

# The New England Journal of Medicine

Copyright, 1951, by the Massachusetts Medical Society

Volume 244

MAY 31, 1951

Number 22

## ANNUAL ORATION

### HOW SPECIALIZED IS A SPECIALTY?\*

DONALD MUNRO, M.D.†

BOSTON

MR. PRESIDENT, fellow-members of the Massachusetts Medical Society, ladies and gentlemen: Permit me, first of all, to thank you for the great honor you have done me by enrolling me among the pre-eminent members of the profession who have previously borne the title of orator. Indeed, I feel myself to be more than usually honored because, as it happens, my father, Dr. John C. Munro, received this same distinction forty-one years ago. It is not often that the son is given the opportunity to follow so exactly in the footsteps of a distinguished father.

According to Burrage's history of the Massachusetts Medical Society, the first oration was delivered in the year 1804 by Dr. Isaac Rand of Boston. He spoke on "Phthisis Pulmonalis, and the Use of the Warm Bath." During the following 147 years and 141 orations, the titles of only 3 have suggested that the author had any concern about specialization in medicine. The first was by Dr. Timothy Childs of Pittsfield and had the fighting title of "Rational Medicine — its Relations to Specialists, the Partisans of Exclusive Systems, and to Empirics." Forty-seven years later, in 1906, Dr. John L. Hildreth of Cambridge addressed the society on "The General Practitioner and the Specialist" and finally, thirty-four years after that, our beloved teacher, mentor and dean of neurosurgery, William Jason Mixter, spoke on "New England Neurosurgery and the Neurosurgeon." During this time orations were given by specialists, to be sure, — notably Dr. Harvey Cushing in my own field, — but none of their titles suggested any concern with the specialty *per se* or its impact on general medicine and surgery. Knowing nothing but my own branch of surgery, but having seen it, perhaps, more from the rough-and-tumble and general-practice aspect than most neurosurgeons of my time, I feel that a consideration of today's neurosurgery and its place in the practice of so-called general surgery in so far as the care of

patients is concerned may be of interest. It is for this reason that I have chosen as my subject the title "How Specialized is a Specialty?"

Before exploring the details of this problem it will be well to reach, if possible, some conclusion about what constitutes a specialist and a specialty. It is easier to define a specialty than to define a specialist. A specialty is that branch of surgery or medicine that is practised by a specialist. Now, what is a specialist? Many are prepared to accept the somewhat disrespectful definition that states that a specialist is one who knows more and more about less and less. The exponents of this point of view, however, forget that if this be true the analogue that holds that a general surgeon is one who knows less and less about more and more must also be true. No general surgeon could be expected to take such a definition lying down. Despite their obvious deficiencies, however, these definitions are perhaps as near the truth as any others that can be devised.

We cannot define specialists and specialties by citing examples. For instance, an otolaryngologist must have more than a speaking knowledge of the skull and the function of parts of the brain — both within the field of neurosurgery and outside his specialty; the orthopedic surgeon claims peripheral nerves as his own and certainly deals extensively with broken backs and their contained spinal cords; the general surgeon has recently been doing things to the vagus nerves (to his sorrow, I believe), and practically anybody who can wield a knife considers himself competent to operate on the autonomic nervous system. Even the psychiatrist has entered the field of surgery by way of that common household implement, the ice-pick. Such intrusions of a specialist into fields other than his own, whether they be those of other specialties or in the general area, are common and well recognized. Neurologic surgery is no different from the others. For example, today's neurosurgeon must be able to recognize and deal with a tension pneumothorax, urinary obstruction, paralytic ileus and the contents of the triangles in the neck. Furthermore, all

\*Presented at the annual meeting of the Massachusetts Medical Society, Boston, May 22, 1951.

†Assistant professor of neurosurgery, Harvard Medical School; associate professor of neurosurgery, Boston University School of Medicine; surgeon-in-chief, Department of Neurosurgery, Boston City Hospital.

physicians, no matter what else they may be proficient in, must be familiar with such subjects as modern fluid metabolism, chemotherapy, the use of antibiotics and blood transfusion, the treatment of shock and similar basic knowledge, which if pursued to its point of greatest proficiency will make a specialist out of every general man. Sir Robert Jones, who I suppose was one of the first really great specialists, says in the preface to "The Orthopedic Surgery of Injuries":

The contributions of this volume will help to prove how necessary it is that a thorough knowledge of general surgery should be possessed by any surgeon who practices a special branch. Nothing is more fatal to progress than when, from defect of general surgical training, a specialist is limited to one view of a subject.

This was in 1921. That statement is as true today as it was thirty years ago. It needs modification, however, to the extent that as the specialist becomes more specialized so does his need for a generalized working knowledge increase well beyond the fundamental preparatory education he has received along such lines.

Can we define specialism by a consideration of its antithesis? The practice of general surgery prior to 1910 included more than a working knowledge of the practice of most specialties. My father could not by any stretch of the imagination be classed as other than a general surgeon. His pet love was gastric surgery, but I am told by those who worked with him that he was a master anatomist, as indeed he should have been, considering the years he prosected and taught under Dr. Thomas Dwight. Perhaps it was for this reason that his writing included neurosurgical papers on pachymeningitis hemorrhagica, trephining for epilepsy and laminectomy for cord injury and others on infections including actinomycosis and typhoid perforation, on all varieties of abdominal surgery, on genitourinary and chest surgery, on fractures, on intussusception and a method for closing the patent ductus arteriosus in the newborn, on aneurysmorrhaphy for abdominal aneurysm and others. This wide diversity of interest and accomplishment differed in no way from the activities of other surgeons of his generation and is instanced to demonstrate what constituted the field of a true general surgeon. Something approaching this kind of general surgery is still practiced outside the large municipal and teaching centers. The general surgeons who do such practice, however, have come to depend more and more on these centers for help but nevertheless are obliged to practice many specialties in a general way. From this attempt at a definition we can but learn again that the measure of proficiency of any specialist is his basic knowledge of generalities.

So far as an individual specialty goes, it must be conceded that neurologic surgery is commonly considered a specialty among specialties. This con-

ception was justified up to the close of the first world war, but since that time this special field has continually widened its boundaries. Today neurosurgery is no longer what it used to be — the surgery of brain tumors, with a few forays into the treatment of pain. The case load has shifted, and now the bulk of neurologic surgery is concerned with the treatment of injuries to the nervous system. Tumor surgery has been relegated to a secondary role. For example, over the past 21 years there have been 10,243 admissions to the 30-bed neurosurgical service at the Boston City Hospital. This series may be considered typical of the neurosurgical case load in any given community, except that it has been concentrated in point of view of time and the injury group is weighted with patients whose condition either was serious or required operative therapy. Fifty-six per cent or over 5700 of these patients suffered from injuries to the nervous system. Large as this figure is, it errs on the side of conservatism, since it does not include the great number of relatively minor cranio-cerebral injuries that are treated at home by a general surgeon or else never reach the doctor. In comparison only 14 per cent or 1400-odd patients of the 10,000 had tumors. This figure is probably weighted in the opposite direction because of the close association of the neurosurgical with an active neurologic service. Other similar figures are obtainable from the 1949 report of the National Safety Council as quoted by Mock, but this personal experience is perhaps enough to emphasize my point.

The care of such injuries calls for a high degree of truly general surgical knowledge. Of course, the judgment that is necessary in the treatment of any surgical emergency is a fundamental requirement. In addition, such effective and modern treatment as is required in spinal-cord injuries, for example, necessitates a knowledge of orthopedics, of proper understanding and care of the genitourinary tract, of dietetics, of plastic surgery and of modern physiotherapy and its offspring, ambulation training. Who can deny that this specialty has broadened to a point where it is rapidly approaching the status of general surgery in so far as the needed working knowledge of the specialist is concerned?

This broadening of the scope and shift of the case load to the field of trauma, of what used to be the surgery of brain tumors, poses far-reaching questions that must be answered by the general surgeon and specialist alike if the patient is to get his due. By their very nature the majority of these injured members of the public first apply for their treatment to the general surgeon. He sees them in a local hospital, which has neither a neurosurgeon on its staff nor a neurosurgical service as part of the hospital set-up. He, a general surgeon, has to be equipped to deal with a specialized problem. That this is not a figment of the imagination is instanced

by another study by Mock.\* This has to do with the classification of doctors who cared for 7700 patients with craniocerebral injuries. In 65 per cent of the cases no neurosurgeon was available at all and of the remaining 35 per cent a part were seen only in consultation by a neurosurgeon. Thus two thirds of this group of cases, which was made up of head injuries and nothing else, were cared for by the general surgeon.

Is this practical need on the part of the general surgeon for specialized training met by our medical schools? Do they train their undergraduates to deal adequately with this load, which as graduates they may have to shoulder in spite of themselves? The answer is no. Through the kindness of the dean's office of the Harvard Medical School I have been enabled to review the announcements of courses sent out by 85 Class A medical schools in the United States and Canada. Forty, or virtually one half, make no announcement relative to the teaching of neurologic surgery. As far as the relation of these schools to their students goes, neurosurgery is not worth talking about. Thirty-two others have a subdepartment of neurosurgery, usually headed by a professor of clinical surgery with "Neuro" in parenthesis after his title or by a clinical, associate or assistant professor of neurologic surgery. This is strictly camouflage, however, because these appointments are under the control of the department of surgery. The appointees have no autonomy of their own and are granted as few teaching sessions as it is possible to give them. For example, in one large school all formal neurosurgical teaching occurs in the third year. Of the assigned five hours, one covers all trauma to the nervous system, two, intracranial surgery — presumably technic, — one, the peripheral nerves and one the autonomic nervous system. Aside from the obvious practical futility of these assignments, it is apparent that in this school, at least, injuries to the nervous system and their treatment are not regarded as being particularly important. This point of view would doubtless change should the professor's child be rendered unnecessarily decerebrate or paraplegic because of lack of knowledge on the part of the graduate who had to care for it after an automobile accident. Only 13 schools have separate departments of neurologic surgery. Thus only 15 per cent of the Class A medical schools in the United States and Canada make anything like an adequate attempt to provide an educational background for the care of injuries to the nervous system. The reasons for this are all too plain. In some, at least, of these schools the department of neurosurgery is extant because of a special endowment, and it is a question of either having a department and the use of the money that goes with it or not having the money. This is a compelling reason for the pursuit of higher

education. In all schools the problem of available time in relation to the number and relative importance of the subjects to be taught is critical and demands a practical solution. Something, indeed many things, have to go by the board, and what is more suitable for relegation to the postgraduate level than the surgery of brain tumors, even if that relegation does happen to take the surgery of brain injuries with it? I can offer you no solution for this difficulty other than the one that is fundamental to all medical teaching. This is the basic tenet that all good doctors want to know as much as they can about the conditions they are called on to treat and if they do not get appropriate basic knowledge in the medical schools they will acquire it in some other way. At present education in neurologic surgery, — and especially in the traumatic variety, — must be on a postgraduate level and must be initiated by the individual practicing physician.

Are the communities, as represented by their hospital trustees and other personnel, alive to the implications of this generalization of a specialty? Again, the answer is no. Consider for a moment the plight of the citizen who has been rendered paraplegic or quadriplegic as the result of a spinal-cord injury. He is taken to his community hospital and receives his first treatment from a general surgeon. With rare exceptions, and in spite of the tremendous advances that have been made in the past ten years in the rehabilitation of such patients, the general attitude of the doctor, the family and friends is that the sooner this patient dies the better. There is lacking, therefore, a proper driving enthusiasm for his treatment. Bed sores, kidney and bladder stones, spasms, deformities, perpetual bed care with long hospitalization, special nursing and attendants are all regarded as inevitable accompaniments of his injury. Soon, if they have existed at all, the financial resources run out. To the pressure that has been exerted by the staff on the doctor-in-charge to empty this bed for more fluid, more operable and better-paying patients is added even greater pressure by the superintendent to get rid of this unremunerative burden on his hospital resources. The victim, therefore, shortly finds himself transported to the county hospital or the medical poorhouse. Here he soon learns that he can look forward to nothing better than to put an end to his own misery and the financial and emotional drain on his family by an early death. Even if the supply of money is unlimited the outlook for rehabilitation that *should* be provided for him is discouraging to a degree. Outside of a few veterans' and armed-services hospitals one can count on the fingers of one hand the civilian or community institutions that are equipped to care properly for such a patient.

Aside from the obvious uncharitableness, is it good business for any community to neglect its citizens in this manner? The Liberty Mutual In-

\*Mock, H. E. *Skull Fractures and Brain Injuries*. 806 pp. Baltimore: Williams and Wilkins, 1950.

insurance Company, under the guidance of one of its vice-presidents, Mr. Stanwood L. Hanson, has demonstrated that in so far as industrial injuries are concerned, it is not. Their conclusions are equally applicable to the communities and the non-industrially injured. Because in this and 34 other state and Federal jurisdictions paraplegic and quadriplegic patients under the Workmen's Compensation law are considered to be permanently and totally disabled, medical services including hospitalization, nursing and attendant care as well as medical supervision and therapy must, if necessary, be rendered to such a patient throughout his life. In 21 of the same jurisdictions indemnity payments must also be made to such patients for the same period. To meet these possible expenses it has been the custom of the company to estimate and earmark for future costs the amount of money necessary to meet these legal requirements. These estimates have been based on life expectancy, surgical complications and so forth. Rehabilitation has not entered the picture. Such estimates have been known to exceed \$100,000 per patient for medical costs alone and to have reached the astonishing amount of \$400,000 in a patient with quadriplegia. In the face of such figures, and because they were getting relatively no return on their investment, the company undertook to provide modern rehabilitation for fourteen paraplegics and quadriplegics. Their intention and expectation was to reduce or eliminate the expense of hospital, attendant and medical care by teaching the patients to lead self-reliant, healthy lives at home. No saving was attempted in the indemnity payments. Any re-employment that might eventuate was regarded as an unexpected bonus. Without such a program of rehabilitation they estimated that their costs for these fourteen patients would be \$1,127,700. With the patients treated according to the best medical and hospital standards for the care of those paralyzed as the result of a spinal-cord injury, the rehabilitation as outlined above of these 14 paralytics actually cost \$115,830. The company's estimated savings, including medical and indemnity payments, was \$903,900. In addition, all patients, besides being free of the need for hospitalization, free of the need for attendant care, able to live at home and needing no more medical care than a periodic six months' examination, have returned to some form of sedentary work or are engaged in their own businesses. These range from repairing watches to driving a truck with special controls and conducting a trucking business. It is all too obvious that if one can save one million dollars by spending one hundred sixteen thousand the effort and investment is well worth making, even for a community, and even if it takes the form of providing more beds in institutions where the ability and the will to carry out rehabilitation are present.

The need for rehabilitation is not peculiar to spinal-cord injuries alone. It is necessary in some form in all patients who are suffering from an injury to their nervous system. It necessitates active interest and co-operation on the part of the staff and the trustees of the hospitals that have the responsibility for the care and welfare of these injured. Meeting this responsibility is not difficult, though the need to do so is by no means universally recognized,—particularly not by the larger municipal and some teaching hospitals. No such hospital can be considered complete, modern or equipped to render the service that is expected of it if it does not have a formal neurosurgical department with a specially trained visiting and house staff. The plea that there is not enough neurosurgery to justify the expense of such a specialized service in the communities that support such a hospital can no longer be sustained in the light of the generalization of this specialty. This is particularly true since these hospitals must act, in addition, as centers of information, teaching, consultation and reference for the smaller hospitals in the smaller communities. They must be prepared to accept in transfer all serious, undiagnosed, difficult, deteriorating and operable neurosurgical problems. It is on them that the burden of rehabilitation falls most heavily, and that they don't like it is no reason for not accepting it. They cannot avoid their responsibilities and keep faith with the public. Moreover, they set the standard and are responsible for the kind of neurosurgery that is done within the circle of their influence. Save for rare exceptions, proper neurosurgery can and should only be done with the equipment and by the staff of a neurosurgical unit in a large general hospital. That done in small community hospitals by specialists who travel over the country operating in one hospital after another is bad neurosurgery. It is bad for the local doctor because he has to accept more of the responsibility for preoperative diagnosis and preparation and for postoperative care than he is able or trained or should be expected to. It is bad for the peripatetic consultant because it is a deliberate performance that is contrary to all his training and is a sacrifice of his ideals and an affront to his knowledge of what is best for the patient. It is bad for the patient because it deprives him of his proper right to survival and complete recovery without affording him any opportunity to object to this deprivation. It is better for the patient to spend his time traveling to a place where he can be properly treated in the most skilled manner than to waste it staying in a place where the treatment is bound to be inadequate no matter how skillful the operative technic.

There is only one exception to this, and that is associated with the impossibility of moving a neurosurgical patient because of the breakdown of public and private transportation. If, in such circumstances, the patient's life can only be saved by

an emergency neurosurgical operation done in the local hospital, then some local surgeon trained in the fundamentals of traumatic neurosurgery must assume the responsibility and shoulder the burden of operating. He will be faced with only a few operative choices, however; a subtemporal decompression, usually with the removal of either an extradural or a subdural clot and the possible closure of the middle meningeal artery, possible débridement of a compound fracture or bullet wound of the skull and a diagnostic stab wound and therapeutic section of the tentorium and incisura tentorii are the cranial ones, whereas a decompressive laminectomy and possible débridement of a compound fracture, gunshot or stab wound of the spine are the spinal ones. The necessity for meeting such an emergency predicates an adequate minimum of equipment kept ready for use at all times in all small hospitals. This is the primary responsibility of the trustees. It also predicates the education of at least one and possibly two members of the surgical staff in basic neurosurgical nonoperative therapy and operative technic, particularly as they apply to trauma. This is the primary responsibility of the staff but is also inescapable on the part of the trustees. The specialized use of this knowledge in so far as actual operating goes will and should be very infrequent but — and this is a big “but” — these specially trained general surgeons should be the men who will direct the first treatment of all such injuries; who will have the responsibility for seeing and will see that the serious, the undiagnosed, the difficult, the deteriorating and the operable patients are transferred at once out of their hospitals to the large municipal centers that are properly equipped to care for them; and who will be responsible for the immediate care and eventual rehabilitation of those patients who can be treated locally. They are the surgeons who

keep down the mortality and morbidity of those injured patients.

I have still defined neither a specialty nor a specialist, but I hope I have indicated that at least one specialty — and one that by tradition has been strongly delimited — has a general surgical aspect. Because of this I urge and believe that the general surgeon who has to practice all kinds of surgical specialties under the hardships imposed on him through the necessary use of small community hospitals must equip himself with a fundamental knowledge of traumatic neurosurgical therapy. Only in this way will he be able to separate those patients that he can from those that he cannot treat. To help to meet this extra load the large centers on their part should have beds and personnel competent to receive his difficult cases, should provide him with opportunities for postgraduate studies along lines that will be practical and useful to him, should set proper standards for the practice of neurosurgery and guard him against the depredations of the peripatetic specialist and aid him to an increased efficiency and a truer appreciation of his own influence and importance in the community.

How specialized *is* a specialty? I don't know, but I strongly suspect that all *surgical specialties* are actually much more general than they are usually considered to be. I am sure that this is true of neurosurgery. Perhaps, therefore, we should revise our thoughts and our teaching, recognize that the pendulum has swung too far and make some effort to get back toward but not to the standards of forty years ago. Surely, with our technical know-how and what we have inherited of our fathers' brains and willingness to work, we can expect to lift both general and specialized surgery to even greater heights than they have already attained.