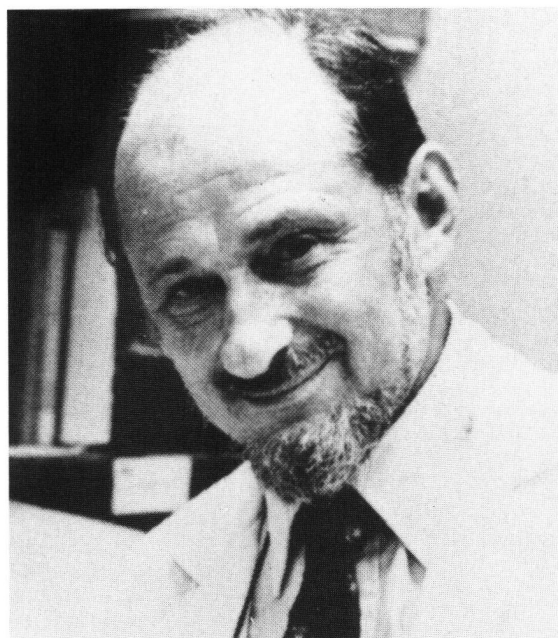


In Memoriam:



Norman Geschwind M.D.

(1926 - 1984)

Norman Geschwind died suddenly on November 4th, 1984 at the age of 58. He was born in New York City on January 8, 1926. Both his parents were born in an area that was, before World War I, a portion of the Austro-Hungarian empire but is now part of southern Poland, and both came to the United States as children. He attended elementary and high school in Brooklyn, New York, graduating in 1942 and entered Harvard College in Cambridge, Massachusetts with the intention of becoming a mathematician. He was, however, drafted in 1944 and served in combat in Germany. Subsequently, he was sent to Japan where he arrived within a very short time after the signing of the peace. Returning to complete his studies at Harvard College, he switched his area of interest to psychology in which he received his undergraduate degree of Bachelor of Arts. He applied for admission to the Harvard Medical School with the intention of entering the field of psychiatry.

After entering Medicine, he discovered great pleasure and excitement in the courses in the basic sciences of medicine, particularly physiology and neuroanatomy. He was intrigued by the professor of neuroanatomy, Dr. Marcus Singer, who introduced him to the problems of epilepsy and aphasia and he soon shifted his interests from psychiatry to neurology. This interest was furthered by the lectures of Dr. Derek Denny-Brown who had been brought to Harvard from England to continue the great tradition of neurological research and teaching at the Boston City Hospital. Norman decided to enter neurology in order to study the higher cortical functions of the brain.

Following his internship in medicine at the Beth Israel in Boston, he went to the National Hospital at Queen Square in London. He was surprised to discover that despite the tradition of Hughlings Jackson there were very few English neurologists who were interested in the higher functions. He was side-tracked and his interest shifted to the study of diseases of

muscle and the neuromuscular junction. He worked with Simpson with whom he described the use of procaine amide in myotonia (Geschwind & Simpson, 1955). After three years in England, he returned to the United States in 1955 and served a year as Chief Resident under Dr. Denny-Brown at the Boston City Hospital. In order to continue his work on muscle, he went to the Biology Department at the Massachusetts Institute of Technology where he worked under Dr. Francis O. Schmitt for two years on various aspects of the chemistry of the nervous system.

In the summer of 1958, he began to work at the Neurology Department of the Boston Veterans Administration Hospital. The chief of that service was Dr. Fred Quadfasel, a neurologist trained in Germany under Bonhoeffer and Goldstein, who were in turn the pupils of Wernicke. Quadfasel had established a unit for the inpatient study of aphasic patients. This immediately revived Dr. Geschwind's interest and he began to work actively in this area. At that time, the situation in the United States was much as it was in England. There were very few neurologists with an active interest in behaviour, and most of them, except for Nielsen at the University of Southern California, had adopted the standard anti-localizationist attitudes that were so typical then in the English speaking countries, although not so much in France or Germany. At the neurological meetings at the time there were almost no papers on behaviour and those that did exist were usually scheduled for the last morning of the meeting to a small audience.

His innovative, unorthodox research had not met ready acceptance. He and Edith Kaplan described the first modern patient with the syndrome of corpus callosum disconnection. The *New England Journal of Medicine* rejected the paper but subsequently it was published in *Neurology* (Geschwind and Kaplan, 1962). His paper on "Isolation of the Speech Area" was rejected outright by the first journal to which it was sent,

but eventually it was published in *Neuropsychologia* (Geschwind et al., 1968). Some time later, he and Levitsky carried out the first convincing study on the anatomical asymmetries of the human brain. The abstract they submitted for one of the major neurological meetings was not accepted for public presentation, although *Science* saw fit to publish it speedily (Geschwind and Levitsky, 1968). He often had difficulties in getting grant support for research activities in the area of brain-behaviour relationships. It seemed to be an area which was rejected as being too mechanical by the purely psychologically minded and as lacking in rigour by those with strong biases towards physics or chemistry.

In 1965 he published a series of very influential papers in *Brain* on the "Disconnexion syndromes in animals and man", a critical analysis of the literature and a theoretical contribution of lasting value (Geschwind, 1965). He not only studied language-related behaviours, but also contributed to the area of the relationship between language and the motor system which led to the elaboration of the callosal theory of the apraxias. These studies of the relationship of cerebral dominance and motor learning led to expanded studies of the anatomical basis of cerebral dominance and subsequently to the discovery of the abnormalities of brain development in dyslexia with Galaburda and Kemper. He was never an experimentalist and let others do the group studies. A careful experimental psycholinguist, Harold Goodglass, was associated with him and the two of them complemented each other very well indeed. The unit was in its most dynamic phase in 1966-67 when I trained there, with Norman Geschwind and Harold Goodglass sharing the clinical leadership and contributing their respective points of view on case presentations, each heading a training program which saw graduates like Frank Benson, Francois Boller, Marty Albert and Martha Denkla, just to mention those who were there at the time. Subsequently many others, such as Ken Heilman, Alan Rubens and Tony Damasio, became independent researchers in the field and established their own research and training program in behavioural neurology. The American Academy of Neurology has formed a subsection on behavioural neurology and there are now two platform sessions each year at the annual meeting devoted to this subject.

In 1967 he was appointed James-Jackson-Putnam Professor, taking over one of the two endowed chairs in Neurology at Harvard from Denny-Brown who retired. However, the Boston City Unit had its problems with facilities as well as staffing. He first transferred his unit to the University Hospital of Boston University and then to the Beth Israel Department of Neurology where he continued to foster the development of

cytoarchitectonics with Galaburda and Mesulam, the study of cerebral mechanisms of emotions, the neuropsychology of temporal lobe epilepsy and the biology of left handedness. He continued to maintain collaboration with the aphasia research center at the VA under the direction of Harold Goodglass. His latest work, just before his death, was directed towards the relationship of left handedness and auto-immune disease. Another recent interest has been the behavioural changes associated with temporal lobe epilepsy and the limbic system. In recent talks he expressed the view that even the largest group of patients with disturbance of behaviour which are presently considered "functional" psychosis and occupy a vast number of mental hospital beds have, in fact, behavioural disturbances which can be related to brain dysfunction.

Norman Geschwind not only had a vast knowledge of the relevant literature in behavioural neurology, but was fully conversant with psychobiology and experimental psychology. He had many friends in the neurosciences, although he was not a "neuropolitician". He was a renowned after dinner speaker and his outspoken, humourous delivery will be remembered by all who heard him. He was also a warm human being, fond of telling off-colour jokes with great flourish. His personal attention to residents was exemplified when he offered me a room at his house until I could find a place to stay in Boston (I do not think he knew I had three kids at that time). He was an excellent teacher and motivator of people and I enjoyed my fellowship with him.

His creative activity was cut down in its peak by a heart attack and cardiac arrest which came without warning at his home in Boston. His death is a major loss to Neurology, especially Behavioural Neurology, but his work and intellect remains an inspiration to many of us.

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