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ANNUAL DISCOURSE

*DOCENDO DISCIMUS**

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BOSTON

ONE hundred and fifty years ago this society established an Annual Lecture, known variously as the Annual Discourse, Annual Dissertation and Annual Oration. With a few exceptions, this annual communication has been presented each year, usually at the time of the annual meeting. For some reason or other the oration was omitted six times between 1813 and 1833, and again in the year 1945, when the annual meeting was canceled because of war regulations on travel. According to my calculations, therefore, 145 annual dissertations have been given, and this is the 146th, on the 175th anniversary of the founding of the Society. The subjects considered in the presentations have been diverse and have varied all the way from the practical through the theoretical and philosophical to the transcendental. In general, the chief interest of the speaker naturally determined the subject of his address, but not always. The first dissertation was given in 1804 by Dr. Isaac Rand, of Boston, "On Phthisis Pulmonalis and the Use of the Tepid Bath." A list of the names of the subsequent orators reads like a list of *Who's Who in Massachusetts Medicine*, for by custom the oration has been given each year by a member of the Society. At the annual meeting in 1835, for example, the dissertation was given by Jacob Bigelow, of Boston, the subject being "On Self-Limited Diseases." This was an epoch-making communication and was given largely in protest against the then-prevalent excessive medication. "Certain morbid processes in the human body have a definite and necessary career, from which they are not to be diverted by any known agents" is one of Bigelow's statements that should be engraved on the timeless tablets of science. The ideas expressed by Bigelow may have led to the dissertation of 1860, which caused so much discussion and dissension that the Society was induced thereafter to disclaim any

responsibility for the opinions presented in the Annual Oration. This 1860 sensation was produced by Oliver Wendell Holmes's disturbing voice in a satirical but well justified protest against the almost superstitious belief that disease was a malignant agency or entity to be driven out of the body by offensive substances. One of the most quoted statements from this philippic is "It is so hard to get anything out of the dead hand of medical tradition."

It would be futile to attempt to select the most meritorious of the orations, for each has his own criteria of excellence. What one can determine, however, is the changing emphasis in the subjects of the orations as the years have progressed. Many of the dissertations in the first half century dealt with practical matters in caring for the sick, whereas in the second half century there were more papers of general interest. During both periods, however, there were ever-recurring discussions of medical education, the progress of medicine, and a few nostalgic historical papers. In the first half of the present century, there were more dissertations presented from the viewpoint of a specialist in one of the many subdivisions of medicine. Some of the more intriguing papers in the past thirty years, many of which I heard in person, were those by David Cheever in 1925, Walter Cannon in 1928, Henry Christian and Harvey Cushing in the successive years 1930 and 1931, and many others of equal virtue and more than passing interest. One "first" was recorded in 1953, when Sarah Jordan was the orator, the first woman in a hundred and fifty years to be so honored. Editor Joseph Garland gave the dissertation in 1952, substituting for John Fallon, of Worcester, whose untimely death may have been in part due to the stress and strain of preparing the Annual Oration.

The honor of being chosen an "Orator" for this society automatically calls for one's best effort. Rashly, perhaps, I decided to give up any thought of selecting my specialty as a subject for the dissertation,

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since less than 5 per cent of my potential audience would be directly concerned with radiology. Thus began the search for something new or something different that might be of interest to this audience, so widely diversified within the field of medicine. But in what other field could I speak with any authority or with any background of experience? Primarily a radiologist for almost forty years, my *alter ego* was that of a teacher for thirty-three years. And for that reason, and others that will soon be apparent, the title on the program seemed best suited. Interestingly enough, I could find no previous oration with a title in either Latin or Greek, although the leading physicians of the previous century were much more skilled in those languages than physicians of the twentieth century. But I shall not bother to translate my title for you, hoping that if you do not understand it already it shall become apparent to all as the discourse wears on.

* * *

Medical education in 1956 has many interesting facets. The three major ones are, as always: the selection and the preparation of the student; the content and arrangement of the curriculum; and the activities of the medical faculty.

One can truthfully say today that the United States has the best system of medical education the world has ever known. More time and effort are being put into the selection of the best candidates for the medical degree; they are receiving the best preliminary training they have ever had; the medical schools are larger, better equipped and more efficiently run; and the faculties are larger, better trained and more interested in producing good doctors than ever before. But there is still a large area for discussion, for criticism, for constructive suggestions, as many people join in the attempt to improve both the methods and the products of the system. Ferments are everywhere. Experiments in medical education are going on in different sections of the country and in various relations to some of the major problems. Conferences and institutes, meetings and congresses are held to define the problems, sum up the experiences and debate the recommendations that have to do with improvements in medical education.

Much of the ground has already been cultivated. The twin volumes, *Preparation for Medical Education in the Liberal Arts College*, by the subcommittee under Severinghaus, and *Medical Schools in the United States at Mid-Century*, by the Committee on Survey of Medical Education, both published in 1953, are veritable mines of fact and opinion, and give both a wider and a deeper view of the situation than could even be attempted here today. These books are outstanding mileposts along the path of improving medical education first marked out by the Flexner report of 1910. Between them, they cover the field thorough-

ly and in a logical manner. At the end of each chapter they state their findings and conclusions and make recommendations, but it is still quite apparent that all the problems are not yet solved and that some of the questions raised seem to have no answer as yet. The progression of affairs, both internal and external to medicine, and the passage of time, which is such an important factor in all of medicine, may eventually solve some problems but will undoubtedly raise others and new ones not yet evident.

THE STUDENT

The selection and preparation of the student is probably the most important single factor in assuring a high-quality product, the young physician. And his selection is undoubtedly more important than his preliminary training. An excellent physician may come from a poor school in spite of limited facilities and inadequate teaching. On the other hand, a poor student may end up as a poor physician in spite of the best possible opportunities. The old adage of the silk purse from the sow's ear holds true in medical education. Admission committees vary widely on the best premedical training, and it is evident now that there is a general return to a more liberal education in college, with less concentration in basic sciences for the foundations of medical work. In other words, the hope is to educate the prospective medical student, to give him the attitudes and approach of a scholar, rather than to start him on his professional training. His *education* should, in college as well as in medical school, be concerned with study and learning for the prime purpose of understanding, not for memorizing. His *training* then would be a matter of acquiring habits, skills and technics and should properly come in his intern or resident years.

But the selection of the best of the candidates from those who offer themselves for medical school is not a simple matter of examination, interview, grades or, in fact, any predictable formula. It has to do largely with personality and character, natural ability, motivation and attitudes as well as proof of intellectual competence. All these attributes, tests for fitness and estimates of excellence are well known to the deans and the members of the admission committees, but it must be admitted that there are wide variations in emphasis in different schools and by different individuals. This is good, since it automatically prevents the turning out of a single model and favors the chance variations that may produce the exceptional physician or even the genius.

To sum up the first phase of my oration, the premedical student and his promise as a college graduate to become a good physician, I list a few of the desirable assets from the *Report of the Conference of Psychiatry and Medical Education*, held in Ithaca, New York, in 1951, published in 1952. That report states that personal characteristics and personality

traits cannot be defined accurately but that the student's principal assets are:

- 1) Intelligence (demonstrated intellectual capacity).
- 2) The ability to communicate.
- 3) Participation in extra-curricular activities.
- 4) Self-reliance.
- 5) Maturity.
- 6) Originality.
- 7) Curiosity.
- 8) Persistence toward achievement of his goals.
- 9) Socially acceptable aggressiveness.

I am sure that no one would disagree with these specifications, but the quantitative determination of the presence of these attributes in comparable or contrasting students may be more than difficult. The Committee wisely stated that in some areas of medicine all the traits listed above were not essential, and that the broadest possible range of selection was advisable to fit all potential situations. In the final analysis the proper selection of a future physician depends upon a careful evaluation of the balance between the qualities of human warmth (or compassion) and of pure intellectual ability. Rarely are these combined to the fullest extent in one person. When they are, selection is no problem. In the majority, however, concessions must be made in one direction or the other, the extent of which will be determined by the orientation of the selectors and the depth of the pool of selectees.

It is of the utmost importance for the future of medicine that the selection of medical students be carried out by thoughtful discussion among a group of faculty members who are sincerely devoted to the task and who represent the various views and orientations of the different medical disciplines.

There are many other problems concerned with the premedical student such as the decreasing size of the annual pool of candidates, but I must leave this subject and progress to the second phase, that of the content and arrangement of the curriculum.

THE CURRICULUM

The greatest source of argument and the most constantly recurring cause of faculty debate and occasional dissension is the curriculum. Dean Berry, of Harvard, points out that the word "curriculum" literally means "a running" or "a race course," and goes on to say that the present plight of the medical student reveals a new significance to the word. Since the turn of the century, or more particularly since the end of World War I, the advances in medicine and its allied fields have been phenomenal. It has been estimated that more important discoveries have been made and more valuable knowledge in medicine has been acquired in the past forty years than in all the preceding years of recorded history. And the acquisition of new facts and their use either for the protection or for the destruction of mankind continues at an ever-accelerated pace, approaching that of geo-

metric progression. It has long since become completely impossible to teach the medical student more than a small fraction of the accumulated medical knowledge, any or all of which could be important to him in some situation or circumstance. It is obvious, therefore, that arbitrary and severe restriction and selection of material is forced upon the modern medical faculty. The difficulty comes and the arguments start when the decisions must be made how much new material must be added, what old material can safely be eliminated, and how the whole can best be rearranged. Each department head thinks, of course, that his is the most important field of all and deserves more time than has been allotted. But time is always the deciding factor, and the number of hours available eventually forces compromise. So the eternal conflict goes on. It seems to me that in general too much reliance is placed on tradition and on authority in maintaining the curriculum in its ancient patterns. But, as I have said before, the curriculum is like a football, constantly in motion, forward and back, now possessed by one group, then by the other. The ball occasionally is fumbled by a player, but it is rarely necessary to remove him. Touchdowns are scored by successful innovations either in content or in method, the rules are changed frequently, and the spectators are, in the end, the public, which decides whether it will support the teams or not. At my last belaboring of this simile the suggestion was made that *pro tempore* the psychiatrists had the ball but could not agree on the signals. They still seem to be in the same huddle.

But I present for consideration a quotation from a report of a committee of the Harvard Medical Faculty: "In modern times the constituent branches of medical science are so expanded, that they are not acquired by any physician in a life-time, and still less by a student during his pupilage." The leading word, "modern," of course, refers to the day or time when it was written, but the substance is as true today in 1956 as it was a hundred and six years ago when it was "submitted" to the members of the American Medical Association by the Medical Faculty of Harvard University and subsequently published in the *Boston Medical and Surgical Journal* of July 17, 1850! The members of the Faculty who signed the report were Jacob Bigelow (materia medica and clinical medicine), Walter Channing (midwifery and medical jurisprudence), John Ware (theory and practice of medicine), J. B. S. Jackson (pathologic anatomy), Oliver Wendell Holmes (anatomy and physiology), Henry J. Bigelow (surgery) and E. N. Horsford (chemistry). Because they seem to be quite modern in both thought and conclusion, I read a little further for possible recommendations: "Medical instruction should be adapted to the powers of the students to receive and retain what is communicated to them, and should be confined to what is important to them in their subsequent life." And

further on they say, "the length of a course of lectures is not the measure of its value to the student. It should not outlast the curiosity of its hearers."

As an epitome of their combined wisdom and experience they offer several conclusions and suggestions as follows:

The usefulness of a medical school depends upon the education which it requires, the fidelity in exacting its own requisitions and the train of healthy exertion, active inquiry and rigid, methodical, self-regulating study to which it introduces its pupils.

The subjects most important to be well taught are elementary principles . . . and the mode of thought and inquiry which leads to just reasoning . . . selecting and enforcing such practical truths as will be needed in the future . . .

Such a report would be a credit to any committee of this mid-century. The wisdom of those intellectual giants could be used in deliberations on medical education today. But what joy would those men of 1850 have if they could return today and see the tremendous progress of medicine during the intervening century!

Certainly, I could add no better suggestions than theirs for the improvement of the medical curriculum, but I should like to recommend some of the suggestions of another Orator who gave his dissertation quite recently, only fifty-two years ago. Dr. Harold Ernst, in 1904, stated that students should have the right to a community life, as claimed by all companies of scholars. He thought that a university medical school should be as compact a unit as a college of Oxford or Cambridge, and that it should afford the company of scholars the same privileges of good dormitories, good dining halls, adequate libraries and all the other facilities that then were rare and now are standard in the better schools. My emphasis here is upon the company-of-scholars idea, on the Oxford-Cambridge plan, complete with house masters and "tutors" or built-in faculty advisors, selected more for character, intellect and integrity than for technical facility or factual knowledge. Sir Lionel Whitby has come out only recently in favor of the tutorial method in clinical teaching. He advocates a "good young man" meeting his small group of students informally but regularly once or twice a week to review what they have seen, done, heard or otherwise learned on the wards or in the clinic. The emphasis would be on the integration of medicine and the basic sciences. Actually, that is already being done to some extent not only in Britain but also in the better schools of America.

To dismiss the problem of the curriculum and the host of details associated with it by the broadest possible viewpoint, I quote Rachel Carson, "our knowledge is encompassed within restricted boundaries whose windows look out upon the limitless spaces of the unknown." It does not matter so much, therefore, what one prescribes of the small part already known in the curriculum, so long as the teach-

ers understand that it is principles, not facts, that are important. That leads me to my final section, the heart of *docendo discimus*:

TEACHING AND RESEARCH

Early in this century several great changes came about in the practice of medicine, which have had profound impacts on the teaching of medicine. Chief among these were, first, the tremendous growth and development in the field of research as allied to medicine and, secondly, the change in the basic approach to diagnosis from one of observation and classification to one based on scientific "facts." The clinical change was aided immeasurably by two new medical disciplines, the medical laboratory, particularly biochemistry, and diagnostic roentgenology. The rapid development and acquisition of both knowledge and skill in these two areas, each with an ever-increasing array of tests, has promoted increasing accuracy in diagnosis. Simultaneously, the dogmatic authoritarian pedagogy declined to the point where today even the student may question the voice of authority if his scientific facts and the results of critical tests are not in order. This could also be understood as the change from the art to the science of medicine. Of course, medicine is still far from being an exact science, but it has also, in many of its aspects, become less of an art. There are even some accusations that medicine has moved more toward a trade than either art or science! Be that as it may, physicians today are certainly able to depend less on intuition and more upon scientific facts than ever before in medical history.

But this change raises the immediate problem of how much of these new disciplines should be taught to the medical student. The best answer probably is that only the application of the results is important to him in general, unless he wants to enter one of those fields. This would best be done in his postgraduate years. It is important for the student to know how such testing methods are performed, the principles on which they are based and the measure of accuracy in their applications, rather than to learn how to do them all himself, which would be practically impossible. Some tests or examinations are so conclusive in their results that they might be classed as pathognomonic or indubitable, and these are increasing in number. But as long as human beings retain the "infinite capacity for variation" characteristic of biologic material one cannot claim medicine to be an exact science. As teachers, therefore, physicians are forced to select and choose what they deem to be important for communication to their students. The good teacher is thus forced to concentrate his material and to select those portions exemplifying methods of analysis on the one hand, or principles of human biologic responses on the other. He must attempt to educate his students in principles

and in modes of thinking rather than in memorizing facts, details of cases or methods of instrumentation. Thus, clinical teaching must be integrated with the basic sciences in which systematized knowledge is the teacher's goal. Medical education should, after all, be more education than medicine, as Flexner says. In the face of the overwhelming mass of material available to be taught, better teachers are needed, to teach less. The good teacher in any field is a skilled craftsman in the art of teaching. He knows how to impart his own insight to others, to fire them with his enthusiasm and, best of all, how to help his students learn how to do their own thinking.

In one of the symposia on teaching, the attributes of an able teacher were defined thus: first, he must believe in his subject with passion and curiosity; secondly, he must love young people and want to share his knowledge and his researches with them; and, thirdly, he must respect his craft as a teacher and constantly strive to improve himself in knowledge and art. One of my predecessors wrote, "teachers need to study and to learn to avoid stagnation. No cow can be milked indefinitely without being put to pasture." (The writer must have been a city physician, for any country boy knows that it takes more than fresh pasture to keep the milk flowing!) An editorial on part-time teachers expresses it clearly: "Both the faculty and students are in fact students working at different levels of education."

As to the spirit and mechanics of teaching there are almost as many methods and ideas as there are articles on the subject. Anatole France has epitomized teaching with "The whole art of teaching is only the art of awaking the natural curiosity of young minds for the purpose of satisfying it afterwards." Harvey Cushing, however, in his *Clinical Teacher and the Medical Curriculum*, says: "It is the business of the teacher to *arouse* curiosity not to satisfy it." A similar concept is the advice for the teacher to "open the door of knowledge for the student, turn on the light, but let him see for himself the beauties therein." The capacity for absorbing knowledge, however, varies a great deal. Increased capacity for absorption may be inherited, but it can also be increased by rigorous mental discipline. By far the larger part of knowledge must be imparted or transmitted by the slow, painful process of study. Perception varies, as does imagination, both essential to teacher and student. In my own field of diagnostic radiology I have often insisted that a good imagination is a decided asset in many ways, but the corollary is that the imagination must be under cerebral control lest it run away with the facts and wreck the conclusions. After all, imagination may be only the capacity to rearrange facts, as Bill Bean says, to show a new truth, or, as I would add, to open up a new theory.

Skepticism in both teacher and student is also a decided asset if present and used in a healthy manner.

Anatole France called it "The faculty of doubting," claiming it was rare among men. He wrote, "A few choice spirits carry the germs of it in them, but these do not develop without training." Henry Christian urged the application of "healthy scepticism" in all work but particularly in reading and in teaching. He said, however, in caution against its misuse, "to doubt is desirable; not to try would be reprehensible."

In my own experience of using the tools of diagnostic roentgenology as viewpoints in teaching medicine, I have employed technics gradually acquired from many sources and constantly modified to meet changing situations. One of the most effective methods of teaching is in small groups with each member of the group participating. It helps awaken interest and curiosity to challenge the student's attention in front of a roentgenogram by asking him as a representative of his group, "How old was this patient?" "What operation has he had?" "What is his probable racial background?" All are simple questions with the answers plainly evident on the film. Roentgenology is a natural-born teaching tool through which many things are visible. One attempts to inculcate the idea that observation reveals morphologic changes that can lead to thinking in terms of pathologic physiology, followed by etiologic deductions and, finally, if the student is advanced enough, an estimate of what can be done about the problem that the patient presents. One usually deals only with the shadow of the patient rather than the substance, but I am continually amazed at how much one can discover and how accurately one can foretell morphologic, functional or etiologic abnormalities. Visual methods of teaching surpass those of any other medium. That is one reason why the roentgenogram can be so useful in teaching. Students should be warned that they can believe less than half of what they hear, and not more than half of what they read, but can trust most of what they themselves see, unless it be pictorial advertising or television. After all, seeing is believing, and one picture is worth a hundred words — two are worth a thousand.

For larger audiences or classes in clinical exercises another gambit for good teaching is the planned argument between staff members over basic principles or on popular beliefs. This we have employed for years in our clinics and conferences to the benefit of successive generations of students. Dr. Wolbach and I often fought bitterly in public, mostly between ourselves at clinicopathological conferences or x-ray conferences, but sometimes we combined forces and attacked some foible or some weakness in the armor of physician or surgeon. The students were delighted and often carried on the investigation of the questions we had raised, to their own benefit. In public we were bitter enemies, in private the best of friends and companions. One discerning physician from Iowa characterized our conference arguments by stating, "You men fight like brothers."

Exaggeration for emphasis plays a good role in teaching, and honest or benign dogmatism must be used at times when it is justified. After all, 90 per cent of medical students want and need a solid foundation of accepted beliefs, basic principles and approved methods lest they be discouraged by the much vaster area of the unknown. Only the exceptional 10 per cent can thrive and be stimulated by having the large gaps in knowledge emphasized and possible avenues of approach to more and better information suggested.

As an illustration of the use of exaggeration for emphasis I cite the visual parable I have used for years in starting my lecture to the students on pulmonary tuberculosis. Telling them at the outset that it was most important to diagnose tuberculosis in the early curable stage, and that they should know the truth about the only way the diagnosis could be made, I would show them a lantern slide of a large, imposing building and ask for guesses about what it was. It was the church of Ste. Anne de Beaupré in Canada. Next I would show them the shrine in the church with innumerable crutches, which had been left as tokens of many cures that had been effected there. By this time the class would be thoroughly puzzled but wide awake and interested, waiting for the denouement. Next came a slide of an x-ray machine or a fluoroscope and then one of numerous stethoscopes hanging on the walls of the x-ray room. A simple statement that "Those are the votive offerings of many physicians who thought they could diagnose tuberculosis in its early stages without x-ray help" would point the moral that few would forget. It was really a prolonged battle, starting with World War I, to get that fact established, but now it is accepted everywhere as obvious truth.

Two principles of teaching, the importance of which cannot be emphasized too strongly, are the clarity and simplicity of presentation and the enthusiasm with which it is presented. After all, enthusiasm is the vehicle that carries the material to the student. One can often present the clinical (and sometimes even the basic) material to the student as a problem to be solved, and adopt the methods of a Sherlock Holmes in unearthing and recognizing clues, some of which may be but "acid-fast herrings" while others may lead eventually to the culprit. An example of this approach in teaching is the strange case of "Who Killed the Pheasant?" This was first used at a meeting of the College of Physicians here in Boston about thirty years ago. I told the story, with picture and diagram on slides, how three of us all shot at a cock pheasant but no one could be sure who had downed him, for five shots were fired but only three reports were heard. Obviously, there had been two simultaneous shots. Ordinary hunters would have settled the question by tossing or matching coins, but in our case I found that each hunter was using different-size shot, one number 8, another number 6 and I

was using size 5. It was a simple matter to take the bird to the hospital, take an x-ray film and find that only size-5 shot were in his vital parts!

The moral was that "We see only what we look for, but we look for only what we know."

The "retrospectroscope," a theoretical instrument invented in Boston, is of great value on occasions when one goes back over a case using hindsight as an aid to diagnosis. Furthermore, the importance or significance of things to the patient must always be kept in mind and must always be emphasized to the students. Never will I forget a lesson I learned from Professor Wenckebach when he visited the Brigham more than thirty years ago. I was young in my specialty but proud of its accomplishments and jealous of its potentialities. Having found a striking calcareous pericarditis in a young woman in whom no abnormal physical signs were demonstrable, I asked to have him go over the patient and see if he could make the diagnosis. The great man was told the problem. To my surprise and discomfiture he did not percuss or auscultate the heart, but simply said, "If she has a constrictive pericarditis and *if it is causing her any trouble*, she will have an enlarged liver." He then proceeded to feel for and percuss the liver. It was not enlarged. He concluded, "The patient may have calcareous pericarditis but if she does it is not doing her any harm. Let us proceed to the next patient." I slunk away defeated but wiser thereby.

RESEARCH

A large volume could be written about the part played by research in modern medical education. There is no doubt that the acquisition or discovery of new facts is one of the most important duties and privileges of all faculty members, and, whenever possible, the intellectual stimulus of research should be inoculated into medical students. The main objectives of the physician are and always have been the prolongation of life; the relief of suffering; the prevention and control of disease; and the promotion of the health and well-being of man. The dilemma noted by Jacob Bigelow in 1835 — "in many cases disease is more easily understood than cured" — still obtains. Since that time medical science has prevented some diseases, controlled others and cured many, but the majority are still beyond the four objectives of the physician. Research holds out the promise of eventual attainment of these goals. But my major concern is how research affects teaching, and not to record its amazing development and its phenomenal growth in my own period of time. Its present status carries dangers and threats as well as promise. Budgets are inflated, balances are upset, and judgments are influenced by pressure for publication of research work. The choice of men for appointment or for promotion on the medical faculty is often influenced by the number or size of the candi-

date's publications. Their value is seemingly estimated by the pound rather than by worth of content. Research institutions are springing up all over the country, and large foundations are sponsoring and subsidizing investigation. The direction of the search, however, is often determined by the grantor. The federal government is the largest of all donors for research covering the widest variety of projects. This may be good, but is not wholly so if it deleteriously affects medical teaching. Many men who are excellent investigators make very poor teachers. On the other hand some good clinicians who have rarely if ever written a paper may be excellent teachers. Hospitals have taken the bait of easy money, and some now have more men and money working on research projects than they have for care of the patients and teaching. The medical schools, by contrast, are losing men to foundations or other institutions, even to commercial organizations where salaries and other inducements can be made more attractive. By contrast with the sacred or hallowed aura surrounding the "pure" research man, too little attention is paid and too little value attached to skill in the art of pedagogy. But there are other compensations for the teacher, particularly the clinical teacher, of whom I sing.

THE PART-TIME CLINICAL TEACHER

Most of the burden of clinical teaching is borne today by the part-time clinical teachers. They outnumber the full-time members of the faculty but are rarely accorded the honor or the support given to the full-time men. They get little if any salary from the medical school but are supported almost entirely by either the hospital (hospital full-time group) or the hospital and their own private practice. Many get no salary, or only a "stipend" from either medical school or hospital, and yet contribute significantly to the total sum of educational endeavor. These part-time men may also add considerably to the prestige of their medical school and hospital by clinical investigation or the publication of articles or books in their chosen fields, but most of all they contribute in the testing or application of the many discoveries and the new knowledge contributed by the research group. There is now available a considerable amount of valuable information which has never been used in the care of the sick patient. The application of the discoveries is the prime function of the clinical man who is both teacher and investigator. As Cushing said in the Annual Oration for 1931, "No idea is wholly new; what is new is getting people to adopt it and act upon it." And in the same article he continues, "In science, credit goes to the man who convinces his contemporaries, not to him who first propounds the idea." Unfortunately, however, few of the clinical teachers ever receive their just awards for being good teachers, either from their university, their faculty or their fellow teachers. They do not

want or need salaries or increased income, since most of them make enough from practice. They receive admiration, gratitude and sometimes devotion from pupils and disciples, and on rare occasions have an institution, a professorial chair or an endowed fund named for them. For the great majority of part-time clinical teachers, however, a little more regard by faculty and colleagues, some moral and financial support for their work and some official recognition would be the logical and proper reward for an important job well done. My colleague, Sam Levine, is an excellent example of the good part-time clinical teacher. For forty years he has made careful observations on patients, written down his findings and his conclusions and then later recorded the results of his treatment. He has investigated many problems, written many articles and several books and has made many contributions to the knowledge of heart disease. He has applied many other discoveries to his own problems. But his greatest contribution has been his enthusiastic teaching of medical students, of house officers and residents, and of colleagues, fellow staff members and many graduate physicians who seek instruction from him year after year. Medical students have come under his influence only two out of their four years, and house officers two to five years; but his postgraduate teaching has gone on for forty years. Largely owing to the efforts of men like Paul White and Sam Levine the understanding and treatment of heart disease are better than in any other special field of medicine, with almost equal knowledge and competence spread widely over the entire country.

The part-time clinical teacher has many other activities of value to medical education as well as to medicine in general. He may act as the spokesman for medicine in politics and in law; he may secure large sums for medical education or research through his contacts with influential persons or from appreciative patients; he may persuade the exceptional young man to enter medicine; and he may make the greatest contribution of all to medical education simply by the power of splendid example, for there is probably "nothing in the teaching of medicine as important as example."

Every physician should be an investigator, for, by reason of its nature, much of medicine becomes an experiment. By watching and studying the progress of disease or its alleviation or cure, he naturally acquires knowledge. There is no greater satisfaction to the teacher than the acquisition of knowledge. There is a high index of intellectual gratification and spiritual contentment in both teaching and learning. The intellectual capacity and originality of the men and women who make up the faculty and the student body of the modern medical school are almost guarantees of suitable recompense at the intellectual level. The atmosphere of a university medical school pro-

vides endless opportunities for the faculty to teach each other and to enlarge each his own store of knowledge as well as to broaden his outlook.

The full employment of one's faculties somehow brings contentment and happiness. Added to this is the joy of learning, and the pleasure of watching the growth of the "intellectual progeny" partly under one's care. This is an immeasurable pleasure similar to that of the orchardist who plants his carefully selected stock, nurtures it with measured and proper sustenance, and watches it grow and develop and eventually bear fruit. To me it seems that the medical teacher lives a highly satisfactory existence, obtaining recompense in spiritual values if not in worldly goods, and contributing largely to the success of the institutions to which his time and effort are

devoted. Not the least of these compensations are the warmth of affection of his disciples and his own reciprocatory pride in their progress and accomplishments. Some of them accept similar responsibilities in university medical schools and carry on the principles, precepts and pleasures turned over to them. Not the least of these compensations is *docendo discimus*, "we learn by teaching."

I close with the best description I could find of the product that all are striving to create or produce: the educated man. This is the definition given by Woodrow Wilson, the humanist and educator, who wrote: "The end objective of education, even at the postgraduate level, is not so much technical proficiency as character. Moral integrity is still our most important product."

TREATMENT OF CHOICE IN CANCER OF THE UTERINE CORPUS*

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CANCER of the uterine corpus can be successfully treated in a number of ways. However, there is no unanimity concerning the best therapy. The following discussion is intended to evaluate the different methods and to aid in the development of a plan for the treatment of this disease.

The types of treatment now employed are: total hysterectomy by either the abdominal or the vaginal route; radiotherapy; a combination of these two; and radical hysterectomy. These can be evaluated by their applicability, primary mortality and five-year survival without evidence of disease. Because the various methods of treatment are not equally applicable, the resulting selection tends to influence the primary mortality and cure rate. For this reason, it is desirable to arrange similar cases into clinical classifications that will allow less distorted comparison.

There are a number of systems of dividing cases into comparable groups. The International Classification is used here. Stage 1 comprises patients in whom, on clinical evaluation, the growth is confined to the uterus; Stage 1, Group 1, consists of cases that are clinically operable; in Stage 1, Group 2, the lesions are technically operable, but the patients are in poor general condition (that is, bad operative risks); and Stage 2 includes patients in

whom the growth has spread outside the uterus — that is, the lesion is inoperable.‡

In the *Tenth Annual Report on the Results of Treatment in Carcinoma of the Uterus*, data from 27 clinics on 8366 cases are recorded.¹ Fifty-three per cent were Stage 1, Group 1, 33 per cent Stage 1, Group 2, and 14 per cent Stage 2. The over-all five-year cure rate was 54 per cent; the rate in Stage 1, Group 1, was 69 per cent, that in Stage 1, Group 2, 46 per cent and that in Stage 2, 20 per cent.

PRIMARY HYSTERECTOMY

Surgical excision is the oldest and most direct method of treatment. Any more limited procedure than total hysterectomy is to be condemned as inadequate. Abdominal hysterectomy is to be preferred, because the tubes and ovaries can be easily removed at the same time, the uterus taken out with a minimum of pressure and manipulation, and the peritoneal cavity freely explored to enable one to recognize metastases.

The tubes and ovaries are the seat of metastasis in some 5 to 15 per cent of cases.^{2,3} Therefore, if the uterus is to be removed, the adnexa should also. Squeezing or undue motion of the uterus during hysterectomy probably increases the likelihood of dissemination. For, if the tumor lies in the lymphatics or venous spaces, intermittent compression could dislodge and propel bits of tumor beyond the field of ex-

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‡Excluded from consideration here are the adenocarcinomas that involve both the corpus and the cervix. Those cases are designated carcinoma corporis et endocervicis, and they are segregated in accordance with the policy of the annual report on the results of treatment in carcinoma of the uterus.¹ These cases have a poorer prognosis than carcinoma of the corpus and should be treated as cancer of the cervix.