The Linacre Quarterly

Volume 32 | Number 3 Article 19

August 1965

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A reader of this paper's presumptuous title might think an alternative a little more palatable: "Change: And Can The Physician Keep Up With It?" But to a medical educator at the crossroads of medicine, medical education, and medical science it is clear that our ancient profession is today undergoing vast changes in its technology and science and in its art and application. Indeed changes are proceeding at a rate faster than heretofore ever experienced by those physicians preceding us in medicine. Instead of trying to prove this point by recounting all the sweeping significant advances in medicine and the medical sciences during the past thirty years, I should like to illustrate it by an analogy.

Recently I spoke before a group of Christian theology students. What they wanted was similar to the purpose of this paper, i.e. to provide an overview of medical education as it is today and to render a viewpoint about its future role in medicine. With a modest knowledge of the Old and New Testaments I suggested that what is happening today in medicine is perhaps no less revolutionary than what would happen in Christian theology, and thus to theologians the world over, if there suddenly appeared an extraordinary number of scriptural writings, all properly evaluated and documented by competent ecclesiastical authorities, to be added to the Biblical canon and, indeed, y accepted as permanent enlarge nts of the Christian Bible. I su sted that the impact on innumera theologians, even after analyzin ell the content of all the new s ptures, would be such to cause gr changes not only in their attitud nd behavior, but in their traditic l practices as well. But what if su new discoveries appeared at the te of a new beatitude every thre r five years; a new pauline epist very decade; or a new Commandi t to be added to the original Te very twenty years? The very th ght of such sweeping changes th young theologians found most sta ng. But since 1930 such changes ve insidiously and cataclysmically n thrust upon practitioners an professors of medicine, and from appearances they will for fores able decades, like a flood-tide of ew advances, become a tidal wa of constantly increasing crescendo.

A long time ago he practice of medicine, we have en led to believe, was very often he application of empirical techniques learned laboriously either in a poorly organized medical school or in an extended apprenticeship with a senior physician. It was a profession based on empiricism but seasoned generously with well-stretched horse-sense and a real competency in human relations, kindness, and patience. Physicians may not have effected many miracle-like cures, but they were well respected and they served people well. The character of the man was important — it also is now — but often in the practice of medicine there was more dependence upon the man than upon his methods. Today the situation frequently appears to be the reverse — methods in medicine are regarded as miraculous and thus overshadow the character and personality of the man, his former dominance and influence.

To many not familiar with it the new scientific medicine is mysterious and frightening, perhaps even threatening. Years of escorting senior alumni physicians through our modern medical school facility have witnessed reactions ranging from wonderment, incredulity, and awe to suspicion and distrust about the whole enterprise and the future of medicine. But what today's students learn in a medical school is both complex and fundamental. The diagnostic and technical skills are complicated, but there also is increased emphasis on learning to know their patients as human beings. The process also is extraordinarily expensive. Yet what is learned may be so superficial and transitory that it must be constantly relearned not only in clinical education and after receiving the M.D. degree but also later in the years of continuous practice. This is a difficult task and may be a stressful hardship, even to the best student. Obviously were competence achieved within a few anniversaries of graduation, all would be well. But, as all of us know, the process of relearning what we learned originally must ultimately lead even to unlearning that proved obsolete. For each of us this may be a painful process. In order to progress and mature, it is essential to learn and to apply in realistic ways the new findings that emerge from scientific investigations, clinical research, and social study in operation throughout our nation today.

What then should be the content of the medical school's curriculum? Professors and deans worry a great deal about this question, and the answer often seems to change with tradition-shattering regularity. In this connection, however, it is well to recall that before 1940 the teaching in a medical school often was excessively didactic and essentially authoritarian. As a result students of medicine often were not provided adequate opportunities to learn to think for themselves, for they were busy memorizing countless details designated essential by their faculty. Unfortunately it was the kind of authoritative system in which the faculty did most of the thinking, thereby resulting, I fear, in students being systematically conditioned not to think critically, nor to question the empiric statements of their lecturers, nor the validity of data, whether it be scientific, medical, economical, social, and so on.

Today the philosophy of medical education is trying to emphasize something substantially different. Most medical educators now are courageous and humble enough to

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admit the student being graduated with an M.D. degree is not a finished product. As a matter of fact this excruciatingly painful fact is impressed upon him throughout his four years of medical training. Less emphasis is given to non-essential details, the significance of continuing one's self-education throughout one's lifelong career is repeatedly made plain. There is emphasis on comprehending fundamental concepts and principles, on gaining a "big picture" of medicine as purveyed at the time and on the direction medical research is taking in increasing and expanding the knowledge of the day. Therefore, the principal authoritarian injunction made today is that medicine shall be constantly reassessed and criticized in light of new achievements, and therefore should be continuously up-dated.

Within limits of practicality and individuality, a student is encouraged to develop curiosity and some creativity and to burnish them through the pursuit of a special study or the enrollment in elective studies of his own choice. Contrary to rumor the purpose is not to graduate a research physician but a physician capable of thinking factually and of evaluating reports of studies pertaining to medicine and medical practice. The typical student now spends his summer months either at the medical school and its affiliated hospitals or at one like it in this country, or abroad. The summer months, together with a day or a day and a half a week in the regular academic year, are the student's own time in which he can apply his own initiative with faculty counsel and guidance in further this aspect of his education.

All this tends to c for the kind of medical students haps a little different from those mitted to a medical school more an 20 years ago. Admissions c nittees still greatly respect the demic grades earned in premedical dy, but they are wary of the sho erm memorizer with excellent ades on his transcript but who as acquired little or no educatio or desire to think critically, in process of achieving a baccala ate degree. Indeed, careful exam tion of what a student has done side the requirements of routi classwork is often more revealing an the computation of the grad on his transcript. The combinat of curiosity and related critical tors, and a sense of compassion, more significant now than ever fore. But it is still important f a student in medicine to have t capacity to organize his time iciently and effectively; indeed a ash of compulsiveness is as des able as ever. Undue rigidity is so thing generally feared; if obser d and documented in an applic it to medical school it is apt to eigh heavily against his admissio

Medical educators today more and more de-emphasize the didactic approach in education; the role of the lecture has been reduced, particularly in the clinical years; individual patient relationships and responsibilities have been increased. Clinical education more and more comprises clinical experiences not just in municipal "charity" hospitals and clinics but also in a wide variety of private and university hospitals and clinics. In this regard Diamond, in emphasizing the need for greater continuity, and thus understanding too, between medical education and medical practice, proposes that through cooperative administrative efforts there be increased academic extensions between medical schools and community hospitals and thereby relate more private practitioners to medical teaching and to medical students.[2] Thus it would appear that the advice offered by a French participant at the First World Congress on Medical Education in 1953 has been widely adopted: The results of "giving a lecture may be illustrated by tossing a bucketful of water on a substantial pile of bottles — only a little water gets in some of the bottles."[4] Not too long ago it was not uncommon for the faculty to lecture as though the printing press were not yet invented; in fact I recall an occasional professor so enamoured of himself that he repeatedly read from a text he had written, even though his students were required to buy his text. In this regard at least there has been some improvement in medical education. But compared to such authoritarian figures in the past, some may now be equally discommoded by the great quantity of highly technical material of the new medicine. Relatively few of us soon-to-be-old-timers readily understand, let alone pronounce some of it. It makes some of us feel apprehensive and insecure; and it is apt to make us doubt its value in medicine as well as usefulness in medical education. But doubts should not overwhelm our pragmatism, nor prevent the adoption of successful new techniques and methods even though we may allow them to be performed for us by others. Nevertheless it makes us aware of the increasing power and effectiveness of medicine and inevitably of our individual ability to encompass and embrace effectively the whole of it. This forces us thereby into the kind of interrelationship of a personal character often not necessary in the work of our fathers in highly independent practices very often in isolated small communities. For now it is believed necessary to specialize in order to acquire competence in some phase of medicine, or if not to specialize, at least to depend upon specialized services in order to achieve even a generalist's level of competence.[3]

Despite the ever-increasing complexity of medicine resulting in improved quality of patient care and in complex diagnostic and treatment procedures heretofore not even thought possible, the price tag for increased standards of care and service has become of increasing concern to its constant consumer, the American citizen. The result has been the development of a variety of ways to provide protection against the increasing costs of ordinary and catastrophic illness, thus health in-

[2]Diamond, G.: Long-Range Alternative to Socialized Medicine is Academic Medicine. *J. A. M. A. 190*: 92, 1964.

[4]First World Conference on Medical Education, 1953.

[3]Ellis, J. R.: The Profession and The People. *J. Med. Educ.* 39: 7, 1964.

surance programs with escalating premiums for benefits applicable against the costs of hospitalization, laboratory tests, treatment, and physicians' or surgeons' fees. But past reluctance in some quarters of medicine to regard third party private enterprise systems as useful may have served to create the kind of widespread concern leading to agitation for federal legislation to interpose itself into the medical cost-patient relationship. Obviously neither new proposals nor end results can be clearly defined, but this can be freely predicted: what we do not solve, or are not willing to solve ourselves, is likely to be solved by the very public we serve, and by the very citizenry licensing us to practice our profession, paying a substantial part of the cost of our education, and providing a lion's share of hospital facilities in which our art and science are purveyed.

Relative to concepts to deliver specialized diagnostic and therapeutic care in medicine, the President's Commission on Heart Disease, Cancer, and Stroke, a committee of distinguished and experienced physicians, has proposed the establishment of regional treatment centers that would be concerned with today's chief causes of death and crippling disability.[6] Early reactions to the commission's recommendations have ranged from unqualified commendation and support to gross antagonism and even threats here and there among sicians, to strike, an unfortuna esponse by professional persons v se aim is to provide mankind professional service.

More recently rep entatives of the Association of Am can Medical Colleges in their rep *Planning for Medical Progress Th igh Education* propose a new e for American medicine.[1] Alt ough the Coggeshall report mbers more than 100 pages, se al excerpts highlight its theme:

> . . . A great need of future is for the rational developm of improved organization and metho r health care and the delivery of healt re.
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> The field of medica ucation needs to turn its attention he matter of improved delivery of h h service in three ways. First, thos the field of medical education them s need to devote greater attention studying how health care can best be vided. Second, they need to teach med students and young physicians to pr le health care in the ways that are m effective medically and efficient econo lly. Third, the medical school of the fu can contribute significantly to the healt ield by providing the 'model' or 'dem ration' of how health care can best be ivered.
>
> Schools of medicine uld be taking the lead in studying the ys medical care is delivered to patient Their concern should be not only wi acute care but also with preventive care nd rehabilitative care. Their concern sho d be with comprehensive family care as well as with specialty care. The university-sponsored medical school is in an unequalled position to draw on the resources of many disciplines — medical practice, economics, business administration, sociology, psychology, education, engineering and others — to study the way in which comprehensive health care is provided.
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> The concept of medicine as a single discipline concerned with only the restoration of individual health from the diseased state should be replaced by the concept of 'health professions' working in concert to maintain and increase the health of society as well as the individual. The physician, with his colleagues in public health, nursing, pharmacy, dentistry, and related professions, can no longer represent the spectrum of service for promotion of health. They must collaborate with social scientists, economists, community planners, anthropologists, social psychologists, engineers, and a host of other disciplines to provide for society the entire range of available preventive and therapeutic measures.[1]

Since the Association of American Medical Colleges consists mainly of the deans of the medical schools, it remains to be seen whether innovative proposals for a new spokesman for medicine would be widely accepted. This aspect is discussed by John Lear in his usual tart way in a recent issue of *Saturday Review*.[5]

Thus the cauldron bubbles. Although the cauldron need not be surrounded by Macbeth's witches chanting "double, double, toil and trouble," one hopes, indeed prays, that we can provide the scientific and humane services modern medicine depends on in a progressively more educated age, not only to our patients of increasing enlightenment but also to our patients in continuing poverty and medical indigency. One hopes we can approach the changes predicted for medicine, medical education, and our profession with intelligent factual analysis, always remembering that medicine's traditional claim is to render benevolent service in the context of up-to-date medical science and technology. To regard ourselves as servants not as masters should create no difficulty in adapting ourselves to the demands placed upon us. But to fail to adapt may result in the kind of hostile environment of society that can alter substantially our long-held prerogatives and privileges extended to us by society in the first place.

[1]Coggeshall, L. T.: *Planning for Medical Progress Through Education*. Association of American Medical Colleges, Evanston, Ill., 1965.

[5]Lear, J.: Who Shall Govern Medicine? *Saturday Rev. 48*: 39, 1965.

[6]Report to the President: *A National Program To Conquer Heart Disease, Cancer and Stroke*, The President's Commission on Heart Disease, Cancer and Stroke. Washington, D.C.: U. S. Government Printing Office, 1964.