MORPHOLOGY IN MEDICINE; A REAWAKENING

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This is the 19th Annual Meeting of the Society for Investigative Dermatology. The Society is actually older than its 19 meeting years since it did not meet during World War II. As scientific organizations go, ours is a young society. According to our calendar years we have reached a recognized age of maturity.

I confess that until this year, when the honor of presiding at this meeting was bestowed upon me, I had not given the purpose of presidential addresses too much thought. I had looked forward to hearing them. I had always learned a great deal from them. In looking back over the previous presidential addresses of this society, I note that the theme varied; but the purpose seemed to be constant—to remind us of things that can improve our society and specialty.

Early in our history our founders and our peers told us the history of disease, reminded us of spheres of investigative interests, and told us of our own history and the history of investigative dermatology. This was good and helped us to establish our fundamental reasons for being. If man cannot, or will not, draw upon the history of man for his strength, he will be weak indeed.

During our adolescence we were properly and rightfully reminded not so much of our heritage but of our current functioning as a society and as individual members and persons in it and in dermatology. We were told how to perform better; not only were the peaks pointed out which we must ascend, but we were also forewarned of the crevasses and pitfalls of which we must be aware and which we must avoid. This, too, was good and proper, even if at times painful when we were reminded of our shortcomings.

My chief, the late Dr. Paul O'Leary, practiced and preached that a young man growing up and maturing needed about two pats on the back for every kick in the pants. This is a good healthy ratio of encouragement and criticism. It seems to me that we are now ready for another pat on the back. Therefore, today I shall remind us of how good we are.

I shall speak today of morphology in medicine. I know that the late Dr. Nelson Paul Anderson would have liked me to do this. Over the past several years, Dr. Anderson and I discussed the importance of morphology, gross and microscopic, to dermatology and to all of medicine. As one of our seniors, he earlier expressed a fear that I and my contemporaries, because of our interests in various scientific disciplines, were minimizing the importance of structure. He pointed out that the gross lesion, its evolution and involution, its configuration and distribution, its microscopic structure, and the total patient with a given disease symptom complex presented excellent clues for the study of disease. I emphasized that such fear was unfounded. The very stimulus of dermatological investigative work has been to understand better the functioning of these normal and abnormal structures, gross and microscopic, that we face clinically every day and to correlate these structures with the function of a cell and of a patient.

Last spring during the last of these discussions with Dr. Anderson, I blurted out that I had some specific things to get off my chest about this talk of minimizing morphology in all of medicine. I said that we in dermatology should be praised, not criticized, for our modern morphological approach to medicine. Some day, given the opportunity, I would like to stand up and say these things. In his quiet way, and typical of Andy, he said maybe the opportunity would come sooner than I might think.

Therefore, if one is allowed to dedicate such a paper as this, I dedicate it to Dr. Anderson and to all of his contemporaries, who as modern morphologists have never divorced structure from function, and upon whose solid building blocks, we continue to build our knowledge and our specialty. Andy believed these things and so do we.

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Presented as the Presidential Address at the Nineteenth Annual Meeting of The Society For Investigative Dermatology, Inc., San Francisco, California, June 21, 1958.

Supported in part by the U. S. Public Health Service, N.I.A.I.D. grant E-1209 (CS), under the auspices of the Hitchcock Foundation, Hanover, New Hampshire.

Our heritage is the correlation of structure and function because clinical dermatology is, in truth, gross and microscopic pathophysiology and all that this constantly changing picture entails. We are leaders in this approach in medicine. The continual goal of all biological sciences, including medicine, is an integrated understanding of structure and function. In dermatology we never deviate from this goal.

Let us define "morphology." It is the study of ". . . the features . . . comprised in the form and structure of an organism or any of its parts. . . ." This is very interesting, isn't it? This is not a static, inert study; it refers to *features* which are changing from second to second in a person or in a cell as it functions, the *features* in the structure of an organism or any of its parts—even its nucleolus or its mitochondria.

How do we carry out this dynamic study of form and structure that we call morphology? We can use only two of our senses—vision and touch. We can see and we can feel structure and form.

Let me list some of the morphologic approaches that a good physician uses to study a patient or a disease: inspection, palpation, percussion; retinoscopy, the various endoscopies; the tissue diagnoses obtained by biopsy; exfoliative cytology, cytology of peripheral blood, bone marrow, and lymph nodes; and all diagnostic roentgenology.

One can look at and count cells or have radioactively tagged cells counted by scintillation counters and seen by means of radioautographs. In the field of immunology, one sees agglutinated cells and their parts. One can use histochemical disciplines. One can see submicroscopic structures with the electron microscope. With the high speed centrifuge one can spin out microscopic and submicroscopic structures and subject them to even closer scrutiny. All this is modern morphology in its ultra refinements. In dermatology we are familiar with and use these disciplines.

Always one strives for a correlation of structure and function so that there are no longer any clear boundaries between the work of biologists, anatomists, physiologists, chemists, geneticists, immunologists, etc., nor between the clinical scientists and practicing physicians, except perhaps on a regional basis of interest that does not exclude, or should not, an understanding of the whole.

Although it is routine for us, in recent years medicine in general is reawakening to the wonders of morphology, to the importance and need of marrying structures to function rather than divorcing them as they have in the past.

We should not criticize other branches of medicine that of necessity have been slow to develop the dynamic concepts of structure and function. We are fortunate that our structure is more available for study. In internal medicine it was a natural development in the past for the study of function to be stressed rather than the study of the structures, which, by their nature, are less available. On the other hand, if we look back in our own history, we find at one stage of our development that we were a bit slow in pursuing the study of function. Again, we should not criticize ourselves for this, because of necessity much of our studies must be limited to human skin. There is no animal skin that can be a substitute in the laboratory for man. Even man's skin is not a single type of a structure but a multiplicity of different skins in the different areas, each having to accomplish its own particular type of functions with its own particular type of structures and suffering from its own particular type of diseases. As the newer disciplines and technics of research evolved, our pursuit of a correlation of function with structure has been an increasingly thrilling scene of which to be a part.

By the same token, the newer technics evolving for internal medicine are allowing the pendulum of development to swing back so that here, too, there is increasing correlation of function with structure. The visualization, gross, microscopic, and submicroscopic, of the various viscera and serous cavities in man have made such tissue diagnoses as needle and excision biopsies of kidney, liver, lung, joints, etc., accepted routines of good diagnostic medicine and good research.

Ten years ago in the various periodicals in internal medicine, the ratio of papers having a morphologic approach to total publications was approximately one to six. Now that ratio is one to two or three.

During this time one has first seen the slide rule displace the good diagnostic technics at the bedside in medicine, and now, in turn, one sees the slide rule being displaced by improved disciplines for a better understanding of structure and function. It is good to see the end of the "slide-rule era" in clinical medicine because once again the young physician is looking less at the patient's chart and more at the patient.

This is a healthy development because it shows

the need of all in medicine to be aware of structure as well as function. This renewed interest in morphology by men in medicine means a renewed interest also in the patient. The internist is beginning to look more carefully at the patient, and in so looking, he has at last begun to discover the skin. Unfortunately, he might make the mistake of some tyros who think that because they have at last seen, they automatically understand.

Here is a case in point. A brilliant and wonderful young internist, who was mighty quick with a slide rule, left the "ivory tower" of academic medicine several years ago and went into practice. He wrote me a note this past year: "What is there about sunlight which makes ichthyosis improve? In the past year I have followed two patients who during the summertime had remarkable improvement in their skin and as soon as fall and winter arrived, the ichthyosis returned."

How can one answer that? How much does he know of the various physical and fibrillar components of the horny layer; how much does he know of the chemistry of the fibrous or of the globular protein portions of the horny layer? What does he know of epidermal cell metabolism and cell turnover rates, or the ratio of the keratohyalin cell to the entire epidermis in such conditions? Is he familiar with the water-holding capacity of the horny layer and the ratio of this to environmental water, temperature, humidity, etc., all of which, of course, must be understood and correlated with this clinical problem. The fact that he found it necessary to ask such a question is indicative of his lack of knowledge of these basic principles; but even more important, it is indicative of his growing interest in dermatology. We welcome this.

We should not judge or criticize all in medicine by the performance of the minority whose pendulum has not yet swung back to unite structure to function. We should rather encourage, help and stimulate these men to acquire the dynamic knowledge, understanding, and interest of our exciting field of medical science.

There is so much yet to know and so much already known to be taught that neither the physician nor the patient should be denied any part of man's total clinical and basic science knowledge in any field of medicine. Those of us who are associated with institutions wherein there in close liaison, mutual understanding, respect, and cooperation of all subspecialties of medicine and surgery know how each department benefits from and stimulates the others. The student, the doctor, the patient, and medical science reap the benefits of such exciting team work.

Ours is a young, growing, dynamic specialty in medicine. We are good. We have many fine men in dermatology and in this society. We can proudly point out that the proportion of clinically trained and practicing dermatologists doing fundamental work in our specialty is as high as, if not higher than, in any other specialty in medicine or surgery. We are men trained in and oriented to the clinical disease and to the patient. In our application of the many research disciplines, we never lose sight of the ultimate goal—the understanding of structure and function and the patient. Ours is a specialty of dynamic morphologists. We are proud of it. This is our heritage. Just as it is the future of all medical sciences, this, too, is our future.