

was, in addition to other symptoms, a partial palsy of the right leg—great sensitiveness to cold; and Dr. R. remarks “the only ailment he complains of is *neuralgia of the right sciatic nerve*, which now and then torments him.” It is true that other cases of palsy are given in which sciatica did not occur; but this is no more than we should expect; for the palsy, Dr. R. tells us, often runs its course without any pain. It must be noted, however, as a fact of considerable importance that the effect of galvanism greatly varies; in some patients, says Dr. Roberts, it produces such severe suffering that they cannot endure it; in others it produces scarcely any pain. This distinctly proves that while some partially withered muscles contract painlessly, others cannot contract without producing intense suffering.

We next refer to Dr. Copland (*Neuralgia of Muscular and Membranous Structures*, vol. ii, p. 881). We find “in true neuralgia of the muscles, the pain is much more acute than in rheumatism, and it recurs in frequent exacerbations. . . . In all the cases I have seen the remissions were attended by weakness or partial palsy of the muscles affected.” “In two cases where the muscular parts were most acute in the thighs, and were attended by occasional cramps, irregular action, etc., amounting to partial paralysis, extensive organic change was found in the cord.” Here, again, we see that semi-paralysed muscles are occasionally the seats of severe pain.

We now turn our attention to the condition of the muscles in the gouty diathesis, and we find in it that there is a great tendency to irregular muscular contraction, attended with more or less pain. Painful palpitation and the pain of gout in the stomach are, perhaps, the best evidences of this. There is one form of this disease often spoken of as poor gout, in which the muscles are flabby, weak, and withered; and it is in this state that sciatica is generally found as a symptom. It comes on very suddenly, is very intense while it lasts, and speedily goes off. Such an attack may, however, be independent of gout altogether.

Of the rheumatic diathesis, I will only say that an immense number of cases put down under the name of rheumatism are simply myalgia, the effect of over-exertion in weak muscles; consequently, there can be no surprise if, with myalgia elsewhere, it exist in the gluteal region too.

Of rheumatic gout I cannot say much; it certainly is attended with very great irritability of the muscles in the neighbourhood of the affected parts, and their contraction is eminently and acutely painful; yet I doubt whether this fact can be made available for the explanation of the pain of sciatica, when there is no reliable proof of the presence of this rheumatic or gouty affection. Of the probability of sciatica being a pure neuralgia, having its seat in the nerves themselves, or being dependent on some form of pure nervous disease, I will not express an opinion; nor will I say anything of the likelihood of its being a sympathetic pain, excepting to express a doubt whether we have any instance in which such pains are brought on by motion of the part itself, without any appreciable alteration of the condition of the distant organ in sympathetic connexion with it.

The conclusion we have arrived at, then, simply this—

duce facial palsy in others; that in one it will give rise to sciatica, in another to paraplegia, in a few to tetanus, and in many to muscular and nervous phenomena combined. Thus, Dr. Roberts says: “in sixteen cases (of wasting palsy) the atrophy arose from cold.” A case is recorded where hand and forearm is wasted by plunging the member when perspiring into snow; others are referred to; and then he adds: “Cases arising from cold are subject to neuralgia and rheumatic pains in the affected parts (the muscles?), either at the onset of the atrophy, and ceasing when this has fairly set in, or continuing throughout its progress.” As might have been expected, in more than one instance the disease, wasting palsy, is alleged to have arisen from “cold combined with fatigue.” This last is very frequently indeed the cause of an attack of sciatica.

that there is good reason to believe that sciatica may be, and very frequently is, dependent upon muscular contraction (when speaking of the muscles, I consider that their fibrous portions are included) in enfeebled, unusually irritable, or imperfectly palsied muscles, and that the pain often is in direct proportion to the weakness of the muscular fibre.

This being so, theory would dictate what experience confirms; namely, that the most appropriate treatment is rest from motion, warmth, anodynes locally, strapping to give support and encourage heat, and tonics to improve the constitutional vigour.

The influence of these considerations upon treatment is, therefore, small—the effect they must have upon our prognosis is far greater. If it be true that the pain may be the first symptom of muscular decay, we can scarcely hope for a speedy and complete cure. If, on the other hand, the muscular decay be a legitimate and certain result of the pain, our prognosis will be guided by the duration and severity of the suffering. In any case, however, of severe and enduring sciatica, especially in delicate or aged individuals, we must be prepared for the probability that it may eventuate in some withering of the muscles of the buttock or the thigh.

ON THE CARBUNCULAR TYPE OF DISEASE: ITS SEPTIC CAUSES, AND ANTI-SEPTIC TREATMENT.

By DAVID NELSON, M.D. Edin., late Physician to the Queen's Hospital, and Professor of Clinical Medicine, Birmingham.

(Read before the Midland Medico-Chirurgical Society.)

It is not my intention, in the presence of the members of this society, men of learning, daily engaged in the practical exercise of their profession, to enter upon any elementary description, or history of the class of disorders now brought under consideration. I neither mean to give a lengthened statement of symptoms, nor a review of the various remedies that have been employed by divers persons from time to time; for with these matters our fellow members must be familiar. I only desire, in the present paper, to draw special attention to the general principle which has forced itself on my notice during a protracted observation of these painful eruptions, and to the therapeutic deductions consequent upon the acceptance of such principle. The principle is this; that all these forms of morbid action are referable to a septic source, and, therefore, that all treatment, to be demonstrably successful, must be of an antiseptic character.

In order to evolve clearer illustrations of such a view, it is necessary to fall back upon the old doctrines of humoral pathology—doctrines which have resumed so refreshed a vitality in these latter days; not, let us rejoice, by the mere fluctuations of what may be called medical fashion, but by the more solid and enduring acquisitions of chemistry and the other allied sciences of the art of healing.

So generally, or rather universally received, indeed, are those doctrines at the present time, that I do not feel myself called upon to prove their truth; but only to adduce certain illustrations of the pathological processes upon which they are founded; so that, by analogical reasoning, the similarity of action may be recognised between the onset and progress of boils and carbuncles, and the onset and progress of those other morbid changes, where the operation of the laws of blood-poisoning are almost as obvious to the eye of the mind as the application of the spark and the explosion of the gunpowder are obvious to the eye of the body.

Thus, to begin with the instance of a common cold, as

it is called. We have, from exposure, not to mere lowness of temperature, but to certain obscure atmospheric causes, a greater or less depression of the nervous energy, accompanied with a sense of cold, and a suppression or retention of certain excretions. These, under the vital reaction that is sure to arise if any power be left at all, will produce either the general expulsive effort of sweating or diuresis, and the like, or else a localised disturbance; according to the idiosyncrasy of the patient, or the condition of his different organs. So, out of a given number of persons thus exposed to the same causes, one shall have a discharge from the eyes and nose, with oppression of the head; another shall have sore-throat; a third bronchitis; a fourth pleurisy; a fifth rheumatism; while a sixth has merely a few prickly serous blotches on his lips, and so an end of the brief commotion. These are non-communicable forms of disease; but, when we come to the communicable, the process becomes still more apparent. Thus, in measles, we have the entrance into the system of a specific poison, which forthwith runs a specific course—a poison that first depresses the vital powers, producing shiverings, anorexia, and vomiting, followed by reactionary symptoms, determining the disease more especially towards the skin, the lungs, and the kidneys. Proceeding after the manner of a ferment, the exciting poison and the fermentible something in the blood are eliminated together never to reappear. In scarlatina, we have a process altogether similar, in rise, progress, and decline. In paludal fever, we have like results, proceeding from the marsh miasm; but no future immunity from the disease, which may recur again and again in the same person, if exposed to the same circumstances. In typhus, we recognise, again, a specific poisonous influence, definite and unmistakable in its effects; arising, not from any one precise cause, such as debility, or starvation, or filth, or putridity; but from a something of which the necessary elements are (except when proceeding from direct infection) as over-crowding of human beings, bad ventilation, poor diet, and filth of a chronic and peculiar kind, such as is due to the non-change of body clothing, including that of night and day. This poison, entering the system and producing a depression of the deepest nature, likewise acts after the manner of a ferment, with disintegration of the blood, and disturbance of every vital organ, till, in due time, it is eliminated; though still, like the paludal miasm, ready to attack the same body again and again, if placed under its influence.

The secret cause of malignant cholera acts after the same fashion; but, in its worst shape, allowing of little or no reaction, so far as I have ever seen, and I saw a great deal of it, both in 1832 and 1848, when I closely watched it in Edinburgh. The action of the variolous poison is still more clear than that of any of the above. Introduced by direct inoculation into the blood, it next shews, with unvarying certainty, the regular procession of events—beginning with the depression, the shiverings, and the nausea, followed by the reactionary fever, and the outbreak of the pustular eruption, containing a specific matter, which is the direct re-multiplication of the originally inoculated particle, ready, in each of its atoms, to reproduce the same series of results, under the same given circumstances. Here, as in some of the others, we have an immunity from future attacks, showing that some latent element, or property of the constitution has been expelled or annihilated in the course of the disturbance, not again to revive.

Lastly, and clearest of all, we have the syphilitic virus, with its manifestly visible existence, specific nature, and specific effects. Introduced into the frame at one point or another, we have, without any accompanying fever, the first local effect; then the creeping of the virus through the absorbents from gland to gland; next its entrance into the venous channels, and its diffusion through the

general mass of the blood; falling with destructive force, through that medium, first upon certain localities or tissues more immediately open to its invasion; but finally involving every portion of the frame, including even the hair, nails, and bones, in its ravages; so that, without treatment, we could not say where or when such ravages might stop, until death, in its most horrible and repulsive form, had closed the scene. Here we have re-production of the virus; but no definite or limited course, either in place or in time, as to the progress of its poisonous corruptions; for the morbid action would go on, so far as we know, until nothing were left to be acted upon. Neither is there any immunity from future attacks; though, happily, medical science has discovered antidotes to its virulence, without which its evils, directly or indirectly, might have wrought a degeneration of the entire human race.

So much for the general forms of blood-tainting. I now proceed to make a few observations upon that poisoning which results in the carbuncular type of disease, including within that category the soft malignant pustule, the boil, and the carbuncle. I am inclined to accept them all as the expression of one single poison, though varying in its amount and in its virulence, and modified by the constitution within which it is generated or into which it is introduced, as well as by its anatomical site. My simple reason for such belief is, that the eruptions are found to take place when either septic matter is retained or introduced into the system, or the body, in whole or in part, is suffering under putrid disintegration. Thus, by direct experiment, as well as by accident, it has been found that the introduction of putrescent matter into the subcutaneous cellular tissue has given rise, in some instances, to diffuse malignant suppuration; and, in others, to the appearance of a little irritating pimple, followed by the hard fibrinous exudation, and all the familiar advances of a boil or carbuncle, including the hard base or core, the bluish red apex, and the sordid bloody sanies and foul pus, so characteristic of the disease, and so well illustrated in the persons of skin-dressers, etc. Again; they have been found to appear in the course of sundry depressing diseases where a putrid tendency has set in. In malignant measles we have the large blains filled with bloody serum of a reddish blue hue. In puerperal fever, and typhus, and malignant small-pox, we have the series of boils, tending to gangrene. In the true plague and yaws, we have the highest exemplification of constitutional disease of a carbuncular type.

The plague, in its very essence putridity itself, if one may so speak, consisted, when any reaction took place at all, of the development of monstrous black boils and carbuncles throughout the frame, which exploded not only on the surface, but within the tissues of the liver, bowels, and other internal organs. The bodies of the dead are described as teeming with balls of malignant suppuration; and the recovery or death as depending upon whether the vital forces could bear up under these expulsive efforts, or might succumb under the morbid pressure. Then, again, we have plentiful proofs of boils and carbuncles appearing from the absorption of putrid matters within the body itself, as in retained menses or lochia, or deep-seated putrid suppuration, decayed teeth, and also from carious action of the different bones of the body.

In short, in almost all cases in which they occur, I think we have pretty good evidence of septic matters being within the body. Those in whom they show themselves are usually debilitated constitutionally; and when they do take place in full plethoric habits, we have some right to infer, by analogical reasoning, that such a habit, under some temporary depression, has had some septic matter introduced from without, or that the effete tissues of an overgrown frame have undergone some morbid change or decomposition, without such

products being expelled through the natural channels of waste.

Where such type of disease has sprung from unknown or undetectable causes, analogical reasoning would still entitle us fairly to infer that some septic cause had been at work, when we see that it is the obvious outward manifestation of such a cause in so many instances patent to observation. The inference in such case would be that there had occurred, under unfavourable circumstances, and in a part of the body not having a free outlet, the deposit of some decayed blood, or other solid or fluid, of so acrid a nature, as not only to give rise to the uncomfortable features of boil or carbuncle, but also to act as a leaven within the mass of the blood, if its vitality were low, and so produce a series of crops, one after the other.

Where a doubt of the nature or cause existed in this or any other disease, a further test would be brought to the aid of our analogical reasonings in the shape of a specific treatment, founded on the specific theory; and in this instance it happily clinches the argument, and agrees with all the facts of the case. For, in all time since it has been known, the Peruvian bark, with its auxiliaries, has proved, by its antiseptic tendency, of the greatest possible avail in all the diseases to which I have specially alluded. In malignant measles, in scarlatina and paludal fever, in typhus, malignant smallpox, and in the plague itself, is not Peruvian bark the sheet-anchor of successful treatment? In deep-seated putrid abscess, and in caries of the bones, is it not of the highest service? and do we not all remember in our boyhood days how the bark and the port wine constituted the essence of the constitutional treatment? So supported by the facts of ancient experience and one's own observation and reasoning, it might almost be felt unnecessary to urge these doctrines on the minds of professional hearers; but the truth is, that there are some minds (not that I mean to say any such are now present) who doubt everything and cleave to nothing, who seem to delight in uncertainty, and to think that one argument or view is just as good as another, except that other amount to a mathematical demonstration; and sometimes not even in that case. The entrance within the portals of the medical profession affords, of course, no guarantee against the possession of this frame of mind, though the nature of the studies is highly calculated to correct it; and hence, in the maze of medical literature, so many proposals of an entirely opposite nature to meet cases almost identically the same. In this very disease, of so septic and cachectic a type, there have not been wanting advocates of the simply purgative, the depleting, and the mercurial plan of treatment—a plan so diametrically opposite to the tonic and antiseptic mode followed by others, and advocated in this paper. There are also others—and no mean authorities either, in other respects—who seem to consider that nothing at all is required to be done in such cases beyond opening the tumours and giving bland diet. It is these unreasonable discrepancies amongst the members of the profession itself that give so much encouragement to all the contradictory quackeries of the day, and afford food for that horde of camp-followers that are ever hovering around the march of scientific medicine. As to this expectant plan of simply opening the abscesses and practising starvation, or something akin to it; I believe it to be applicable to those exceptional cases only in which some accidental poison has got implanted within a vigorous and plethoric constitution accustomed to high luxurious living, and therefore gaining strength, rather than otherwise, by an apparently depleting procedure. Such a body, deprived of rich animal foods, strongly spiced sauces, feeding beers, and inflaming wines and spirits, can live perfectly well upon its own interstitial deposits for a time, and, by thus getting rid of much effete matter, and of sundry chronic congestions,

that had formerly clogged its actions, may be all the more equal to the task of expelling the causes of disease. But, with such exception, I am convinced that, in this type of disease, the most active measures are required for the expulsion and neutralisation of the acrid poison, and for the maintenance of a vigorous vital reaction. Without this, we may have crop succeeding crop, and exhausting the body to the last degree; or we may have abortive efforts at eruption, while the general constitution is suffering under an unaccountable debility and depression, with headache, anorexia, nausea, and faintness. The external manifestation of boils relieves this state of body, not because it is a wholesome manifestation *per se*, but because it is a proof of effectual reaction.

At this very time, while I speak, I have a patient under treatment who affords an apt illustration of this latter position. He had been ill for a long time before; and yet, with exception of a slight cough, there was nothing physically tangible—no pain, no foul tongue, no tenderness of stomach or abdomen, no pectoral dulness, no roughness of respiration, no irregularity of bowels, no deposits in the urine, no unnatural sounds at the cardiac valves; yet there he lay prostrate, with no appetite, no capability of exertion, and constant nausea and sinking both of body and spirits. He is pale, thin, and soft in flesh; and the action of the heart was so feeble that the first sound was scarcely discernible over the aortic valve. He had full doses of quinine and steel administered to him, along with powerful draughts of cardamoms and ammonia, light strong diet, and port wine negus; and the result has been a manifest increase of the action of the heart, accompanied with an eruption of boils. An exactly similar case occurred to me some years ago, in a man who is now perfectly well and able for all his duties.

But, although carbuncular outbursts are to be considered favourable under such circumstances, they are not always critical; for the contained matter is of an acrid nature; and its resorption is liable to give rise to fresh morbid processes. Therefore it is desirable, when the surgeon or Nature shall have laid open the boils or carbuncles, to see that they be emptied as much as possible, and an open drain maintained; while the patient also undergoes the decided medical treatment already indicated. When they have been comparatively soft, I have usually employed full doses of the compound tincture of cinchona, with the sulphuric and muriatic acids; and when they have been harder, instead of the acids, I have used the iodide of potassium. Under the action of the latter agent, the fibrinous exudations have more rapidly been absorbed, while the usual outbreak of iodidic pimples has occurred; but, under the employment of either of the agents, I have always found that, obstinate as the disease may have been, no more boils have shown themselves; and this I view as the master fact of the whole argument. The more complete proof of the efficacy of the tonic and alterative treatment has been afforded to me by the further fact that where the crops seemed due to the persistent generation of putrid matter within the body, as in caries and the like, such crops were stayed during the exhibition of the medicine—while they reappeared upon its being stopped, not being arrested completely, until the healing of the burrowing ulcers gave evidence of the arrest of the carious action—and the reestablishment of the constitutional integrity.

Having thus advanced these observations with the view of upholding, in the first place, the humoral doctrine of blood-tainting; in the second place, the extreme probability, not to say certainty, of the carbuncular type of disease arising from a septic taint in the blood; and, in the third place, the necessity of counteracting such septic taint by an antiseptic treatment; I now proceed to adduce a few cases, not in tiresome detail, but only in so far as they illustrate the particular points upon which

I have insisted. To give more only were to indulge in useless digression and vain repetition. They are most of them very brief, simply because the treatment proved rapidly successful. Let me also add, that while the one essential line of treatment was carried out in each case, some other agents were used incidentally for incidental symptoms, such as must ever occur in so complicated a structure as the human body; but none of them so as to influence, or at least invalidate, the main plan.

CASE I. Mr. A. H. first consulted me on 23rd April, 1855. He had been for upwards of two months troubled with a succession of large hard boils, which had been poulticed, and opened again and again; whilst his bowels had been acted upon by saline cathartics. Under this system they continued to reappear. I advised a continuance of the poultices, and the use of the lancet to existing boils; and prescribed for internal use, ten grains of the iodide of potassium, with two drachms of Huxham's tincture of bark, and half a drachm of tincture of hyoscyamus, three times a day.

On May 3rd, all the boils were rapidly healing up, except a very large one, which was treated by iodine applications. No fresh ones had shown themselves; but there was a profuse eruption of little pustules over the skin, such as is ordinarily caused by the iodide. Its further use was therefore stopped, and he had the tonic tincture as before, with muriate of morphia, and muriatic acid.

May 10th. He was proceeding favourably, with no further eruptions.

May 17th. He was quite well, with only a little hard swelling over the seat of the large boil. I can attribute the speedy arrest here only to the bark and its adjuncts.

CASE II. E. W. was seen by me on Oct. 13th, 1856. He was a delicate young lad of smoky unhealthy complexion, thin and weakly. Some time before, he had injured a finger, and a severe whitlow was the result. From his timidity, the opening of this whitlow had been delayed, and when the opening was effected, the wound was offensive, and would not heal; but, in addition, there had appeared on various parts of the body, dark hard boils, which were very painful. At this time, the bone of the finger was necrosed, and its removal was advised, as well as the opening of those boils that were pointing.

His bowels being very much confined, he took two drachms of compound tincture of senna every night; and three grains of iodide of potassium, with a drachm of compound tincture of bark, and four drops of tincture of opium, thrice a day.

By the 20th, the finger was healing, as well as the boils that had been opened, and no fresh outbreak of the kind occurred. He subsequently took the bark with sulphuric acid, and regained his usual health. Here, I think, we have, in regular succession, curious abscess—absorption of putrid particles into the blood of an already sickly subject—production of boils, and their arrest by the treatment.

[To be continued.]

THE DUBLIN MEDICAL SCHOOLS. There are 806 Students of Medicine and Surgery attending Lectures and Hospitals in Dublin this winter; 1,237 Students in London; and 1,156 in Paris—being a larger number than is usual in all three capitals. The Students of Medicine in Dublin 1860-61, are divided among the various Schools as follows:—The Ledwich School, 228; College of Surgeons' School, 220; Cecilia-street School, 101; Trinity College School, 100; Richmond Hospital School, 97; Steevens' Hospital School, 60; total, 806. Of the 100 Students attending the Trinity College School, 80 are Graduates or Undergraduates in Arts. (*Dublin Hospital Gazette.*)

ON THE OCCURRENCE OF DEPOSITS OF CRYSTALLISED PHOSPHATE OF LIME IN HUMAN URINE.

By WILLIAM ROBERTS, M.D., Physician to the Manchester Royal Infirmary.

DR. HASSALL seems, so long ago as 1852, to have satisfied himself that phosphate of lime appeared occasionally in urine in a crystalline state; for, in his little work on the urine, the eighteenth plate contains a delineation of "crystals of phosphate of lime," and the date appended to the drawing is August 1852.

In the beginning of last year, Dr. Hassall read a paper before the Royal Society, "On the Composition and Pathological Importance" of the calcareous phosphates occurring in the urine as a spontaneous deposit of stellar crystals. He found these crystals to consist of biphosphate of lime; he also considered them of more frequent occurrence and of far graver signification than the triple phosphate of ammonia and magnesia.

My attention had been directed to these crystals with curiosity for some years; and recently I have had an opportunity of subjecting them to chemical analysis. Before the publication of Dr. Hassall's observations they were universally considered to have the same composition as the prismatic phosphate, which contains ammonia and magnesia, but no lime; and it was believed that the phosphate of lime never assumed the crystalline state in urine, but was always deposited as an amorphous sediment.

The forms of the crystals in question present considerable variety; but they are, nevertheless, easily recognised by the practised eye. Good figures of them are given by Dr. Beale in his twenty-second plate, although erroneously designated "A Rare Form of Triple Phosphate"; still better ones have been published by Dr. Hassall in the little work already alluded to; also in the *Lancet* for 1857, as well as in the paper communicated by him to the Royal Society, January 1860.

Dr. Bird had evidently seen these crystals, and he gives imperfect figures of them. (Fig. 45.) He held them to be of the same composition with the triple phosphate.

In the atlas accompanying Lehmann's *Physiological Chemistry*, Funke gives two capital plates in his twelfth plate, but he names them uric acid.

The prevailing appearance is that of crystalline rods or needles grouped round a centre, so as to form a more or less perfect star. Some of these stars are of great beauty, as large as the finest seen of uric acid, and not unlike them, except in the absence of a brown colour. Sometimes, the rays of the star are so close set that the appearance of a rosette is produced. Again, not unfrequently, the crystals, instead of radiating equally in all directions from the centre, shoot out in one direction only, so as to form a fan; or, in two directions, on opposite sides, so as to present a rude resemblance to a wheat-sheaf. Sometimes, too, the rods lie confusedly across each other, or crystallise round hairs or fibres. Frequently, the rods are wedge-shaped, and thicker at their outer extremity than where they join in the centre. Other forms are club-shaped and bottle-shaped, and abundantly marked with lines of secondary crystallisation, reminding one of the same appearance on the hexagonal plates of cystine.

In a case of diabetes recently under my care, these crystals formed a constant deposit. The urine had been brought down by appropriate treatment to fifty ounces a day, and the patient was steadily gaining strength and flesh. The deposit was often mixed with oxalate of lime, and sometimes with uric acid; but never, except as the result of putrefactive decomposition, with the triple phosphate. I managed to collect about two grains of the crystals in a pure state, unmixed with oxalate of