

OF

**Medical Science.**

No. XLI.]

MAY.

[No. V. of 1844.]

**PART FIRST.**

## ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Observations on the Pathological Elements, and Nature of Constitutional and Local Scrofula.* By EDWARD HOCKEN, M.D., Physician to the Blenheim Street Infirmary, London.

MEDICAL men, and the public also, are in the daily habit of speaking of “scrofula” and of “scrofulous diseases;” regarding the first as synonymous with constitutional disorder, whilst the latter implies disease either arising from this state of the system, or modified by it. Ask medical men generally, however, what they mean by this constitutional state of struma, or the nature of the effects or manifestations, and the answer received will be, that the habit is characterised by a deficiency of stamina and enduring tone,<sup>1</sup> indicated by certain appearances of form, feature, and complexion, whilst the local affections are distinguished by languor and want of action; but more certainly by the production of tuberculous matter. Ask the public, and the reply will be, it is a disease of the blood. The question has appeared of considerable interest to me for several years. In the following paper I will endeavour to prove, that struma is a disease of the blood, and that the disease itself consists in the introduction of imperfectly assimilated albumino-gelatinous matter into the circulating mass, and its subsequent separation and expulsion from the system—by the consideration of the facts which induced me to adopt these views.

A great discrepancy of opinion exists among medical authors as to the proximate cause of scrofula. They “may be said,” remarks Mr S. Cooper,<sup>2</sup> “to remain, even at the present day, in entire ignorance

<sup>1</sup> Vide Cyc. Pract. Med., vol. iii., p. 702.<sup>2</sup> Dict. p. 1154.

of it." After examining their discordant opinions, he goes on to say, that "we are brought back at once to the point from which we first started, viz., that scrofula is a disease depending upon some unknown peculiarity of constitution, congenital or acquired, and capable of being excited into action by various causes, as climate, mode of living, &c.," (p. 1156). Such vague opinions will scarcely content the inquiring mind.

In the first place, it may be stated, that one of the chief sources of confusion arises from constitutional and local deficiency of vital vigour and tone being confounded with general and local struma.

It is true, that a deficiency of vital power invariably accompanies the presence of actual struma, and imparts peculiar features to the habit and its effects; but it is equally true that the atony may exist quite independent of the contamination of scrofula. For instance, what is more common than to see the children of a strumous parent or parents, inheriting a great tendency to the habit, indicated by much delicacy of constitution, and certain physical peculiarities, and who yet escape, for a time or permanently, from its evils under skilful management. Such individuals, so long as they are free from actual struma, may suffer from local disease of an atonic character, being modified by the general state, but differing in no other respect from the same disease in a perfectly healthy person. Notwithstanding the truth of these assertions, the constitutional and local diseases are in common parlance termed scrofula and scrofulous diseases.

The following peculiarities are said to indicate struma. In one, (and the most common form,) the skin is fine, the complexion clear and delicate, the hair light, the eye-lashes long, and the intellect precocious; in another, the skin is harsh and dry, the temperament lymphatic, the muscles soft and flaccid, and the mind dull and apathetic; in the third, the skin is dry, foul, and swarthy-coloured, the countenance swollen, and the hair dark, &c. These peculiarities certainly do accompany the actual presence of struma, when the predisposition or the disease itself has been congenital; but when unconnected with other strumous indications, they can show simply a congenitally predisposed condition of system, since it is not possible that actual and active struma can depend on a mere physical conformation of the body.

If we separate the diseases which depend on a deficiency of due vital action from those which alone deserve the specific name of strumous, we find that the latter class are universally, essentially, and invariably characterised by the formation of tuberculous matter: this matter being either retained in the absorbent system, or separated from the blood as an unhealthy secretion.

Tuberculous matter is found by chemical analysis to consist mainly of albumino-gelatinous<sup>1</sup> ingredients, with a few earthy and other saline matters.

<sup>1</sup> Albumino-gelatinous, or proto-gelatinous.

Repeated, careful, and minute anatomical researches led Dr Carswell<sup>1</sup> to regard the *mucous* and *serous* surfaces, and the *blood*, as the exclusive seats of the tuberculous matter. He believes, that this morbid product is never deposited in the molecular structure of organs. It always makes its appearance on free surfaces as a product of secretion; and although it may form on serous surfaces, its seat of election is the free surface of the mucous membranes. There, as into the great emunctory of the system, it appears to be separated from the blood, and becomes visible in a variety of forms. As a morbid constituent of the blood we can take no cognisance of the existence of tuberculous matter, otherwise than through the medium of the secretions, or until this fluid has ceased to circulate. Then it is seen to separate from the other constituents, the serum, fibrine, and colouring matter of the blood, and is distinguished from them by the peculiarity of its physical characters.

In confirmed struma, the albuminous and the gelatinous tissues are almost invariably more or less diseased; for instance, the mucous membranes of the respiratory, alimentary, and genito-urinary systems, &c. &c., and the gelatinous structure of the skin, serous membranes, or cellular tissue. I shall have to show presently that their proneness to disease arises from derangement in secondary assimilation, both in the nutrition of these tissues from an imperfectly elaborated blood, and their reconversion and reabsorption into the circulating current.

Besides the separation of many of these diseased states of the albuminous and gelatinous tissues, and the derangements of digestion, and primary assimilation, which I shall presently have to consider as the especial causes of the strumous habit, from the effects of struma itself, and the discrimination of mere predisposition and want of vital energy, it is also necessary to remember that the disordered habit renders the system very prone to take on diseased action, and to suffer from those diseases which also occur in the strictly healthy body. When such arise in the scrofulous they are modified accordingly, but differ in many respects from scrofulous affections, properly so called, which spring solely from constitutional causes, or originate from causes which merely determine the seat of disease without in any way affecting its nature.

All these affections are apt to come on, either singly or together, in the strumous constitution; so that we have a disordered condition of primary and secondary assimilation, with more or less disease of the digestive organs, &c., and of the albuminous and gelatinous tissues generally, besides those which are strictly struminous in their nature; viz., where they arise from the deposition of tuberculous matter, or determine the deposition of this matter in particular situations. The difference between those strumous diseases which arise from constitutional causes only, and those determined both by

<sup>1</sup> Cyc. Pract. Med. Art. *Tubercle*, vol. iv., p. 254.

the state of constitution and some external agency, is, that in the first the deposition of tuberculous matter precedes and excites, whatever pathological processes may succeed; in the second, this deposition is determined by previous disease, brought on by external agencies.

Nevertheless, it may be stated, that all strictly strumous diseases are characterised by the presence of tuberculous matter, and that all affections, not in themselves strumous, but modified by this disordered habit, are marked by want of activity and power, and the disposition to excite the formation of tuberculous matter.

If therefore the separation of tuberculous matter from the blood, or a tendency to this separation, be the characteristic feature of all the diseases which affect the strumous constitution, and this diseased secretion consists of albumino-gelatinous ingredients, it is obvious that the source from whence it is derived, and from whence alone it can proceed—viz., the blood—must be itself contaminated with albuminous and gelatinous matters in an unhealthy condition, or imperfectly assimilated to the nature of the blood itself. This admits of direct proof in many ways; for we can detect it, detained on its road to be emptied into the circulation, in the mesenteric glands and lacteals, and in the absorbent glands and vessels of the general system, as well as in the blood itself.

We cannot detect tuberculous matter generally in the blood whilst contained within its proper vessels, but it is frequently met with in the blood contained in the cells of the spleen. The spongy texture of this organ admits of the accumulation of the blood in such quantity that the tuberculous matter can be seen forming in this fluid at some distance from the walls of the cells in which it is contained. In one cell we may see the blood coagulated, in another coagulated and deprived of its red colouring matter, and converted into a solid mass of fibrine, containing a small nodule of tuberculous matter in the centre in a third. It also sometimes happens that the blood is effused in consequence of the rupture of some of these cells, and an opportunity is afforded of witnessing its successive or simultaneous conversion into fibrine and tuberculous matter.<sup>1</sup>

If it be allowed that imperfectly assimilated albumino-gelatinous matter circulates with the blood, and that its secretion from this source in the shape of tubercle is a characteristic feature of the strumous constitution, I will proceed to consider the sources from whence this contamination is derived, and the supply maintained.

Struma is invariably preceded and accompanied by a disordered condition of the chylo-poietic viscera—strumous dyspepsia, by which the albumino-gelatinous ingredients of the chyle are imperfectly elaborated, and when taken up by the lacteals, either accumulate

<sup>1</sup> Carswell.

in some of these vessels or in the mesenteric glands, or find their way, in this unassimilated condition, into the circulation. In the confirmed disease, secondary assimilation is equally disordered, both in the formation of the albuminous and gelatinous tissues, and in their reabsorption and reconversion into blood. In these ways more of this morbid matter is formed, and is either conveyed into the mass of circulating blood, or accumulated in the absorbent glands and vessels.

Let us in the first instance consider the subject of derangement of primary assimilation.

Dr Prout considers<sup>1</sup> that the reducing portion of primary assimilation consists of three distinct offices:—1st, reduction, by which alimentary substances are chemically combined with water; 2d, conversion, by which alimentary principles are changed, within certain limits, into one another chemically; and, 3d, vitalization or organization, by which crude and *dead* aliments are rendered fit to be brought into contact, and even unison, with the *living* animal body.

In struma it is most probable that reduction and conversion of alimentary substances are fully performed, and that, chemically speaking, albumen and gelatine exist in a perfect condition in the chyle, but that the third, or the vitalizing process, is deficient. In this case, chemistry would detect but little amiss with the chyle in the lacteals, but nevertheless it would contain within itself the germs of a most severe and often fatal disease. Some portions of the albumen and gelatine are probably so imperfectly vitalized as to induce disease in the tissues with which they eventually combine, or are quite unfitted to form a part of the living frame; in which case they are detained in the mesenteric absorbents, or are secreted from the blood as an unorganized and unorganizable product, that, namely, of tubercle.

Dr Prout tells us that when too much food is taken, relatively to the assimilating powers of the stomach, or to the wants of the system in healthy states of the assimilating organs, such superfluous matters are often reduced and converted, and even perhaps partially vitalized, so as to pass with the chyle into the sanguiferous system; from whence (not being sufficiently vitalized, or not being required) they are ejected from the system through the healthy kidney, in the form of lithate of ammonia. Now, in early life, under such circumstances, from causes not clearly known, but probably from original weakness, or deficient action of the assimilating organs and of the kidneys, or rather, in short, of the whole system, the imperfectly assimilated chyle, in passing through the lacteal system, either does not undergo the necessary changes by which chyle is converted into blood, or is malconverted into the comparatively insoluble pseudo-albuminous matter of struma; which, in passing through the lungs, lays the foundation (perhaps, at first mechani-

<sup>1</sup> Stomach and Urinary Disease.

cally) of tuberculous deposition, and future accretion. Whether or not this be admitted, no one who has studied the subject can deny, that the assimilating organs in strumous and consumptive habits, about this age, are peculiarly deranged, and that great attention to diet (when diet is least apt to be attended to, and all sorts of crudities are taken) will not only sometimes ward off those phthisical attacks, which, when once established, will inevitably run their fatal course, but prevent many nearly allied diseases in after life.

Dr Prout adds in a note, that gout and struma are frequently, if not always, associated; and the gouty chalkstones of old age may be considered as little more than modifications of the scrofulous tubercle of youth, both being alike formed from mal-assimilation of the albuminous principle.

All the best modern authors acknowledge the invariable presence of disturbed digestion in struma. The late Dr Todd states in his *Essay on Dyspepsia*, in the *Cyc. of Pract. Med.*, (vol. 2, p. 654)—in which opinion Sir James Clark fully concurs—that strumous dyspepsia presents a more characteristic feature of this habit of body than any physiognomical portrait which has yet been drawn of it. For, upon whatever temperament the disordered constitution called scrofula engrafts itself, this form of dyspepsia will also there be found; and, therefore, being constantly present with it, preceding and accompanying the various symptoms which issue from it, it would be contrary to all reason to refuse to it an important share in the development of this disordered habit, and in the production of the local affections, which have hitherto too much engrossed the attention, to the exclusion of a proper consideration of the constitutional disease.

The derangement of the organs of primary assimilation excites symptoms which differ slightly in different cases. The abdomen is unnaturally protuberant, and entozoa are very apt to generate in the intestinal canal. The tongue is frequently red at the tip and edges, and the papillæ prominent, whilst the centre is covered with a shining greyish mucous coat. At other times, the whole tongue is covered with a thin opaque mucous covering, through which the papillæ project, or is distributed in more or less circular confluent spots, often with a brownish dry streak down the centre in the morning. The appetite for food and drink is very uncertain. Sometimes the patient is thirsty, with a ravenous appetite, whilst at others there is no desire for food, with unaccountable dislikes and fancies. The bowels are generally confined, with occasional attacks of diarrhœa, depending probably on the irritation which the accumulated matters in the intestinal tract ultimately set up.

The evacuations from the bowels are almost constantly unnatural in smell, colour, and consistence, mainly attributable to the deficiency or morbid qualities of the biliary secretion. The stools are generally of a light, or even white colour, of a clayish consistence,

possess a putrid odour, and are mixed with much mucus, undigested or partially digested food, and sometimes blood. Pain or uneasiness is often complained of in the stomach, or in some part of the abdomen. The breath is foul, and there is in general much irritation about the nose and mouth, and sometimes the rectum, so that the child picks and scratches these parts continually, and often occasions unpleasant sores.

The sleep is seldom perfectly calm and undisturbed, but is either broken suddenly with a start, or is restless, with grinding of the teeth, talking, or even screaming. In advanced cases the throat often suffers from repeated inflammations, and the tonsils undergo chronic enlargement—but only in some cases—and in these also, the upper lip enlarges, and the mucous membrane of the nose is almost always engaged. The temper becomes irritable and fretful, and the child cries from slight causes.

Such are the symptoms of primary mal-assimilation. It remains to consider, in the second place, the phenomena of deranged secondary assimilation.

Secondary assimilation consists of processes of two kinds, formative and destructive. By formative assimilation, the different tissues of the body are renewed and formed from the blood. By destructive assimilation, the tissues are again destroyed, taken up again into the circulation, and either converted into other principles for future purposes, or into excrementitious matters.

In confirmed struma, the albuminous and gelatinous tissues being formed from an imperfectly elaborated blood, are far from healthy; the muscular and cellular tissues, &c., are soft, flaccid, and deficient in tone. The general surface of the body is often pale—the skin being in some cases harsh, dry, and subject to eruptions; in others soft, relaxed, and pasty; and in a third set, of a fair waxy appearance, with conspicuous veins—in which latter case there is almost always excitement of the circulation and of the nervous system, producing, in the debilitated state of the general system, a condition of incipient hectic fever, and night sweats. The mucous membranes of the respiratory, alimentary, and genito-urinary organs, are either diseased, or extremely prone to take on diseased actions. Moreover, it must be remembered that, according to the laborious researches of Dr Carswell, the secretion of the tubercle from the blood is confined to albuminous and gelatinous tissues, viz., the surfaces of mucous and serous membranes—to which we might add the skin and muscular system.

By the secondary destructive assimilation of these tissues, albumino-gelatinous matters, imperfectly elaborated and deficiently vitalized, are formed. Those portions which, instead of entering the circulation at once through the capillaries, are taken up by the absorbents, frequently accumulate in the glands and vessels of this system, especially where they are much exposed to external influences, in the solid or organizable form of tuberculous matter. In

healthy states of the system, these matters having found their way into the circulation, would be converted by the kidney into lithate of ammonia, and pass off with the urine; but this is not the case in struma, for the urine rarely deposits the lithates, unless the system be in a febrile condition. The urine, it is true, is almost always unhealthy; but unless the patient suffers from hectic, it is apt to be pale and abundant, speedily becoming alkaline, and undergoing decomposition, whilst a white sediment—the triple phosphate of ammonia and magnesia—separates and falls to the bottom as the urine cools.

The general symptoms in all forms of struma, are those of defective power, deficient vital energy or vitality, either with or without excessive nervous irritability. Where the nervous system is morbidly irritable, the slighter or the more confirmed indications of hectic fever are invariably present; for, as I have shown elsewhere,<sup>1</sup> the essential elements of hectic consist of excessive nervous irritability, and deficient general power. The pulse is either soft, feeble, and slow, or preternaturally quick and irritable, but deficient in real power; the muscular system (as a general rule) is feeble, and incapable of much or prolonged exertion, whilst the nervous system in one set of patients is languid and deficient in its functions, and morbidly active and irritable in another.

All strictly *strumous diseases* arise from the deposition of tuberculous matter in certain situations, and the excitation of subsequent morbid processes set up in order to remove such sources of irritation from the system. The reason why particular organs and tissues are, as it were, selected by a disease having so wide a diffusion as the volume of circulating blood, is dependent upon an attraction which subsists between such parts and the peccant materials contained in the blood. Not only are these matters attracted by the affected tissues (either from the nature of their functions, or from injury, or disease going on in them,) but sufficiently so to separate them from the blood, and either to retain and fix them in connexion with the tissues, or to pour them out on free surfaces. In these situations, in the shape of tubercle, they act as foreign matters, and sooner or later excite a series of subsequent processes intended to rid the system of their presence altogether.

From the abundance of the material, and the constancy with which it is renewed, we can readily understand how so many organs are involved in severe cases.

The explanation now furnished of the origin of local strumous diseases most probably applies to all diseases which depend on either a specific virus, or some noxious material circulating with the blood; the local affections which arise from these states, are set up by the mutual and elective attraction between the tissue and the noxious agent—the ultimate aim being to eliminate it from the sys-

<sup>1</sup> Edin. Med. and Surg. Journal, Jan. 1843.

tem. Doubtless such is the case in gout, syphilis, and other diseases. Dr Budd of Bristol, in an able and interesting paper on the symmetry of disease,<sup>1</sup> has proved that the essential condition of each individual lesion is dependent on the detention of morbid matters, and their being held in union or affinity with the part affected.

There can be little doubt that several varieties or groups of symptoms are apt to come on in the strumous constitution, but having the essential pathological elements common to all; thus tubercular phthisis, strumous diseases of the bones and joints, diseases of the eye, attack individuals, independently of each other, and rarely occur together in the same person, although no doubt can exist of their dependence on an identical state of constitutional contamination. Tubercular phthisis presents peculiarities, and the more common strumous local affections are rarely present, notwithstanding that the products of diseased action are identical. On the contrary, where the lymphatic glands undergo strumous deposition and inflammation, the ears are sore, and the skin is affected with eruptive and other disorders, diseases of the eyelids and eyes are common, but tubercular phthisis most uncommon.

It must be stated, however, that another strumous disease, viz., strumous conjunctivitis is not solely dependent on strictly strumous causes. The excessive irritability of the ophthalmic division of the fifth pair of nerves, which characterises the disease, seems to arise from the propagation of irritation along the ganglionic system, originating in the abdominal portions, and which, in accordance with a general law in such cases, affects the terminal filaments. The intimate connection which is found to subsist between the ophthalmic symptoms and the state of the digestive organs, leads me to this conclusion. It should be added, that strumous ophthalmia rarely occurs, unless the fifth nerves are suffering from the effects of primary or secondary dentition.

The *causes* of struma favour the views already expressed.

In one form or another, it is the most prevalent affection which affects the inhabitants of damp, cold, and variable climates. Like many other constitutional diseases, the peculiar form possessed by the parents is almost sure to be handed down to the offspring, or a state of system extremely prone to take on similar disordered actions. Indeed, the causes of struma are chiefly those derived from congenital and hereditary peculiarities, but there can be no doubt that the disease may be induced in a healthy individual, provided he be exposed for a sufficient length of time to injurious agencies of sufficient intensity. Thus, it comes on after many of the eruptive fevers, from confinement to an improper diet, whether excessive or deficient either in nutritive principles or mere quantity, especially if indigestible; dark and unhealthy habitations, deficient clothing, and a want of due and necessary exercise. As

<sup>1</sup> Med. and Chir. Transactions, vol. xxv.

might be expected, the younger the patient the more injurious do these causes prove.

ARTICLE II.—*Case of Pannus treated by Inoculation of the Secretion of Purulent Ophthalmia.* By ROBERT E. DUDGEON, M.D., Liverpool.

The varieties of *Pannus* may be included generally under two heads, the *P. crassus* and *P. tenuis*; the former comprising those which present a fleshy-looking appearance, occasioned by hypertrophy or increased development of the blood-vessels of the corneal conjunctiva, which has sometimes granulations on its surface; and the latter, those which have a dull, yellowish, semi-opaque aspect, with but few blood-vessels visible. It very frequently happens that the pannus belongs partly to the one, and partly to the other species; when this is the case, the *crassus* is generally superiorly, the *tenuis* inferiorly, according to Jüngken and Sichel; and my own observation agrees with theirs. The growth of the pannus is from above downwards.

Another important division of the disease is into acute and chronic; thus, I have seen several good instances of it after a week of severe catarrhal ophthalmia, and not a few of upwards of twenty years' standing.

It may be complicated with many other affections, such as photophobia, (which always exists in serofulous subjects, and to a greater or less extent in almost every case, as far as my experience goes), ulceration of the cornea, prolapsus iridis, &c.

Pannus is most frequently the result of previous acute inflammation, such as variolous, morbillous, serofulous, catarrhal, and above all Egyptian and gonorrhœal ophthalmia; it may also be occasioned by the irritation of foreign bodies long continued, such as an undetected particle of dust or other substance in the eyelid, by the irritation to which the eye is exposed in lagophthalmos, by the action of the cilia in entropion, trichiasis, and distichiasis.

In cases of long standing not owing to the irritation of foreign bodies, I have always found present a granular state of the palpebral conjunctiva, to the cure of which the local treatment of surgeons has generally been directed, by the application of stimulants, such as blue-stone, and lunar caustic, or by excision of the granulations.

The cure of acute cases, the result of catarrhal ophthalmia, is in general simple, (although I have always found that even here the characteristic conjunctival granulations exist): the same may be said of those cases caused by the irritation of a foreign substance, and the inversion of the cilia, the removal of the former, or a successful operation for the latter generally sufficing.

It is the chronic cases, the sequelæ of some of the above inflammations kept up by the granular state of the palpebral conjunctiva, which generally defy our local applications and prove the opprobria