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A DEFINITION OF
THE SCOPE OF ORTHOPÆDIC SURGERY,
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BY ROYAL WHITMAN, M. D.

A DEFINITION of the scope of that branch of surgery known as orthopædy is the more difficult because the derivation of the term, as well as its original application by its author, Andry, † refers to the prevention and treatment of the bodily defects and deformities of children only.

One is obliged, therefore, to define not what orthopædy means, but what its present application has come to be. Andry is sometimes called the father of this specialty, and there appears to be a very general misapprehension as to the object and scope of his book, published in 1741, in the title

* The President's address read before the American Orthopædic Association at its tenth annual meeting.

† "*L'Orthopédie ou l'art de prévenir et de corriger dans les enfans les difformités du corps.*" (From title page.)

"Quant au titre en question, je l'ai formé de deux mots grecs, sçavoir d'orthos, qui veut dire droit, exempt de difformité qui est selon la rectitude, et de paidion, qui signifie enfant" (Andry).

of which the name "*orthopédie*" first appears. This was in no sense a scientific work, even from the standpoint of that time. It was what might be called a nursery guide; in it were considered not only the common postural deformities, but, at much greater length, external defects and blemishes, as of the hair and skin, which could not be concealed.* It is emphasized again and again by this writer that the advice is intended only for parents and nurses, and that surgical aid is required for the proper treatment of the more serious distortions,† of which congenital dislocations are instanced.

The treatment of deformity has always been considered of special importance, and the subject has attracted the attention of many of those whose names are most distinguished in the history of medicine; the terms *kyphosis*, *scoliosis*, and *lordosis* date from the time of Galen, and suggestions of some of the forms of apparatus now in use may be found pictured in the ancient works on surgery.

At the time of Andry, and for long afterward, the treatment of deformity, of which distortions of the spine and clubfoot seem alone to have received serious attention, was practically limited to the use of apparatus.

At the beginning of the present century this treatment was to a great extent carried on in special institutions, and we may assume that at this time the ancient practice of mechanical treatment began to be known as *orthopædic*, although the use of apparatus is hardly mentioned by Andry. Indeed, he may be considered as one of the earliest advocates of what was afterward known, in the animated discussions of the early part of the century, as the *dynamic*

* "Je ne considère dans tous ces articles, que les défauts extérieurs. Je veux dire ceux qu'on ne sauroit cacher."

† "Le tout par des moyens à la portée des pères et des mères et de toutes les personnes qui ont des enfans."

or developmental treatment, as opposed to purely mechanical methods.

Orthopædic surgery is a compound term which would seem to imply the addition of broader knowledge, and, therefore, more comprehensive treatment, to the ancient and limited practice of the early specialist.

In this broader sense the specialty of orthopædic surgery is modern, but it still feels the weighty influence of the old traditions, not only in the supposed limitations of its legitimate and necessary scope, but in the confounding of the means employed with the object to be attained. The application of a brace rather than the treatment of disease and deformity is still, in the minds of many, the distinctive and essential feature of the specialty.

The following definition, to be found in *An American Text-book of Surgery*, illustrates this point of view, and may therefore serve as a text for my remarks: "Orthopædic surgery has to do properly with the treatment of deformities and contractions, especially by some form or other of mechanical appliance; though of late its field has been somewhat extended, so as to include the consideration of many of the deformity-producing joint affections." The qualifying clause is of weighty significance, and it applies particularly to the practice of orthopædic surgery in this country, for here, where its importance has been more rapidly and generally recognized than abroad, it seems to have developed from a different standpoint, in that it was the desire to provide for the more effective treatment of the painful, dangerous, and deforming diseases of the bones and joints, now known to be tuberculous in origin, that led to the establishment of special hospitals and clinics, and thus afforded the opportunity for the study and treatment of disease and deformity, and for the evolution of the modern orthopædic surgeon.

As an example to the point, the objects for which the New York Orthopædic Dispensary and Hospital was established in 1866 are set forth as follows :

Objects of the Institution.—"To furnish treatment to the poor, with special reference to the diseases and deformities of the spine and hip joint and other of the more serious diseases of the bones and joints requiring surgical and mechanical treatment, and for giving instruction in the same."

This illustration is particularly applicable, because this institution is one of the few to which the distinctive name orthopædic was applied.

If one asks the student of to-day what orthopædic subject most interests him and of which he wishes first to learn, he will probably answer "hip disease"; and "hip disease" seems to the lay mind also to sum up in its familiar characteristics of danger, pain, and ultimate deformity, the type of the class of cases which demands that special knowledge and skill in treatment that the orthopædic surgeon is supposed to possess. Disease, then, that may lead to deformity has become of equal importance in the practice of orthopædic surgery with the treatment of actual deformity, which was originally its end and aim, if not greater. When the better knowledge of disease pointed out the varying causes of deformity, and thus the possibility of its prevention; when the standpoint was changed from the treatment of effect to the study of cause, from an empirical to a scientific basis, the importance of deformity as an entity disappeared and the old limitation of the specialty became intolerable and impossible. The ancient specialist treated deformity by means of mechanical appliances; or, in the words of the definition, "orthopædic surgery has to do properly with the treatment of deformities and contractions, especially by some form or other of mechanical appliance." When causes were unknown the manner of treatment was

of greater importance than the thing to be treated, and the manner of treatment still clings to orthopædic surgery as its essential feature. One constantly encounters this traditional faith in the efficacy of a brace *per se*, and in the teaching of students one's first care must always be to attack this popular fallacy and to relegate the brace to its proper place, as one of the means to be employed in the treatment of weakness and disease, a means whose use becomes apparent only by the study of cause and the knowledge of effect.

The exaggeration of a means or manner of treatment belittles the importance of the study of cause and effect, and in so far as it applies as a distinctive and limiting principle is not only inconsistent with scientific progress, but impracticable in rational treatment; and as an apt illustration of this fact, one quarter of the space devoted to orthopædic surgery under the definition which is the subject of this analysis is occupied by the descriptions of spasmodic wryneck, Dupuytren's contraction, webbed fingers, supernumerary digits, and clubhand, not one of which can be properly treated by any form of mechanical appliance.

Of the two hundred and eighty-four papers to be found in the eight volumes of *Transactions* of this association, but seventy-five are limited to the sixteen subjects that, according to this text-book, represent the scope of orthopædic surgery. Of the seventy-five, thirty two are on clubfoot alone, and nineteen of these consider its operative treatment. One must conclude, then, that this section of a modern text-book represents the orthopædic surgery of a past time—of a time when its scope was limited to deformities and contractions, and when exclusive methods of treatment were opposed to one another, even within this narrow field.

It would seem that at the present day one need not multiply arguments to prove that any exclusive manner of treatment, however useful and however efficacious it may be in its proper place, for the individual practitioner, and as applied to selected cases, must be inefficient in the larger and more comprehensive field of the modern specialty. Its shortcomings and failures can only result in the voluntary or involuntary division of patients, in the separating into groups disabilities, diseases, and deformities that are absolutely one in cause and effect.

Those who see only the advanced and serious class advocate radical and unnecessary treatment for all, and those who limit themselves to the milder types may be ill prepared to combat the emergencies that may arise even in selected cases, or to modify a routine to meet the individual need.

The practical effect of this division, selection, and consequently ill-rounded experience has been to create and keep alive an antagonism fostered by a quicker perception of an opponent's failures than of the merits of his treatment. That such antagonism still exists is due, no doubt, to the traditions of that ancient time when ætiology and pathology were alike unknown, and the manner of treatment was of greater importance than the unknown cause which led to the condition.

I hope it has been made clear why the definition of Andry, by which he unwittingly limited the specialty to external deformity and to the treatment of children, is no longer adequate, and why the definition quoted from a modern text-book neither properly defines the term orthopædic nor indicates the scope of orthopædic work; it has even retrograded from the standard of our ancient prototype in that it makes a manner of treatment the distinguishing and limiting characteristic of modern scientific work.

Orthopædic surgery inherits an ancient name and the traditions of a still more ancient practice, but it is no longer bound to those traditions; it no longer separates deformity from its causes, or divides it into classes to fit it to a peculiar therapeutic method; but it now maintains, in common with other specialties, that the knowledge of cause and effect, modified it may be by practical experience and the individual needs of the patient, is the only safe and enduring standard upon which treatment may be conducted.

It is a very pertinent question in this discussion why orthopædic surgery is a specialty.

We may assume that in the past, as at the present time, it is because of the universal dread of deformity; in the past, as at present, because of the necessity for special knowledge of the use of apparatus that has always entered so largely into its effective treatment.

In more recent years the neglect of the chronic and deforming diseases of the joints gave it larger opportunity, and when advancing knowledge showed the curability of what was at one time considered hopeless disease, and the possibility of preventing and checking deformity by early diagnosis and timely treatment, its sphere of usefulness was still further extended. Finally, it is the time-absorbing character of the work that demands the infinite pains necessary to make hopeless deformity tolerable, to bring chronic disease to ultimate cure, and to search out the insignificant causes that may lead to pain and disability, that make it to-day, more than ever before, an important branch of surgery.

It is the mechanical specialty, but no longer in the old and narrow sense—mechanical because it has to do directly with the human machine. One must not only know the causes of disease, but he must become an expert in the statics and dynamics of this machine if he would hope to

possess that scientific imagination that may predict effect from the knowledge of cause, and, thus foreseeing, guard against it—a knowledge which is the very essence of prevention.

This represents the scope and function of modern orthopædic surgery, as I understand it, and as it is defined by the work of this association.

If a new definition or a new interpretation of the outgrown term orthopædic is needed, its first essential, it seems to me, should be freedom from the hampering qualifications that a former practice and tradition may have justified in the past. From the point of view that the object of orthopædic treatment is the cure or relief of the condition for which it is applied, and that the scope and compass of modern orthopædic surgery are best indicated by the work of this association, the following definition is suggested: *Orthopædic surgery is that division of surgery which treats of disabilities and diseases of the locomotive apparatus and of the prevention and treatment of deformities of the framework of the body.*

This definition would not claim for orthopædic surgery all the surgical diseases, deformities, and disabilities whose exclusion would burden it with qualifications. It claims for the orthopædic surgeon no special aptitude for the treatment of supernumerary digits, harelip, and crooked noses, which, with crossed eyes and stuttering tongue, were by Andry included under the title; but it would indicate that orthopædic surgery had especially to do with those deformities that affected the framework of the human machine, those diseases of the bones and joints that led to distortions of this machine, and those disabilities that especially concerned the functional use of the machine.

To illustrate the applicability of this definition to the daily work of the orthopædic surgeon, the following ex-

amples may be cited : Disability of the locomotive apparatus would include simple structural weakness, as well as local paralysis ; it would also include the minor affections that cause pain and weakness, but not necessarily deformity, as illustrated in the *Transactions* by treatment of slipping patella, anterior metatarsalgia, non-deforming club-foot, and the like. Disease of the locomotive apparatus has a wide range, from tuberculous disease, on the one hand, to the acute infectious processes of the bones and joints that demand immediate surgical interference and which almost inevitably lead to deformity, on the other.

Prevention of deformity has two applications : not only the prevention of local deformity, the direct or indirect result of disease, but the prevention of deformity in its broader sense, by guarding the body during the growing period from the evil effects of carelessness and ignorance, as well as from unnecessary compensation for local deformity or disability.

Orthopædic treatment may be primarily mechanical and incidentally operative, as in the most important section of orthopædic work. It may be primarily operative, as for congenital dislocation of the hip ; or secondarily operative, for the purpose of making apparatus unnecessary or less burdensome, as in the excision of a joint ; or for the relief of paralytic deformity by arthrodesis or tendon grafting ; and, finally, both apparatus and operation may be displaced in many instances by developmental training and by the avoidance of predisposing and exciting causes that would otherwise lead inevitably to weakness and disability.

As prevention of deformity is the present ideal in practice, so, other things being equal, the importance of its rapid correction is likely to be more generally recognized in the future. As the causes of deformity become better known, the principles of treatment will become clear and

definite, and the means of applying these principles more simple and effective.

As the study of human mechanics in its broader sense is so important in the practice of orthopædic surgery, so mechanical treatment was, and still is, the most important means of treatment, and that there may be no misunderstanding on this point, all that has been maintained as to the benefit and the absolute necessity of the rest, correction, and protection that may be afforded by the brace is admitted ; but it can not be admitted that the essence of orthopædic surgery is the manner by which disease and deformity may be treated, or that the orthopædic surgeon has any vital interest in the elevation of the practice of what has been called mechanicotherapy, or that this or any other useful means toward an end needs other advocacy than the evidence of its merits that advancing knowledge and practical experience shall demonstrate.

If the treatment of deformity ever fell into disrepute, it was not because of the use of apparatus, or because of the conditions for which apparatus was applied, for this class of sufferers has always appealed to universal sympathy ; it was because of the unscientific exaggeration of a means of treatment ; it was because of the theory that deformity was properly treated by apparatus, and not because apparatus was properly employed in the treatment of deformity.

The contributing field for orthopædic work is large, but the varying causes lead in effect to disability and deformity ; thus the specialty differs from others that are limited to special organs or tissues in that it has a broader outlook and an ill-defined boundary ; but this is not a disadvantage, since the object of a specialty is not the complete separation of one branch of medicine from another, but rather to provide the opportunity for the concentration of

energy in a particular direction, and thus for the addition to the sum total of knowledge by more accurate observation, and for the acquirement of manipulative skill that can only come with constant practice.

An ill-defined boundary is rather an advantage, if thus, by more frequent contact with workers in other fields, we may escape the accusation of narrowness that is sometimes urged against special work, and of the truth of which our history may furnish instructive examples.

It is not to be expected that members of this association, attracted to orthopædic work by one or another of its many-sided aspects, who differ so widely in training, in environment, and in opportunity, will always agree, even on a common point of view.

It may be even a fortunate factor in the vigorous life of the association that its members differ with one another not only in the interpretation of the phenomena of disease, but as to the means by which it may best be treated, and limit themselves, it may be, to one or another therapeutic method.

But this association, as the representative of modern orthopædic surgery, can be bound to no exclusive method or doctrine, for its object is to bring together and to concentrate individual effort in the search for truth, wherever this search may lead. On this account, if for no other reason, its charity must be broad enough to cover all the limitations in the aims and methods of its members, that it may provide a free and open field for discussion; for it is by the contests of opposing theories and methods that the underlying principles that govern and explain all treatment will come to light and will be established.

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FRANK P. FOSTER, M.D.

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