I cannot select a better opportunity than the present for regretting that the term "orthopædic" should ever have been introduced in connexion with this department of surgery, for it conveys an idea of exclusiveness to which there is no claim, and raises in the mind of the student an ideal barrier, against which it offers a protest.

In the treatment of non-congenital deformities, orthopædic surgery shows only what may be done by time, patience, and gentleness, aided by mechanical appliances, or proper surgical treatment, after disease, accident, or general debility have done their worst. It claims not to be a specialty, except in so far that it requires some study and examination. But I may warn those entering upon practice that the whole subject is not to be "grasped" in a moment. It comprises a study of the morbid conditions of all the great systems of the body.

On the 24th of February, I saw a little child, aged four years, at the Orthopædic Hospital, of whom the mother simply stated that the left foot turned inwards in walking. And such was the case. The foot turned inwards, the inner border being raised, and the boy complaining, after walking, of pain in the sole of the foot at the junction of the metatarsal bones with the phalanges. But when he was put on a sofa the foot could be moved freely in every direction. It was only after most careful examination and comparison that a slight degree of tension of the tendo-Achillis was detected. The left limb was somewhat smaller than the right.

Now what was the explanation of this case? The child was suffering from one of those obscure affections of the spinal cord which manifest themselves by disturbing muscular equilibrium. This or that set of muscles exercises undue force, and the weight of the body is irregularly transmitted to the ground. In the case now before us, there was incipient contraction of the muscles of the calf, causing a tightness of the tendo-Achillis. It was not sufficient to be detected by cursory examination, and was more easily recognised by its results: what were they? In stepping forwards, the child pressed, with undue force, in consequence of the tense state of the tendo-Achillis, the anterior part of the corresponding foot against the ground; from this cause pain ensued, and the boy instinctively turned the inner border of the foot upwards and inwards, thus walking on the outer side. The next consideration was the seat of disease, which was certainly not the foot; and attention was directed to the spinal cord, as well as to the mouth, where the important process of dentition was yet going on, and exerting an influence over the whole system.

Some months ago, an aged gentleman consulted me in consequence of a tight condition of the tendo-Achillis, by which the weight of the body was thrown unduly forwards, and corns were formed, to his great annoyance, on the anterior and under part of the foot. In early or middle life, such an occurrence may be rectified by the division and elongation of the tendo-Achillis; in the aged, it may be alleviated by proper baths, and by processes of manipulation, by means of which the thickened epithelium is removed.

But disease or accident may be yet more local, and confined to a single articulation. Who does not still remember the frequent condemnation of diseased joints, and their subsequent amputation? Surgery has made a bold step in attempting the preservation of the limb by resection of the diseased joint. Nevertheless, we have yet to learn how much may be done by time and patience on the surgeon's part; how limited may be the real issue of disease; how capable parts so changed are of restoration.

I have three young patients under my charge suffering from strumous disease of the ankle-joint and tarsus. In the one case the heel is drawn up in the position of talipes equinus; in the second, the foot is thrown outwards in the position of talipes valgus; and, in the third, the integuments over the tarsus are red, inflamed, and suppurating. In order to treat these deformities, a general knowledge of the principles of surgery is required. Active disease must cease before we attempt the restoration of the displaced parts. The foot is drawn inwards or outwards instinctively, and for the patient's ease; and the division of tendons would be unscientific and reprehensible.

So, likewise, in cases of contraction of the knee-joint during disease the division of the flexor tendons of the ham is a proceeding both unscientific and futile. Why is the knee bent? To relax the ligaments which hold together firmly pressed the inflamed articular extremities of the bones. What would be effected by the subcutaneous division of the flexor tendons? Either absolutely nothing, or else to render the limb more unsteady and likely to reapproximate the diseased surfaces. It is a rule in orthopædic surgery to let morbid processes cease before we attempt the readjustment of displaced parts.

Faulty position may become the cause of non-congenital de-

formity; and this cannot be better illustrated than by reference to diseases of the spine. Lateral curvature! how often do we see it; how rarely is it mentioned! The very subject may be said to falter at the portal of legitimate surgery, in spite of the immense amount of misery which this affection is yearly causing.

Let me mention the following case, the particulars of which may be verified by anyone who chooses to call at the Royal Orthopædic Hospital, where the patient still remains:—

A young woman, the daughter of a professional man, became affected with double lateral curvature of the spine, after being left destitute. She was ultimately removed to a workhouse, where she remained bedridden and paraplegic for seven years. She was admitted into the Orthopædic Hospital above twelve months ago, under the care of Mr. Tamplin, by whose directions proper appliances were fitted to the distorted spine, and the limbs, which were contracted, were slowly extended. The patient can now walk, even some distance, by herself, and finds herself daily becoming stronger.

The treatment of non-congenital deformities implies, then, an extensive knowledge of the general principles of medicine, and proves clearly how impossible it would be to establish orthopædic surgery on the basis of a specialism.

Bridge-street, Blackfriars, 1860.

ON PERIODICITY AS A CHARACTER OF DISEASE.

By RICHARD HUGHES, M.R.C.S., L.R.C.P. Ed. (Exam.),
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THERE is one disease—ague—of the phenomena of which periodicity is an invariable characteristic. There are other affections—the neuralgiæ and nervous headaches—which very frequently assume a regularly intermittent character. And, occasionally, in the course of various diseases a tendency to a periodical type is manifested.

Quinine and arsenic are specifics in ague. They are hardly less valuable in neuralgiæ and nervous headaches. And when, in works on Medicine, we meet with the remark that sometimes the symptoms seem to come on periodically, it is generally coupled with the statement that in these cases quinine will be found of the utmost value.

What is the *rationale* of these facts?

The cause of the regular periodic recurrence of the paroxysms of intermittent fever is discussed at length by Dr. Watson in the first volume of his Lectures on Medicine, p. 758. After passing in review the various theories that have been advanced to account for it, he leaves the subject as one altogether uncertain. Cullen's hypothesis as to the influence of diurnal habit he thinks the nearest approach to the truth; but admits that this will in no way account for the tertian and quartan types of ague. In this state of uncertainty, the peculiar poison—malaria—which causes intermittent fever has been generally regarded as the source of its periodical character. It is supposed to act in the way of a ferment in the blood; and the zymotic process set up by it is supposed to have its regular development and decline, the paroxysms being its effect on the nervous system when the process attains its acme. When other affections manifest a periodic type, it is supposed that their subjects have either had ague, or been exposed to malarious influences. On the other hand, quinine and arsenic are considered to be antidotes to the malarious poison, and thus to counteract its periodic influence in all affections which tend to assume that type. But I think I shall be borne out by general experience when I assert that periodic phenomena are manifested in many a case of neuralgia or other disease, where the hypothesis of malarious influence is altogether shut out. This theory, therefore, in itself *à priori* most improbable, must be at once rejected.

If, then, the periodicity of ague does not depend upon the peculiar poison which occasions it, does it depend upon the peculiar portion of the organism which that poison affects? This is universally acknowledged to be the nervous system. I would agree with this view, but would still farther limit it to a particular division of the nervous system—the *sympathetic*.

Let me place one after another some of the principal phenomena of the cold stage of ague, with those produced by galvanization of the sympathetic in the neck.

In the cold stage of ague "the patient feels chilly; the blood deserts the superficial capillaries; he grows pale, his features shrink, his skin is rendered dry and rough; his respiration is quick and anxious; his pulse frequent sometimes, but feeble: all the secretions are usually diminished; he may make water often, though generally he voids but little, and it is pale and aqueous; his bowels are confined, and his tongue dry and white."—(Watson, *op. cit.*, p. 735.)

Let Dr. Brown-Séquard now tell us the result of his galvanizing the sympathetic in the neck. "The pupils are dilated; the eyelids wide open; the globes protruding. Blood deserts the superficial vessels; secretion is diminished or checked; temperature and all vital functions lowered."—(Lecture IX., in THE LANCET, vol. ii. 1858.)

It is clear from the above that the essential phenomena (diminished afflux of blood to the surface, check of secretion, and lowering of temperature) of the cold stage of intermittent fever may be produced artificially by excitation of the sympathetic nerve, and are dependent upon the contraction of the bloodvessels thereby occasioned. The hot stage is no less explicable as the natural reaction of the vessels to even beyond their normal calibre, and finds its precise analogue in the phenomena which result from section of the sympathetic in the neck.

It would appear from the above that the sympathetic system is that part of the organism specially affected by the malarious poison, and that the phenomena of ague depend on a periodic excitation of it by the poison, followed by an equally immoderate reaction in the opposite direction, which latter at length settles down to the equilibrium of health. And upon this hypothesis the beneficial influence of quinine and arsenic in this disease receives its perfect *rationale*. For these are well known as (to use Dr. Handfield Jones's term) "toners of the vaso-motor nerves"—i. e., of the sympathetic, and their tonic influence thus exerted will obviously render it capable of resisting the morbid irritation of the malarious poison—a view which is confirmed by the well-known fact that quinine is no less valuable as a preventive than as a curative agent against this malady.

But will the fact of the sympathetic system being the seat of the phenomena of ague help us to explain the periodic character of these phenomena? I think it will. Let us consider the actions of the heart and the uterus, two muscular organs supplied mainly or entirely by this nerve.

What is the cause of the rhythm of the heart? It cannot be the stimulus of the blood, or of anything else within the body; for a frog's heart will continue its regular systole and diastole for some time after its removal from the thorax. The only motive agency then left to it is that of the sympathetic ganglia, which are imbedded in its substance. To these nervous centres we are therefore shut up in our inquiry as to the heart's action; but the influence of these centres is neither continuous nor occasional, but rhythmical—i. e., periodic.

The uterus resembles the heart in its also possessing numerous sympathetic ganglia imbedded in its muscular walls, and in entire independence of the cerebro-spinal system in its movements. Is there anything here periodic? We immediately think of the regular monthly recurrence of the phenomena of menstruation, and of the act of parturition, which (as first shown by Dr. Tyler Smith in the pages of THE LANCET) is determined by the menstrual periods, being normally due on the 281st day after the commencement of the last menstruation.*

From the marked periodicity apparent in the actions of these two organs, exclusively animated by sympathetic ganglia, we seem justified in the conclusion that a periodical evolution of nerve-force is characteristic of this division of the nervous system; and if this be the case, we cannot be surprised that it should give its peculiar character to phenomena resulting from the effect of a poison upon itself. Thus the periodic character of the paroxysms of ague is reduced under the more general law of the periodic character of all phenomena, morbid or natural, over which the sympathetic system presides, dependent upon the endowment of this system itself.

It follows that periodic phenomena appearing in the course of any other diseases must be attributed to an involvement of the sympathetic system in their morbid irritation; and thus the beneficial effects of quinine and arsenic in all such cases fall under the general law of their toning influence upon that system. I may instance the most common affection which inclines to a periodic type—nervous headache. Dr. Symonds, in his admirable Gulstonian Lectures upon this subject, shows by

many arguments that the vascular nerves (i. e., sympathetic) of the brain and skull are the seat of pain in this affection, and, in common with general experience, regards quinine and arsenic as the sheet-anchor in its treatment.

I venture to submit that the following original conclusions are established by the preceding considerations:—1. That ague is an affection of the sympathetic system. 2. That its periodical character is dependent upon a periodicity impressed upon the sympathetic system, and manifested in all the phenomena, morbid and natural, over which it presides. 3. That the *modus operandi* of quinine and arsenic in ague and other periodical affections is the toning influence exerted by them on the sympathetic nerve. The doctrines also of the dependence of the heart's movements on its imbedded ganglia, and of the menstrual periodicity as the determining cause of parturition, receive no slight corroboration; and our instinctive recourse to quinine and arsenic, whenever periodic symptoms manifest themselves, receives alike its *rationale* and its establishment.

Brighton, July, 1860.

A Mirror

OF THE PRACTICE OF MEDICINE AND SURGERY IN THE HOSPITALS OF LONDON.

Nulla est alia pro certo noscendi via, nisi quam plurimas et morborum et dissectionum historias, tam aliorum proprias, collectas habere et inter se comparare.—MORGAGNI. *De Sed. et Caus. Morb.*, lib. 14. Proœmium.

KING'S COLLEGE HOSPITAL.

REMOVAL OF NECROSED BONE, WITH SUBSEQUENT EXCISION OF THE KNEE-JOINT, IN A LAD AGED FOURTEEN; RECOVERY.

(Under the care of Mr. FERGUSSON.)

A CONSIDERABLE period has elapsed since the subject of excision of joints was thoroughly illustrated by the record of numerous cases in our "Mirror," and since then the operation has met with the attention that its importance demands, and is now frequently resorted to in suitable and well-selected instances in many of our metropolitan and provincial hospitals. If we have not recorded all those in which it has been done in London, it is because our space would not allow it; but we to-day give the details of nine cases of excision of the knee, taken indiscriminately, for the purpose of showing the nature of their progress and final result, and of again drawing attention to the subject generally. The consideration of excision of the hip-joint we shall reserve for another occasion.

With respect to the knee, we refer with much satisfaction to the memoirs of Mr. Butcher, of Dublin, who has so zealously laboured to advance this branch of surgery, of Mr. Humphry, and of Mr. Price, who still more lately has been busy in the same field of research. We feel satisfied that if correct statistics of the knee could again be collected, they would show a very fair amount of success, for the reason that the operation is better understood now than when first revived by Mr. Fergusson some years back. It is now undertaken with more confidence, and its simplicity is found to encourage those surgeons to repeat it who have once put it into practice. We regret to say, however, that in two or three of our hospitals, amputation still appears to be the rule, even in patients whose knees could be excised with every possible advantage. As a set-off to this, there is a disposition to excise the hip in preference to the knee, on the ground that it is likely to prove a far more successful measure.

To speak of particular points in connexion with excision of the knee, it seems to be questionable whether the operation should be resorted to in the young, because the affected limb, after the loss of its main joint, does not grow proportionately with other parts of the body. This has been found to be true in some cases; nevertheless, the shortened limb with a high-heeled shoe is preferred by the patients themselves to going about with a single leg. It would appear that there is scarcely a disease of the articulation, excluding of course any-

* This theory should be more widely carried out in obstetric practice. I have been delighted at the exactitude with which it has enabled me to predict even the day of delivery. The advantage of such a pre-knowledge, whether to patient or practitioner, is immense.