ANATOMY—THE FOUNDATION.

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IN ACCEPTING the invitation of your program committee to meet with you today, I have not been actuated by any feeling that I would be able to make a contribution that would in the slightest degree equal the great honor you have done me in asking me to be here.

I gladly seize the opportunity to make full acknowledgment of the fact that thruout all the years of my professional life I have been a student of the works of those great men, members of the Illinois Dental Society whose high ideals, wisdom and influence have contributed so wonderfully to the uplift and scientific development of dentistry everywhere.

In the hope that I may say something to be remembered by, I have chosen as my subject, "Anatomy—the Foundation."

When all the teaching world at least, was wrestling with the problem of a curriculum for the "four years course in dentistry" your essayist asked himself one night the question, what is the object of a dental education? And the answer that satisfied came quickly, to make a dentist. But what is dentistry? A branch of the healing art. What is the great object of the healing art? At first the relief of human suffering. In recent years also the prevention of those diseases that cause the suffering.

Man then may be spoken of as the "Anatomical unit." With this thought well fixed in our minds, it requires but a few moments reflection to bring us

forcibly to the conclusion that every branch or specialty of the healing art has for its foundation, anatomy. It is the common science of all. A knowledge of anatomy is therefore pre-requisite and I use the term here to include what is commonly incorrectly denominated "Histology," but should be spoken of as microscopic anatomy.

My hearers are saying to themselves all this we know, anatomy has always been among the first subjects drilled into us. Yes, this is true, but has its important relation to the other subjects been sufficiently emphasized? Has their dependence been pointed out understandingly? Where have we learned that the nomenclature of nearly every subject we are supposed to make use of is directly derived from anatomy? That before beginning a study of them we should first become familiar with every organ and tissue of the human body.

Have these facts been sufficiently impressed upon us in our preparation to practice to say nothing of our teaching?

Such thoughts lead to the inquiry as to what are the subjects that are so dependent upon Anatomy.

A great deal has been written and said about the "Art of diagnosing," but where is there a chapter or a magazine article that points out clearly that the basis of all diagnosing is a knowledge of the normal anatomy of the part or parts involved in the disease? Yet the rational treatment pre-supposes a correct diagnosis. Without a knowledge of

the normal how will one recognize the diseases? Let me observe here that many names of diseases are also derived from the anatomical names of the tissue involved.

The assertion has been made that the nomenclature we use is taken from anatomy. Let us see of what subject this is true. Certainly of operative dentistry, prosthetic dentistry, operative and prosthetic technics, oral hygiene, oral surgery, physiology, orthodontia and clinical dentistry.

If the instruction on all these subjects depends on anatomy for the nomenclature that is necessary to make them clearly understood, is it not logical and sane to see that those who are coming into the profession should first receive their instruction in that subject which is to furnish them the technical language that will be used by their teachers? Otherwise the student is bewildered, gets but a hazy impression of what he is listening to, or the instructor must review the anatomy relating to his special field, wasting his time and that of his pupil.

I do not deny that there are many ardent students of anatomy in our profession, and we owe to them a great debt of gratitude. I come not here to belittle my profession nor in a fault finding mood, but to say that in these days when so much of the responsibility is being thrown upon the profession, by the "late discovery" that the work that we are called on to do, is upon tissues that are indeed a part of the human body, and in intimate relation with every other part of it, and we are to be held accountable for these remote disorders, I hope to present a new angle of thought upon what seems to me the foundation of all our work.

I believe that the science of dentistry is sufficiently advanced to stand the test that these new demands are making of it. Where the thoroly trained are the tested, the errors responsible for systemic

infection are not near as common as they are supposed to be by some of the profession. I know men whose patients do not suffer from systemic disorders due to improper dental service and in this connection permit me to say that the mere elevation of requirements are not sufficient to make us appreciate and become more familiar with technical knowledge. Preparatory training is helpful but does not always furnish us with a basis of sound logic and a clear insight. Its possessor may be able to analyze conditions, weigh facts, discern their relation to each other and yet without that high ideal which leads to self control, honest purpose and true love for his fellow-man, his whole career is a failure.

DISCUSSION.

Edmund Noyes, Chicago.

I am very glad to say a few words about the subject which has been presented to us by Dr. Morgan. We give too much time and too much interest in our societies (and for fifty years we have done the same thing in our schools) to the technical aspects of our profession, and too little to the scientific and fundamental subjects upon which our profession must be built if we are to be professional men, in addition to being technicians.

I congratulate you and the profession upon the waking up which we have been getting in the last few years in regard to the responsibility that we have, and the relation which our work has to subjects and conditions and diseases outside of the mouth. It has already made it easier for teachers in schools to get some interested attention, not merely a perfunctory attention, to such subjects as anatomy and histology, (which has been rightly called microscopic anatomy) and the subjects immediately built upon them, physiology and pathology. Chemistry relates to all of them.

For fifty years I have watched and

known something about dental education, and you know and I know that the students in our schools have cared almost nothing for these scientific subjects except to pass, and if they could cram them for two weeks before examination, they did not care whether they remembered a syllable of them after they got into practice or not. They thought they were not of much consequence, and I am very sorry to say they got too much encouragement in that attitude from the members of the profession who, after a few years of practice, ought to have learned better. We have had to buck against not only the attitude and feeling of dental students but the attitude and feeling of the dental profession, and I rejoice that we have got a shaking up that will cure us of that attitude of mind.

The paper we had this morning about anesthesia has anatomy for its foundation, and anything that any of you do along these lines is dependent upon the most careful study of the anatomy which is involved in the procedures, and the increasing use of local anesthetics, and nerve blocking especially, has immensely stimulated that necessary study and acquaintance with the anatomy of the head and face.

Something similar is coming in regard to the relation of histology to the pathological conditions concerning which we have heard so much in late years. Microscopic anatomy of the tissues, otherwise histology, is the foundation upon which is built the functions of the tissues. Physiology that is worth anything is cell physiology, that is, it concerns the functions and activities of the cells of the tissues. Pathology as the next step is a deviation from normal cell activity and cell function. The three sciences are absolutely dependent upon each other, and the microscopic anatomy is the foundation of them.

I congratulate you and the profession

upon an awakening interest in these matters. We shall in a few years, thanks to this changing attitude, stand side by side with the medical profession and understand them and have them understand us. It is as necessary in this day that the medical and dental professions should understand and cooperate with each other in close consultation, as it is that the general practitioner of medicine should frequently and understandingly consult with the nose and throat specialist, or with any other specialist in medical practice. The two professions must be in close cooperation, educated so as to be equal, and fit for the responsibilities and duties that come upon us.

We owe a debt of thanks to Dr. Morgan for bringing this subject to our attention.

Thomas L. Gilmer, Chicago.

I regret that I have been asked to discuss Dr. Morgan's excellent paper since I am wholly unprepared. I have had no time to study it. If Dr. Brophy were here he would tell you that pedigree plays an important part in farm animals. Having been a farmer all my life, I am quite in accord with the theory that there is much in pedigree. I know this man Morgan's pedigree. I know his father, William H. Morgan, who was one of the most lovable, intelligent, and learned men we had in the profession. I have heard him speak on many occasions, and he always inspired me for better things, and so we have been inspired tonight by the son of that pioneer in dentistry.

Dr. Morgan says that anatomy is the foundation of dentistry, and so it is, and that histology is only finer anatomy. This is equally true. In 1871 histology was not taught even in the best medical schools. If anatomy is the foundation of dentistry, then it seems to me that dentists should be so taught that they may become a part of the medical pro-

fession. I wish they were, and I think the time is coming when an arrangement will be made by which dentists can be fully educated medical men. Our schools are teaching more of some of the fundamentals of medicine than were taught in the medical schools fifty years ago.

To understand anatomy, the dentist would be greatly helped did he have a classical education prior to commencing his professional study, because he could then more easily understand the terms generally in use in anatomy, which are Latin or Greek, or a combination of the two. In my teaching of students, I have endeavored to instill into them that anatomy, histology, and physiology are just as much a part of dentistry, as any other part, such as operative or prosthetic dentistry. It has been difficult for the students to understand why anatomy, chemistry, oral surgery, and physiology are useful to a dentist, but when they get into practice their eyes are opened to this necessity.

Radiographs of the jaws are often misleading, particularly if one view only is made. It is as suggested, not only a good plan to have more than one exposure, of the same area, at different angles, but also exposures of the opposite side of the mouth for comparison, in order that errors may not be made in reading the pictures.

Dr. Morgan's paper was extremely interesting and timely, and I wish to thank him for having presented it.

Frederick B. Moorehead, Chicago.

Anatomy is one of the fundamentals, and fundamentals need neither amplification or confirmation. Air, sunlight and food are fundamentals of life. One does not need to confirm the fact that food is a fundamental; one cannot live without it.

The relationship of air, food and sunlight to life, is analogous to the relation-

ship of anatomy to medical science in any of its branches. One is just as destitute in the world of medicine without a thoro knowledge of anatomy, and just as incapable of functioning in the world of medicine without a knowledge of anatomy, as one would be incapable of functioning in life without food or air.

The ancillary of anatomy is chemistry. Analyzed in their entirety, anatomy and chemistry constitute in a large way the entire world of medicine, and practically all that we know of medicine relates either to the subject of anatomy or to chemistry. This being true, it is scarcely necessary to argue the point that unless one knows anatomy and chemistry, he cannot take any satisfactory place in medicine or any of its branches.

The term anatomy is more or less a composite one. We have, first of all, zoology, embryology, comparative anatomy, microscopic anatomy or histology; and finally, gross anatomy. Broadly speaking, these subjects all belong to the subject of anatomy.

Beginning then, with anatomy, we have, first of all, the study of the cell. Cell life is basic to all life. The cell is undoubtedly fundamental. This is just as true in plant biology as it is in animal biology. A knowledge therefore, of cell development, is a requisite to appreciation of anatomy.

In the study of embryology, we see the building of cells into tissues and organs.

The subject of comparative anatomy belongs rightly in zoology, and should be taught as a part of the course in zoology. The thread-worn method of presenting comparative anatomy to dental students has, I believe, done much more harm than good, as it has not been presented in its proper relationship.

In the study of microscopy or histology, one familiarizes oneself with normal tissue. It need scarcely be stated that unless one is familiar with normal

tissue, one is not likely to appreciate a departure from the normal, or pathology.

Pathology is, I believe, one of the simplest of the medical subjects, provided one knows zoology, organic and physiological chemistry, and histology. I am speaking now of laboratory pathology. Living pathology is still another subject.

In the study of gross anatomy, one becomes familiar with the dependence and inter-dependence of structures, and gets some idea of the physical mechanism. Before the student undertakes the study of gross anatomy, he should be familiar with all of the other phases of the subject of anatomy. Unless he has this information first, gross anatomy will mean nothing and he can learn it only by the process of tabulating isolated terms.

It is gratifying to note that in some of our better dental colleges, these subjects are being presented in some sort of intelligent sequence. We hear much these days about local anesthesia and how it should be taught. It is perfectly obvious that unless one is thoroly familiar with anatomy, more particularly gross anatomy, and has a good working knowledge of chemistry, he is not at all likely to do satisfactory work in local anesthesia.

Given one who knows his anatomy and his chemistry, and has some appreciation of asepsis, he already has the materials for developing technic in the

production of local anesthesia. Without this training, he may acquire some stereotyped method which after all is neither satisfactory nor safe.

To functionate therefore, with satisfaction and intelligence, in the world of medicine, whether as a dental specialist or any other form of medical specialist, it is quite necessary that one shall know his anatomy, and his chemistry.

Dr. Morgan (Closing the discussion:)

There is very little left for me to say except to acknowledge with gratitude the complimentary and highly pleasing manner in which my paper has been received.

There is one name that has been mentioned in the discussion that I am always ready to kneel to, the name of one whom I called father. I was never worthy to unlatch his shoestrings, but when I hear grateful things said about him, and have them applied to me, I feel very humble indeed. While I do not deserve them, they are pleasant to hear nevertheless.

I did not know there was so much in this subject until I heard these learned gentlemen agree with me so heartily and add so much to it. I have obtained a great deal of inspiration from what they have said, and I am grateful to Dr. Gilmer, Dr. Moorehead and Dr. Noyes for what they have said. If I re-write it in the future much that they have said, shall certainly be used.