Since the 1930's, the residents and fellows of the Neurosurgical Service at the Massachusetts General Hospital have left their mark on neurosurgical practice. With work done here or at other universities in this country and abroad, they have been involved in such unique innovations as prefrontal lobotomy, diphenylhydantoin therapy for seizure, boron neutron-capture therapy for neoplasms, the first positron camera, hypothermia for the surgery of cerebrovascular lesions, studies of the cerebrospinal fluid circulation, the hippocampus and memory, use of urea for osmotic diuresis, polymer coating of intracranial aneurysms, the birth of microneurosurgery, the first extracranial-intracranial bypass, use of the proton beam for radiosurgery, recognition of normal-pressure hydrocephalus, embolization of arteriovenous malformations and balloon occlusion of intracranial vessels, the introduction of stereotactic anterior cingulotomy for the treatment of intractable psychiatric illness, stereotactic recording from the cerebellum of humans, selective thermal coagulation of the trigeminal ganglion for tic douloureux, radiotelemetry for measuring intracranial pressure, and the identification of pituitary tumors secreting only subunits of active hormones.

In 1941, the leadership of the Neurosurgical Service was passed to James C. White, who had studied surgery of the autonomic nervous system in Strasbourg with René Leriche. He continued his lifelong interest in sympathectomy and the management of pain and, together with William Sweet who followed him as Chief of the Service from 1961 to 1977, published the significant monograph *Pain and the Neurosurgeon* in 1969.

In the past two decades, the Neurosurgical Service has been fortunate in receiving several major gifts for the establishment of research. The Pappas Foundation funded a Professorship in Neuroscience at the Harvard Medical School and a Neuroscience Center at the Hospital, and the Mixter family donated the Mixter Laboratories which continue as active sites for research. With these gifts, a major basic and applied science effort took root. Nine neuroscience professors with appointments in the Department of Neurology now work directly for the Neurosurgical Service supervising the work of 22 research, predoctoral, and postdoctoral fellows. Over the years, these researchers have made a number of significant contributions to science, including identification of the "no-reflow" phenomenon, the role of neurotransmitters in vascular disease, the structure of brain arteries, neural protection from ischemia, and the gene locations for neurofibromatosis II, von Hippel-Lindau disease, and human glial tumors.

Today, the Neurosurgical Service has eight full-time surgeons and 12 residents. It commands 7% of the hospital beds and performs 1600 operations each year. The 6-year training program encompasses clinical residency, research training, and enhanced fellowship. In 1977, a subspecialty-oriented practice arrangement was initiated that now involves a number of interdepartmental alliances, the most important of which are the Brain Aneurysm Center, the Skull Base Center, the Neuroendocrine Center, the Spine Center, the Cyclotron Radiosurgical Center, the Epilepsy Service, and the Regional Tumor Collaborative. In addition, the Service directs a Comprehensive Stroke Center and a National Research Training Award, both supported by the National Institutes of Health.

The Neurosurgical Service has grown steadily as a unit committed to the academic precepts first set forth by Drs. Mixter, White, and Sweet. Their influence and the success of their vision can be seen in the large...
number of graduates who are now in academic practices or are department heads. Currently, for example, more than 50% of the resident graduates obtain academic appointments and 45 are or were chairpersons at other institutions — 23 in this country and 22 abroad.

The goals and accomplishments of the Neurosurgical Service are not unlike those of other major university departments. However, the great challenge as the next century approaches is to maintain the pace of change that has propelled neurosurgery in the past two decades.

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Address reprint requests to: Nicholas T. Zervas, M.D., Department of Neurosurgery, Massachusetts General Hospital, Boston, Massachusetts 02114.