An Address

ON THE

DOMAIN OF ORTHOPAEDIC SURGERY*

BY

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It is not my intention to trace this special branch of medicine from earliest times—although such an exercise must have a chastening effect. Our very remote forefathers had philosophical minds, and often practical vision. When, with all the air of a discoverer, we descant upon the value of the sun and open-air hospitals it is a little humiliating to find that the followers of Aesculapius built a temple of healing to the honour of their master, and that the design of the open-air ward was almost identical with our most recent buildings, with free access to sun and air. I wrote an article some years ago on the conservative treatment of club-foot. It might have been copied from Hippocrates, who, with a wealth of detail, had anticipated all I had to say. When we realize the magnitude of this supreme ancient we must feel humble. He enriched surgery in all its branches; but we shall best remember him as a pioneer of extension in the treatment of fractures, as a teacher of passive hyperaemia, as an authority on congenital dislocation of the hip, and on the correction of club-foot—and all this 400 years before Christ.

Some years ago I was engaged as a witness in a medico-legal case. One of the issues referred to the method of reduction which should be employed in a case of dislocation of the head of the humerus with fracture of the surgical neck. Many distinguished surgeons in 1906 did not know of such an injury. They were much astonished to hear that fifty years before the Christian era Pasicrates (quoted by Malgaigne), in describing the injury, stated that he preferred to reduce the dislocation and then to allow union of the humerus. Aristion, on the contrary, endeavoured so to arrange traction that it would act upon both head and shaft simultaneously. Heliodorus supported the contention of Pasicrates. It is of profound interest to realize that in olden times, just as to-day, schools existed, one in favour of immediate reduction and the other in favour of allowing the shaft to unite before dealing with the displaced humeral head; and so it is always.

THE GROWTH OF ORTHOPAEDIC SCIENCE

The term "orthopaedic" was first used by the distinguished Nicholas Andry (1650–1742), professor of medicine of the University of Paris. He wrote an interesting book on the prevention of deformities, and was a great apostle of posture and body mechanics, a branch of work which has been so enriched to-day by Joel Goldthwait of Boston. It is not a satisfactory term, but so far, out of the many suggested, none accurately connotes the group of cases it is supposed to cover. We must, however, come to some clear understanding as to what the definition includes. There was a time when orthopaedic surgery included a comparatively small group of cases. Lateral curvature, flat feet, rachitic distortions, club feet, and a few other congenital conditions represented the list. Apart from tenotomies and an occasional osteotomy, no other operations were indicated. The use of the knife was almost a reproach, and only followed a failure in mechanical effort. How different it is to-day, when some of the most difficult operations in the domain of surgery are included under the definition "orthopaedic"! During the great war I had to direct—on behalf of the British Government—what was known as military orthopaedic surgery, and this involved a statement of what groups of cases ought to be included under the term.

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This definition developed into:

1. Fractures—recent, malunited, and ununited.
2. Deformities of the extremities and spine.
3. Diseases, derangements, and disabilities of the joints, including the spine.
4. Injuries of peripheral nerves.

It purposely covered a very large area of surgery, and could only make an appeal to the highest type of young surgeon, as it required an advanced standard of training and exceptional ability. Unless this broad definition were substantially agreed to, advance would be checked and a lower standard of orthopaedic surgery would inevitably arise. We must not recognize as an orthopaedic surgeon anyone who is unable to hold his own in any procedure—operative or otherwise—which his art requires of him. In certain countries orthopaedic surgeons confine their specialty to children. In England we always include the adult in our definition. The same principles applicable to the treatment of the child are also applicable to the adult, and age limit seems to us to be an artificial boundary line.

This war-time definition is now accepted in Great Britain as appropriate in civil life, and no difficulties arise. At first it was felt to include too much, and the surgeon who had not specialized feared a depletion of his teaching material. Once it was understood, however, that it was the orthopaedic surgeon alone who had limitations placed upon him, and that the general surgeon was not limited in his scope by a definition of any sort, all difficulties disappeared. At the outbreak of war the field of orthopaedic surgery was limited to a handful of specialists; where they were not available the cases were often treated by surgeons—not especially interested—in hospitals inefficiently equipped. There was quite inadequate accommodation for prolonged treatment, and no immediate prospect of engaging on a national campaign on the lines of prevention, early discovery, treatment, and after-care. The heavy casualties of 1914 onwards brought appalling facts directly to everyone. The treatment of fractures at the front, because of the conditions, resulted in a high mortality. There was no proper provision at home for the long treatment essential in certain crippling conditions beyond the general hospitals, already crowded, and in which evacuation had to be rapid. Consequently in both these instances patients either died in the war area or, being evacuated from the hospitals too soon, relapsed and developed permanent deformities. The solution of these problems, which in peace time would have been slow, became so vital and urgent during the war that within a short time the rapid advance of the orthopaedic surgeon was assured. What might have taken a quarter of a century was accomplished in three years. At the front it was decided that casualties within the recognized definition of orthopaedic, as passed by the War Office, should be grouped in orthopaedic centres on their arrival home. In Great Britain centres for proper orthopaedic treatment were accordingly organized, and specially equipped and staffed hospitals for the treatment of fractures were started at the front. The daily spectacle of deformity brought an entirely new and universal sense of the pitiful case of the cripple. A severe counterpoise to the traditional spirit of indifference was produced in all sections of society by the sight of their own flesh and blood stricken with deformity. The contrast was two-edged. The shrinking from the cripple diminished, but inversely the cripple saw that deformity held something which might even prove heroic. That was the psychological contribution of the war towards deformity. But the common experience of complete recovery of function produced a profound realization of the cripple as made, not born, and also as curable. Such an impression so universally received wrought an immense change.

THE SCOPE OF ORTHOPAEDICS

It is to the lesson of the war that we owe the wider sense of the importance of adequate means of cure. Out of that profound shattering experience has come the practice in time of peace. The orthopaedic centres were evidence of a system of handling orthopaedic cases, which has been followed since the military beds were evacuated. The temporary necessities of war thus became the permanent accessories of peace. But the war contributed more than hospitals. It formed a training ground of a large number of specialists whose influence was henceforth to compose the wonderful chapter of organization which is now rapidly taking place. In a few years orthopaedic surgery passed from a small branch—with vaguely defined boundaries—into a very comprehensive sphere. Nurses trained in the military orthopaedic centres had learned the lessons that they continued to practise with the crippled in times of peace. Another signal service rendered by war was a thorough understanding and mutual appreciation between those surgeons of our own specialty and surgeons whose work had mainly been carried on in other departments. I think I am correct in saying that only very friendly feelings exist to-day between the so-called general surgeon and the orthopaedic surgeon. In proof of this the Association of British Surgeons and the British Orthopaedic Association have on two occasions selected the same president. This feeling of comradeship and complete understanding should be encouraged; it is a great asset to future progress.

An important lesson learned during the war was the psychological and physical value of work. It was a common thing in our hospitals to find our men attending the various departments for electricity or massage and for the rest of the day sitting nursing their arms or legs. The atmosphere was one of apathy and discontent. We therefore introduced curative workshops there. They proved invaluable as an aid in the recovery of both mind and body. They acted *directly* when the work done gave exercise to the injured limb, and were employed in restoring co-ordinate movements; for instance, a screw-driver was used to supinate the arm and a saw to exercise the shoulder. The *indirect* method was equally productive; a man with a stiff ankle was set to planing, and as he became interested in the work he unconsciously used the ankle. Productive work has a human interest completely absent in mechanical contrivances, such as Zander's apparatus. These methods developed during the war are now part of standardized orthopaedic equipment. They are employed in a scheme of vocational treatment as well as training.

THE SUCCESSFUL ORTHOPAEDIC SURGEON

Most of us have responsibilities to fulfil in the matter of surgical education, and I hope we are all agreed that, before specializing, every surgeon must have a sound practical training in general surgery. An ideal specialist is the general surgeon who concentrates upon a special branch of his art, and not he who becomes a specialist with but little knowledge of surgery as a whole. Most of our French colleagues, who have done so much to advance orthopaedic surgery, still retain their title of general surgeon and practise other branches of their profession. Some of the greatest advances in bone surgery have been made by the general surgeon—for example, Ollier of Lyons and Macewen of Glasgow. There is little in a name. A surgeon is judged good or bad from an orthopaedic point of view by the results of his efforts to correct disability, and not by what he calls himself. His surgery is based on the recognition of definite principles of treatment which lead to the restoration of function—not merely to the correction of deformity. It strives for *function* rather than for form, but it is more

content if it can secure excellence in both. It is conservative and constructive, but it desires to take the most direct road to function—be it by knife, by hand, or by mechanical device. General surgery and orthopaedic surgery should never be divorced. They should move hand in hand to their mutual advantage. Great as our surgical triumphs have been in the past we realize we are only just emerging from darkness. The future is full of promise; its many and intricate problems will not be beyond our power to solve, and we must therefore welcome among us the young, well-trained, and flexible mind, however revolutionary, in order to give us food for reflection and interest in our proceedings.

In my own career I have derived my greatest inspiration from a friendly and close association with the younger generation, especially those who are but little influenced by tradition. They often correct or modify our sometimes crusted views, or by clash of intellect encourage introspection and force us to revise our premisses. Often they merely strengthen us in our views. Truth never shines so brightly as when contrasted with error. As leaders in orthopaedic surgery we should endeavour by every available means to eradicate those diseases which give rise to deformity. It is our duty to ourselves and to humanity. Leaders in a preventive crusade are a greater national asset than mere masters of surgical technique. And what a glorious work! It spreads a spirit of sacrifice and binds together in comradeship with us the official mind, the nurses, and countless voluntary lay workers.

Take, for instance, two diseases—tuberculosis and rickets—which are roughly responsible for half of our cripples. Largely owing to recent research we have sufficient evidence to enable us to state with authority that rickets is wholly preventable. The tragic supply of material in Vienna and elsewhere, as the result of the great war, has furnished us with heartrending evidence, which should move the nations to concerted action. In such noble work our profession should take the lead. We know enough now about tuberculosis to enable us to predict that within a generation it could be stamped out if concerted action were taken. Dirty milk and personal contact are our main enemies, and our objective must be to conquer them. Much is being done, but not nearly enough, to ensure a clean milk supply for our children. We must remember the chain is not stronger than its weakest link, and disease will continue to spread unless the bacillus is absent from all milk or destroyed before milk is supplied to the child. This cannot be effected by voluntary agency alone. The crusade should be directed to the extermination of the disease in cattle, over 20 per cent. of which are infected in Great Britain. When we deal with the human bacillus we ought to be able to evolve a barrier against contact between a child and an infective tuberculous patient. There are difficulties, but they should not prove insuperable. We can make a good beginning by preventing that common tragedy—the evacuation of patients from our sanatoriums who are sent out to die in their homes and, in consequence, spread infection among their families. The human bacillus could be largely eliminated if the authorities insisted upon the proper care and isolation of the consumptive. In Great Britain alone 50,000 die every year from tuberculosis.

ROUTINE AND TREATMENT

We are all anxious, for reasons which are obvious, to have our cases brought to us early, and each nation doubtless has its own methods of securing this. In England—recognizing the evils of foul air, late access, and want of continuity of treatment—we are building a chain of open-air orthopaedic hospitals in various parts of the country, staffed by surgeons and nurses with special orthopaedic training. These hospitals are definitely country hospitals with open-air wards. We recognize, especially

in the care of crippled children, that fresh air and sunlight form an essential basis for treatment. We can safely prophesy that the time will soon come when the town hospital for children will be looked upon as an anachronism. These country hospitals are responsible for the treatment, education, and training of cripples drawn from large adjacent areas. Around the hospital are grouped after-care clinics to which children are brought after being evacuated from the hospital beds, while other cases are seen which require admission for operation or prolonged treatment. These clinics, with their nurses, are periodically visited by surgeons from the hospital, and in this way continuity of treatment is assured and relapse prevented. This network of clinics has resulted in a marked diminution of those gross deformities which are caused by neglect. We hope before very long to see this scheme functioning over all parts of the British Isles.

Despite all that can be done for children by preventive methods we can never hope to be without the cripple problem. The menace of transport is ever increasing, while there is but little corresponding expansion in hospital accommodation. The adult industrial cripple has been neglected in England until lately. Other countries, notably America, are alive to the importance of this problem. There, schemes for rehabilitation are quickly

developing. The Federal Board of the United States shows that, up to 1926, 24,000 disabled persons had been restored to work at an average cost of £50 per head. In America alone 84,000 are disabled vocationally every year. This great work relieves the State of a heavy financial burden, apart from the moral aspect of the problem. It is essentially humane and economical.

While we are all deeply interested in the work of our own nation we are very apt to be ignorant of the activities of our neighbours. Nothing can prove of greater value than international meetings in familiarizing us with the activities in which we are interested all the world over. A too rigid nationalism has its grave defects. We are all the better for early access to the literature and work of the several countries, and this is especially so in the cause of the cripple. Brackett of Boston has suggested that there should be a central bureau of information at Geneva, attached to the League of Nations. It should act as a centre for collecting and distributing information regarding cripples in all civilized countries. It should cover preventive treatment and training, and should include methods of dealing with those injured in industry. Such a source of information would be a great service to all of us. It would unite the nations in a common quest.

A CASE OF PITUITARY TUMOUR

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The subject of this report is a professional man now 50 years of age. He was first seen about seven years ago by one of us (D. P. M.) in consultation with his family attendant. The particular interest in the case lies, in the first place, in the curious onset, and secondly, in the pathological cause, the removal of which eliminated in large part the original symptoms.

SIGNS AND SYMPTOMS

The earliest symptoms arose some twelve months prior to the consultation. The patient's partner had noticed a marked slacking-off in his work. Although he attended office punctually and regularly he accomplished very little real work, spending most of his time behind closed doors, writing voluminously, and destroying at the end of the day the results of all his labour. He took little interest in his profession, but when asked his opinion seemed as alert and as sound as usual. On rare occasions a letter missed destruction, and several were gradually collected. In one of these the patient styled himself a knight, and wrote about the millions he was investing. The theme was usually suggested by a business letter or a consultation. Thus, following a consultation on mining matters, his subsequent letters dilated upon the millions paid by this mine, all earned by himself; after a professional conversation about shipping he wrote to his son, still a schoolboy, about his yacht, giving it the name of a liner previously discussed, and describing his wanderings across the Seven Seas. In other respects—in conversation, intelligence, and in conduct—he appeared to be his normal self.

When first examined the patient was a heavily built man, 71½ inches in height and weighing 203 lb., with large features and a strikingly pallid complexion. The facial characteristics were somewhat prominent supra-orbital ridges and malar eminences, and a heavy lower jaw; there was also some puffiness below the eyes. The hands were large, and showed distinct thickening of the skin—a "solid

oedema." The skin of the trunk was smooth and very pallid. There was general loss of hair, the pubic hair being scanty and resembling in its distribution that of the female. The penis was small, as were the testes, which were insensitive to pressure. The patient complained of loss of sexual desire and admitted impotence. Generally the trunk indicated the adipose appearance associated with a pituitary dystrophy. Other symptoms—for example, headache, vomiting, etc.—were strikingly absent. The patient, in fact, had no complaints to make, and only admitted, rather shamefacedly, the indulgence of "day-dreams," as he called them, when he composed his letters.

A systematic examination elicited the following facts. The cardio-vascular system showed little abnormality. Blood pressure was 130/80; pulse rate was 70. Examination of the heart revealed no enlargement or degenerative changes. The blood picture indicated a mild grade of anaemia—4,950,000 red cells per c.mm., and 78 per cent. haemoglobin. A census showed cells of normal size and staining capacity, and a slight relative lymphocytosis.

Occasionally, at irregular intervals, the urine contained a small amount of sugar and a trace of albumin (salicyl-sulphonic acid test). A glucose tolerance test gave fairly

FIG. 1.—Tracing of sella turcica (26 × 25 mm.).

normal values, fasting sugar in one test being 0.0665 mg. per cent. After 50 grams of glucose had been taken the percentages of sugar recorded half-hourly were: 0.0915, 0.125, 0.093, 0.073, 0.0592, with a urine specific gravity of 1032; yet no sugar was excreted. A urea concentration test indicated 3.7 per cent. of urea after the first hour, and 4.1 per cent. after the second hour. The deposit contained no cells or casts, only an excess of phosphates being present. Examination of the eyes disclosed a restriction of the fields of vision. A full examination was made by Dr. A. W. Sichel, whose report is appended. An x-ray examination of the skull by Dr. van Rooyen indicated clearly a very much enlarged pituitary fossa measuring 26 by 25 mm. (normal 13 by 8 mm.) (Fig. 1).