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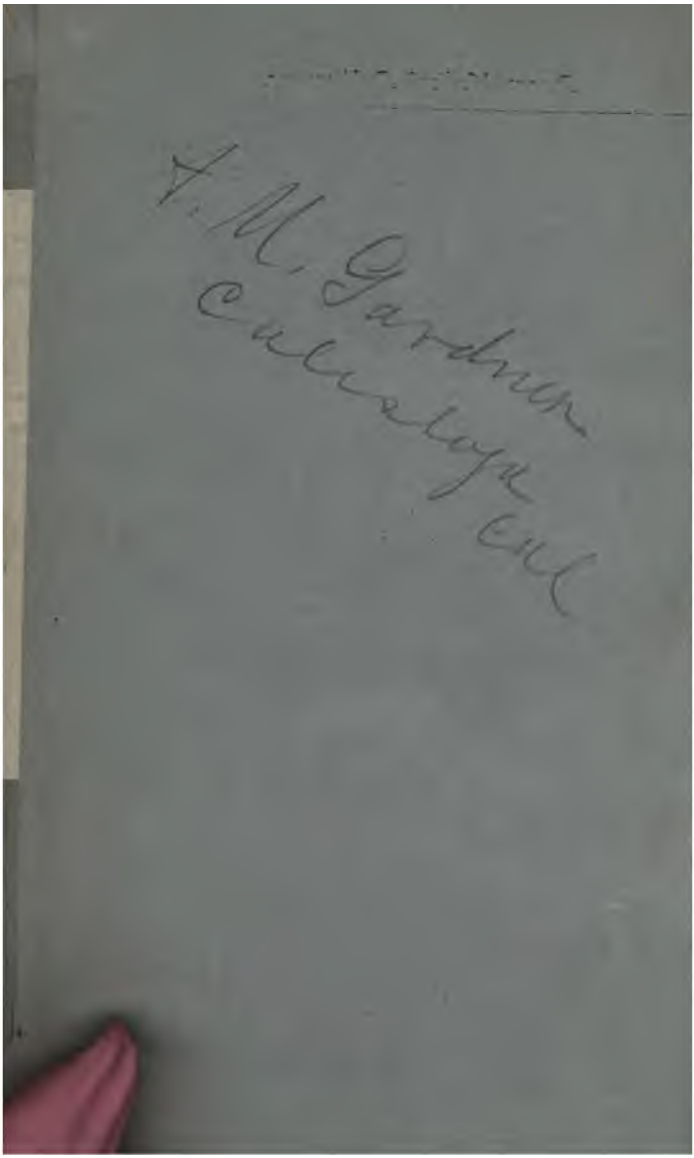
M. Gardner

*STUDENTS' AIDS SERIES.*

# AIDS TO DIAGNOSIS

## PART I.—SEMEIOLOGY

BY

J. MILNER FOTHERGILL

MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON
ETC., ETC., ETC.

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# PREFACE.

THE student is often lost in surprise, not uncommonly blended with suspicion or scepticism, as to what it is which directs an experienced practitioner as to the questions which he puts to his patients; which causes him to use his instruments of precision little; and sometimes induces him to dispense with them altogether.

It is Semeiology.

What is meant by and involved in the term 'Semeiology' it will be essayed to explain in the following pages. As such a work is largely original, allowances are craved for defects and shortcomings.

*October 2nd*, 1880.

# AIDS TO DIAGNOSIS.

## SEMEIOLOGY.

Σημειον—a sign or a symptom. Semeiology is used here to signify the signs and symptoms which are noted by the eye, before a physical examination of the patient is made. But it is found that the information afforded by feeling the pulse and taking the temperature must be discussed under this heading, and even the examination of the urine, etc. Students are taught physical signs at the present time very carefully; so carefully, indeed, that while they can measure the amount of disease present in the lungs with much accuracy, they know very little about the individual in whom that disease exists. All that the old practitioner has learnt to take in by the eyes, they are largely left to learn at the bedside for themselves, and by themselves, when they get into practice, and at the expense of their patients. Some teachers point out many things, signs of value, to their students, while others make close observation of their patients when stripped; but are comparatively indifferent about them while they have their clothes on. But careful observation will often tell a great deal, from the physique, the gait, and the indications furnished by the contour of the head, and by the outlines of the face. Such observation, it will be found, tells much about the general condition which underlies the malady, or ailment specially complained of. Such observation will furnish most useful hints as to the line of treatment to be

adopted; which after all is the end to which accurate diagnosis is the means. A copper-coloured spot on the forehead will often clear up the nature of a very puzzling form of hemiplegia in a young person, just as will a tubercle on the iris; a scar at the corner of the mouth will reveal the secret of a case of malnutrition in a child which has hitherto resisted all remedial measures, but which becomes suddenly tractable, when mercury is added to the chalybeate; a little puffiness under the lower eyelid may indicate the chronic Bright's disease underlying the bronchitis which is the prominent trouble for which the doctor is consulted; the hue of the skin will often furnish the clue to the malarial neuralgia, which is very troublesome; just as a tortuous visibly-pulsating temporal artery will tell in all but articulate language of the gouty heart and its associated conditions. These are a few instances of what the eye can do in the way of diagnosis; it gives the direction to physical examination, and guides the line of treatment when otherwise a trackless waste appears to lie before the puzzled youthful therapeutist. It is all very well to treat symptoms; but in the numerous maladies which are but the special manifestation of the general condition, the treatment of the general condition is that of the special manifestation, as is so well seen in gouty and syphilitic affections. A copper-tinted blush on a baby's bottom may throw a flood of light upon the otherwise obscure lung mischief in its father, and furthermore suggest the appropriate specific treatment.

At present the remarks apply to a patient as seen with his or her clothes on; at a later period something will be said about patients when first seen in bed. When a patient walks into the consulting room, whether private or at the hospital, or into the general practitioner's surgery, the first thing to be done is to look at him. Look him or her carefully over; and my young friend the reader, if you will only do this sufficiently carefully, you will soon be surprised to find how much you can see. The more the eye learns to see, the more it can see, and will see. Because you cannot see all at first, you must not be cast down. A juggler will keep six balls in the air at once: you see him do it, but that will not enable you at once to do the same. As he

learnt to do it with much patience, long and determined perseverance, so must you, if you wish to do it. There is nothing worth knowing that is got without trouble. So it is with the education of the eye. Robert Houdin, the famous French conjuror, set himself to see how much he could note of the contents of different tradesmen's dressed windows in walking past them. In a little time he could note an almost incredible number of objects in an apparently brief passing glance. We all remember the interesting child's story of 'Eyes and no Eyes.' The education of the eye is most important to a medical man: it cannot be forgotten or mislaid, like an instrument; it is of incalculable value when the patient is unconscious, or deaf; or a foreigner whose language the doctor does not know, and who does not speak the doctor's language. The careful education of the eye is invaluable in all these cases. Further, it spares much waste of labour often, and puts the practitioner on the right scent in many obscure cases. Especially is the information so furnished valuable as to certain diathetic (inherited) and cachectic (acquired) conditions, which underlie the malady of which the patient mainly complains. The reader will see, as the matter is unfolded, that the semeia we note tell chiefly of gout, struma, syphilis, and anæmia, all underlying conditions of the greatest moment in treatment; the hue of the skin in jaundice and Addison's disease being indeed the chief indication of the malady. The physiognomy of Graves's or Basedow's disease forms the diagnosis almost. The blurred outlines of some faces tell of mitral disease, just as surely as the pallor of other faces tells of the large white kidney. All this, when learnt, is of the greatest service every day in practice. Froude says truly enough: 'The knowledge which a man can use is the only real knowledge; the only knowledge which possesses growth and vitality and converts itself into practical power. The rest hangs like dust about the brain, or dries like rain-drops off the stones.' Some varieties of information may be safely left in the library, and it is quite enough for the busy practitioner to know where to find it when he wants it; but there is other information which is required several times every day, and of such nature is

this which I am now essaying to furnish to the student—with how much success it would not be judicious to say. The subject has not been systematically handled before.

The late Professor Laycock, of Edinburgh, was the first person to insist on 'physiognomical diagnosis,' and on diatheses and their indications; Jonathan Hutchinson has told us much about the teeth; the late Marshall Hall wrote an excellent article on 'Symptomatology' in the 'Cyclopædia of Practical Medicine;' S. Wilks has written on 'Temperaments;' Professor Austin Flint has an excellent section on the subject in his 'Clinical Medicine;' Dr. Southey, of St. Bartholomew's Hospital, has written a series of articles in the *Lancet*, Vol. I., 1878, on 'Diatheses;' and Dr. Finlayson, of Glasgow, has written on the subject in his 'Clinical Manual for the Study of Medical Cases;' and I myself have written on the subject in 'The Maintenance of Health,' and in 'The Practitioner's Handbook of Treatment, or the Principles of Therapeutics.' So far as I know, the list given comprises the bulk of what has been written on the subject. Lavater's work was related to *physiognomy*, and so are the numerous phrenological works, and not to physical indications. Professor Laycock's work stands out in bold relief, and is by far the most important contribution on the subject. His 'Medical Observation and Research' ought to be in every student's hands, and before long will be so; for its practical value is much greater than the student at first sight will be led to suppose. Perhaps what is said here will stimulate him to peruse Dr. Laycock's writings for himself, especially the lectures in the first half of 1862 in the *Medical Times and Gazette*.

Making all allowances, then, for the immaturity of the subject, and remembering that it is but in its early infancy, the plunge must be essayed.

**GENERAL APPEARANCE.**—The first object to note is the general appearance of the patient; which tells the sex certainly, the age approximately. If obese, there is no question of wasting disease; if florid, there is no anæmia; if pallid, there is no vascular fulness; if emaciated, then phthisis, dyspepsia, diarrhœa, cancer, or female troubles are probably present. There

may be dropsy present, as seen in the swollen feet or bloated features; or if it be abdominal, the unfastened gown or gaping waistcoat tell us quickly in which direction to pursue our inquiries. The general appearance will tell us whether the patient is fairly well generally, whether broken down by disease, or how far enfeebled—will, indeed, tell us rudely how 'ill' the patient is, and direct our examination.

**THE ATTITUDE.**—The attitude is often suggestive. The patient may be bowed by sheer debility, or by abdominal pain, or spinal disease; or bent to one side, in order to give some part rest, as in pleurisy, when the patient bends to the affected side, so as to lessen the friction of the two inflamed serous surfaces. Then the *tout ensemble* is often most instructive. There is the pale, thin, cast-down and unhappy-looking young woman with dyspepsia, and trouble of various kinds in her reproductive organs; there is the panting patient with raised shoulders, who has chronic bronchitis and emphysema simply written legibly upon the figure; there are the liniments of struma as distinct as a written page, especially in children; the snuffles of a syphilitic baby are pathognomonic! It is well for the student to study types, or well-marked varieties of disease, which spares much time, in out-patient practice especially; as, once the type well-recognised, it is easy to find out the peculiarities of the individual patient. The eye learns a certain type of person with persisting lithiasis, and this will often guide one safely through a perfect maze of symptoms and statements of subjective sensations otherwise unintelligible. This is very common among elderly patients; and is as marked as that of the anæmic young woman. There is a certain attitude and carriage which tells one, in no doubtful accents, that there is pulmonary phthisis, and leads one to examine the patient's chest without more ado. Then the bearing is very different A consumptive is often abnormally acute, and will note a piece of paper on the floor under the table, and dive for it before one is well aware that he is in the room; whereas patients with chronic bronchitis and emphysema, or with fatty degeneration of the heart, appear bewildered and stupid. Then in chorea the movements make the diagnosis;

sometimes, however, the arm is quiet, and looks as if paralysed, and so the practitioner is set off on a wrong scent. In paralysis agitans the movements of the forearm are indicative of the changes in the nervous system. Then there is tremor, which is well seen in anæmic women who take tea to excess. It is also well marked in chronic alcoholism, when the tremor of the different muscles, and the unsteadiness of the carriage, often tell what the patient endeavours hard to conceal.

**PHYSIOGNOMY.**—Then the physiognomy is not without value. There is the bowed-down look of cerebral anæmia; the depression of melancholia; the excitement of mania; the elation of general paralysis; and the worn look of mental worry or anxiety are all visible enough. There are the general evidences of nutrition and a well-fed nervous system, usually with a full pulse; and the muscular listlessness of malnutrition, and a soft, compressible pulse.

**PARALYSIS.**—This may be partial—the hand and arm being fixed—the remains of a whilom hemiplegia. This condition, however, may be simulated by some accident or affection of the bones; or the patient may have slept with the arm over the back of a chair, as men when drunk are apt to do, and the pressure on the brachial nerve be the cause of the paralysis.

Then there are the differences in gait, attitude, and walk produced by different forms of nervous disease and osseous changes. There is, first, the walk of ordinary hemiplegia; where the patient circumducts the affected leg, trailing the shoe-toe on the ground, sometimes the outside, sometimes the inside, so that the toe of the shoe becomes irregularly worn. Often, the shoulder of the opposite side is thrown outwards at each step, so as to tilt up the pelvis on the affected side, and thus make it easier to circumduct the leg. Here the knee action is lost. Often the arm of the affected side hangs down rigid, with the fingers closed. In paraplegia the feet are not lifted up, but shuffled along the ground; in advanced cases there is never a distinct interval betwixt the feet, and each attempt at a step does not reach the length of the shoe. In hysterical paralysis the feet are dragged along, usually one more markedly than the other; while the patient is apt to

drop 'in a lump.' The fact, too, that the patient is a young woman is very significant. In true paraplegia the patient does not drop so long as the power to walk alone remains. In pseudo-hypertrophic paralysis there is a 'duck-like walk' or waddle, not unlike the walk of double *talipes varus*. '"Is that the long word you call it when a fellah walks so?" said the young man, making his fists revolve round an imaginary axis, as you may have seen youth of a tender age and limited pugilistic experience do when they show how they would punish an adversary, themselves protected by this rotatory guard' (Oliver Wendell Holmes). Then all are familiar with the manner in which the feet are lifted up abnormally high, and then brought down with a flop, in the disease known as locomotor ataxy. In disease of the cerebellum the gait is that of a drunken person, staggering, unsteady, or reeling. In paralysis agitans the patient comes 'trotting' forward much as an elderly actor comes on the stage; while the body is bent forward, with the shaking hands held out in front. This is simulated to a great extent in lead and mercurial poisoning. In progressive muscular atrophy the rolling gait of the sailor before he has acquired his 'land-legs' is exaggerated; while the muscles of the ball of the thumb are wasted, and if the patient attempt to unbutton his waistcoat, he does not try to use his thumb and index-finger, but thrusts the upper edge off the buttons with the dorsal aspect of his fingers.

Then there are sources of error; a patient may have a cork leg, or there may exist osseous changes. In hip-joint disease, 'in the early stage the limb is usually straight, carried slightly forward, or perhaps somewhat abducted, owing to the irritation and contraction of the capsular muscles on the anterior and outer aspects of the joint. As the disease advances the limb becomes adducted, so that the knee is carried against the lower part of the sound thigh' (Erichsen). Or the walk may be modified by a broken bone badly set. A limp is often caused by a sprain, or a tight boot; then there are the disturbances of the gait produced by corns; and the hobble of gout. Or the gait may be altered by intoxication, acute or chronic.

Then there is the swinging round of the affected leg, instead

of the normal straight-forward step, when there is disease of the hip-joint, usually called 'rheumatic'; and the same in rigidity of the knee. Or, in children, there is the peculiar gait, with the pelvis tilted up, which tells of *morbus coxarius*.

**DIATHESES.**—The diathesis, the inherited constitution of the patient, is of the utmost importance. It will tell of liability to certain forms of disease according to the diathesis. A certain diathesis may have engrafted upon it a cachexia—an acquired condition, as a person of strumous diathesis may have a syphilitic cachexia; in which case you will have a malady which you will find very intractable, and which will tax all your therapeutic capacity. In describing these diatheses I shall abbreviate Professor Laycock's descriptions in 'Medical Observation and Research.'

The gouty or sanguine arthritic diathesis presents the following features: a well-developed osseous system, firm muscles, carriage erect, a generally robust appearance; nutrition active; digestion usually good: respiration deep; large heart, with florid skin, usually; large head and lower jaw, with solidly enamelled teeth, often worn down; while the hair is usually strong and thick, not falling easily. The pulse is usually firm and steady, and the blood pressure in the arteries is high. Disease of the vascular system, the gouty heart, with its almost innumerable associations, is common with this diathesis; and high blood pressure in the arteries leads to atheroma, as a permanent condition, with apoplexy, aneurysm, and angina pectoris as passing conditions; and an hypertrophical left ventricle, with or without valvular disease, ending in decay and fatty degeneration of the heart walls.

The strumous diathesis gives an imperfectly developed osseous system 'of a retrogressive type, either towards the infantile or a lower ethnic form, both as to cranium and other bones.' The bones of the thorax are small; the shafts of long bones are slender, while their epiphyses are large in large bones ('double-jointed' is the north country expression), while the hand is unsightly. The forehead is often lofty and prominent; there is a certain fulness of the lips, and alæ nasi, with long silken eyelashes, and in very bad struma ophthalmia tarsi; the teeth are

carious, the lower jaw often light and thin. Hair fine and thin, often of a light hue; the eyebrows arched or very straight, often very thick and well-marked, especially in brunettes. The skin is often moist with acid perspirations. Then there is defective nutrition of the tissues. Diseases of the bones, *morbus coxarius*, rickets, spinal curvature, occur in childhood; or enlarged mesenteric glands, or a lardaceous liver; after puberty pulmonary consumption and suppuration of the glands of the neck appear. Women of this type often have children quickly, and then die off prematurely. Tubercle in all its forms, from meningitis in childhood to phthisis in adult life, is found with the strumous diathesis. It is always difficult to maintain the nutrition in this division of patients; and whenever there is disease of the osseous system, or of the lungs, it will demand careful and prolonged treatment. Syphilis usually is severe in strumous subjects.

The nervous diathesis furnishes a class of small beings rarely richly endowed with fat. Small, active, restless unwearying beings, with a small osseous framework; but with more muscular power than one would credit from their size. They are very energetic, and usually willingly carry other's burdens as well as their own. The forehead is high, and there is a well-vaulted skull, with small well-formed features and an active looking eye. They are the commonest subjects of overwork, and their nervous system often falters from the excessive demand upon it. They are liable to visceral derangements, especially dyspepsia and constipation. They are difficult to treat; being either intensely susceptible to neurotic agents, or requiring them in huge doses. From this class spring persons who possess 'idiosyncrasies,' and very cautious the young practitioner must be about them. They usually prefer tea to alcohol, and are affectionate beings; but when advanced in years, especially if they become gouty, they are irritable and often very trying. Their family history usually reveals various neuroses amongst the different members.

The bilious diathesis manifests itself in a dark skin with black hair, often with a yellow tinge on the conjunctiva. Persons of this class may be large or small, active or indolent; according as the bilious element is blended with the gouty, nervous, or lym-

phatic diathesis. When associated with the strumous diathesis, the product is a being in which, if once tubercle set in, it goes rapidly downwards; its course here resembling that of tuberculosis in the dark races. Bilious individuals do not *usually* put on fat, and hydro-carbons are not well assimilated. From the chemical composition of the bile acids we can trace their origin from the albuminoids of our food; and the presence of bile acids in excess in the blood of the bilious, affecting their intestinal canal, is as common as is lithiasis in the gouty. In each case the product is of albuminoid descent; and abstinence in the matter of nitrogenising foods and alkaline purgatives are indicated in each case. It is in these persons that we most commonly find localised spots of pain, which can be covered by the thumb, at or about the lower inner angle of the scapulæ; which knowing old doctors tell us mean 'liver and kidney.' They are quite right; but why a waste-laden blood should give rise to these spots of pain is, as yet, an unsolved problem.

The lymphatic diathesis is the antithesis of the nervous, large unenergetic listless beings, of the 'fat cow' type usually. They are always 'below par,' and require to be whipped up with large quantities of rich food and wine in order to possess an approach to a sense of energy. They usually have a large osseous framework, but their muscles are soft and their intellects inactive. They are not usually florid, and are commonly pallid. They are never well in low-lying districts. They require active treatment of a stimulo-tonic character in their illnesses; and depressants are badly borne by them. Women of this diathesis are liable to menorrhagia, and almost always have leucorrhœa; and in parturition are liable to flood profusely.

**CACHEXIÆ.**—With each form of diathesis may be superimposed a cachexia. The gouty individual may be anæmic, or the subject of lead-posoning, to which persons of this diathesis are very susceptible. The strumous person may have gout; the nervous individual may be the subject of malarial cachexia; or the lymphatic individual may have acquired syphilis. In all such cases it is necessary to keep in mind the diathesis as well as the cachexia, and to allow for both in the treatment adopted.

The leading cachexiæ are syphilis, gout, malarial poisoning, anæmiæ of varied origin, either from want of food, from mal-assimilation, from poisons formed within the body, or absorbed from without; as lead in painters, plumbers, and compositors; mercury in gilders and looking-glass makers; arsenic from wall-papers and other coloured objects; copper from kitchen utensils, or tin from the tinned provisions in vogue now. In all anæmiæ associated with a poison, the specific for the poison must be added to chalybeates for the treatment to be successful.

**HUE OF THE SKIN.**—This is important. It may be deepened in plethora, in the gouty heart with atheromatous arteries, in which cases the face is usually red; when the hue is purplish, then there is venous congestion. This is seen in mitral disease, in dilatation of the left ventricle, in cases of embarrassment of the pulmonic circulation; indeed, in all cases where the right ventricle is overtaxed. As cyanosis in babies, it indicates congenital malformation or imperfect development of the heart. Purplish congestion of the face with hurried respiration in pulmonary phthisis indicates much invasion of the lungs, and is of the worst prognostic omen. An increase in the natural vascularity of the face, with a certain 'blurring of the outlines' of the face, a fulness of the lips and alæ nasi, is found with organic changes in the heart in young subjects, generally indicating mitral disease. It is also seen with some women about the menopause, when they are not so well as usual, and there is a certain amount of vaso-motor paresis, with low arterial tension. By a careful observation of the features in the last case a shrewd practitioner sees that his patient is not so well, and puts his opening question accordingly. (It is of great moment, youthful reader, to mind this little matter. Never, if you can avoid it, put your greeting, 'Well, you are a little better to-day!' when the patient is worse; or, 'I am afraid you are not so well to-day!' when the patient is feeling better.) 'Circumscribed redness of one or both of the cheeks, with abruptly defined borders, is diagnostic of acute pneumonia. If it be observed in a case of chronic pulmonary disease it denotes the so-called hectic fever, and is a sign of phthisis.' (Flint.) Then there is a peculiar blueness of the

nose, lips, and cheek-bones, which is seen in some persons who resort to chloral. It is a hue quite *sui generis*, and unlike any other; the same hue may be seen on the hands.

Pallor is even still more common. There is simple pallor due to anæmia; whether caused by mal-assimilation or defective food, or by a drain, as diarrhœa, menorrhagia, with or without leucorrhœa, repeated epistaxis, or loss of blood from any cause. The hue is more cachectic-looking, approaching the cancerous character, in some cases of gastric ulcer—a waxiness, indeed. The cancer hue is slightly yellowish, yet distinct enough commonly. Then Bright's disease has its own pallor in large white kidney, often with unnatural smoothness of the skin in some cases, as in middle-aged ladies, or comparatively young men. In older persons the skin is wrinkled more than is natural. In both cases it is abnormally dry, and perspiration is not readily excited. Then there is anæmia with the skin looking like parchment, as if the subcutaneous fat was absorbed, and the dry skin tightly drawn upon the solid understructures, bringing out the temporal artery, usually tortuous, in strong relief. This condition I have observed in spare young men with syphilis, and spare old persons with visceral cirrhosis; in the latter the hue is sometimes that of discoloured parchment. Then in chlorosis the pallor has a greenish tint. This is seen in girls, who often at the same time are obese. Then there is the pallor of malarial mischief, whether neuralgic or dysenteric.

At times pallor is accompanied by œdema. This is seen in acute nephritis, in some cases of renal dropsy of a chronic character; or it may occur where there exists some obstruction to the circulation in the upper vena cava. Then there is pallor with or without much wasting, with a greasy unctuous skin, in certain cases of phthisis; these patients never do well, and rarely live long, do what one will. At other times the skin is pale, with a greasy feel, and degenerative changes in it, in aortic valvulitis in its later stages.

**COLOUR.**—Then there are conditions where the colour of the skin is changed. For instance, there is jaundice, where the face is stained yellow with bile. In Addison's disease there is bronz-

ing of the skin. The colour of the skin in these two conditions is an essential part of the diagnosis. It is well, however, to be careful. A colleague of mine at the West London Hospital once made a curious mistake. He mistook a gipsy for a case of Addison's disease. However, he was quite sharp enough to find it out himself, and tells the story with glee. In cases where nitrate of silver has been taken for some time, as it used to be for epilepsy, the skin becomes stained where it is exposed to light, as in the face, and then a blue colour is produced. The 'blue man' is comparatively rarely seen now.

**EXPRESSIONS.**—There are, too, what may be rather termed expressions of the face. There is the choleraic face, ashen in hue, with sunken eye and livid skin. The Hippocratic face is pale, of leaden hue, with sunken eyes, eyelids separated, cornea losing its transparency, the nose pinched, the temple hollow, and the lower jaw falling. This is the face of death, and when well marked no recovery is possible. In the typhoid condition the face is expressionless and dull, the lips and teeth covered with sordes, while the patient lies flat on the back in the middle of the bed. In pyœmia the expression is lost, or is that of dull indifference.

In peritonitis the upper lip is raised so as to expose the front teeth in a manner which is quite unique. Like the twitch of abdominal pain which flits over the face, producing a twitching of the lips and contraction of the eyebrows with a frown; it must be once noted, when it can never be forgotten. The twitch is peculiar to disease below the diaphragm, and is best studied in the face of the parturient woman when the pains come on, especially in the second stage of labour.

Then there is the face of grave organic disease, where pallor is blended with an expression of suffering, such as is seen in vertebral cancer; abdominal aneurysm, where there is also spinal caries; in caries of the vertebræ; in repeated angina; and with a look of depression in persistent headache, especially if of organic origin.

The face of hectic, the wasting, the general pallor, with the bright red spot over the cheek-bones, the quivering of the nos-

trils, all suggest, in the language of the author of 'Guy Livingstone,' 'that consumption has already hoisted her bloody flag of no surrender.' At times, however, when the family history is good, this condition is survived; the tuberculous mass softens and is expectorated, and the patient recovers with a cavity. Still, it is a very grave condition.

**THE HAIR.**—The hair is suggestive. When strong and coarse it usually indicates a strong constitution. If early grey, this coarse hair indicates a gouty taint. Such coarse hair rarely falls early, and is often found thick and white in very advanced life. Thin fine hair is found in certain strumous cases, especially when very fair—the hair of youthful precocious fairies, who rarely stay long with us, but are carried off by tubercle in some of its forms.

Fine hair falls soon; often a fringe, like a monk's tonsure, is found round a pate as smooth as a bladder of lard; seen in persons with lithiasis or chronic Bright's disease, but not necessarily in the subjects of this disease only. Greying of the hair on the temples indicates approaching age. In some cases isolated very white hairs are found scattered through hair of raven blackness; in my observations in the dead-house of Vienna in such cases there was always some pathological change in the kidneys; though these were not so advanced as to be a factor in the production of death in most instances.

When the hair is glossy and bright it indicates good nutrition. The hair loses its lustre, becomes dry and brittle in advancing phthisis; and recovers its natural look and appearance as a return to health is made. When a consumptive patient has not been seen for some time, the condition of the hair is often a sure and certain index of the general state and condition. A good full head of hair, like good teeth, usually indicates a good constitution; the exceptions are found in certain strumous individuals.

**THE FOREHEAD.**—The forehead is important. When well vaulted it forms a part of the nervous diathesis. When broad and rather low, it usually goes with a stalwart frame and a bulky body. The lofty brow is usually accompanied by a thin flank

and a 'weasel-belly'—indeed, with small digestive viscera, and a liability to indigestion; the broad low brow goes usually with a square abdomen, large digestive organs, and good assimilation—with gout looming in the distance, or even actually present. It may be protuberant from excessive ossification of the centres of the frontal bones, and this is apt to be found with defective development of the rest of the bones, and wide fontanelles, as seen in hydrocephalic infants. It is also seen in the rachitic forehead. 'The head of the child in rickets is generally unusually large, the vertex flattened, and the forehead prominent, broad, and square, with considerable expansion at the centres of the parietal bones.' Sometimes the sutures remain open; at other times they are closed prematurely, and then the growth of the cranium is arrested, and the child remains a child in intellect, or is a cretin or an idiot. Imbecility, however, is not always accompanied by a small cranium. In strumous children with a syphilitic taint, the forehead may become protuberant and project in front of the face. Here the arrested development of the facial bones intensifies the deformity. In some cases the forehead carries with it a moral significance. There is the broad eburnated forehead, the forehead Jeremiah recognised when he said, 'Thou hadst a whore's forehead, thou refusedest to be ashamed.' The woman with this forehead will deny pregnancy with the most unblushing effrontery; and is utterly untruthful when anything connected with morals is involved Then the forehead may manifest one single copper-coloured spot, pathognomonic of syphilis. Ulceration of the forehead is always syphilitic, except when the result of a wound. The scars are equally significant and suggestive.

**EYEBROW.**—The form and character of the eyebrow is often suggestive. When the eyebrows are exceedingly arched, or unusually straight, and still more, when they are also very thick and bushy, they indicate struma. When such persons become the subjects of phthisis, they usually have it in a severe form, and soon succumb. Severe and repeated attacks of facial neuralgia may lead to increased growth of the eyebrow, especially the

outer extremity, while there may be a patch of dark coloured skin around it.

**EYELASHES.**—These are also modified by struma: in the finer forms the eyelashes are very long and silken, giving a pleasing expression to the face; but when the condition of opthalmia tarsi is reached, then the expression is very unpleasing, sometimes even repulsive.

**EYELIDS.**—The eyelids may be œdematous, especially the lower eyelid. This œdema under the lower eyelid, seen distinctly on getting up, and largely disappearing during the day, is associated with chronic Bright's disease. It is commonly seen in ladies of middle age with pallor, the anæmic form; but in advanced life it is not unfrequently seen even along with a high complexion. It is common to look inside the lower eyelid to measure the amount of anæmia in a case. Then the upper eyelid may be paralysed, as in ptosis, when the superior branch of the third nerve is involved. A dark pigmentation of the eyelids is not unusual in pregnancy, where pigment changes are common. Sometimes there are patches of deep pigmentation on the brow as well. These pigment changes indicate pregnancy in some women at a very early period. They are apt to recur in the same individual. A dark areola is often seen at the menstrual periods, especially when a woman is in bad health, and has severe catamenial losses.

**EYE.**—The eye tells a great deal, and should be carefully studied. The eye is oblique in many idiots and imbeciles; who are apt to manifest the Mongolian type of features. In exophthalmic goitre, the eye is very prominent; in slight cases the prominence is only such as to make the face more interesting, but when more pronounced it gives a disagreeable expression to the features. Then the conjunctivæ may be stained yellow in jaundice or biliousness; or be pearly white in certain cases of chronic Bright's disease. It is apt to be vascular where there is free indulgence in alcohol. In the 'Bright eye' there is a minute quantity of fluid behind the conjunctiva which looks like a tear; but it can be moved, which a tear cannot.

A squint is often significant of hydrocephalus in infants; a

momentary squint at first, but becoming more persistent as the case moves on to its end. In like manner a squint is developed in brain disease in adults. At other times the eyeball is oscillated slightly, but rapidly, from side to side. This is called nystagmus. It has no significance.

Then the cornea may be affected, and is chronically inflamed by syphilis about puberty, and until about seventeen. Under proper treatment it may clear up; but if neglected permanent opacity may result. At the union of the cornea and the sclerotic a ring is sometimes seen; this is the *arcus senilis*. It indicates advancing age, as its name implies; but it is necessary to have clear ideas on the subject, else error may arise. There are two forms of arcus: one very suggestive and of evil omen; the other without any significance. The latter being the more pronounced of the two, careless observers have often been misled. To take the innocent form first may be well. It is very distinct, with sharply-defined outlines and a clear cornea. It is calcareous in its nature, and is very common in hale old people; especially persons with light-blue eyes. It corresponds to the bony plates found in birds at the point of attachment of the cornea to the sclerotic. It has no significance; but the other form tells of tissue-decay. This arcus has badly defined edges; while the cornea is hazy and cloudy from fat-granules being scattered throughout it. It is more pronounced under the eyelids, where the arcus is often to be seen very distinctly, when scarcely recognisable in that portion which is exposed to light. It is often well, then, to lift the upper eyelid when in doubt; as when the question arises as to whether or not there be fatty degeneration in the fibres of the heart. Arcus is a bow: annulus a ring. It is arcus senilis, not annulus senilis. Then as to the pupils. Sometimes the iris is the seat of inflammation; and the formation of a tubercle at the inner or free edge of the iris is common in syphilis. Then the pupils may be of unequal size. Contraction of one pupil is often found in aneurysm of the aorta. When the pupils are both contracted, and severely contracted, then the suspicion of opium poisoning is aroused, or indulgence in cough-lozenges containing opium; or may be hæmorrhage into

the pons varolii. In apoplexy the pupil of the paralysed side is usually dilated; but this is not invariably the case. It is well to note inequalities in the pupil; but the subject of the causes of the inequalities is too wide a one to be entered upon here. In convulsive seizures the pupil may be widely dilated, contracting again when the attack is over. Dilatation of the pupil occurs just before death in opium-poisoning. As a guide to the continuance or discontinuance of belladonna given internally, the condition of the pupil is utterly valueless; and the administration of atropia, as in the night-sweats of phthisis, should not be stopped, because the pupils are dilated thereby. The mobility of the pupil under light is significant; and the circumstances under which there is mobility to light, but not to distance accommodation, are interesting, but cannot be reviewed here.

The steadiness of gaze, or the unsteadiness, often tells of the character and habits of the individual. The secret drinker rarely has a steady eye. The averted look often is significant when a question involving morals is mooted. In insanity the eye tells of the gloom of melancholia, the excitement of mania, or the elation of general paralysis; while there is the glare of suspicion or of persecution; or the vacant gaze of dementia. It is always desirable to watch the patient's eye. In all relations of life a struggle for mastery is unconsciously going on; and the eye will generally tell when the patient is going to be obedient; and also when the doctor has got the worst of it, and the patient does not intend to follow the proffered advice. And a doctor has always practically failed when he feels he has not convinced the patient sufficiently to make him or her obedient!

**NOSE.**—The nose often has its tale to tell. The nostrils play and quiver in thoracic disease, or conditions of nervousness. When the bridge is sunken, inherited syphilis is suggested. The 'snuffles' of syphilitic infants is well known; and the chronic inflammation of the bones of the nose set up thereby may result in their arrested growth, and thus be instructive ever afterwards. Then the alæ nasi may be full, as in struma. The tip is red and tuberous in chronic alcoholism—a condition simulated by disease in some cases. The red tip in women usually indi-

cates indigestion or constipation, or both, with or without pelvic complications; or the nose may be abnormally pale. In either case there are usually cold feet.

**LIPS.**—Sometimes a dyed moustache will reveal the design of the individual to conceal his age; a matter which may not be, at times, without significance. Then in strumous children the lips are fuller than usual. In slighter cases, this, with fulness of the alæ nasi and the long silken eyelash, gives a very pleasant, often piquant, face; but in severe struma the thick coarse lip and nose brutalise the expression of the face. Then a certain fulness of the lips, and especially of the under lip, commonly goes with well-marked sexual proclivities. The full under-lip of the House of Burgundy may still be traced in the House of Austria—the full lip and the light morals of the Hapsburgs. The lips are apt to become fuller and coarser in an individual after prolonged sexual indulgence in excess. Then scars at the angles of the mouth are always pathognomonic of syphilis. The sordes on the lips and teeth will be considered when the typhoid condition is described.

**GUMS.**—The blue lead line along the teeth puts the observer on the right track in lead-poisoning. A spongy state of the gums is found in purpura and scurvy; or in mercurial poisoning.

**TEETH.**—Much useful information may be gleaned from careful observation of the teeth. They may indicate excessive tobacco-smoking, or chewing, from their colour; and in that case are usually natural teeth. And this is a point not to make any mistake about—before observing the character of the teeth, be certain that they are the patient's natural teeth, and not artificial teeth. Artificial teeth are generally better shaped, more perfect and regular than natural teeth. Badly-decayed teeth generally indicate unsoundness of the constitution, or delicacy; persons with bad teeth rarely have robust health. Their bad teeth lead to indigestion, because the food is not properly masticated. Often when the front teeth look well, the molars are decayed or gone. Strumous persons usually have decayed teeth, with a blueish hue around the caries. Where the teeth are diseased as a consequence of mercury, they are rather

'dirty' in hue, than blue around the carious portions. Then 'gouty' teeth are thick and heavily enamelled, and usually worn down. At times the two upper incisors are very large and massive. At other times, in persons of the gouty diathesis, the teeth fall out from periostitis without any caries. The larger massive well-formed sound teeth of the gouty diathesis often furnish most useful information about the patient.

The modifications of the teeth produced by congenital syphilis have been made the subject of careful observation by Jonathan Hutchinson. He writes: 'It is very common to find all the incisor teeth dwarfed and malformed. Sometimes the canines are affected also. These teeth are narrow, and rounded, and peg-like; their edges are jagged and notched. Owing to their smallness, their sides do not touch, and interspaces are left. It is, however, the upper central incisors which are the most reliable for purposes of diagnosis. When the other teeth are affected these very rarely escape, and very often they are malformed when all the others are of fairly good shape. The characteristic malformation of the upper central incisors consists in a dwarfing of the tooth, which is usually both narrow and short, and in the atrophy of its middle lobe. This atrophy leaves a single broad notch (vertical) in the edge of the tooth; and sometimes from this notch a shallow furrow passes upwards on both anterior and posterior surface nearly to the gum.

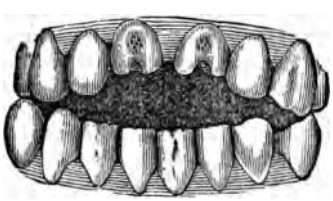

Fig. 1.—After Hutchinson.

This notching is usually symmetrical. It may vary very much in degree in different cases; sometimes the teeth diverge

and at others they slant towards each other. The appended woodcut illustrates a good example of the deformity. In any case in which the malformation was as marked as in the sketch, I should feel no hesitation in pronouncing the possessor of the teeth to be the subject of inherited syphilis, even in the absence of any other testimony. I have never yet seen such teeth, excepting in patients of this class. In the majority of cases, however, the condition of the teeth is sufficient only to excite suspicion, and not to decide the question. In a few rare cases only one of the upper central incisors is malformed, the other

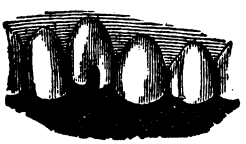

Fig. 2.—After Hutchinson.

being of natural shape and size. A good instance of this state of things is shown in this woodcut. In a considerable number of cases of hereditary syphilis the teeth show no deviation from the normal standard, and in such the diagnosis must be guided by other conditions. In addition to the peculiar malformations above described and illustrated, there are others which, although less characteristic, are yet very valuable to a trained observer. They do not, however, admit of description without great risk of misleading the reader. Before leaving the subject of dental malformation, I may again ask attention to the fact, that it is only in the permanent set that any peculiarities are observed. The first set are liable to decay, but are not malformed.'

The student must not confound 'craggy' teeth, with their horizontal furrows, with Hutchinson's teeth with vertical furrows. Also many children have notched teeth, with the absence of the fourth denticle, who have no syphilitic taint. Where the jaw is small, and a child delicate, and its tissues imperfectly nourished, the teeth are apt to be notched, and present

three denticles only. Syphilis is an 'imitator,' and mimics conditions produced by other morbid states; and, except in the very pronounced teeth given above, mimics the malformed teeth otherwise produced. When three denticles are found in otherwise well formed, large, good teeth, in my mind they suggest suspicion of a syphilitic taint. To say more might mislead.

**CHIN.**—The chin tells little except as to the diathesis and constitution. A massive square chin usually goes with a good physique; and is part of the well developed osseous system of the gouty. A small, light, slender chin and jaw goes with the nervous or the strumous diathesis. A massive chin indicates usually a strong, good constitution; while a small chin indicates delicacy. A prominent chin goes with the full under lip and the light morals.

**VASCULARITY.**—The vascularity of the face has been alluded to before; so far as it indicates phethora by redness, or anæmia by pallor. But further study of the vascular condition of the skin will yield information of value. The presence of a high complexion may tell of exposure to the weather rather than plethora; the vascular fulness protecting the skin from the cold to which it is exposed. Then pallor of the face may indicate the merely opposite state of in-door occupation. A mill hand, a clerk, or a compositor could scarcely be expected to manifest much facial colour. At times little dendritic twigs are seen where the tiny artery pierces the skin and shows upon the surface. Professor Laycock speaks of 'blood-vessels largely developed over the malar bones, and varicosed' in the physiognomy of the sanguine gouty cachexia; and the condition of the facial arterial twigs is very suggestive as to the state of the arterial system generally. More especially is this the case where there is pallor of the face with deeply injected arterial twigs. They may also be seen, but are scarcely so conspicuous, in florid persons. These dendritic arterial twigs are part of the atheromatous changes which accompany 'the gouty heart.' A hard radial pulse, an hypertrophic left ventricle, an accentuated aortic second sound, are the associated conditions; the urine is copious, and the patient commonly gets up at night

to make water—a very 'fetching' question when judiciously put in the right place; and aortic dilatation, apoplexy, aneurysm, and angina pectoris are commonly found therewith. As the heart fails there is arterial anæmia, with pallor; venous fulness, with lividity about the lips; and a countenance, a *tout ensemble*, which speaks volumes. Then there is the expressive, if inarticulate temporal artery. This may be tortuous in young persons, especially in industrious, studious young men; and may even be seen to pulsate, when a strong light falls upon the face, without any significance. But usually the condition of the temporal artery reveals that of the general arterial condition. It is tortuous; it expands laterally, as well as elongated, as the pulse-wave of each ventricular systole reaches it. In aortic regurgitation the diagnosis may at times be made by observation of the temporal artery. The impression of 'balls of blood shot under the finger,' as applied to the sensation imparted on feeling the radial pulse, is conveyed to the eye; it is possible almost to see the ventricle rapidly impel its contents into the arteries; and then the sudden collapse as the backward flow, on the aortic recoil, is no longer arrested by healthy aortic valves. Such abrupt collapse indicates considerable shrivelling of the free edges of the aortic valves; with the patency aggravated by dilatation of the aortic conus. Where the incompetency is blended with a rigid condition of the aortic valves, constituting obstruction, then this 'water-hammer' pulse and suddenly collapsing temporal artery are not found.

The atheromatous change in the arterial wall may be of two kinds. In the one case it is thick and soft, suggesting the idea of being swollen; here the pulse is comparatively soft, and fatty degenerative changes are associated therewith. At other times it is small and hard; and then it is suggestive of visceral cirrhoses. The radial artery and the temporal are both influenced in the same direction by like degenerative changes; whether the arterial system generally is the subject of fatty or calcareous degeneration. In some young men a parchment-looking skin is tightly stretched over the tissues beneath, and the temporal artery is very conspicuous, being both tortuous and thickened.

The first time this condition came vividly under my notice was in a South-Western railway carriage; I was much puzzled to account for such advanced arterial change in so young a man. Beside him sat his wife with an infant in her lap. A puff of wind from the carriage window lifted, for a moment, a veil over the baby's forehead, when a well-marked syphilide near its scalp —the *corona veneris*—presented itself; the mystery was solved. Syphilis and alcoholism expedite atheromatous changes in the arteries. Shortly after this, I was called in in consultation to see a young man with an irregular form of paralysis. There, again, the tightly-stretched skin and conspicuous tortuous temporal artery were present together; on examining the skin carefully, disseminated coppery stains of *psoriasis guttata* were found; the nature of the malady was thus distinctly revealed.

**NERVOUS SUPPLY.**—The face may be distorted by paralysis. The features are drawn towards the sound side, the saliva dribbles from the palsied side; the cheek is flaccid and is blown out by strong expiration. The patient cannot frown with the affected side, nor shut the eye, though that on the sound side is firmly closed; he cannot whistle, nor pronounce the labial consonants distinctly, unless the palsied side of the lower lip be held up by the finger; while on protruding the tongue, it curves round to the palsied side. The sensation of the paralysed side is generally unimpaired. Inability to close an eye, or ptosis, usually indicates intra-cranial disease; while facial paralysis, generally, may be local and peripheral.

Of course, mere observation of facial paralysis will not determine whether it is peripheral or central. Then at times there is the tic convulsive, where there is intermitting spasm of the facial muscles. In some cases it is confined to the eye muscles, where it simulates a very strong 'wink'; at other times it implicates other muscles, and gives an odd comic look to the face. The facial expression of idiots and imbeciles is given by Dr. Langdon Down at length. The following is an abbreviation: Their eyes are oblique, and the face simulates the Mongolian type. There are semi-lunar folds of skin at the internal canthus of the eye (the third eyelid of the bird). The lips are thick,

especially the lower one; they are often marked by transverse fissures; also, they are often deficient in muscular power, so that the saliva dribbles. The angle of the jaw is obtuse, while the ears are placed usually far back. The mouth is arched, the tongue large, rugous, and fissured, while its papillæ are enlarged.

**THE EARS.**—The ear is often instructive. It may contain otolites, pathognomonic of gout. Or as Professor Laycock insisted, the lobe may be red, full, and glistening, as if the stretched skin was about to crack. This is common in gouty persons in middle age. As nutrition fails, the lobe may become wrinkled. It goes with the skin of the face to a great extent. A wrinkled ear lobe with a face seamed with wrinkles usually goes with extensive but very chronic visceral cirrhosis. Here the skin is very dry and imperspirable. Then the ear may be deformed by œthœmatoma, most commonly seen in the general paralysis of the insane. A discharge from the ear should always claim careful attention; chronic otorrhœa not rarely ends in meningeal inflammation and death. Wagging of the ears has no significance.

**THE NECK.**—Observation of the neck is of moment. Wryneck may be temporary, and due to rheumatism or cold: or permanent, as the result of inflamed glands after scarlatina or measles: or from disease of the spinal vertebræ: or from the cicatrix of a burn. Then there may be enlargement of the thyroid gland. This may be due to a varicose condition of its vessels; but more commonly its enlargement goes with exophthalmos, and is part of Graves's disease. The enlargement may be bilateral or unilateral. It is not uncommon in various parts of England, but is not associated with cretinism in this country. Then the neck may present enlarged glands, or the scars of by-past ulceration of a scrofulous character. The muscles of the neck are part of the accessory muscles of the respiration, and are thrown into action when the respiration is embarrassed. In severe dyspnœa they act violently, drawing up the bony framework of the thorax while the diaphragm is descending. The arteries of the neck are commonly seen to pulsate violently and distinctly in aortic regurgitation; or on one

side only in aneurism involving the carotid artery. At other times the jugular veins pulsate, indicating regurgitation of venous blood on the systole of the right ventricle, with or without tricuspid incompetency.

**THE RESPIRATION.**—The character of the respiration is often instructive. It may be hurried and shallow; or it may be deep and laboured. The first may arise from nervousness, or be associated with pulmonary phthisis. The latter is rather found with chronic bronchitis and emphysema; when the latter is pronounced there is dyspnœa, where the respiration is both rapid and laboured. The character of the respiration, the pallid or livid countenance, and the disquieted look, will often establish the diagnosis of chronic bronchitis and emphysema, without a râle being heard; physical examination here only corroborates the diagnosis. In pneumonia the breathing is hurried. The rapidity of the respiration is the measure of the amount of disease, and by comparison of it with the pulse rate the amount of lung-inflammation, or consolidation, or congestion, the extent of emphysema, or of the diminution of the lumen of the bronchial tubes, may be rudely measured; often, however, with much accuracy. This matter will be further considered in relation with the pulse. When both are excited and rapid, a febrile condition or a nervous condition are indicated; sometimes both. There is a certain modification of the shoulders in chronic asthmatics. They are elevated and drawn forwards, by the pectoral muscles being accessory muscles of respiration; and when they have been much used as such they draw the shoulders forward. They may also be so changed by emphysema, or chronic phthisis.

The thoracic change visible to the eye through the patient's clothes is confined to the barrel-formed chest of extensive emphysema, and the flat chest of those predisposed to phthisis. What is seen on stripping the patient will be found in Dr. Thorowgood's division of the subject.

**THE ABDOMEN.**—This is fuller than natural in pregnancy, ovarian disease, large uterine fibroids; in hydatids of the liver, ascites in amyloid disease of it, especially in boys, cancer in older persons, in liver-enlargement from alcoholism; and at times

from tympanitis. Or the abdominal fulness may be merely a pad of fat. In young children the belly is swollen in disease of the mesenteric glands. Enlargement of these glands may remain as 'pot belly.' When there is much abdominal fat without corresponding bulk elsewhere, the condition is more distinctly pathological than where there is general obesity. The condition is pathological in so far that the large increase of abdominal fat is usually due to free living; and the younger the subject the worse the prospect.

**THE HAND.**—The hand, too, should be observed. The arm is straight and rigid, and the fingers bent in the late rigidity which follows some attacks of hemiplegia. At other times the fingers are spasmodically closed in some women who are the subjects of neurosal affections of an hysterical, or hysteroid character, the spasm being intermittent. Then there is the condition of athetosis, where the extensor and flexor muscles rhythmically counteract each other in wave-like movements.

Or the hand may be dropped in lead-poisoning, or be the subject of 'writers' cramp.' In hydrocephalus in children the hand is closed upon the thumb, often tightly; and this characteristic hand should always put the young practitioner on his guard. Then again in chorea the movements of the hands constitute the diagnosis. At times there is rather paralysis than movement, and the mother will tell you that the child 'has lost the use of its arm;' nevertheless the malady is chorea. Chorea may be uni-lateral or bi-lateral, or confined to the hands, or implicating the feet and at times the muscles of the trunk.

Then the hand may tell of constitutional conditions. In gout the joints are swollen and thickened, and there are deposits of urate of soda in the fingers; and occasionally, but rarely, in the thumb. Or a finger may be drawn down by gouty inflammation in the tendon and its sheath, a condition which Sir James Paget says is pathognomonic of gout. The patient will tell you it is caused by his walking-stick, or geological hammer, or other local cause; but usually the same thing will be found in the other hand, only not so far advanced. It may of course be the result of local disease; in which case the other hand is not

affected. This 'drawn-down' finger is not found usually with the characteristic enlarged knuckles of gout. Then all are familiar with the distorted hand of rheumatic gout. Patients usually call any deformity of their hands 'rheumatic' in its nature. Then again there is the hand of the strumous diathesis. Here the characteristics are large epiphyses with slender shafts to the bones. The knuckles are large and prominent; the joints thick and coarse, while the middle portion of the phalangeal bones is slender. Such was the fist of the great lexicographer, Dr. Johnson, who also had a strongly marked strumous face; wherever an engraving of him hangs the student should study the hand, especially in connection with the features. In girls this modification is often seen. It detracts from the symmetry of the hand, and gives trouble in connection with the getting off and on of rings. This enlargement of the epiphyses is well seen in children with rickets, at the union of the costal cartilages and the ribs. The little prominences hang like festoons, and the name 'the rachitic garland' has been given to this condition. Then the hands often indicate the general wasting. The interossei muscles waste in phthisis, and the atrophy of them gives to the hand a listless look and feeble grip. At other times the full blue veins in the hand indicate debility with venous fulness. Then there are the 'clubbed' fingers of congenital heart mischief seen in perfect development, when the hand may be deep red or even blue, with livid nails; of chronic phthsis; or of chronic mitral disease. The attempt has been made to distinguish the two; in plthisis it is asserted that there is wasting of the subcutaneous fat with incurvation of the nail on each side. 'In some old persons we have observed a remarkable tendency to lividity of the finger-nails. It appears to us to be from defective powers of the capillary circulation that cold is so difficultly borne by infants and very old persons' (Marshall Hall).

The hand, too, will often tell of the nature of the patient's occupation, whether the hand does in-door or out-door work, and so give useful information. Where there are black, sodden 'hang-nails' on the fingers of girls, they tell of illicit practises, and so are very instructive. Especially is this the case where

there is a cold, wet palm. The damp palm is very suggestive; and a rudimentary growth of hair on the upper lip, Dr. Robert Greenhalgh tells me, has often guided him to a suspicion of what direct inquiry proved to be a fact (manu-stupration). Then in idiots there is a 'woolly hand,' from the skin being loose and looking as if too big for the hand. In imperfect jaundice, or where it is doubtful, it is well to stretch the skin on the back of the hand, when the yellow shade becomes apparent —if it be there at all.

**NAILS.**—Then the nails are changed in chronic gout, and are striated; showing that they consist of agglutinated hairs. Disease often affects the nails; in my own case, an attack of gout will leave its mark on nearly every nail, and the date of it can be guessed from the position of the mark. It takes about seven months for the nail to grow the tell-tale mark out. According to Mr. Jonathan Hutchinson, the white patches on the nails known as 'flowers' or 'lies' are 'often seen in the nails of children and delicate persons, who are in the habit of picking the nail at its root and thus injuring its soft structures.' He is in accord with B. W. Richardson in thinking psoriasis of the nails associated with the dartrous diathesis (Asclepiad).

**THE FEET.**—These tell of gout and dropsy as constitutional states. The protuberances of gout may be mistaken for bunions, and *vice versâ*. Dropsy is shown by the unlaced boots, or the slit shoes, or the projection of the stocking over the top of the shoe or boot in slighter cases. Such dropsy is usually cardiac, and points to mitral disease, or dilatation, or 'failing hypertrophy;' but there may be renal complications. The altered movements produced by nervous or osseous diseases are given in a previous section.

**THE CLOTHES.**—The arrangement, or the want of it, of the clothes often gives a quantity of useful information. When there is failing brain-power the clothes are not attended to properly. The drunkard becomes first dirty, with unbrushed clothes, and then ragged. The same neglect is seen in brain disease, where the coat collar is not turned down, or the waistcoat is buttoned awry, or the trousers are partially unbuttoned,

while the shoe is often 'down at heel;' the *tout ensemble* often being most instructive.

In a drinking bout, or fit of drunkenness lasting some days, the drunkard will often attire himself grotesquely; as also do certain lunatics. Peculiarities in dress are significant of insanity or oddity. The trousers are stained with sugar in diabetes, or are wet in incontinence of urine.

**THE VOICE.**—This is affected by a cold, or by laryngeal disease, as syphilis and phthisis; and by hysteria in girls. The articulation of words is affected by cerebral mischief in the neighbourhood of Broca's convolution. The tone is enfeebled in disease, or the patient can only speak in a whisper in some cases where there is laryngeal disease; or only very slowly and deliberately after cerebral exhaustion, as in the typhoid convalescence. Or there may be inability to pronounce the labial consonants from causes affecting the lips. In the general paralysis of the insane the utterance is thick, or the words are 'clipped,' as in intoxication.

**COUGH.**—This is often instructive. There is the cough of bronchitis, acute or chronic, and the bubbling of râles. There is the cough of phthisis; in the first stage, where there is consolidation, it is often a 'hemming' or 'phthisacking' cough; later on it is apt to occur in severe paroxysms, leaving the patient exhausted and bedewed with sweat. Then there is the short, dry cough of pulmonary congestion due to mitral disease. The neurosal cough is either a small, frequent cough, like the 'phthisacking' cough, or a loud, ringing, barking cough. The latter cough is also heard commonly in aneurysms, involving the recurrent laryngeal nerve; sometimes it is 'brazen,' as if a brass musical instrument was being coughed into.

**THE MANNER.**—Observation of the patient's manner will often furnish useful information. There is a certain brusqueness in country people who are much out in the open air, which contrasts with the sedate quietness usually found in those who live by indoor work, book work, or behind the counter. The chronic invalid has usually a look of langnor and self-consciousness; while a lady with the vapours gets herself up with care-

ful, indeed minute, attention to every detail of dress and manner which can make her more interesting. Where there is something to conceal there is a certain restraint of demeanour to be noted, as seen in some girls who are pregnant without any preliminary legal procedures; while others adopt an attitude of defiant indignation.

Such, then, is the information afforded to the eye as it slowly passes over the patient; quietly, steadily, and observantly. And very valuable information is this so furnished. But this cannot all be learnt in a day; and the perusal of this little *brochure* should set the student a-noting every patient carefully. In a little time the eye will learn a great deal, and direct the inquiries in a practically useful manner. When the eye is not so trained the practitioner is apt to pursue fruitless and futile lines of inquiry, and wastes time, and only bothers the patient; where it is carefully trained the inquiry takes the right direction at once and forthwith.

**THE TWITCH OF ABDOMINAL PAIN.**—This is well-marked in many cases. There is a contraction of the forehead, like a frown, with a twitch of the lips which is most expressive. It comes and goes in spasmodic affections, as colic. It is well seen at the commencement of 'a pain' in labour; and the student who carefully scrutinises this twitch in the face of a parturient woman will never forget it, or mistake it after. It is pathognomic. It may be more continuous in persisting pain. Thus Flint describes 'the facies of acute peritonitis' thus: 'The upper lip raised so as to expose the front teeth, gives an aspect which characterises, in a certain proportion of cases, acute peritonitis. It is often wanting, but, when present, it is strongly diagnostic.' Dr. Marshall Hall describes this twitch with fuller detail. He writes: 'In inflammation of the abdomen with severe pain, there is a continued state of contraction of the muscles of the face, inducing an unnatural acuteness of the features; the forehead is wrinkled and the brows are knit; the nostrils are acute, drawn upwards, and moved by the alternate and irregular acts of the respiration; the wrinkles which pass from the nostrils obliquely downwards are deeply marked; the

upper lip is drawn upwards, and the under one perhaps downwards, exposing the teeth; the chin is often marked with dimples. This state of the features is aggravated on any increase of pain, from change of position, muscular effort, or external pressure. Indeed, in cases of abdominal affection, it is better to press on the abdomen, or to beg the patient to raise the head and shoulders, and watch the effect on the expression of the countenance whilst the patient's mind is occupied with some other subject, than to ask the direct question whether pressure produces pain, as is usually done: for patients naturally suppose that every painful part must also be tender, and are therefore apt to answer in the affirmative, although incorrectly. In cases attended with spasmodic abdominal pain, the contraction of the muscles of the countenance are more violent but less permanent; during the paroxysms, the distortions of the countenance take place in a degree scarcely observed; in the intervals the countenance recovers a calm, unusual, if not incompatible, with inflammation. The transition of spasmodic into inflammatory pain, may often be traced with great distinctness, by carefully observing these changes and modifications in the expression.' Dr. Hall was a very successful practitioner, as well as a scientific student of medicine. Such expression of the countenance is instructive in renal or ureteral colic, as well as ordinary colic or uterine spasms. Its absence puts the observer on his guard against hysterical peritonitis.

**LOOK OF PAIN.**—Dr. Hall says further: 'The appearance of the countenance affords a valuable source of distinction between chronic dyspepsia and insidious organic disease. In the latter there is a characteristic early and progressive loss of flesh, with paleness, perhaps slight flushing, but without sallowness; the bony and muscular parts become exposed, the integuments are drawn into deep wrinkles, and there is often coldness and perhaps lividity. Such a state of the countenance, with an expression of pain, uneasiness and anxiety, often leads to the detection of slow and insidious pleuritis or peritonitis, as well as of other diseases which would long remain hidden, from being unattended with acute pain.' This 'look of pain' is quite

characteristic, and should always put the practitioner on his guard against occult mischief. It is seen in osseous pain, aneurysm, visceral disease, and is usually accompanied by pallor or sallowness. Deep-seated pain in the spine, when accompanied by this peculiar but almost indescribable pain, should suggest the suspicion of aneurysm, or inter-vertebral cancer. There is also a 'bowed down' expression of suffering on the face in extreme cases of chronic headache: especially in markedly bilious persons. These facial expressions are often noticeable when inspecting the tongue.

**THE TONGUE.**—Much may be learned from accurate observation of the tongue; how much, a few old practitioners almost alone can tell. In the treatment of phthisis, inspection, minute and scrutinising, of the tongue is far more important than the wielding of the stethoscope, however skilfully. The one tells much of the amount and nature of the disease, the latter gives information, often priceless, as to the precise line of treatment to be adopted; for the tongue is the index of the state of the intestinal canal, and if the *primæ viæ* are disordered, they must be put right before any other therapeutic measure can be safely adopted.

Tell the patient to put out his tongue fully, so that the circumvallate papillæ can be clearly seen; it is no use to study the tip. If the patient is an infant, Sir William Jenner's plan of placing a drop of fluid, especially if viscid as syrup, upon the chin, is well worth following. A tickling sensation is produced, and the little patient tries to remove the cause of irritation with its tongue. The condition of the tongue can thus be studied without much disturbance to the child. The manner of protrusion is instructive. In the typhoid condition of fevers, and in some cerebral affections, the request to put out the tongue has to be repeated, and loudly, before the patient does as is requested: and similar reiteration is requisite to induce its withdrawal. 'It is a curious fact that patients will frequently protrude the tongue when they cannot be made to do aught else, owing to the state of their mental faculties' (Flint). Then tremulousness of the tongue indicates alcoholism: and less frequently lead or mercurial poisoning. Tremulousness of the tongue may denote mus-

cular weakness. When seen in the early stages of typhus, or typhoid fever, it indicates a grave condition of bad prognostic omen. In advanced stages the tongue is protruded slowly and with difficulty, indicating impaired power over the muscles. In hemiplegia the tongue when protruded turns its apex to the paralysed side, from diminution of power in the genio-hyoglossus muscle of the affected side. In bulbar, otherwise glosso-labial paralysis, the capacity to protrude the tongue is impaired or lost. In facial paralysis, without hemiplegia, this loss of power to protrude the tongue tells that the mischief is central, and within the skull; and not peripheral, or Bell's palsy.

Dryness of the tongue is found in pyrexia, whether the fever be specific or symptomatic. It is also dry in diabetes, and other conditions of polyuria, and in some of the functional disorders of digestion. It becomes dry and hard, as well as brown, from the accumulation of dead epithelium cells upon it in the typhoid condition and in uræmia. When the mouth is kept open it becomes dried, as is seen in some forms of dyspnœa. Then it is edentated; and marked by the teeth in conditions of debility, from menorrhagia, chronic diarrhœa, or acute prostration, however induced. Then as to the state of the tongue known as 'coated' or 'furred.' This is constant with some individuals who are well and strong; and a furred tongue, especially in the morning, is common with heavy smokers. But usually a furred tongue denotes disturbance of the digestive organs, or the oncome of acute disease, especially the specific fevers. When found with shivering fits, this condition of the tongue tells of coming trouble. When the coating has a distinctly yellow or brownish hue, there is usually a bad taste in the mouth in the morning when awakening; the taste and the colour are both due to tauro-cholic acid. This is denied by some authorities, who say there is no connection betwixt the state of the tongue and the condition of the liver; but the great bulk of medical experience is dead against them. The fur on the tongue consists mainly of dead epithelium cells, mucus, particles of food, and dust inhaled by the breath. As the rude index of the condition of the gastro-intestinal canal, the state of the tongue furnishes

valuable information. Where the coat is thick, it is evident that absorption of food from the intestines must be very imperfect, through the layer of dead epithelial cells; and our efforts are directed to remove this obstructive layer. Consequently we inspect the tongue in acute disease, and in convalescence in order to ascertain, with such an approach to accuracy as the tongue can tell us, whether the state of the intestinal canal is such as will permit of the assimilation of the injesta. When the tongue cleans, then we know assimilation is going on satisfactorily. When the tongue remains coated, we aid the natural efforts to remove the fur by a mercurial laxative. Repeated free purgation without a mercurial often leaves the tongue as thickly coated as before; and a few grains of calomel produces a clean tongue in a few hours. At other times a dose of calomel may get the credit of cleaning the tongue, when it is due to a natural process. I remember well the case of a boy who had been threatened with enteritis. He was progressing nicely, but the tongue did not clean; I spoke of giving him a powder, but counter-ordered it. Next day he had two free semi-fluid motions, and the tongue was quite clean. Had the powder, which would have consisted of three grains of calomel, been given, it would unquestionably have got the credit of producing the change. This was years ago, in the early days of general practice, but the lesson has never been forgotten. It is always well to see the tongue clean; and in private practice more attention is, and has to be, paid to the state of the tongue than is given to it in hospital practice usually. In acute disease the mucous membrane commonly is unequal to shedding its dead epithelium, and when the shedding occurs it is a good omen of returning vigour. In protracted illness the fur may be shed and reproduced again several times. After acute disease, and especially fevers, the fur may disappear bit by bit, commencing at the tip, and creeping along the edges: leaving a thick coat up the mesial line and upon the base, which in time also disappears. Such clearing up of the tongue is of the best prognostic omen, and tells of uninterrupted convalescence. In scarlet fever the tongue often assumes a 'strawberry' appearance; sometimes the red papillæ

stand out on a red surface like a ripe red strawberry, at other times the red papillæ stand out upon a coat of fur, like the seeds on an unripe white strawberry. A furred tongue is manifested in many cases of dyspepsia, especially when many 'by-products' of digestion are formed in the digestive act. Both in indigestion and artificial digestion there are by-products formed as well as peptones, and these 'by-products' are offensive and objectionable. In some cases of acid heartburn the chief offending agent is butyric acid. In almost every case of indigestion with a furred tongue constipation is present, and must be considered in the therapeutic plan. Here nothing but a continuous course of laxatives, and occasionally acute purgation at intervals, will be of any service; and the treatment must be continued, no matter how long, until the system rights itself. In some cases the patience of doctor and patient becomes severely tried, but perseverance brings with it at last its reward. All mechanical means of cleaning the tongue, as scraping it, or rubbing it with lemon-juice or vinegar, are well enough for the local sense of cleanliness and comfort, especially in pyretic states; but they are utter rubbish and nonsense as to cure, which depends upon other measures altogether.

Then the tongue may be furred along one side only, or may be raw and irritated, or even ulcerated, by a decayed tooth with a jagged edge. At other times the epithelium of the tongue is stained, as by drinking elder wine, sucking a piece of liquorice, or chewing tobacco; or it may be discoloured by some preparation of iron. These modifications of its appearance are the more distracting and puzzling when the tongue is coated with fur pretty thickly.

The 'raw' or 'bare' tongue. This condition of the tongue has not, in my experience, received from medical writers a tithe of the attention it deserves to have paid to it. Here the superficial structures of the tongue are denuded, more or less completely, of the natural epithelium. In convalescence from acute conditions, where the tongue has been coated, sometimes the tongue is abnormally red and imperfectly covered with epithelium, and here a coat is apt to form again (Flint).

Both in acute or chronic conditions, the absence of the normal epithelial covering, whether slight or considerable, should receive the keenest attention of the practitioner. As long as the tongue is 'raw' or 'bare,' the line of treatment to be followed is that of bland food, with sedatives to the gastro-intestinal tract, as bismuth, with alkalies, or opium, or both. So long as this condition remains, tonics are useless, and are not digested. At the risk of being charged with dogmatism, I venture to insist upon this. Perhaps it is in phthisis, of all diseases, where this rawness of the tongue excites one's apprehensions; at least, it is of all semeia the one I personally dislike most. It is not usually complete over the whole tongue, but lies as a large patch in the middle of the tongue, the irregular edge usually extending further on one side of the mesial line than on the other. We have every reason for supposing that this condition of tongue is significant of the state of the unseen portion of the gastro-intestinal canal; and the absence of epithelium interferes with assimilation. This it is which excites one's apprehension in all wasting diseases. 'After a meal the epithelium cells of the villus are found crowded with fat. Since the striation of the hyaline border of the cells is not due to pores, as was once thought, the particles must have entered into the cells very much as foreign particles enter the body of an amœba. The epithelium may, in fact, be said to eat the fat' (Michael Foster). If, then, the epithelial layer be defective from absence of epithelium, or from the epithelial cells being imperfectly developed, and therefore functionally defective, fat cannot be properly absorbed; and that absorption of fat is of all things what we especially desire in wasting disease. Not only is the epithelial layer important in the absorption of nutritive material from the food in the intestines, but it is essential to secretion. 'The food, in passing along the alimentary canal, is subjected to the action of certain juices which are the products of the secretory activity of the epithelium cells of the alimentary mucous membrane itself, or of the glands which belong to it. These juices (*viz.*, saliva, gastric juice, bile, pancreatic juice, succus entericus, and the secretion of the large intestine), poured upon and mingling with the food,

produce in it such changes, that from being largely insoluble it becomes largely soluble in an alkaline fluid such as blood, or otherwise modify it in such a way that the larger portion of what is eaten passes into the blood, either directly by means of the capillaries of the alimentary canal, or indirectly by means of the lacteal system, while the smaller part is discharged as excrement' (Foster). Now, if 'the epithelium cells of the alimentary canal play this important part in the digestive act, it is quite obvious and abundantly clear that deficiency in number or perfection of these epithelium cells must exercise a deep and profound influence upon digestion, absorption, and nutrition. That all the practitioner's energies should be bent towards the restoration of the epithelial layer to normal perfection, or the best approach thereto, is intelligible enough; and the attention paid to the *primæ viæ* by our predecessors was amply justified by its importance. It is, too, comparatively easy to get rid of the layer of dead epithelium cells of the coated tongue; but it often taxes all our resources to restore the epithelial coat to its integrity where the tongue is 'raw' or 'bare.' Yes, and sadly, too often, our best efforts are futile and unproductive of good result! When the 'bare' tongue is the index of a deficient epithelial layer in the alimentary canal—and no other index do we possess—the first duty of the practitioner is to do his utmost to restore it to the normal condition. How this is to be achieved will be considered in another *brochure* ('Aids to Rational Therapeutics'). When, then, under appropriate treatment the tongue assumes its normal appearance, and the epithelium once more grows freely upon it, then we know the digestive powers are returning, and that we may venture on tonics, and more food of a less restricted character. A shrewd practitioner, young or old, will always study the condition of the epithelial layer of the tongue carefully, sagaciously, with a full knowledge of what is revealed by the condition of that part only of the alimentary canal which is open to our vision. So long as the condition of 'raw' or 'bare' tongue continues, so long must our therapeutic measures be directed to the restoration of the epithelial layer of the alimentary canal to its integrity—or the

nearest attainable approach thereto. Then the tongue may present a 'beefsteak' appearance when it is denuded of epithelium, as it is apt to do when the brown fur of the typhoid, or uræmic condition has been shed. The system is equal to shedding the dead epithelium, but it is not quite equal to the production of a new layer of perfect epithelium.

The epithelial layer of the tongue is often suggestive of other conditions than those of the alimentary canal. There is a peculiar silvery sheen of the epithelial covering of the tongue in many cases of menorrhagia; especially when the tongue looks swollen and shows the indentation of the teeth. I have nothing to say as to the 'how' of this association; but it is certainly sufficiently common to give this condition of the tongue a distinct diagnostic value.

In relapsing fever there is often a small triangle on the tip of the tongue, much cleaner, or 'rawer,' than the rest of it. Each side of this equilateral triangle is about half an inch in length. I have seen it both here and in Germany.

Then the surface of the tongue may be altered. The mucous membrane may be ulcerated, as in stomatitis. Glossitis it is not my province to describe. Or it may be fissured. Deep rugous fissures are very suggestive of syphilis. So is a large bare patch with or without fissures, without acute disturbance of the health; while patches of syphilitic psoriasis where the affected epithelial scales are shed and a bare patch is left, are not at all uncommon. The tongue may be the seat of a chancre, which must be discriminated from cancer: this is done by the history, the age, and the conditions of the glands of the neck. When inspecting the tongue, other evidences of syphilis may be furnished by the state of the pharynx, or soft palate. Then the tongue may be indented by the teeth. 'Indentations on the margins may be produced by the pressure of the teeth. These occur if the organ be swollen; otherwise they simply show that it has remained in contact with the teeth for a considerable time. In health, during wakeful hours, it is frequently moved, not remaining, except momentarily, in the same place. The indentations due to diminished movements denote mental hebetude. The tongue occa-

sionally presents fissures or cracks in the course of fevers, and these sometimes continue into convalescence. Cicatrices are observed in persons subject to epilepsy, as the result of wounds inflicted by the teeth during the paroxysms. These may be useful in determining that paroxysms which a patient has experienced were epileptic in character. Coldness of the tongue belongs to the moribund condition, without reference to the disease, and it is a striking symptom in the algide stages of epidemic cholera' (Flint).

A tongue fissured not deeply, but with many little fissures over its surface, I have very commonly noted in persons who drink their tea very hot; but it is not invariably, though commonly, so associated.

When looking at the tongue, the eye may note several other conditions. It may detect that the teeth are artificial, or that while the front teeth look well and are sound, the molar teeth are extensively decayed: the latter fact is instructive where dyspepsia is complained of. Then there are some more special matters to be alluded to, in relation with the mouth.

**THE ROOF OF THE MOUTH.**—This may be highly arched, as in idiots or imbeciles. Or it may be largely wanting, as the result of congenital defect, or of acquired syphilis.

**THE TONSILS.**—These may be enlarged, or they may be ulcerated. In acute disease there may be quinsy, or the film of diphtheria or of scarlatina. Ulceration usually denotes syphilis, especially when there is another ulcer in the soft palate.

**THE UVULA.**—This may be long, so as to tickle the epiglottis, and give rise to a persisting intractable cough. Or it may be removed by syphilitic ulceration.

**THE FAUCES.**—Here, again, we are apt to find syphilitic ulceration.

**THE PHARYNX.**—This may be raw and irritated, as in ordinary sore throat or 'hospital' sore throat. Or the condition may be more permanent, as clergyman's sore throat. Or the pharynx may be the seat of troublesome chronic follicular ulceration. It is very apt to be affected by syphilis, not only in the early stage of secondaries with the associated rash; but a grey

sloughy ulceration is often found in the pharynx in more confirmed syphilis, or a punched-out looking hole. Ulceration of the soft palate along with it is not uncommon in syphilis.

So much, then, for what is seen when the oval orifice is opened, and its contents exposed to view. Of local disease, as cancer, it is not the place here to attempt a description. Aphthæ are often seen in infants, denoting great debility.

**PARASITES.**—It is not common to find parasites on the skin, but sometimes they are present and indicate poverty, carelessness; squalor, or an impaired constitution. In the latter case we find phtheiriasis very intractable, and this intractable character points to great constitutional debility, from which the patient is not likely to rally or recover if old, or the subject of serious organic disease.

**SMELL.**—The sense of smell possessed by some men is very acute, and is sufficiently developed in most men to give it a certain diagnostic value. In the exanthemata a certain animal odour often amounting to a positive stench is emitted. Certain lunatics, and markedly general paralytics, possess a very disagreeable odour—so strong, often, as to have a diagnostic value. In pyæmia the breath carries with it a characteristic smell, described as that of hay or of earth. In fœtid bronchitis, in gangrene of the lung, and in ozæna, the breath is very offensive. In stomatitis, the breath is unpleasant. Then in favus there is a mouse-like smell. There is an offensive breath with many persons when the bowels are neglected, and in indigestion. Many persons, especially men in middle age, have a disagreeable breath. A friend with a very acute nose informs me that he has observed this offensive breath to correspond to periods of overwork or worry; being most pronounced then.

Such, then, are the indications revealed to the senses by the appearance, and sometimes by the odour of a patient. These indications are of cardinal value in giving direction to the ques-

tions and to the physical examination. Of how much value they are, only experienced practitioners can tell.

**THE PULSE.**—The next proceeding is to feel the patient's pulse. Take care always to feel both the radial arteries; and not one, as is usual. Put the patient in a good light, and feel the arteries steadily for a minute; while the eye is making its observations, the finger is furnishing valuable information. The character of the pulse is the first thing to be observed. Whether it is full and incompressible, or feeble and obliterated by the pressure of the finger. When the arteries are full of blood the artery is not to be obliterated by moderate pressure during the diastole, that is, in the interval betwixt the beats. A full pulse then means high blood-pressure in the arteries, *i.e.*, the arteries are full. When, on the other hand, the pulse is feeble, then there is a comparatively empty artery, and the blood is mainly in the veins. A full pulse is a slow pulse; broadly speaking. A slack pulse is usually a fast pulse. The rapidity of the heart-stroke is regulated by the condition of the arterioles. The arterioles are almost entirely muscular as regards their walls, and their calibre is regulated by the vaso-motor nerves. When the arterioles are dilated, the blood runs freely out of the arteries, and therefore the artery is slack and compressible, and the heart beats rapidly. Such is the condition of the vascular system in fevers. In sthenic inflammations, *i.e.*, in inflammatory conditions in robust persons, the pulse is full, rapid, and bounding. Especially is this the case in acute thoracic inflammations, as pleurisy and pneumonia. In the latter disease, however, if both lungs become extensively implicated, the pulse will become small, weak, and often irregular, because the blood cannot pass freely through the lungs. When the pulse fails in pneumonia, and at the same time the heart is found beating violently, it indicates commencing failure in the right ventricle. A bounding, full pulse is the characteristic of acute inflammation of the thoracic viscera, and of the meninges of the brain. But in abdominal inflammation the artery is contracted, feels like a pulsating wire, and is incompressible. Why there should be this marked difference is not very clear; but it exists. In peritonitis, in inflammation affect-

ing the tunica vaginalis, there is this contracted, incompressible artery. It is of the utmost importance to be able to correctly estimate the pulse. Dr. Thorowgood has described the pulse in the different forms of heart-disease, therefore it is not necessary for me to go over the same ground. It is enough to say that careful examination of the pulse will often tell the form of heart-disease under which the patient suffers. The 'splashing,' 'collapsing' pulse of aortic regurgitation is quite characteristic. Irregularity of the heart's action is found in conditions of cardiac dilatation and in mitral disease, and especially when the two are combined. Intermittency in the pulse is of three kinds. 1. A simple halt or pause in the regular beat; often a mere nervous trick, and nothing more, especially in young persons. It is, however, often found with evidences of degenerative changes in persons advanced in years. Its significance depends upon its surroundings. 2. A halt, preceded by a few rapid feeble strokes, aggravated by effort. Here there is a dilated heart, with or without mitral disease. It is very significant; and it is very important to distinguish this form from the preceding one. Much misery has been caused unnecessarily by attributing to the first form the significance which attaches to the second form. 3. This is where the contraction of the left ventricle is so feeble that the impulse of the blood wave driven into the aorta fails to reach the radial artery. The intermission may be isolated or in clusters; but if the ear be placed over the heart, its action will be found to be comparatively regular, and rhythmic. Sometimes not half the ventricular contractions reach the radial artery. In cases of pulmonary embarrassment, the pulse may be irregular and intermittent as a consequence of partial failure in the right heart. The amount of blood passing through the pulmonary circulation is insufficient to furnish a fair blood wave into the aorta on the contraction of the left ventricle. The left ventricle can only pass onward what blood comes to it, and no more. This form of intermittency is best seen when a patient is sinking from some disease of the respiratory organs. While the pulse flutters and intermits, and the flame of life is flickering out, the heart, and especially the right ventricle, will be heard labour-

ing away at its ineffectual task. Disparity betwixt the volume of the pulse and the energy of the cardiac contractions indicates enlargement of the right ventricle; except in cases of aortic stenosis.

It has been said before that both radial pulses should invariably be felt. Sometimes there is an abnormal distribution of the radial artery, and it courses over the dorsal surface of the hand to the phalanges of the index finger; if it were made a regular practice to feel both pulses this could not, as it sometimes does, lead to confusion.

Then comes the question of rapidity of the pulse. Your physiological teacher will have told you about the relations of the vagus nerve to the heart. I am not here going to describe that nerve in its entirety; it is enough for the present purpose to say that it contains various nerve-fibrils, some of which accelerate the heart's action, while others slow it. These are called respectively the 'accelerator,' and the 'inhibitory' fibres of the vagus. When the blood-supply to the roots of the vagus nerve in the medulla oblongata is insufficient, the 'accelerator' fibres are thrown into action, and the heart beats rapidly, so as to pump more blood from the veins into the arteries. When, on the other hand, the roots are flooded with blood from well-filled arteries, then the 'inhibitory' fibres are thrown into action, and the heart's action held back. By this slowing of the heart's action, the blood has time to escape out of the arteries through the contracted arterioles, before the next ventricleful of blood is thrown into the arteries. If it were not for this last arrangement, rupture of arteries, especially the cerebral arteries, would be much more common. There are other interesting matters connected with the fibres of the vagus, which may be added in future editions; it is here essential to my purpose to show how the 'fast' and the 'slow' pulse are brought about. It is very important that this broad division be clearly comprehended in daily practice; as it not only helps to clear up the diagnosis, but gives direction to the therapeutic measures. The slow, incompressible, usually strong pulse indicates a totally different condition from the fast, small, compressible pulse. The latter may

indicate debility or exhaustion, or may be strictly nervous. When a patient is first seen, the pulse is apt to be very much accelerated, especially if the patient be nervous or excited. It is well then to feel the pulse at the end of the examination as well as at the commencement; the information furnished by the second examination of the pulse will often correct any erroneous impression produced by the first feeling of the pulse. In many diseases the pulse mounts as death approaches; and when in severe disease the pulse becomes irregular as well as fast, the condition is fraught with imminent danger. It may become merely a 'wobbling thread,' indeed; or at other times it is a 'fluttering' rather than a rhythmic beat. In conditions of great debility, especially when brought on by hæmorrhage, the pulse may become weak and irregular or intermittent, without much real danger. The examination of the pulse ought, then, to indicate careful investigation as to the associated general condition, and will often put the practitioner on his guard in insidious states. A persistingly rapid pulse over 100 per minute is regarded by many practitioners as a certain prodromic indication of commencing phthisis. It certainly is a semeion of evil omen, especially when found with actual lung mischief.

One thing there is about the rapidity of the pulse which ought to be brought more conspicuously before the student than is done at present, and that is, *the proportion betwixt the rate of the pulse and the respiration.* Normally the proportion is as 4 to 1. If we regard normal respiration as 18 per minute, we get a pulse rate of 72 per minute. This is the proportion in health. In febrile and inflammatory diseases both mount, and we may have the respirations 30 per minute and the pulse at 120. Here the disturbances are such as to affect the respiration and the circulation alike. But when the proportion is disturbed it is most significant. If the pulse be rapid while the respiration is calm, it is well to examine the heart, to see if there be any dilatation about it. Dilatation and debility in the heart will send up the pulse, without the respiration being necessarily affected. On the other hand, where there is thoracic embarrassment, the ratio of the respirations mounts up out of normal proportion to the pulse

rate. This disturbance of the proportion will not tell what is the nature of the disturbing agent, of course; but it tells in distinct language that some abnormal factor is at work. The cause may be emphysema, with or without some bronchitis; or a large portion of one or both lungs may be consolidated either in pneumonia or pulmonary phthisis; or there may be progressing congestion in acute disease. The student in the hospital ward is always taught carefully to examine the patient's posterior thoracic regions when congestion is suspected; but this is not always convenient in ordinary practice. A private patient has his or her own opinion and feeling, which must be consulted, and cannot safely be ignored, by the practitioner: and an examination of the back is disagreeable, troublesome, and often repugnant to the feelings, and should not be done without good and valid reason therefore. To examine the back daily to see if there be hypostatic congestion is unnecessary in many cases, and distresses or annoys the patient; it should therefore only be done when there is good reason for it. If the practitioner were accustomed to take the rate of the respiration as systematically as that of the pulse, which certainly ought to be the case, a disturbance in the proportion would at once strike him, and put him on his guard. When the respirations commence to mount without a corresponding rise in the pulse-rate, then the lungs should be carefully examined to ascertain the cause of the disproportion. So long as the normal proportion is maintained, the mind may be pretty easy as to lung-congestion. The correct timing of the respiration and the circulation is a most important matter, in thoracic disease especially, which will have more attention paid to it in the future than has been accorded to it in the past.

Then there are nervous conditions when both pulse and respiration mount up; even the temperature may go up too. Austin Flint talks of 'being fooled by temperature;' and when the subject of temperature is discussed, the nervous element will be considered more fully.

In pyrexia both pulse and respiration are accelerated, as well as the temperature raised; and a fall in any of the three is of good omen, as improvement in the other two follows. The use

of the watch is now not nearly so great as it ought to be. Other and more recent instruments of precision have taken precedence of the watch; but the day of the use of the watch will come again: only it will in the future be used with more precision than it has hitherto been.

Then the pulse may be abnormally slow, either as mere idiosyncracy, or in cerebral mischief, or in fatty degeneration of the heart.

Then, again, the character of the wall of the artery is worth noting. Atheroma is a growth of connective tissue in the arterial wall; either found in patches, and especially on points of flexion, as the knee and axilla, or at the outer curve of the aortic arch; or a more general distribution, where the arteries feel more like tendons than normal blood-vessels. This condition is usually, if not always, due to sustained high arterial tension. In time the artery feels to the touch elongated as well as broadened at each beat. This atheromatous change proceeds in two directions. (1) Towards fatty degeneration, and (2) calcareous change. The first is most common in the atheromatous patch, where the neoplasm softens and is washed away piecemeal in the blood-current, leaving an ulcer which is apt to become an aneurysm. The latter change is more general, and in very marked cases the arteries feel as rigid as pipe stems. The atheromatous artery is a very important matter, from its associations with an hypertrophical left ventricle, contracted kidneys, and a waste-laden condition of the blood. Even when the left ventricle begins to fail, the atheromatous artery gives the impression of a good pulse—it exaggerates the pulse-wave so as often to be very deceptive. The condition present may be one of temporary asthenia, and yet an atheromatous radial artery may create the impression that lowering measures are indicated.

It has been said before that it should be the rule to feel both radial arteries simultaneously. By so doing, many an aneurysm of the aortic arch would be detected which escapes observation.

After pyrexia, inflammatory or other, a fall in the pulse-rate marks the defervescence of the malady. In feeling the pulse, it is

well to let the ring and little finger tips trail over the palm; when this is wet and cold it indicates exhaustion, not unfrequently associated with disturbance in the reproductive organs. In hectic fever the hand is often burning. In wasting disease the hand feels listless and limp. In hospital practice the soft palm and fingers tell, in a man, of indolence, and indicate very commonly a gaol-bird. The hand will often tell much as to the mental attitude, the amount of will, or the want of it in the patient; and when presented in order that the pulse may be felt, it is well to feel the hand first, as a preliminary to feeling the pulse.

**THE RESPIRATION.**—The importance of comparing the rate of the respiration and the pulse has just been insisted upon above. Then the character of the respiration is important. There is the rapid shallow breathing of nervousness, of phthisis, and of emphysema. When the lung-space is infringed upon by a morbid growth within the thorax, by congestion of blood in mitral disease, by consolidation, pneumonic or other, the breathing is rapid. Then, too, it may be laboured, as seen by the accessory muscles of respiration being brought into play; this last is well seen in cases of emphysema, with chronic bronchitis and enlargement of the right heart. The blue hue of venous congestion on the lips, taken along with exalted respiration, will often make a physical examination a mere matter of form, corroborating the diagnosis. In the present prominence of physical examination, the other means of ascertaining the condition of the thorax are apt to be put aside too much. When the breathing is accelerated without rise in pulse-rate, or temperature, then disseminated mischief in the lung is suggested, as interstitial pneumonia, or miliary tubercle. Dyspnœa is paroxysmal in asthma of whatever form. There is true genuine asthma, due to spasm of the bronchial muscular fibres, coming on at intervals, the patient being quite well betwixt the attacks. Then there is dyspnœa produced by exertion, showing that the lung space is infringed upon either by solid growth or vascular fulness, as in mitral disease; this is usually found along with dilatation of the right ventricle. Or it may be due to general emphysema of

the lung, or pleuritic effusion, or empyema. When the lining membrane of the bronchiæ is swollen, and the lumen of the tubes thus diminished, dyspnœa on effort results. While the patient is quiet, the breathing is unperturbed in many cases of extensive mischief; but the disturbance caused by slight effort tells that the thoracic space is infringed upon. This being ascertained, it next becomes necessary to find the exact nature of the disturbing cause. Then in children there is the embarrassing respiration of croup, and the same in laryngeal disease in adults. There is the peculiar, loud, noisy inspiration of hooping-cough; and the crowing sound of laryngismus stridula. When the respiration has often been interfered with, the shoulders are apt to be thrown forward; this is well seen in persons who suffer from, and have long suffered from, attacks of genuine asthma.

**THE COUGH.**—A patient often coughs, and the form of cough is often significant. There is a little 'hemming' cough, often the precursor of phthisis: very frequently a nervous trick, which, however, alarms the mother of the patient, who is usually a girl. Then there is the loud brazen cough, also a neurosis, which is closely simulated by the cough of aneurysm, especially when the recurrent laryngeal nerve is pressed upon. Then there is the dry cough of pleurisy and of pulmonary congestion, common with mitral disease. There is the reflex cough, the 'cradle-cough' of pregnancy. There are also a 'liver cough,' from interference with the diaphragm; and an 'ear cough,' from irritation in the ear acting through the chorda tympanum. Then there is the paroxysm of coughing common in phthisis, which may be relieved by the expectoration of softened tubercle; or it may be set up by a mass not yet softened, where it is exhausting as well as futile. Then there is the ordinary cough, followed by expectoration, in bronchitis; and very commonly, especially in winter, the cough on getting out of bed in a morning, when the mucous which has accumulated in the air-tubes during the night is expectorated. There is also a cough in getting into bed at night, from the general cutaneous surface being chilled by contact with the cold bedclothes. Here the cooled blood

reaching the lungs sets up a cough, or a series of coughs. In children, especially of the strumous diathesis, there is often a dry, frequent cough which goes on in sleep.

**THE EXPECTORATION.**—It is of much moment to closely observe the character of the sputum expectorated in cases of thoracic disease. In pneumonia the expectoration is rusty in hue, and is so viscid that a quantity adheres to the bottom of the vessel when inverted. Later on the sputum is of grey hue. In bastard pneumonia the expectoration resembles prune-juice. In carcinoma of the lung the sputum resembles currant jelly. In bronchitis, at an early stage, the expectoration is marked by streaks or spots of blood; when the phlegm becomes looser, that is, the secretion more abundant, then the sputum is white and frothy; afterwards it becomes rather like starch. At times pus cells are present, and the secretion is muco-purulent. At other times the sputum is flattened and round, resembling a piece of money; here it is called 'nummular,' and is often found in phthisis. In œdema of the lungs, and in bronchorrhœa, the secretion contains serum, and is a thin watery fluid. It may co-exist with mitral obstruction. Fibrinous casts of the bronchi, or bronchia, are expectorated sometimes, as well as croupous casts of the larynx and trachea. At other times calcareous concretions are expectorated. These are generally supposed to be the earthy salts of what were once tuberculous masses; certainly they are most commonly found in phthisical subjects. They should not be confounded with the masses which sometimes form in the follicles of the tonsils; these latter are masses of pus-cells which are unctuous to the touch and emit an offensive odour. In smoky towns and in dusty weather the sputum becomes dark-coloured from the presence of minute particles of carbon; and after a thick fog the sputum may be inky-black. As to the presence of hydatid hooks, cancer cells, pieces of lung-tissue, or epithelial cells, as seen under the microscope, their description is not within the scope of this work.

**HÆMOPTYSIS.**—This is much more alarming than any other form of expectoration, as it is generally supposed to indicate pulmonary phthisis. This opinion is shared by the profession at

large, and by the public; nor is it wise or prudent to under-estimate the gravity of hæmoptysis. It should always cause careful examination of the case. It is in women a form of vicarious menstruation very commonly. Then it may be due to pulmonary congestion, the result of effort. As associated with actual mischief in the lung, it is very necessary for the student to have clear views about it. 'Before pulmonary cavities have formed the hæmorrhage is from the bronchial lining membrane' (Austin Flint). In the early stages of lung-consolidation hæmoptysis is rarely fatal. It may occur in small or large amounts, and is often a useful form of local bleeding, giving relief to all the symptoms. As such it may recur in the same patient. When cavities are formed, then the prognosis is profoundly altered. When a tubercular mass softens, the blood-vessels usually wither up to a dry cord (Rokitanski); at times this is not the case, and the coat of a blood-vessel is cut through by ulceration, and serious hæmorrhage follows. Or a cavity is formed, and a blood-vessel bordering on the cavity bulges in an aneurysmal manner into the cavity. The aneurysmal pouch is ruptured in the act of coughing, and dangerous hæmorrhage follows. These two latter forms of hæmoptysis place the patient's life in imminent peril, and do not frequently recur. The first form is much more common, is usually less in quantity, and often recurs, and is of less seriousness. But the student, when at the examination table, should have his mind fixed little on this less grave form, but steadily fixed on the graver forms. He should never under-estimate the gravity of hæmoptysis, especially before an examiner. Hæmoptysis may result from an aneurysm bursting into the bronchi or trachea, as was the case with the late famous surgeon, Robert Liston. After a severe bleeding, a clot got into the orifice and plugged it; and fatal hæmorrhage did not occur till some time later.

When present at the time, it is not difficult to distinguish betwixt hæmoptysis and hæmatemesis, but when the explanation of the appearance of the blood has to be gathered from statements, difficulties arise. In hæmatemesis the colour of the blood is usually dark or black, while the blood in hæmoptysis is

usually bright and frothy. The one is got up by vomiting, the other by coughing; hæmoptysis is usually preceded by evidences of thoracic mischief. It is well to make sure that the blood does not come from some lesion in the mouth, or throat, or palate.

At other times blood appears at the anal orifice. When from the rectum, it is usually bright in colour, and passed without pain, whether hæmorrhoids be present or not. When from further up the bowels it is dark in colour, and is usually found along with typhoid fever, or tubercular ulceration of the bowels. It may be associated with dysentery when it is accompanied by patches of mucous membrane. When proceeding from the urethra, it may co-exist with renal mischief, when it is thoroughly mixed with the urine; or an enlarged prostate when it follows after the urine; or stone, or cancer of the bladder, when it usually precedes the flow of urine.

The stream of urine is forked or twisted in stricture; it dribbles in enlarged prostate, and is intermittent and liable to sudden stoppage in stone in the bladder.

**THE URINE.**—There are a large number of cases in which it is of primary importance to carefully examine the urine. The first question to be asked is its amount, or bulk. The bulk of urine, *cæteris paribus*, is the measure of the blood pressure in the arteries: when the arteries are full the bulk of urine is large, as in the middle stages of gouty kidneys, where there is hypertrophy of the left ventricle and a tense pulse. When the circulation fails and the veins are full, then the bulk of urine falls, as seen in the scanty urine of heart failure. It is very important for the student to make himself familiar with the relations of the bulk of urine to the condition of the vascular system. Some years ago, Sir William Jenner pointed out in the most lucid and instructive manner the diagnostic significance of a modification of the bulk of the urine. In the middle stages of chronic Bright's disease the patient passes a large bulk of urine of low specific gravity; but when the case has progressed to the point of the heart commencing to fail, the bulk of urine falls below the norm and resembles that of advanced heart failure. As the power of the heart wanes, the bulk of urine falls below that of

normal health; its character, too, changes: from being pale, watery, and of low specific gravity, it becomes deeper in colour, and of a higher specific gravity as it decreases in bulk; from a pale watery urine it becomes densely saturated with lithates, usually pink or red in colour. The question of these alterations in the urine alongside the well-recognised changes in the vascular system in the course of chronic Bright's disease, otherwise termed 'the gouty heart,' are well worth serious and careful attention from the student. They illustrate well the light physiology can throw on the facts of clinical medicine. The student should ask his teachers, physiological and clinical, for further elucidation of the subject, which is one that will turn up in practice constantly from day to day; and nothing but careful consideration of the subject will enable the student, when he has become a practitioner, to read aright the information afforded by the bulk of urine.

Normal changes in the bulk of the urine go on in healthy individuals, according to the amount of perspiration, and the amount of fluids swallowed; the one drains away the fluids of the body, and leaves the urine small in bulk and of high specific gravity: the other fills the blood-vessels and so increases the bulk of urine. When a large bulk of fluids has been drank, especially if the skin be not active, then the urine is copious, watery, and almost free from solids. But in certain cases of kidney disease these changes are exaggerated, or brought about without obvious cause; and the patient will tell one, often without asking, of the great variation in the bulk and character of the urine passed. If the patient get up at night to void urine, the suspicion of kidney disease in an early form is very strong indeed. In hysteria, where the arteries are corded and the heart beats violently, the attack passes off with the discharge of an immense mass of limpid urine. Then there is a *diabetes insipidus* where the flow of urine is large and watery, which is to be distinguished from *diabetes mellitus*, where sugar is present in the urine.

A small bulk of urine is found in pyretic conditions, though the patient may be drinking large quantities of fluids, and yet

not be perspiring. In heart failure, when the circulation is affected—when the arteries are slack and the veins are full—the bulk of urine falls. The decrease of the bulk of urine tells with strict veracity of the failure of the circulation. When the bulk of urine increases, whether from a turn in the case, or from the therapeutic plan adopted, the aspect of the case brightens. The friends of dropsical patients watch with intense anxiety the variations in the bulk, colour, and character of the urine: so the student should be *au fait* with this matter of the bulk of urine for every reason.

The colour of the urine may only be spoken of broadly, and the same may be said of urinary deposits. Pale urine is usually of low specific gravity, and contains comparatively few urine solids —it may, however, contain either sugar or albumen. High coloured urine is usually of high specific gravity. The bulk and the specific gravity of non-saccharine urine are usually in inverse proportion to each other. Then as to urinary deposits, white lithates are usually associated with imperfect assimilation, and defective action in the liver. Red or pink deposits usually indicate defective oxidation, and are more distinctly gouty in character. Tawny or fawn-coloured lithates lie half-way betwixt the red and white lithates. Uric acid crystals resembling cayenne grains are found in the gouty, and especially where there is also a strumous diathesis. In decidedly strumous young persons uric acid crystals are commonly found in the urine. Sometimes they are passed in considerable quantities, constituting 'an attack of gravel.' At other times the urine contains deposits of phosphates; about these, however, there is such divergence of opinion as yet, that nothing can be said about them here. Pus may be found in the urine as the result of cystitis, or from suppuration in the kidney itself. The bladder is very intolerant of purulent urine. A urine of high specific gravity is best and longest tolerated, *i.e.* of normal urine solids. Urine containing sugar soon teases the bladder.

There are mucous deposits in the urine from spermatorrhœa true or false, in man; from vaginal discharges in the female. Renal casts, and epithelial scales, each often revealing much,

are to be found under the microscope. When urine is of high specific gravity, not being saccharine, it usually contains large quantities of urea. The addition of a little nitric acid brings out crystals of nitrate of urea. Baruria, or azoturia, as this condition has been termed, is not a common malady. In the high specific gravity of the urine in fevers, and especially typhoid or enteric fever, the proportion of urea is often very high. A great deal of stress was laid upon this large amount of urea some years ago, as it was held to represent the waste of the nitrogenised tissues of the body by the fever. The fallacy of assuming this without calculating for the nitrogenised matters swallowed *per diem* by the fever patient, is now generally recognised.

So much then, broadly, for ordinary urine. It next devolves upon me to discuss the subject of albuminuria and glycosuria; and as my views on these two subjects are not those ordinarily taught, it will be very necessary for me to be careful: first, as to giving the student the correct, or what I honestly believe to be the correct views on the matter; and, second, not to get him into trouble with his examiners. Advanced views are not always held by examiners, and a student may get into trouble from the possession of knowledge—as well as from the want of it. Just as the student was instructed to take the gravest view of hæmoptysis before an examiner, so he should speak of albuminuria and glycosuria with almost bated breath. Hæmoptysis not rarely is followed by instant death; albuminuria and glycosuria were first observed in persons seriously ill, consequently they are spoken of as most serious symptoms. So they often are in practice; but they should be invariably of grave significance at an examination table. If the student is willing to speak disdainfully of the significance of these two conditions of urine in an examination, he must be prepared for one of two alternatives. Either to demonstrate that he thoroughly knows what he is talking about, and has studied the subject very carefully; or the more probable alternative, viz., to be referred to his studies for a little while longer—to the wounding of his self pride, to the detriment of his progenitor's purse, and the chagrin and sorrow of his female relatives. So let him understand distinctly that

he must never underrate the significance of either indication. It is scarcely my province here to tell the student how to find sugar or albumen in the urine. But it is much easier to find these substances than to make out their significance when they are found.

The two common tests for albumen are to boil the suspected urine in a test-tube, or to add some nitric acid, allowing it to trickle slowly down the side of the test-tube into the urine. If albumen be present it is coagulated. (Any lengthy description of the cautions to be observed, and the fallacies to which the methods are liable, is unnecessary here, as the correct testing of the urine is one of the things which the student certainly is taught very thoroughly.) Albumen may be present in the urine as chylous urine, a rare malady; after a meal largely albuminous, as eggs; or from slight disturbances, as dyspepsia or febrile conditions. Setting aside these unimportant exceptions, albuminuria must always be looked upon as a grave symptom of disease; and when discovered, it becomes an anxious question to the practitioner: What significance has it?

'The pathological states in which albumen appears constantly or occasionally in the urine may be arranged in the following groups:

1. Acute and chronic Bright's disease of the kidneys.
2. Pregnancy and the puerperal state.
3. Febrile and inflammatory diseases. (Zymotic diseases, such as scarlet fever, measles, small-pox, typhoid, cholera, yellow fever, ague, diphtheria, etc.; inflammatory diseases, such as pneumonia, peritonitis, traumatic fever, acute articular rheumatism, etc.)
4. Impediments to the circulation of the blood (emphysema, heart disease, abdominal tumours, cirrhosis, etc.)
5. A hydræmic or dissolved state of the blood and atony of the tissues (purpura, scurvy, pyæmia, hospital gangrene); also, hæmatinuria.
6. Saturnine intoxication.
7. Neurotic albuminuria (nervous disturbance). When albumen is found in urine, the important point to decide is, whether it indicates the existence of organic disease of the kidneys or not.

The question, in any individual case, must be considered chiefly in connection with the three following points jointly, namely:

i. The temporary or persistent duration of the albuminuria.

ii. The quantity of the albumen, and the recurrence and character of a deposit of renal derivatives.

iii. The presence or absence of any disease outside the kidneys, which will account for the albuminuria' (William Roberts on 'Urinary and Renal Diseases').

As to point 1, he refers to the researches of Parkes, as to 'temporary albuminuria.'

As to point 2, he states: 'The greater the quantity of albumen, the more likely is the existence of renal disease; and a large quantity of albumen (one half and upwards) is rarely found except in undoubted acute or chronic Bright's disease.' The bulk of urine must be allowed for. 'Indeed, of all urines, there are none more surely indicative of Bright's disease than a pale, dilute, abundant urine, which is, at the same time, more or less albuminous. On the other hand, as a rule, with very few exceptions, when the urine is only slightly albuminous, and at the same time dense and high-coloured, Bright's disease is not present, and the albuminuria is owing either to pyrexia, or some impediment in the circulation of the blood.'

On point 3, he says: 'When the urine is found permanently albuminous, and there exists neither pyrexia nor thoracic disease, or other recognisable condition which can account for the albumen, the inference is almost irresistible that there exists a primary organic disease of the kidneys.'

Now I have put before the student what is said by one of our very best authorities on the subject, a man of much acumen and of very extensive research. The student should certainly start out with the fixed impression that albuminuria is the evidence of renal mischief, primary or secondary. Until his last examination is passed, he may not safely swerve from this faith. But when he becomes a practitioner, he will have to determine for himself, as best he can, what the albumen signifies in each individual case. If he make his diagnosis solely from the reaction of urine in a test tube, he may make a profound mistake; causing

much avoidable misery to the patient and his friends in the first place, and ultimately bringing much discredit upon himself. So let him be cautious!

There has as yet come no Daniel to read for us the significance of albuminuria, taken alone. We are as much in the dark as were the companions of Belshazzar as to the writing on his palace wall, on this matter of albuminuria, *pur et simple*.

Let me say that making the question of the presence or absence of kidney mischief turn on the evidence furnished by the test tube, has been abandoned by many thoughtful practitioners. The testimony of the test-tube is but one factor in forming the diagnosis. The presence of albuminuria may be without significance in some cases; its absence may give no comfort in other cases. For attend to what William Roberts says of the urine; 'it may contain only the minutest traces of albumen, even in confirmed and fatally-tending cases;' and further: 'But it must be admitted that chronic degenerations of the kidneys, not distinguishable from some forms of Bright's disease, *do* exist under certain circumstances, without albuminuria.' And Professor Grainger Stewart writes, in speaking of cirrhosis of the kidney, which he says 'is the most hopeless of all forms of Bright's disease in relation to treatment,' the following significant remarks: 'Albumen is rarely present in any considerable quantity, and its presence—fitful in appearance, and varying in its amount—is also difficult of explanation.'

Austin Flint says: 'The presence of albumen in the urine is by no means always evidence of renal disease;' on the other hand, I can affirm that chronic old-standing kidney disease of the gravest character may exist without giving rise to albuminuria, even though repeated examination has been made of the most careful character. ('The Heart and its Diseases, with their Treatment; including the Gouty Heart,' 2nd ed., p. 456.)

There is one form of albuminuria that is fairly accurately significant, and that is the form associated with cardiac failure and dropsy. When the venous engorgement has proceeded to a certain length, then albumen makes its appearance in the urine; first as a mere trace, then a little more; disappearing as treat-

ment relieves the renous congestion; after a while showing itself again, and persisting. About the fatal significance of this form of albuminuria there exists no room for doubt.

In albuminuria without other evidences of disturbance of health, the student will do well to keep any opinion he may entertain to himself, and refer the patient to some known authority on the subject. Many a reputation has been sorely shaken by too confident reliance on the prognosis formed from the evidence furnished by a test tube.

**GLYCOSURIA.**—The appearance of sugar in the urine is usually regarded as the herald of disaster; and sadly too frequently it is such. As to its detection, it is simple. Put some Fehling's solution into a test-tube—about an inch is enough—or dissolve one of Pavy's cupric capsules; boil it, then add a drop of the suspected urine; boil again—the orange-red oxide of copper falls to the bottom of the test-tube. Or put a piece of German yeast, the size of a pea, into a test-tube, then fill the tube with the urine, place a saucer on the tube, turn the whole upside down swiftly; leaving the tube erect, bottom upwards, on the saucer. Soon carbonic acid forms, and in a few hours the tube is free from fluid. This last is the easiest, and at the same time most absolutely certain, of all tests for sugar. Having found the sugar, it is necessary to take the specific gravity; and all urines over 1025 are to be suspected, and ought to be examined. Then ascertain the total bulk of urine voided per diem. If the specific gravity be great, and yet the bulk of urine be small, the daily loss of sugar may be less than in those cases where the specific gravity is comparatively low, but the bulk of urine voided is large.

As my personal views on the significance of glycosuria would be held by some to be heretical—heretical in the fact that I have seen a number of cases where a considerable quantity of sugar exists in the urine continuously without any disturbance of the general health, I will again quote William Roberts: 'Cases of saccharine urine may be primarily divided into two broad classes or divisions.

'One class consists of instances in which a small quantity of

sugar appears in the urine for very short periods, without relevant symptoms—the circumstance being a temporary and incidental consequence of some physiological or pathological antecedent which has little or no affinity to diabetes, as clinically understood. Belonging to this class are examples of saccharine urine after the administration of chloroform, after eating an excessive quantity of saccharine and amylaceous food, in recovery from cholera, and after paroxysms of whooping-cough, asthma, or epilepsy. These may be designated as cases of *incidental glycosuria.*

'In the other class of cases the glycosuria is more intense; it constitutes a permanent symptom, and persists for considerable periods of time, and is associated with a serious departure from health. To this class alone is the term *diabetes* at all applicable.

'This second class again is divisible into two groups. In the first the glycosuria is persistent and intense, and the flow of urine is greatly increased; this state of urine is associated with thirst, debility, emaciation, and a train of grave fatally-tending symptoms, which constitute a familiar, easily-recognised clinical unity. This is the classical *diabetes* of authors, and to this the name of diabetes was limited, before our more refined and ready analysis disclosed the presence of sugar in urine in a number of other and different states.

'The second group embraces those less serious types in which sugar is present in the urine, sometimes abundantly, sometimes scantily; sometimes persistently, sometimes intermittently; always with a weakly condition of health, but without thirst or conspicuous emaciation, often indeed with corpulence; without any or only slight increase in the quantity of urine, and without that fixed tendency to death which stamps the first group—occurring also generally in advanced years, or at least beyond the time of early manhood.'

The student will see from this that diabetes was a well-recognised form of disease before the discovery of sugar in the urine was made. Now the presence of sugar in the urine is apt to be made the evidence of diabetes *par excellence.* The student,

then, must not conclude from the presence of sugar in the urine that therefore the disease diabetes is necessarily present. Epilepsy may be a mere disorder, or it may be the result of most serious organic change. So with diabetes. A prominent symptom is not a disease, as is too often carelessly assumed. Glycosuria may only exist after meals, when grape sugar is made faster than the liver can dehydrate it into glycogen. These cases must be discriminated from those others where sugar is continuously present. Then sugar in the urine may alternate with gout, a matter yet little understood generally. It may occur in corpulent persons without producing any subjective sensations; here it is a sort of 'waste-pipe business,' running off the superfluous sugar which the system does not require. It may be induced by a shock or mental upset; here it usually comes on severely as well as quickly, and is usually very amenable to treatment. On the other hand, when there is emaciation along with it, it is impossible to overrate its grim significance. This is what Roberts calls the 'classical diabetes;' and this is the form an examiner always means when he talks of or asks about diabetes. Further, in elderly persons who begin to grow thin, the faintest trace of sugar in the urine should awaken the gravest suspicions, and cause the greatest attention to be paid to the case. Here not only is the 'break-up,' of which the saccharine condition of the urine is but one of the evidences, of the most intractable character; but it is usually swift in its operation.

I desire the student to distinctly understand that there is no wish to here underrate the gravity of diabetes—true 'classical diabetes'—in making the statement that glycosuria is often a matter of little real significance. Its gravity depends essentially on its associations.

Buckle writes pithily: 'To be willing to perform our duty is the moral part; to know how to perform it is the intellectual part.' The reader, then, should neither lose his head and act precipitately on the discovery of sugar in any particular urine, whether his own or anybody else's; nor should he conclude that diabetes—'classical diabetes'—is merely a matter of sugar in the urine.

**TUBE CASTS.**—These can only just be mentioned here. They are of various kinds. The student must investigate this subject by the light of special treatises; any brief statement would be worse than useless to him.

**HÆMAGLOBULIN.**—On testing urine with nitric acid for albumen, a distinct pink or crimson zone is often produced. I the test-tube be then placed in the flame of a spirit lamp, the whole body of the urine becomes of the same hue. If another specimen be boiled with hydrochloric acid, the urine will assume a claret-and-water hue. The substance here present is hæmaglobulin, otherwise uro-hæmatin. It is the colouring matter of the blood, a most highly elaborated compound; but nothing as yet is systematically taught about it.

Sometimes the chrysophannic acid of rhubarb causes the urine to look 'bloody.' To the eye the deception is often complete.

**TEMPERATURE.**—This is a semeion of the most cardinal importance in a large class of maladies. By the use of the clinical thermometer, the temperature is revealed to the eye. It may be below the norm (99°; or 98·5° Fahr., to be extremely and minutely particular) in cases of collapse, in deep alcoholism, or in embarrassment of the respiration. In disease of the respiratory organs, a fall in the temperature is often a most grave matter; indeed, there are times when a high temperature is a matter of much comfort, and a fall even to the norm is of evil omen. When the temperature falls below 95° the condition is becoming very serious.

Infinitely more commonly the body-temperature is above the norm. It is only of recent years that the body-temperature in disease has been systematically and generally studied. The clinical thermometer is one of the most valuable additions to our means of examining our patients. As ordinarily used by most practitioners, it merely tells the rise and fall of a pyrexia, as an exanthem or pleurisy; indicating the febrile rise or the commencement of defervescence—very useful in its way, no doubt; but a great deal more may be ascertained by it if a little physiological knowledge and intelligent attention be given to its use. It is not, however, every practitioner who wields a clinical thermometer skilfully, any more than a stethoscope. It is easy to

put either to the patient's body—true; but after all the instrument is valueless or valuable according to the brain that superintends the operation. The most delicate or requisite instrument cannot illumine a defective or imperfectly educated mind. 'After all, it is not the instrument that knows!' Some men act as if they thought that if they only could secure a perfect instrument, it would do away with the necessity for knowledge, and abolish the need of thought. It would do all for them. This is so obviously absurd, that it would seem a superfluity to allude to it; if it were not so prevalent it would be quite unnecessary to refer to it!

In order to wield the clinical thermometer intelligently, and to comprehend the information afforded by it, the student must fully realise the fact that a high body-temperature may be produced by

1. Imperfect heat loss.
2. Increased heat production.
3. Both combined.

For successful treatment it is of the highest importance to determine how the pyrexia is brought about. When the skin is dry, and still more when it is burning as well, then there is defective heat loss *par excellence*, whether there be any increase of heat production therewith or not. In rising fever there is no perspiration. Heat is radiated away from the body by the vascularity of the cutaneous area, and still more by the cooling effect of the evaporation of the water of the perspiration. Sustained effort leads to sweating. In effort, more body-heat is produced than in quiet; and this increase in heat production is followed by an increase in the perspiration with resultant increased heat loss. Thus the temperature equilibrium is maintained. In rising fever all perspiration is arrested, and the exhalation of heat from the burning skin is insufficient to keep down the temperature. Consequently high temperatures with a dry skin are not so serious as equal temperatures with a wet or moist skin.

When the skin is wet, showing great heat loss, a high temperature indicates greatly increased heat production. Here, in spite

of an abnormally great heat loss, the body-temperature keeps high. Post partum conditions often present this wet-skinned pyrexia, requiring active measures for its reduction. (This important matter will be considered in another of this series, 'Aids to Rational Therapeutics.' In the meantime, the student who wishes to know more on this matter can consult the chapter on 'Body Heat and Fever,' in the 'Practitioner's Handbook of Treatment.') In taking the temperature, the condition of the skin should be carefully noted: when wet, the rise over the normal temperature is of much greater gravity than where there is a dry skin. It is necessary to insist upon this!

In many cases there is a certain amount of increased heat production, as in local inflammation, with a certain diminution in the heat loss from inactivity in the sweat glands.

Then there is the rapidity of the rise to be considered. A rapid rise is more common with children than adults. The younger the organism, the more unstable and mobile are its heat-regulating processes. A rise of two or three degrees Fahrenheit in a child is of little moment; but in a person over sixty it should be looked to carefully. A rapid rise to 103° or 104° or more in a child usually means acute indigestion. The more rapid the rise, the less serious its indication. Fevers rise slowly, and take days to reach a point attained in dyspepsia in as many hours.

Then there are sunstroke, or 'heat-apoplexy,' when the temperature has more than a diagnostic value; and 'heat-diarrhœa' requiring its own management. Hyperpyrexia, that is, a temperature above 105°, is applied to conditions where an abnormally high temperature suddenly mounts. It is always a serious affair.

When the temperature mounts to 107° the patient's life is in great danger; at 108° in terrible danger; at 110° the prospects of life are all but blotted out. A few cases of survival after a temperature of 110° are on record.

Then the temperature is often higher at night than in the morning, as in some surgical fevers, and in phthisis. So long as the morning temperature keeps near the norm, a rise of a few degrees in the evening does not much alarm one. But when the

morning temperature mounts and approaches the evening temperature, the prognosis waxes gloomier. On the other hand, when the morning temperature drops, and there is a distinct gap betwixt it and the evening temperature, then the outlook is brightening. Often a rise or fall in the temperature heralds a coming change, of which it may be the first outward sign. On the other hand, the student must know that at times rapid rises of temperature are nervous in origin, are, in fact, 'true neuroses.' In one case which came under my notice, in a very nervous girl, for months the temperature, when taken, was over 103°. This rise was accompanied by increased rapidity in the respiration and the pulse. Yet she was sinking of inanition, and never approached the typhoid condition which is the consequence of a sustained high temperature, nor gave any indication of persisting fever. Once the temperature, when taken, was 104°, yet she was not at all 'feverish;' it was just excitement, and too evanescent to produce any distinct consequences. Further, listen to what Austin Flint says: 'The physician is liable to be misled by placing too much reliance on the laws of temperature. They are not infrequently interfered with by complications and accidental events. As an illustration, a young girl had passed through typhoid fever, convalescence being declared, in connection with other symptoms, by the laws of thermometry belonging to the decline of fever or defervescence in this disease. Suddenly hysterical symptoms were manifested, and the temperature rose to 105°. The physician, a man of learning and large experience, was naturally alarmed. In a few hours, however, the temperature declined, and recovery took place without further impediment. The expressive comment made by the physician was, "This is not the first time I have been fooled by temperature!" With regard to the information furnished by the thermometer, as well as other diagnostic symptoms, it is to be borne in mind that there are exceptions to rules which are generally applicable.' It is in the female sex that these neurosal disturbances are usually manifested. At the catamenial week of the menstrual cycle, temperature perturbations are common, and a pyrexia, for which there is no apparent cause, may at these times cause unnecessary alarm. *Experte credo!*

A sustained high temperature ever causes anxiety, as the result is the typhoid condition with all the dangers which follow in its train. A sustained pyrexia melts down the body-tissues and endangers life from the accumulation of the products of nitrogenised waste in the blood.

Finally, a word as to the utility of instruments of precision. The more precise our instruments, the more extensive and accurate should be our general knowledge; so as to wield them skilfully, to read readily the information they furnish; and to be on our guard against disturbing factors, so as not to fall into error over them or through them. The more delicate the instrument the greater need for knowledge as regards its variations, and the exciting causes of its perturbations. We are now almost encumbered by our various instruments of precision in every direction; but these may be made misleading if used without the knowledge requisite for their correct use and application. It is the more essential to insist upon this, as many young men take to medicine as a socially respectable method of getting a living, and, impressed with its evident attractions, believe that it is their special vocation in life; too frequently this is a mistake, just as a maiden may misinterpret the first impulses of a merely sexual preference for the indications of a life-long individual attachment.

**ON VISITING A PATIENT AT HOME.**—There are some further points to be noticed when the patient is visited at home. The first thing to be noted about the patient is whether in bed or up; conventionally dressed or otherwise. When up and ordinarily attired, the case is not usually immediately serious, unless some fit or vascular disturbance be present, or some surgical emergency. When the patient is in an armchair in *dishabille* the case is more serious. It may, indeed, be very serious, as when a patient with heart disease cannot lie in bed. Take a steady survey of the patient, in a good light if possible, and note the expression, whether intelligent, with the eye bright, or listless and indifferent. Observe the rapidity of the respiration, its character, the play of the nostrils; this will give valuable information, if only in the direction of putting the questions

asked to the point. Then note the hands, whether sodden or firm, or wasted and transparent. Or the patient may be up, convalescing and recovering the normal state; or be an invalid confined to the room, or to the house. Throw away nothing by an ill-directed or inappropriate remark, originating in imperfect observation.

At other times the patient is in bed; but even then the attitude is far from being uninstructive. If there is orthopnœa, and the patient cannot lie down, but is propped up in bed, or is half-recumbent with a lot of pillows behind him, it tells of disease of the heart, or of the respiratory organs. If the patient be rolling about in bed or tossing, there is usually encephalic trouble, unless it be in colic or after acute hæmorrhage; in the last case the face is blanched. When the head is rolled about, headache of a severe character is rarely absent. Or the patient may be on the back, with the legs raised to lift the weight of the bedclothes off the abdomen, which suggests the suspicion of peritonitis. When pressure is exercised upon the abdominal parietes colic is probably present. In a child, in colic, the legs are generally kicked against the belly.

Then again, note if the patient is confined to one position, or can move readily. If he can only lie on one side, there is generally a local reason for it, as enlarged liver, causing the patient to lie on the right side; or a left side pleuritic effusion, causing him to lie upon the left side. Here the side next the bed is little moved by the act of respiration, while the upper side is chiefly in action; the patient therefore avoiding throwing the affected side into action, and so escaping suffering. When the patient lies on the back without power to move, then the typhoid condition is commonly present, or there may be rheumatic fever. In the latter, the expression of pain and helplessness is usually well seen upon the countenance, while the hands and wrists are very suggestive in their swollen stiffness. The typhoid condition is graphically described by Tweedie: 'It is announced by the decline of the previous more acute symptoms; by the pulse becoming more rapid and soft, the tongue dry and brown, tremulous, and protruded with difficulty; by the incrustation of

the teeth with sordes; by the increasing intellectual disorder, indicated by the condition of the muscular system, evinced by muscular tremor and subsultus tendinum, and in some instances by irregularity or intermission of the pulse; by the patient lying sunk on his back, or sliding to the foot of the bed, the muscles being unable to support the body even in the horizontal posture.' There are many points included in this able sketch; but perhaps the slipping down to the foot of the bed is the semeion of worst omen, as indicating extreme muscular prostration. If, on the next visit, the patient is more on the pillow, it is a good sign; and as soon as it is possible to lie on either side the case is becoming brighter in prospect, as this allows of one kidney being relieved from hypostatic congestion. The appearance of the patient also is very instructive. There is the lack of intelligence in the face, the absence of expression indicating the stupor in which the intellectual faculties are wrapped. The sordes on the lips and teeth are significant; while the brown, dry, often fissured tongue, tells in inarticulate language of a condition where life is most gravely imperilled. The twitching of the tendons is of bad omen, telling of muscular spasms, which differ from convulsions but in degree. Then there is that dreaded phenomenon, 'picking the bed clothes.' Here vision and the intellect both manifest how seriously affected they are. The description of the death of Falstaff is very faithful. 'After I saw him fumble with the sheets, and play with flowers, and smile upon his fingers' ends, I knew there was but one way; for his nose was as sharp as a pen, and 'a babbled of green fields. "How now, Sir John?" quoth I: "What, man! be of good cheer." So 'a cried out—"God, God, God!" three or four times. Now I, to comfort him, bid him, 'a should not think of God; I hoped, there was no need to trouble with any such thoughts yet: So 'a bade me lay more clothes on his feet: I put my hand into the bed, and felt them, and they were as cold as any stone; then I felt his knees, and they were as cold as any stone, and so upward, and upward, and all was as cold as any stone.'

Then there is the statuesque position with the facies Hippocratica. Here the nose is pinched, the jaw dropped, and the

mouth open; the eyes sunken, while the cornea is dull and has lost its transparency; the eyes are open; the temples are hollow; the ears shrunken, while the skin is pale and leaden looking, or livid. This indicates a dying condition, and that the sands of life are near run out.

Then, again, there is the peculiar *tout ensemble* of carbonic acid poisoning, the terminal phase of many cases of mitral disease, or other heart failure. The desire for sleep is intense; but as soon as unconsciousness arrests the voluntary efforts to maintain the respiration, the patient is awakened by acute dyspnœa; the start is sudden, and is preceded by a horrid dream; the respiration is roused up for a time, and in dread of that terrible dream and start, the patient makes a vigorous effort to keep awake. But the drowsiness creeps on again, and stealthily wraps the patient in unconsciousness, which is soon again rudely broken. This goes on till the respiratory centre is utterly exhausted; and then the patient sleeps at last to wake no more. The same is seen in chronic bronchitis; but in death from acute bronchitis the failure of the respiration is too swiftly complete for the terrible struggle just described. Then there is the Cheyne-Stokes phenomenon. Here the respirations rise and fall, growing shallower and slower steadily; then rising again in depth and frequency to full-drawn inspirations, after which they again fall. In one well-marked case fifteen inspirations made the complete cycle. It always indicates serious disease, as a fatty heart, apoplexy, or brain disease.

Or the patient may be lying in simple unconsciousness. This may be due to cerebral disease, to rupture of an encephalic vessel, or to uræmia. In the last, the respiration is hissing, while in apoplexy it is stertorous. Or it may be due to alcohol, or to sun-stroke; and less frequently to cerebral exhaustion, or acute vaso-motor spasm of the cerebral arteries. Then there is *coma somnolenta*, where the patient sleeps, but can be roused; and the more significant condition, mostly found in children, known as *coma vigil*, where there is unconsciousness with the eyes partially open.

Or the patient may be in bed; motionless, because paralysed.

Then there are acute conditions where the face is flushed, and

general excitement is present: as in acute indigestion, acute inflammation, and in the exanthemata. It is well for the student to observe if there be any rash on the skin when called to patients taken acutely ill in bed, especially if children or adolescents, so as to note a coming exanthem. In measles the cresentic rash is often first manifested near the frontal hair; while the blush of scarlatina very frequently shows itself first under the clavicles. In small-pox there is often a pustule forming at the side of the nose over the wing of the alar bones, feeling to the touch like a No. 5 shot under the skin. But to follow out the diagnosis of the exanthemata is no part of the scheme of this book. *Ne sutor ultra crepidem!*

There are some points about the diagnosis of disease in children which are worth consideration. And I will extract some remarks from the excellent work of my colleague, Dr. Eustace Smith, on 'The Wasting Diseases of Children.' A careful perusal of the face is of the utmost importance: by it we may not only diagnose pain, but even its seat. Pain in the head is indicated by contraction of the brows; in the chest by a sharpness of the nostrils; in the belly by a drawing of the upper lip. Enlargement of the belly is usually attributed to mesenteric disease, yet this is very rare in children under three years of age. Percussion will tell if it is due to flatus—a very common cause. This is due to bad feeding, which should be remedied. Mesenteric disease is not uniform; and when the swelling of the belly is uniform and no tumour can be felt, this is not, whatever may be, the cause of the enlargement of the abdomen. If the liver is enlarged its edge can usually be felt. The colour of the face is suggestive. Lividity indicates a weak circulation or an impeded respiration; a waxy tint indicates syphilis; while an earthy tinge is seen in many cases of bowel complaint. Coolness and pallor of the face, with lividity of the eyelids, the lower parts of the whites of the eyes being exposed, with depression of the fontanelles, mean exhaustion and the necessity for restoratives. 'Snuffles' tell of syphilis, and so do chaps and fissures at the mouth and anus. If the breathing is rapid, the chest should be examine[illegible] and unequal movement of the two sides of the chest is

significant of a lesion in the less active side. If the accessory muscles of respiration are active, there is probably some abdominal mischief; if the action of the abdominal muscle be increased there is probably some mischief in the thorax.

'The cry of the infant varies very much in character. In cerebral affections it is sharp, short, and sudden. In lesions of the abdomen, exciting pain, it is prolonged. In inflammatory diseases of the lungs and in severe rickets the child is usually quiet, and unwilling to cry on account of the action interfering with the respiratory functions. In inflammatory diseases of the larynx it is hoarse and may be whispering. In inherited syphilis it is high-pitched and hoarse.' The cry of a syphilitic child once well-noted is unmistakable ever afterwards. Then it is well to learn to distinguish the howl and screech of temper from the cry of sudden pain, or other cause of distress.

Reflex excitability is destroyed by cachexia. If in a healthy child the finger-nail be drawn along the upper two-thirds of the inner aspect of the thigh, the testicle on that side is drawn close to the abdominal ring by the action of the cremastor muscle. In a cachectic child this does not follow. Any sudden weakening of a healthy child is accompanied by reflex movements, as convulsions. 'When the debility is produced more slowly the same result does not follow, and the excitability of the nervous system, instead of being exalted, is more or less completely destroyed.' Where there is great emaciation with a furfuraceous skin, it shows neglect and often resort to narcotics, especially in manufacturing districts, where the mothers work from home.

THE END.