THE CROONIAN LECTURES

ON THE DIFFERENCE BETWEEN THE SEXES IN REGARD TO THE ASPECT AND TREATMENT OF DISEASE.

Delivered at the Royal College of Physicians of London.

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LECTURE II.—*Concluded.*

No doubt, the rapidity with which these symptoms appear depends much on the original temperament and education. Thus, in the Keltic races we find it supervene very early, in the Teutonic but slowly. This peculiarity of race is paralleled in the hereditary character of hyperæsthesia and the hysterical temperament, frequently to be observed. Also, the sex makes a considerable and well recognised difference, the symptoms being slower to appear in the male; so much less marked are they, and so much longer in arriving at the intensity necessary to develop "hysteria", that formerly this disease was considered a disease peculiar to females. But later observations, and more care in carrying them out, has led to the acknowledgment of the occurrence of attacks of hysteria, even with the convulsiform paroxysm, in the male. I think I am right in assuming that you will join your assent to this.

In support of it, my own assent was early given; because, long before I entered this profession, I saw a well marked instance of this. My father was giving a lecture in my native town on electricity. Before he had finished, a most severe thunderstorm occurred, which was easily seen through the large windows of the room. The organist of the town, a tall, somewhat feminine man, was seized with one of the most violent paroxysms of hysteria possible; screaming, sobbing, and crying, with convulsiform movements; which, with the thunderstorm, soon brought the lecture to an end. I may mention that this person afterwards married and had a family. My colleague Dr. Wilks mentioned to me a case he had witnessed in a man of different type; with a very large head, in which the emotional form was strongly shown. Doubtless, you will be able to call to mind many such cases.

I have seen a medical man within a few days, who tells me his wife's brother suffers from most violent hysteria, and this generally when thwarted in his wishes. And, to show the connection with the other allied conditions, the sister, who is the wife of my informant, suffers from hyperæsthesia generally, and specially high reflex sympathy between the uterus and stomach, so that slight disturbances of the uterus bring on nausea and vomiting. She has very peculiar notions, and approaches a state of mania occasionally. Her father is very peculiar in his ways, and her sister is in a lunatic asylum.

Notwithstanding these instances of hysteria in men under the influence of mental excitement, I am anxious to impress upon you that in general we ought to view the hysterical symptoms rather as a sequel of these irritations, depressants, and perturbations, than that these latter are a part of hysteria or produced by it. My own observations lead me to the belief I have already expressed, that hysteria *per se* is very rarely a primary disorder. It is true that in women it occurs very rapidly, so as to appear as if it were a cause rather than an effect; but, upon close investigation, there will be found, very nearly always, that there has been a preparation for it. In man, the attack generally results from mental trouble, shock, or anxiety. In woman, these causes also act powerfully; but, as they are more open to the conditions already alluded to, we find that in them bodily ailments are potent factors in bringing on hysteria.

In women, the emotions are more powerful and less under command than in man. Emotional excitement and shock act much more violently on their ganglionic system, producing, if severe, complete, though perhaps temporary, sedation or paralysis: witness sudden death from abrupt news in a few, and amenorrhœa not infrequently. If not severe enough for this result, then it excites the ganglia and their corresponding organs, and we find overaction often as the result. All this is well known to every practitioner of medicine, and nothing is more marked than the rapid sympathy of the uterus with emotional excitement. Yet, we cannot rightly call this hysterical in its first

effect; only when it has continued, and there is, with the various disturbances, the tendency to emotional ecstasy and convulsiform paroxysms, should it be called by that name. At first, it is a normal physiological effect, a part of the human, but more frequently of the feminine, constitution; the more marked but still normal exemplar of the emotional influence.

It is not difficult to understand also how women are much more obnoxious than men to sources of irritation. Besides the general non-sexual causes, she has added to her an organ, the uterus, which, as I have before said, a few minutes' consideration will show to be very different from a simple mass of contractile fibre. For, first, it is almost entirely supplied by the sympathetic system. It is not by pain, but by its reflex irritations that it exemplifies its disturbances. It is, as we all know by everyday practice, in active sympathy with the central ganglionic system. It is liable to frequent periodic congestion, denuding itself of its mucous membrane each time, more or less. By this means, its nerves are more exposed to irritation, being deprived of their ordinary protection. As a matter of fact, it is liable to abrasions at its lower portion which, by friction against the posterior vaginal wall in walking, etc., and by the disturbance during coitus, permit a reflex excitement to be thrown back to the centres, which in its turn produces disturbance in the vaso-motor nerves, and thereby engorgements in the whole organ. The organ is, besides its other functions, an erectile one; one of its essential functions, namely, the maturation of the ovum, cannot be carried on without a high sensitiveness to nervous excitement, and, as a result, a readiness rapidly to develop embryonic cells. Although, for this to be effected in the completest manner, it requires the stimulus of the impregnated ovum, there can be little doubt that all excitants act in the same way in a minor degree. This quickness to respond, this nervous vitality it is which makes its errors so impressive on the general sympathetic system. But when conception has occurred and the growth of the uterus has proceeded, it is more than probable that its nervous structures and ganglia also grow; at any rate, we find its susceptibility increased and reflex phenomena more marked.

An organ having these qualities must necessarily render its possessor more liable to disturbances of the sympathetic system; and, when it is considered how closely the organ is mixed up with the moral nature, the influence of its diseases and derangements cannot be difficult to value; and, as a matter of everyday experience, we find that these troubles ensue more quickly in affections of the uterus and its appendages than in those of any other organ.

I apologise for somewhat repeating previous remarks. I take it that this is the chain of events in the causation of hysteria. An irritation exists, for example, on the surface of the os uteri. The first effect is to produce an enlarged and hyperæmic condition of the organ, uterine tenesmus; with an increased flow of secretion, a kind of catarrh. After a certain time, the ganglia become irritable beyond the normal action, which increases the effect of the original cause; and, after a time, the influence extends up to the centres, and then we have other organs, notably the digestive, affected and disturbed in action. Then, the heart is annoyed; and thus we have palpitations, easily accelerated action, etc. In other words, all the organs supplied by the sympathetic are sooner or later influenced; and, in consequence of the disarrangement of the organs of assimilation, we early find a failure of the health, independently of the neuroses; and generally a condition of anæmia, from the menorrhagia common to this reflexly engorged womb.

The reflex phenomena and their effects are somewhat apt to be overlooked in the male, although evident enough. Take an ulcer of the lower rectum, watch the tenesmus, the secretion of mucus, which first occurs. Then, the intestines above being irritated, a diarrhœa comes on, which is a natural result of any irritation of the lower bowel. After a time, backache ensues, and then the bladder sympathises. Sooner or later, dyspeptic symptoms show themselves, with loss of bodily strength and health. When the system has arrived at this point, we find then a liability to an excitable condition of the emotional system; and perhaps, though but rarely, paroxysms of a convulsiform kind, which we then call hysteria.

But sometimes the ganglionic system is primarily wrong, or becomes so in consequence of derangements of the cerebro-spinal centres. We probably shall all agree as to the practical importance of distinguishing this difference of origin; because, if we admit that eccentric irritations produce this miserable train of symptoms, then it must also be admitted that it is our duty to try to cure them as early as possible before these effects arise, particularly in men and women of sensitive type; while, in cases of centric origin, we have rather to contend with the error of the general system, the disturbance of the mind or cerebro-spinal organ. But, as I have stated before, these are the rarer cases.

But besides this, woman is doubtless endued with a more mobile nervous system; and this, with less power of regulating its motions.

This is not specially because of the uterus, neither specially in consequence of her ovaries; but because she is, in possessing these organs, so made.

Yet men vary much among themselves in regard to their mental sensitiveness and response to irritations; nearly, if not quite, as much as men differ from women. But their mode of bringing up, their more invigorating pursuits, their rougher contact with the world, acting on each, besides the influence of a similar kind derived by descent, tend to render their nervous system more under control. Yet, sooner or later, ill health, overwork, watching, anxieties, long-continued pain, failure in his pursuit, and many other things, singly or in combination, will bring man into a state so similar to that of woman under the same circumstances, that it must be acknowledged that it is only in degree that the sexes differ.

And this being admitted, must we not come to the conclusion that we should, in studying these phenomena, rather take the more marked instance first, and then apply the knowledge thus gained to the minor? In other words, we must argue from the woman to the man, rather than in the opposite direction; not considering these nervous and emotional aberrations as a thing added to the woman, and not a natural part of her constitution, with which man had nothing in common.

I alluded before to the term "hysterical vomiting" as an evidence that it was a refuge for ignorance or indolence. Why should we call it "hysterical" in the way in which this term is generally understood? If "hysterical" mean uterine, then, in a large number of cases where we have sympathetic vomiting, I should be disposed to agree with the term; because we actually do find it to depend on some prior disturbance of the uterus and appendages in the majority of cases. But this would not be the whole case; irritations of other organs may readily give rise to reflex vomiting; and if with this there be already oversensitiveness to reflex irritation, and some disturbance of the emotions, many, may I not say most of us, would be apt to make use of the word "hysterical"; and, when that word is pronounced, the patient is plied with all antihysterical remedies, instead of the cause being sought out and the cure applied to it. The stomachs of some women are peculiarly sensitive to uterine irritation; even the ordinary digital examination, examination with sound, coitus, simple menstruation, retroflexion, and many other circumstances, imitate in their effects the well-known influence of the uterine excitement resulting from pregnancy. Why should we call these vomitings "hysterical"? Irritations and congestions of the ovary will also set up vomitings. In these, as in many cases, the cause may be slight; and many are apt to think them not worth notice, and then cloud their indolence under indefinite and vague terms, which still further influence their mind against searching for the cause.

I am aware that some who have not watched the effect of these disturbances in uterus and ovaries, nor the effects of proper treatment, still go about to deny the possibility of the effects attributed to them. Perhaps too much attention to local conditions led some of the pioneers of modern obstetrics to overlook the more general state of the health, and to attribute defects in the constitution of the patient to the local disease, whereas the patient was suffering from both; or the general health, by the long standing of the local complaint, was so affected as to cause the greater ailment; but yet this does not alter facts, which are as patent as possible to an unbiassed observer; at any rate, quite as clear as the facts about other diseases concerning which no doubt arises. I mean, that if a woman vomit incessantly for weeks with a retroflexed uterus, and, the moment it is replaced, the vomiting ceases; and then, should it again fall back, vomiting again begins, to cease on replacement—what can be more positive? Again, if a woman complain of great distress in walking, an intense backache, so that she can walk only a few yards; and, with severe menorrhagia and leucorrhœa, have an engorged womb, with large patent os uteri abraded all over; with vomiting every day; and, after the abraded surface has been covered over with a light touch of nitrate of silver or other similar styptic, twice or three times, the patient be able to walk with but slight distress half a mile or so, and the vomiting cease, the uterus at the same time becoming more healthy,—I say we have here as clear a thing as anything in medicine. But this is not special to the uterus only. I have seen a small crack on the tongue cause the whole tongue to swell, every papilla to be injected on the affected side, saliva to flow freely from that side also. Here was a reflex engorgement of the tongue, with hypersecretion natural and useful enough to carry off any movable irritant, supposing that it, instead of a fissure, were the cause. When the fissure was touched with nitrate of silver, in half an hour the pain, swelling, and secretion had gone down. But I need scarcely multiply instances; irritation of the fauces, larynx, conjunctiva, afford familiar examples. Only, in the case of the uterus, we do not have so much of pain in the parts principally supplied with spinal sensitive

nerves, but rather engorgements, excessive secretion, tenesmus, and reflex irritations to the vital organs. Is it necessary for me again to ask whether we are not likely to treat our patients better by viewing these cases as most probably of eccentric origin, than of centric; because, in the former supposition, we seek for and find the cause; whereas, by giving a name, say "hysteria", "fancy", "mania", "madwomb", we may wholly pass by the palpable and remediable cause.

The remarks I have made regarding functional reflex disturbances I would also apply to the reflex pains found in oversentient persons, male and female. A pain cannot exist without a cause, either in the part primarily, or by reflex irritation, or from centric disturbance. To call it "hysterical", when we fail to find the cause, is self-blinding. That man or woman can conjure up a pain I cannot as yet believe; but, no doubt, when a slight pain gives rise to constant distress, fear, and apprehensions—then, if the patient be also depressed and sensitive, the mind, constantly noticing it, becomes morbidly sensitive to its presence; but the pain is an entity notwithstanding.

From a consideration of the quickness with which irritations excite all the reflex sensibilities in woman, we derive a lesson of much importance in practice, applicable in principle to both sexes, but specially so to woman; namely, that we must not carry out our otherwise proper endeavours to cure, too frequently, nor employ remedies so severe as that we may set up more irritation than we are endeavouring to relieve.

It is easy to overtreat women; many of the older obstetricians fell into this error, which some have since acknowledged. Neither should we unnecessarily increase their apprehensions regarding themselves by our remarks nor actions, lest we find that, whilst curing the local trouble, we call up another spirit, not so easily put to rest. Our rule should be "the minimum of treatment consistent with efficiency".

It is not my intention to enter into any explanation of the peculiar exhibitions of emotional perturbation which have been classed under the head of "hysteria". If I may be permitted to give references to any work to such an assemblage as is here before me, I would mention an article in the form of a review in the *Medico-Chirurgical Review*, vol. 1, 1872, on the Pathology of Hysteria; and to Dr. Russell Reynolds's article Hysteria in his *System of Medicine*. With the latter author I am in accordance, when he says that hysteria is not necessarily associated with disease of the generative organs of either sex. At the same time, I hold that in by far the larger number of cases it is derived from irritation of the female sexual organs, for the reasons I have endeavoured to point out just now.

It is not my intention to discuss the diseases which belong to the sexual organs of either sex, except so far as the condition of one bore upon general principles of pathology. But there is one condition, having no exact parallel in the male, yet having a very interesting bearing on pathology, and in close connection with the subject of reflex irritation. I allude to the *effusions of serum* generally, but blood sometimes, more or less pure, which occur into the cellular tissue about the uterus, and notably in the broad ligaments. Like many of the ailments of women, they are to be observed seldom otherwise than clinically. It is true that in some cases, where a large amount of effusion has been poured out, this has caused death at once, or has softened down, and the patient becomes worn out by suppuration; but generally the cases have recovered. But the evidence from clinical observation is clear enough. Many conditions give rise to it: cold applied to the lower parts, notably effective at the menstrual epoch; coitus; passing the sound, though but rarely; and other irritations applied to the uterus. Generally it is attended with marked derangement of the abdominal viscera; and this is so prominent in some cases, that the attention is first called to the liver and præcordium. A case I saw recently was attended three or four days for a "bilious" attack, the patient being quite yellow; and it was not till three or four days had elapsed, that attention was directed to a swelling above the pubes. The young lady had sat on a cold stone at the time she was menstruating, which function was suddenly arrested. In the course of three or four days more the swelling had arrived as high as the umbilicus, and then subsided without suppuration. Now, the origin of these swellings is not difficult to explain, if we consider their causation. A sound touches the os uteri and canal; it merely passes in and out without abrading. It can but be by mechanical contact. This, we conclude, irritates the nerves; engorgement ensues, a blood-stasis, then exudation through the walls of serum; and, if too intense, rupture and effusion of blood. The act of coitus does the same; so cold acts through the nerves of the feet or lower body.

Can we find anything similar in other parts of the body? any kind of reflex engorgement caused by cold externally, or nerve-irritation at a distance? May we not surmise that some forms of congestion of lung

are thus produced? However, these questions I leave to you, who are so much more capable of answering these questions.

I am afraid you may think that I have occupied too much time on these subjects; but so much of every-day practice is made up of attending to affections of this kind, such a large amount of distress is dependent on them, that this must be my apology. My concluding lecture will note the other sexual differences of disease.

THE GOULSTONIAN LECTURES ON PHARMACOLOGY AND ITS RELATION TO THERAPEUTICS.

Delivered at the Royal College of Physicians, London.

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LECTURE III.—Concluded.

EXPERIMENT has taught us that the food begins to be digested in the mouth, and its starchy constituents are even then partially converted into sugar. In the stomach it meets with the gastric juice, which converts the albuminous matters partly into syntonin and partly into peptones. In the duodenum it is mixed with the bile, which emulsifies the fats, and with the pancreatic juice, which combines the properties of all the three others, digesting the starch, albumen, and fats. Lastly, the intestinal juice probably finishes the solution of albumen and starch, as well as converts cane into grape-sugar. In each secretion, we find its ferment: ptyalin in the saliva, pepsin in the gastric, and trypsin in the pancreatic juice. But these ferments do not exist ready-formed in the glands. They are stored up in the form of a mother-substance or zymogen in the secreting cells, and, when these are called into activity by the nerves of the gland, the zymogen yields up the free ferment ready for its work. But something more is required than the nervous impulse, or, as Mayow would probably have called it, the vital spirit. Unless the glands have a free supply of blood to yield them oxygen and nutriment, they cannot secrete much, however strong the nervous stimulus may be. The secretory nerves of a gland are, therefore, accompanied by other filaments, which cause the vessels of the gland to dilate, so that a copious stream of blood pours through them, making the veins pulsate and jet like arteries. But, though these nerves may often run together, yet their functions are quite distinct. Stimulation of the secretory nerves alone will only cause the gland to yield a few drops of juice and then cease, if the vaso-dilator nerves do not quicken the blood-stream at the same time; and no action of the vaso-dilator nerves, no rapidity of the circulation, however great, will produce a single drop unless the secreting nerves act also. Usually, they are both excited simultaneously, and in the

part to which it was applied, and the secretion is poured out. Each gland seems to have its own favourite stimulus—for the salivary glands acids and sapid substances, for the stomach alkalies, for the liver acids applied to its duct, for the pancreas food in the stomach and duodenum, and for the intestine the presence of food. When savoury substances or acids are taken into the mouth, the stimulus they apply

Fig. 2.

any other drug which we can use? It is not very long since we would have been obliged to reply in the negative; but pharmacological research, besides explaining the *modus operandi* of opium, has given us another remedy more powerful still. This is atropia, which Heidenhain (*Pflüger's Archiv*, v, p. 40) found to paralyse the ends of the secreting nerves in the submaxillary gland, so that no irritation would excite the slightest flow of saliva. At the same time, it leaves the vascular nerves unaffected, and, on the application of the stimulus, the vessels dilate as usual. The paralysis may be removed by Calabar bean, and secretion again will occur. The bean alone has a curious effect, for it excites the secreting nerves, but at the same time causes contraction of the vessels. The gland, therefore, begins to secrete, but soon stops from want of blood. The profuse flow of saliva occasioned by smoking is known to everyone, and examination of the action of nicotine shows that this is just what we might expect; for the drug has a double action on the gland, and does not merely stimulate the sensory nerves of the mouth as pellitory would do, but stimulates the ends of the secreting nerves within the gland itself. In larger doses it paralyzes these nerves and arrests the secretion; but, as the poison is quickly excreted, the stoppage only continues for a short time. Thus we can understand how moderate smoking may increase the flow of saliva, and excessive indulgence in it may cause temporary dryness of the mouth, especially if the tobacco be strong.

A great part of our knowledge regarding secretion in the stomach has been obtained from the observations made by Dr. Beaumont, through a fistulous opening accidentally made by a charge of duck-shot in the stomach of a Canadian voyageur. But this information would have been very imperfect, had it not been supplemented and extended by observations on the stomachs of animals, through circular openings, made by a much less tedious and painful process. From both classes of observation, we learn that the healthy stomach during fasting has a pale colour and velvety appearance, and is covered with a thin coating of transparent mucus. When a moderate stimulus is applied, such as gentle friction with a glass rod, the introduction of food, or a weak alkaline liquid, it begins to secrete, the gastric juice oozes out from the follicles, and collects in drops on the surface of the mucous membrane. At the same time the circulation is increased, as in the salivary gland, and the colour becomes rosy. The stimulus has been conveyed by efferent nerves to nerve-centres, and then through efferent nerves to the vessels and cells, as indicated by the letters A, B, C, D in the diagram (Fig. 3). But if the stimulus be stronger—if, for example, the stomach be violently rubbed with a rod introduced through a fistulous opening, the rosy colour at once disappears, the vessels contract, the membrane becomes pale, and secretion of gastric juice stops, a flow of mucus is produced, and nausea comes on. The stimulus has now awakened a different nervous mechanism (A, E, F, G, in the diagram), and the results are different. If the irritation be still increased, the muscles of the abdominal wall are called into action, and vomiting occurs (A, H, K, K).

Fig. 1.

following manner. A stimulus applied to the mucous membrane lining a part of the alimentary canal, mouth, stomach, duodenum, or ileum, is conveyed by afferent nerves to a nervous centre (Fig. 1). Thence the stimulus is reflected down efferent nerves, as in the adjoining diagram, both to the cells and vessels of the glands connected with the