

## WHAT TO EXPECT IN THE MEDICAL CURRICULUM

*Have no JHU.*

In my final year in college I was happily notified of acceptance by Harvard Medical School on the one hand and by Johns Hopkins Medical School on the other. After much soul searching, the decision was made to leave Harvard, where I had already had four years in any case. In retrospect the reasons for such a choice seem more clear than they did at the time. I had many friends in the Harvard Medical School when I was a senior at Harvard College, and learned through them that the first year program at least was characterized by fortnightly written quizzes, and according to my friends this was the source of many tensions. At Hopkins, on the other hand, my grapevine indicated that the policy was one of no written examinations or quizzes except those at the end of the first two years and at the end of medical school. When I began classes at Hopkins, this proved to be true in the main, and, as one would expect, there was a wonderful freedom to concentrate on whatever each of us thought was important. There was also, for a time at least, a relaxed and serious attitude on the part of most of the students. This policy has been largely abandoned at Hopkins now, I understand, for what reasons I do not know. To most of us it was some time before we learned to pace our suddenly independent study privileges without the spur of the more customary fortnightly examinations, but we established patterns of study before the end of the first two years which appear to me to have been life-time assets.

*Dev. indep. study patterns*

RAWSON Science in general, and medicine in particular, are uncovering new and exciting discoveries far too fast for any man long to be a good doctor without such independent habit patterns of study. The transition to it appears

rarely to develop before our students enter the medical school, and it is something which must develop before embarkation on practice if one is to remain adequate. There are tremendous differences in the pattern of

*Differs in pattern of transition*  
approach to this transition from one school to another and from one department to another in any particular school. This is a point about which you might well make careful inquiry before deciding where you wish to apply, for your happiness and accomplishment in and after medical school may be critically affected.

*Philosoph*  
In discussing what to expect in the medical curriculum, I could go through course by course what is ordinarily presented and what you should expect from each. I think, however, each of you could learn more from any good medical school catalog. The basic philosophies underlying this assembly of individual courses are more worthy of discussion here.

*Research*  
I believe my best departure in discussing the curriculum lies in outlining in some degree the research programs upon which medical students in many of our medical schools are encouraged to embark. In our own medical school, about two-thirds of the students become engaged in research projects either in regularly scheduled elective time during the school years or during the summer vacations. Such investigative studies may be undertaken in every one of the 14 departments of the school. In our own Department of Surgery, we had an even 25 students involved during the summer of 1963, and 30 are registered to work with members of the Department this year. This requires a re-organization of the faculty vacation schedules, and this activity has resulted in the summer months being among the heaviest in the programs of many of the faculty. In some instances, faculty vacations are foregone to

*faculty effort*

permit pursuit of active research guidance for the students.

<sup>?</sup> Why is all this effort made? <sup>?</sup> What is gained by it? The reasons are ~~many~~ many, but the dominant one is that for which the program was originally conceived. To this I will return in a moment.

During the past 30 years, there has been an explosion of scientific progress with no previous counterpart in the history of mankind. The advances are too rapid to be grasped by even the most brilliant mind, and the panorama about us in the sciences in general, and in medicine in particular, is changing with breathtaking and exciting rapidity. The reasons for such an explosion need not concern us here other than to note that it has arisen in major measure from embarkation on basic, fundamental, investigative pursuits by men from all areas of the scientific world.

*Publish* A corollary of this rapid expansion of scientific activity, unfortunately, is an almost insatiable urge to publish. In the field of medicine alone, the number of publications is so enormous that there exists now a special monthly journal devoted merely to publishing the tables of contents of the current journals. He who endeavors to keep abreast is forced to circumscribe his interests to an area which he finds intellectually encompassable. <sup>?</sup> In all this wealth of published material, is it true that everything represents a new discovery, or a worthwhile contribution, or even a demonstrable fact? Unfortunately, this is not the case. It is that scholar with an intellect critically trained and cultured in the processes of sound, scientific investigation who can best sift the real from the unreal, the true from the untrue, the too-frequently spurious claims of the advertising aimed at the medical profession from the scientifically established fact.

True education is a process in which the factual knowledge is but incidental to the acquisition of the ability accurately to utilize that factual knowledge as the tools with which to work. Students may achieve honor standing in many areas of so-called education by the development of what may be referred to as "flypaper memories". It is this type of medical educational institution which the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges rightly shun in giving their stamp of approval.

The alternate pattern <sup>that</sup> of the basic introduction to the methods of research, <sup>to</sup> the patterns of thought of research, and <sup>to</sup> the patterns of acquisition of information in research helps to gain for the student the same critical analytical approach to everything he may seek to learn in the medical world. This

*Individual instruction*  
is not something most of us can learn as members of large groups. It is something we can learn as individuals working under the personal close guidance of someone experienced in the scientific method. Even though the classes in some of our medical schools may number up to 200 students, our schools in major measure endeavor to break the student body down into groups small enough so that each student becomes fairly intimately acquainted with at least one member of the faculty in nearly all major departments. In such small groups the diagnostic and therapeutic problems of individual patients are approached as though they also were research projects.

It is <sup>the</sup> the belief of many of us in our medical school faculties that a background of approach of this character to scientific and, in particular, to medical learning can best prepare our students for the rapidly changing new panorama of advances to which I have already alluded. In the course of

utilization of such approaches, the student finds himself motivated to assimilate with rather surprising ease an immense amount of factual material. He now can see a purpose in having this factual material at his fingertips, and he utilizes it as it comes within his grasp. In pursuing a research project in each of several areas, he may learn immensely more of factual material than his subsequent medical career may minimally demand, but since he will have used this material with interest and excitement and frequently with real accomplishment, most of it is his forever.

If I may go back to another consequence of the scientific explosion of the past 30 years, I would like to call attention to the importance of scientific research on basic, fundamental levels. The concentration on such fundamental types of investigation has been so intense that the curriculum committees of some medical schools appear to me to have become confused. One medical school has made all of the basic sciences obligatory while surgery is an elective. From the position in which I stand, I cannot help looking with some bias on such a program. I find that the great bulk of the research work in progress in the clinical departments in my own medical school is of a very fundamental nature. Most of us do our major experimental work in the experimental animal laboratories as physiologists, biochemists, theoretical chemists, immunologists, basic physicists or members of other fundamental fields. I myself have a Ph.D. degree in Surgery and Physiology and a Master of Science degree in physiology in addition to the M.D. degree and was a member of the faculty in physiology before completing my surgical residency. Many of our recent advances in basic physiology and biochemistry have thus come from individuals not

Facts

formally members of basic science departments. The clinical sciences, therefore, maintain basic science parameters and in our good educational centers the clinical departments prepare graduate and undergraduate students alike for doing basic work as well as so-called purely clinical work. In addition most medical schools provide an opportunity to drop out of medical school for a year or two to gain an advanced degree in one of the medical sciences before completion of requirements for the M.D. degree.

Having gone this far, perhaps I should tell you some of the things that you will not find in the usual medical school curriculum. If you as members of the medical profession wish to prepare yourselves to be in the forefront of new advances, there are certain steps that can well be taken before matriculation at medical school. During the past decade, the interaction between the medical and basic medical sciences, on the one hand, and the fundamental sciences of physics, atomic physics, theoretical chemistry, electronics, and the newly burgeoning science of computers, on the other, has made many aspects of scientific medical progress extremely difficult without a thoroughly sound foundation in these latter areas as well. I finished medical school in 1935 and was well prepared in none of these areas. I have paid a heavy price for that lack of preparation. This is true in part because of time spent in trying to gain sufficient knowledge in these areas at a stage of a career in which the undergraduate student's freedom to concentrate upon such study has been no longer present. It is also true because of failure in investigative programs solely by virtue of failure of such adequate preparation. You will rarely find such subjects in the medical school curriculum, and it is a wise student who masters at least some of them before entrance.

Not in  
curric.

Physics  
Chem  
Calculus  
etc

Ransom

2  
There is a second absence from most of our medical school curricula, namely flexibility. I regret to state that in very few schools in the United States is it possible for a brilliant student to proceed at his own pace and perhaps finish medical school in two and one-half years instead of four. In pitifully few schools can a hard-working, thorough, but somewhat slower student remain in good standing and take five years to finish medical school, even though the potential of an excellent physician is there. We have begun exploring at our school the possibility of introducing such flexibility into our curriculum. Some of us believe the time span from college matriculation to completion of internship could well be seven years instead of the standard nine. Those of you who know yourselves to be at one extreme or the other of the intellectual spectrum of those entering medical school might do very well to investigate this aspect of the curricula too.

3. *Warrant  
Excess*  
Finally, I should like to comment on the third subject which you will rarely find in medical school curricula. I have heard the statement repeatedly and with awe-inspiring emphasis that the "future of medicine lies in the laboratory". The future of medicine is dependent upon the laboratory, that is true, but not upon that alone. Too often we hear reference to a "case" in the hospital and are provided with a history, a detailed physical examination, an awe-inspiring presentation of complicated laboratory data, and a brilliant display of deductive reasoning, culminating in a diagnosis of delightful precision. This is not the whole story. I prefer to hear the subject of all this inquiry referred to not as the "case" but as the "patient", for the patient is a person, with feelings, fears, hopes, and a family similarly endowed. Those who have had much of illness become keenly aware of the importance of the kindly concern

of the physician, of the importance to morale of the cordial physician-patient relationship, and of the forthright and thoughtful communication to the patient of as full as possible an understanding of his disease processes and problems all the way from proper patterns of ethical practice to the knowledge of presence of malignancy. Our medical profession is in grave danger from those who would impose a bureaucratic control upon it and thus threaten to stifle its growth and the personal aspects of medical care. Our best friends are our patients and the best of all are those who have been treated with full consideration that a man is something more than a mere biochemical mechanism and according to the golden rule. These things are important, and recourse solely to the laboratory to the exclusion of the warmth of proper human relations is to deny the very Hippocratic oath upon which medicine is founded.

In summary, I believe it fair to state that you will find very little didactic teaching in our strongest medical school curricula. You will find a measure of opportunity for independent but guided study which to some may prove a stressful experience, but which I should hope may present a welcome and exciting challenge to most. Before going to medical school, I would suggest not only a good foundation in the humanities as basis for a warmth of understanding in the handling of the ill, but a much broader foundation in fundamental physics, chemistry, and mathematics than I have seen outlined in any medical school catalog. With this armamentarium, the possibilities before you in a medical career are almost unlimited.