the system revealed by chronic swelling and suppuration of the absorbent glands, etc.

SEPTICÆMIA.—From *σήπω* to rot, *αἷμα* blood.—Putrid infec-

tion. A morbid state of the blood, due to the presence of bacteria, *i.e.* rod-like microscopic bodies.

SEQUELÆ.—From *sequor*, to follow.—Morbid affections left as the result of a disease.

SHINGLES.—From *cingulum*, a girdle.—The popular name for Herpes zoster, a vesicular disease which compasses half the circumference of the body.

STENOSIS.—From *στένω*, to make narrow.—Contraction of a vessel.

STERCORACEOUS.—From *stercus*, excrement.—A term applied to faecal vomiting.

STOMATITIS.—From *στόμα*, a mouth, terminal *-itis*.—Inflammation of the mouth, which may be parasitic, vesicular, ulcerative, or gangrenous.

SUBSULTUS TENDINUM.—From *subsulto*, to leap.—An involuntary twitching of the tendons, generally observable at the wrist. Evidence of great cerebral irritability.

SUDAMINA.—From *sudo*, to sweat.—Small transparent vesicles which appear in numbers upon the skin in diseases accompanied by sweating.

SYCOSIS.—From *σῦκον*, a fig.—An eruption of inflamed tubercles clustering about the beard and scalp. Ringworm of the beard.

SYNCOPE.—From *συγκόπτω*, to knock to pieces.—Partial or complete suspension of respiration and the action of the heart. Sudden prostration.

SYPHILIS.—From *σύν* with, *φιλέω* to love.—An infectious disease communicable by sexual coition.

TABES.—From *tabeo*, to decay.—Emaciation, usually the result of tubercular degeneration.

TÆNIA.—From *ταινία*, a band or ribbon.—The tape-worm.

TENESMUS.—From *τείνω*, to stretch, to strain to the utmost.—A painful desire to go to stool, with great straining.

THROMBOSIS.—From *θρόμβος*, a clot of blood.—Partial or complete obstruction of a vessel by a morbid product formed at the occluded spot.

TINEA CIRCINATA.—From *tinea* a gnawing worm, *circinatus* to be compassed about.—A contagious and parasitic disease attacking the general surface of the body, and characterised by rings spreading from a centre.

TINEA DECALVANS.—From *decalvo*, to make bald.—Falling off of the hair, leaving little circular or oval bald patches.

TINEA FAVOSA.—From *favus*, a honeycomb.—This disease affects the scalp, and the hairs are found to pierce a small, dry, cup-shaped, yellow scab.

TINEA TONSURANS.—From *tondeo*, to shave.—A disease of the scalp, in which are present patches of baldness, with scaly eruption.

TINEA TRICOPHYTINA.—From *θρίξ* the hair, *φυτόν* a vegetable.—A vegetable parasite affecting the scalp, the hairy part of the face, or any portion of the skin.

TINEA VERSICOLOR.—From *verso* to turn, *color* colour.—A vegetable parasitic disease marked by the presence of yellow-coloured patches on the chest and abdomen, and covered with small scales.

TONIC SPASM.—From *τείνω*, to stretch.—Referring to rigid contraction of the muscles without relaxation.

TOPHI, pl. of *tophus* or *tofus*, volcanic rock.—Chalk stones. Concretions of urate of soda with animal matter, found in the joints of gouty subjects.

TRICHINA SPIRALIS.—From *θρίξ* a hair, *σπείρα* anything wound round.—A species of entozoa infesting the voluntary muscles.

TUBERCULOSIS.—Diminutive of *tuber*, elevation or excrescence.—A morbid condition distinguished by small nodular lesions found in the organs and tissues.

TYMPANITIS.—From *τύμπανον*, a drum.—Accumulation of wind in the bowels, spherical projection of the abdomen, and increased resonance on percussion.

TYPHLITIS.—From *τυφλός*, blind; terminal *-itis*.—Inflammation of the cæcum.

TYPHOID.—From *τύφω* to make dull or restless, *εἶδος* resemblance.—A slightly contagious fever generated by decomposed animal matter, and distinguished by increased vascularity of Peyer's glands, followed by ulceration.

TYPHUS.—From *τύφω*, to make dull or restless (or *τύφος* smoke).—A continued contagious fever marked by great prostration and mental disturbance.

URÆMIA.—From *urea*, *αἷμα* blood.—A condition of urea in the blood, which acts as a poison to the nervous centres.

URTICARIA.—From *urtica*, a nettle.—An affection distinguished by an eruption of wheals, resembling the elevations produced on the skin by the stings of nettles.

VARICELLA.—Diminutive of *variola*, chicken-pox.—A mild eruptive disorder characterised by transparent vesicles of the size of a pea, and appearing in successive crops.

VARIOLA.—From *varius*, spotted.—A contagious disease marked by fever and an eruption passing through papular, vesicular, and pustular stages. Upon shrinking of the pustules scabs are formed. Small-pox.

VIBICES, pl. of *vibex*, the mark of a stripe.—Large purple spots appearing under the skin, and found in purpura, scurvy, small-pox, typhus, and liver and splenic diseases.

ZYMOTIC.—From ζύμη, leaven, yeast.—Zymotic diseases are those which depend on some morbid poison acting on the organism in the manner of a ferment. They are contagious, febrile in character, and rarely attack the same person more than once. Zymotic diseases are—small-pox, chicken-pox, typhus fever, typhoid, scarlet fever, the plague, measles, hooping-cough, mumps.

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