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ANNUAL DISCOURSE

AT THE BEDSIDE

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MINDFUL of the honor bestowed upon me in delivering the Annual Discourse for 1967, I shall attempt to justify the breach of silence. With this remark my thoughts return to my professor of botany in college, an especially devout Quaker from Haverford College. It is recognized that the Society of Friends contains some of the finest people in the world who teach by admonition. One of my professor's favorite admonition was: "Don't speak unless you can improve on the silence."

Any physician worthy of emulation rarely achieves this enviable station without integrating effectively the science and learning of a philosopher with the virtue and benevolence of an iconic Samaritan. Such men by the conduct of their personal lives, professional performance and assumption of civic responsibilities have given dignity and preferred status to the varied components of the medical community. By their maximum exploitation of wisdom and skill, they have cured the sick suffering from a remedial disease, reassured those deranged from a malady of the mind or eased the burden of those with a physical affliction currently uncorrectable. It is usually taken for granted that the candidate for the doctorate of medicine is a clean-shaven fellow with a necktie and a stethoscope, – one who is primarily concerned with the advancement of medical science, whether in the laboratory or at the bedside, – one who is desirous of enlarging the storehouse of scientific facts or clinical observations for his ready retrieval, or one who is qualified to prepare a communication for publication so that others may share his experiences.

In our mission of prevention of disease and restoration of health, we are accountable for errors of ignorance as we are for errors of judgment. We are only absolved in committing crimes of omission or commission when knowledge is not yet available. The physician's sensitive soul shares in the distress brought about by the unachievable as he shares in the joys of restitution made possible only through advances in scientific research in the field, in the clinic or in the laboratory.

Irrespective of whether the physician is endowed with a brilliant intellect or possesses an unimaginative capacity for reasoning, the interplay of pertinent facts about the patient and his illness, the knowledge acquired and clinical experience in reaching a diagnosis and recommending management, the mission of the physician in the office or at the bedside is the same – the dispelling of fear, creation of confidence and restoration of structural, physiologic or chemical imbalance whenever possible.

We have heard many accusations against and much haranguing of the physician in recent years, sometimes valid; in the great majority of instances, however, only partially documented or grossly false. Whatever charge may be leveled against the physician, his character remains as inviolate as the godlike practitioner of the good old days. In many areas we have failed to keep pace, not because of any change in character but because of the complexity of providing medical service to the most where it is most needed.

The conduct of our exemplary physician is nowhere better displayed than at the bedside, with associates, or students or house staff in close proximity. A compassionate conduct toward those who are younger and less experienced is one of the identification marks of a respected physician. Many of us will recall the conclusions drawn by a more experienced physician, sometimes quite different from ours, yet, passed on with benevolence and understanding to those eager to hear, and so phrased as to give no hint of our ineptness.

Even though health is becoming more and more a community affair, the physician does not abrogate any responsibility for the personal phases of the health care of the patient – whether preventive, diagnostic, therapeutic, convalescent or restorative.

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Nor should the social changes, which are slowly integrating our contemporary affairs or those changes being planned for the future, or not yet thought of, jeopardize the intimate liaison between the practitioner of the healing arts and the patient. One of the exceptions to this pious expression is the management of selected aspects of psychiatric problems, in which group therapy or the psychiatrist-visiting nurse-psychiatric clinic triangle may be the only practical solution to the handling of the psychiatric problems of many – a compromise imposed by the adverse ratio of the number of the patients needing psychiatric counsel to the number of professional persons available to provide it.

The graduate of medical school in recent years has many advantages over those of us who have been out of school for a longer time. And although we have enjoyed a longer experience in practice, our juniors possess one overwhelming advantage in having pursued their medical training in an environment of a changing order, of which the introduction of the computer is an example. Accepting change while preserving culture is a way of life today that influences many of our nonprofessional as well as our professional activities but has not altered the goal nor reduced the need for maximum efforts in the handling of the sick.

Although automation is already exerting its force into the delivery of medical care and inevitably will affect in varying degrees all or most features of prevention, diagnosis and treatment of disease, automation and its handmaiden, the computer, will not displace physicians in their professional functions. Rather, the new devices should enable the physician to practice more effective medicine and surgery without sacrifice of informal, personal relationship. In the hospital and to a lesser extent in the office, one of the basic elements in the effective application of computer technics will be the rapid retrieval of pertinent clinical information from the patient's records, thereby allowing more time for examination and diagnosis. The appointment time should be shared minimally with records and bookkeeping and other essential but nonprofessional activities. In moving toward greater and greater automation, ultimate responsibility must not be relegated to the monolith, the group or the clinic or the hospital, but must be carefully preserved by the individual physician.

As one looks back over the centuries of medical history, long periods of scientific sterility have been interspersed, infrequently, with bursts of scientific progress. During the fallow periods it was the mode to rely largely upon the past and to accept as adequate what was passed down by scroll and script, without daring to question or to pose an unfounded statement to nature for confirmation or denial. Quite the contrary is the current fashion, with a high premium placed on curiosity and exploration. However, as we accept with equanimity the accelerating discovery of new facts in the medical sciences and the proclivities of a changing social environment, we must preserve the intimacy and privacy of the physician and his patient and not allow the patient to be separated from the doctor as he was centuries ago. Then the physician would diagnose and treat from a sample of urine brought to the physician, the patient meanwhile not privy to the act.

Contrary to the thoughts of some, I like to think of the practice of medicine in the Greek temples, the famous Asclepieia, as one of the first examples of the bedside practice of medicine. The temples such as those at Cos and Epidaurus, built by the first-known organized guild of those who professed and followed the healing art, the Asclepiads, were located in charming environs with mineral springs disgorging their sparkling water to the temple visitors. Patients were first examined by the physician-priest and, intermingled with appropriate prayers and sacrifice, they were bathed, massaged, hypnotized or otherwise induced into sleep. The dreams were then interpreted and treatment recommended. The grateful patient made a votive offering, a tablet to be deposited in the temple, which bore a brief history of the case and the means of cure. Although the entire procedure was heavy on mysticism and light on science, it was a beginning; the direct approach was apparent and commendable. The deficiencies could be attributed to utter lack of any body of facts resembling what we accept today as commonplace, scientific medicine.

The temple-treated practice of the Asclepiads then merged into the classical period of Greece from which, during the age of Pericles, just before the Christian era, scientific European medicine issued. The great physician from the Isle of Cos denied the gods any part in the pathogenesis of disease and in their place postulated a disturbance of the humors of the body. Hippocrates introduced clinical medicine – that is, bedside medicine – into Western culture. He used his senses as instruments of diagnosis, classified conditions according to their peculiarities and recommended specific agents and measures in treatment. Members of the profession from that time forward were worthy of a plinth and respect that has continued throughout the centuries without contest. The Coan physician gave the profession a broad prospectus, for he wrote on a variety of subjects that we would now class as subspecialties of surgery or medicine, such as orthopedics, gynecology, neurosurgery and neurology.

In the examination of the patient, it is hazardous to take much for granted. The physician must record the fateful events from the patient and look, listen and feel for aberrations. In this aspect of practice we have lost little to the machines or to the laboratories, whose mechanical and chemical aids should reassure us regarding a tentative diagnosis, but not supersede or supplement medical skill in confirming the suspicion. There is still much to be learned in the individual examination from the tone of the voice, the spirit of the response, the look of the eye,

the texture of the skin, the swing of the gait, the sentient reaction of the pulse, the palpation of the abdomen, the application of the stethoscope and the sensation of the reflexes to the percussion hammer.

There should be nothing between the patient and the physician except an ophthalmoscope, a tuning fork, or a stethoscope. This belief was stated so well by Dickinson W. Richards, Jr., that it merits repeating. Dr. Richards, one of the select group of Nobel Laureates among American physicians, in his presidential address at the seventy-fifth annual session of the Association of American Physicians, noted that[1]:

> In order for the stethoscope to function, two things have to happen. *There has to be, by God, a sick man at one end of it and a doctor at the other!* The doctor has to be within thirty inches of his patient. It won't work by long distance telephone, or by word of mouth through half a dozen intermediaries, or by radio, or by television, or in a dry clinic, or even in a committee.

This is bedside medicine as I too understand it. In recent weeks, I have plumbed the depths and scanned the shallows to retrieve incidents from personal experiences or passages from the contemporary literature that confirm the recognition of the bedside approach as the surest and most reliable procedure for first finding out what ails the patient, in order that therapy might begin at the earliest possible moment.

We can look back a century earlier to the remarks by Oliver Wendell Holmes, professor of anatomy, whose contribution "On the Contagiousness of Puerperal Fever" before the Boston Society for Medical Improvement held that "The bedside is always the true center of medical teaching." Having expressed the sentiments of a contemporary clinician and presented the aphorism of a nineteenth-century teacher, I will proceed with other examples of intimate liaison of the physician at his labors, albeit allowing a liberal interpretation of bedside practice.

The physiologist in the laboratory in his acquisition of knowledge from the experimental animals is the counterpart of the physician seeking knowledge from the patient. It is pertinent in this context to take note of John C. Dalton, Jr., of the nineteenth century and Walter B. Cannon of this century — each associated with Boston medicine. Dalton graduated A.B. from Harvard in 1844 and in his second year at Harvard Medical School served as house pupil at the Massachusetts General Hospital. Here he witnessed the administration of ether by Morton. Hinckley's retrospective painting of the historic event, the property of the Boston Medical Library and temporarily on exhibition in the amphitheater at the Massachusetts General Hospital, shows the red-headed medical student among the distinguished gathering of senior physicians and surgeons that included H. J. Bigelow and J. C. Warren. Dalton studied with Claude Bernard in Paris and, upon returning to America in 1851, was offered the chair of physiology at the University of Buffalo School of Medicine; thus, he became one of the first professors to occupy such a chair in this country.

In America, physiology had previously been taught as a joint enterprise with anatomy, chemistry or pathology. After holding interim appointments, Dalton volunteered for the Union Army and attained the rank of brigadier general. Resuming his peacetime duties as professor of physiology at Columbia University's College of Physicians and Surgeons, he prepared a monograph on experimentation in animals as a means of acquiring knowledge in physiology, pathology and practical medicine. He led the crusade for vivisection, which even in his day was needed to counteract a strong and disturbing faction, in order that physiologic investigation and the employment of animals for instruction of students might proceed. Dalton[2] noted that:

> It is a universal conviction that animal life is properly to be sacrificed whenever it may be necessary for the welfare of mankind. Nothing is more essential to this welfare, than the preservation of health and the relief or cure of disease [in man].

Neurology and psychiatry were two of the first specialties that took firm root in Boston during the nineteenth century. In this latter context O. W. Holmes should be mentioned again, this time for his preparation of psychiatric novels. The impressive roster of internationally known physicians and bedside practitioners, who helped to make Boston the center of clinical neurology and psychiatry, might include Brown-Séquard, also an endocrinologist, who spent a short time in Boston as professor of neurology. Later, in 1872, J. J. Putnam was appointed lecturer on the application of electricity in nervous diseases in the department of clinical medicine, while in 1893, the chair of diseases of the nervous system was established and Putnam was appointed to the post. Others in turn include E. W. Taylor, Morton Prince, E. E. Southard, James Ayer and Stanley Cobb. Even a cursory résumé of Boston neurology would do a great injustice to this society if I failed to mention Henry Viets, an example of the prophet in his home town. Henry Viets, student of Sir Charles Sherrington, is recognized as a physician, a scholar and a person with many talents. As a young instructor many years ago he delighted in taking groups of second-year medical students to the small hospital on Long Island in Boston Harbor, in order to demonstrate the altered reflexes, impairment in gait, flaws in speech, decrement in muscle co-ordination and other neurologic deficiencies in those chronically afflicted. His bedside demonstrations of neurologic imperfections were overflowing with histrionics, thus all the better for instruction of students; meanwhile, he maintained a sincere and overt warmth for the poor miserable souls. They were not confined by chains in the institution, but geographic isolation and functional segregation was their fate.

As the center for neurology in America for so many years, it is not surprising to find that neurosurgery in Boston followed in the wake, with Harvey Cushing as the leader. Cushing[3] symbolized to

me the personality and the epitome of a bedside surgeon, interpreting signs and symptoms on the basis of his excellent training in anatomy, physiology and neurology. During his travel months in Europe after his formal training, and encouraged by Osler and Welch, Cushing conducted physiologic investigations on intracranial pressure with Krönecker in Berne and studied the response of the motor cortex in apes with Sherrington when the latter was still in Liverpool. Later, in Cushing's great days in Boston, when he entered the lecture amphitheater at the Brigham with two nurses pushing the bed of the patient to be shown while Adolph Watzka strutted beside as the emperor of the operating room, it was Cushing's custom to bring along a rare book from his own collection – a Vesalius, a Paré or a Larrey – relevant to the case. The class was soon aware of an unusual event in the routine life of a medical student. Cushing felt the pulse with the assurance of a Sam Levine and proceeded to discuss symptoms in a dialogue with the patient, employing that rare talent of holding the rapt attention of the audience without interruption. It was an informal communion, completely devoid of oratory or tension, as effortless as a child with a toy balloon. Few notes were used by Cushing to refresh his memory, and no notes should have been taken by the students. The impression of the case and the impressions of the master pedagogue were infinitely more important than the scribbling on the note cards.

He displayed the priceless gift of making a difficult and complicated neurologic subject not only understandable but even interesting. It is within the memory of several of us to recall the demonstration of two or three cases of basophilism at one of the Tuesday evening sessions at the Brigham. This was shortly before the eponymic identification, "Cushing's disease," was applied by Fuller Albright. Although Cushing was not the first to describe the polyglandular syndrome, his review of the natural history, physical alterations, laboratory studies, operative findings and microscopical observations of a probably new entity is of sufficient importance to justify the eponym with which the medical community today is more apt to associate him than with his investigations in the neurosurgical clinic. Even the younger neurosurgeons have almost forsaken him and subtly wish to rename the Harvey Cushing Society, the "American Association of Neurological Surgeons." In the zeal to modernize the nomenclature of medical societies, I hope no one attempts to rename the Harvey Society of Manhattan.

Cushing's gently handling of tissue, absolute hemostasis and meticulous closure of wounds, following the tradition of his chief, Halsted, at Hopkins, were as respectful of the patient under anesthesia, usually measured in hours rather than minutes, as during an examination while the patient was awake. In the immediate postoperative period, it was Cushing's custom to visit the patient one or more times. He shared responsibility with his associates, house staff and nurses, but never did he sign away to any group full responsibility. With highly efficient monitoring devices in the recovery room today, this is scarcely needed, but his pattern of performance was noteworthy – truly a surgeon at the bedside.

I like to believe that Cushing's impelling desire to practice bedside surgery was so ingrained that he refused the offer by the President and Fellows of Harvard College and the Trustees of the Peter Bent Brigham Hospital to abandon the "Harvard system" of practice and teaching of medicine and of surgery and to become an academic full-time teacher. And I recall with regret his decision when he departed from Boston to take along his great collection of books for the Library of Medical History at Yale University, rather than leave them in this community where he had spent so many years. If they had remained, the collection would have formed an important division of the Countway Library.

The mastery of the technic of physical examination is admittedly one of the vital phases of bedside aptitude. Boston has been clearly identified with the standard text on the subject, *Physical Diagnosis*, prepared initially by Richard C. Cabot and now the editorial property of F. Dennette Adams.[4] The text is in its fourteenth edition over a period of sixty-seven years, a phenomenal record.

The physician's task in many ways is somewhat simpler than other professional pursuits – to mention only a few, the botanist, the biologist or the bacteriologist. The natural scientist has a tremendous number of living things to be examined, whereas the physician has only one specimen, unless, of course, one assumes that each patient is a new specimen to be examined. Some natural scientists are physicians as well or profess great concern for the practice of medicine. Hans Zinsser was a rare individual, who was as interested in man as in animals. Zinsser lived in a world that to him was filled with lice, rats, sewage, bedbugs, fleas and ticks, but he could also inspect a skin rash intelligently and examine a sick throat with gentle manipulation. He acquired these bedside maneuvers while an intern and for a short time while a practicing physician in New York City before he turned to microbiology.

Endowed with a brilliant mind and a facile tongue, Zinsser was greatly respected in the lecture hall and was internationally recognized for his accomplishments in the laboratory. He was always seeking the value of basic research in the prevention or treatment of disease and carried out his work with an enviable passion for intellectual exchange with his academic equals in the nonmedical world as well as with his medical associates. Typical of those few who willingly gave of their time and energies not immediately related to the classroom and the tools of the trade, Zinsser served for a number of years as a trustee of the Massachusetts General Hospital.

Zinsser studied typhus in Serbia with the International Red Cross during an epidemic; there he investigated the spread of the contagion apart from its host, explored the manner of multiplication of the rickettsia and its performance under artificial conditions. He then carried the agent back to experimental animals, where he followed its damaging or lethal characteristics in order to define the defenses of the animal cells and biologic fluids, only to be challenged to pursue it again in epidemic dissemination. He examined its relation to food, water, animal carriers and insect vectors, its geographic, climatic and seasonal distribution, its adherence to the laws of epidemic waves, and means of protection or cure by chemical agents.[5] Zinsser's relation to microbiologic agents and their hosts was as intimate as any physician-patient liaison.

One of his notable contributions to a literary periodical was entitled "The Perils of Magnanimity."[6] This appeared in the *Atlantic Monthly* and discussed the hazards of foundation funds. This subject is as pertinent today as in his time, when foundation and federal grants appear to be without limit. In this era of federal and foundation largess, I hope the support of the bedside teacher will not continue to be overlooked. The tendency to regard the laboratory as the only locus for contributions to better medicine has led to the assumption that anyone can teach medical students and needs little or no financial sustenance. By this reasoning, the great benefactions should be assigned to the laboratory worker, who, irrespective of his aptness or ineptness with the sick, attracts funds to the disadvantage of the clinical teacher. If the supply of competent clinical teachers begins to dwindle, the bedrock of medical education will become a quarry of shale. Although intellectual talent seems to be our critical commodity in many lines of endeavor, the heavy siphoning off of physicians from clinical pedagogy into the more lucrative world of research will merely aggravate the critical shortage of doctors. The importance of the steadiness of the job of teaching reminds me of a Jewish story:

Once in the medieval city of Chelm a man was appointed to sit at the city gate and watch for the Messiah. He complained to the elders that his pay was low. "You are right," they said to him. "The pay is low. But consider: the work is steady."

It will surprise no one to be reassured that a pathologist of the old school is one who studies disease firsthand. I am told that today the pathologists who establish their reputation with the electron microscope outnumber the table-side pathologist. Tracy Mallory, rightful heir to traditional pathology in Boston, will be remembered as a shrewd bedside clinician when the natural history of the affliction was concluded and the only remaining intellectual inquiry concerned the findings in the morgue.

Theobald Smith, first incumbent of the chair of comparative pathology and director of the Antitoxin and Vaccine Laboratory of the Commonwealth of Massachusetts, is another type of pathologist associated with Massachusetts. Among Smith's many scientific and academic accomplishments, I like to associate him particularly with two items. He planned for the manufacture and widespread distribution throughout Massachusetts of biologically controlled smallpox vaccine, the first state laboratory in the United States to provide safe vaccine – a policy already in effect in several European countries. Theobald Smith made regular clinical rounds on the sick cattle in the corral and on the range, whether at manger-side or sty-side, or as field physician, in his work on zoonosis, particularly on Texas cattle fever,[7] as well as on the fatal epizootics of hogs, bovine tuberculosis and hog cholera.

Walter B. Cannon, M.D., Boston physiologist, and champion for the humane treatment of experimental animals, demonstrated his imaginative capacity and skill as a laboratory clinician in his employment of a radiopaque substance in the roentgenographic visualization of the motility of the stomach. In 1897, not long after Roentgen noted the remarkable properties of the rays from the Crookes tube, Cannon communicated to the American Physiological Society his findings on gastrointestinal visualization.

The goose served as the first experimental subject and in time was replaced by the cat. The procedure followed a simple design. The movements of the bismuth meal in the stomach permitted study of the contractions of the gastric wall and the progress of gastric contents in the casually restrained but intact animal. The segmental migration of the bismuth meal was followed through the small bowel into the colon. The application of Cannon's observations to clinical medicine was one of the most important advances in applied physiology of his generation. The studies, immediately fruitful, led to a serendipitous by-product and the popularization of the term.[8] The quantitation of the physiologic effects of emotion, which was to be his focal point of research for many years, was directly applicable to bedside medicine. During the first World War Cannon served with the British Army and later with the American Expeditionary Forces, pursuing experimental and clinical work on traumatic shock. Although Cannon was most at home in the laboratory, his concern for the sick and the wounded recurred regularly in his communications to the literature. He discussed such subjects as "The Use of Clinical Records in the Teaching of Medicine," "The Responsibility of the General Practitioner for Freedom of Medical Research" and "Reasons for Optimism in the Care of the Sick."

In contrast are the character and the characteristics of Lawrence J. Henderson, also doctor of medicine, endowed with remarkable perception and profound wisdom. As a biochemist, general physiologist, philosopher, and sociologist, Henderson displayed an amazing understanding of bedside medicine, but he never conducted an animal experiment in the laboratory nor felt the pulse of an ailing patient.

He was deeply concerned with certain aspects of physiologic chemistry while in Harvard College and proceeded to Harvard Medical School for further work in this subject since the College offered no formal courses in this or related matters. Immediately after graduation, Henderson studied the actions and reactions of acids and bases with Hofmeister in Strassburg and thereby clarified the dependence of anions and cations in interpreting neutrality in body fluids. The Henderson–Hasselbalch equation is an extrapolation of this application of physicochemical phenomena to living matter. This was further extended in his study of interactions, when he used nomography as the visual exposition of the interaction of acidic and basic substances in his monograph, *Blood, a Study in General Physiology*, presented at Yale University as one of the series of Silliman lectures, one of the great monographs in physiology of this century. Even more remarkable to me was his continued search for other illustrations of interchange between two or more components of living substances. This led him into rather sophisticated sociology, the philosophical sociology of Pareto, whose four-volume treatise, *The Mind and Society*, became the basis of a cult along the Eastern Seaboard in the 1930's.[9] Henderson, a philosopher-physician, explained many of the interrelations of individuals and, in addition, discussed the patient and physician as a social system. Even though he had never cared for a single sick person, Henderson talked and wrote wisely of the infirm and the doctor as a sociologic system of mutual dependence.[10]

Any accolade to Boston medicine would be incomplete without a reference to the *New England Journal of Medicine* which celebrated its hundred and fiftieth anniversary five years ago. For nearly twenty years, the editorial direction has been the responsibility of Joe Garland, my ideal of a bedside pediatrician. Joe was the keeper of our children's health and the assuager of their mother's qualms when we lived in these parts. Joe will put away the blue pencil and will leave his desk in the near future, with the firm assurance that the reputation of the *Journal*, under his guidance, has remained inviolate and will so continue.

Although neither of us would be willing to accept the charge, since we believe that it does not come to everyone to be paid to perform a job that is so much to one's liking, editorial responsibility is not always viewed by editor and reader through similar glasses. At least one reader of the *Journal of the American Medical Association*, upon submission of a manuscript, admitted defeat before he began the battle of acceptance. On the page after his references he inscribed this motto: "Those who can, write. Those who cannot, edit. Those who cannot edit, set editorial policy." I am not setting editorial policy in these remarks – merely paying tribute to the physician of yesterday, today and tomorrow who believes that the practice of medicine at the bedside is the only activity that is worthy of the title "The Practice of Medicine."

As I approach my concluding remarks, some will wonder why I have not mentioned Francis W. Peabody, one of the great clinical teachers and a true follower of Sydenham. In fact, some may have wondered why I have discussed the contributions of those who spent little or no time at all in the orthodox practice of medicine. The procedure was followed intentionally to emphasize the importance of bedside medicine by pointing out an ability to disseminate and infiltrate beyond the clinic and the hospital into related disciplines and expressed in Peabody's most famous epigram: "The art in the care of the patient is in caring for the patient."[11]

Returning to my Quaker professor, I am reminded of another of the admonitions of his faith: "The silent people are not the only ones who say nothing."

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