H. Narabayashi, Tokyo
B.S. Nashold, Jr., Durham, N.C.
G. Ojemann, Seattle, Wash.
M. Rayport, Toledo, Ohio
J. Siegfried, Zurich
A. Struppler, Munich
R.R. Tasker, Toronto
J.M. Van Buren, Miami, Fla.
N. Zervas, Boston, Mass.

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In Memoriam

Ernest A. Spiegel 1895-1985

Ernest A. Spiegel, MD, the founder of this journal, (which was en-titled Confinia Neurologica from 1938 through 1975), died in Philadelphia on January 26, 1985 at the age of 89. Dr. Spiegel was a well known and respected scientist whose work has influenced most of the authors who have contributed to Applied Neurophysiology. He and his co-worker, Dr. Henry Wycis, originated the field of human stereotactic surgery in 1947 and were the acknowledged leaders in that field throughout their working lives.
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The following is excerpted the eulogy I had the honor to give at Dr. Spiegel's funeral in Philadelphia:

We are gathered here today to pay tribute to a unique man - a man whose intellect makes the rest of us seem small by comparison and whose creative wisdom provided us with an entirely new field of scientific endeavor.

Dr. Spiegel was born in 1895 in Vienna, where his father was a physician. He received his MD degree from the University of Vienna in 1918 where he became one of the youngest members of the faculty to receive the *venia legendi* at the record age of 29. He came to Philadelphia in 1930 when he became Professor of Experimental and Applied Neurology, and the Department of Experimental Neurology was created for him at Temple Medical School. He remained active and productive in that position until his retirement in 1967 after 50 years of clinical and laboratory research. Dr. Spiegel remained intellectually active, even after his retirement, as witnessed by the 1982 publication of his book, 'Guided Brain Operations', which summarized the concepts of stereotactic surgery that resulted from a lifetime of work.

My first contact with Dr. Spiegel was 29 years ago [1]. As a freshman medical student, I was looking for an opportunity for research in neurophysiology. I was directed to his laboratory by one of his old students who was then Professor of Physiology. Dr. Spiegel and Dr. Henry Wycis, also his student, were watching motion pictures of patients before and after stereotactic surgery. Their enthusiasm was so infectious that I remained in the laboratory off and on for the next 13 years.

It was with Dr. Wycis that Dr. Spiegel originated human stereotactic surgery in 1947. Their contributions assure their places in medical history. The first human stereotactic apparatus is still housed at the Smithsonian Institute. Dr. Spiegel's scientific discoveries are varied and have resulted in over 400 publications, starting in 1918 and ending with the publication of a book, 'Guided Brain Operations', which he published at the age of 87.

Much of his significant work was carried out jointly with his devoted wife, Mona Spiegel-Adolph, herself an outstanding scientist and Professor of Colloid Chemistry. During her illness of several years, Dr. Spiegel and her sister cared for her at home with loving and intense dedication. It was only after her death last year that he lapsed into the depression that has just ended.
I was thinking that it would be fitting if some of the colleagues who admired and revered Dr. Spiegel could be here to express their admiration and respect, but many of them are already gone and others could not travel such distances on short notice. But it occurred to me that their feelings for Dr. Spiegel are here. In 1975, many of them contributed to a volume honoring Dr. Spiegel on his 80th birthday [Confinia Neurol., vol. 37, 1975]. Much of what they wrote then is appropriate now and I will share what some of them had to say.

Prof. Hugo Krayenbühl[2] of Zürich: 'I am a great admirer of this neurologist, who deserves to be regarded as one of the revolutionary founders of modern neurology, i.e., functional neurosurgery ... Spiegel and his neurosurgical associate Wycis were the first to have had the courage and foresight to use a stereotaxic instrument for operations within the brain. Their publication 'Stereotaxic apparatus for operation on the human brain' (1947) will remain a classic. It inspired the construction of further models of stereotaxic apparatus, such as those of Leksell (1949), Talaraich et al. (1949), Riechert and Wolf (1950) to mention only a few... The efforts made in treating patients with extrapyramidal and pyramidal disorders at the Neurosurgical Clinic of Zürich may be regarded as a tribute to the inspiring work of Professor Spiegel... In this sense, in the year 1965 the Medical Faculty of the University of Zürich bestowed upon Dr. Spiegel the honorary degree Doctor honoris causa "In primis de ratione sectionum stereotacticarum in homins cerebro instituendo optime merito".'

Prof. Hirotaro Narabayashi [3] of Tokyo: 'Dr. Spiegel, one of the most ingenious figures in the field of neurological sciences ... We, working in the human field of stereoencephalotomy all over the world would join together with cordial and personal feelings of congratulations. Dr. Spiegel, who was already an eminentphysiologist in his youth in Austria, made his second scientific life in the USA remarkable by the initiation of human stereoencephalotomy in 1947 ... Stereoencephalotomy in each part of the world had its own course of development, influenced by the specific tastes of the people interested. How-ever still today, it must be remembered that the most extensive and integrated works were made by Spiegel and Wycis, covering whole subjects of extrapyramidal symptoms, pain and emotional disorders and epilepsy. The main course of the development of stereoencephalotomy in the last 20 years has been set by these two pioneers.'

The late Prof. Sixto Œbrador[5] of Madrid: 'This vast expansion of
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stereotaxic neurosurgery throughout the world over the last 25 years has resulted in a consolidation of the principals set up by Ernest Spiegel and Henry Wycis. In the course of these years, I had the privilege of seeing them both at many congresses, symposia, and meetings where I learned a great deal and gained their friendship. I recall them as a scientific pair resembling in some respects the literary and universally known figures of Don Quixote and Sancho created by Miguel de Cervantes as symbols of the human race. One of them aloof with great wisdom and theoretical knowledge enabling him to visualize new techniques for the study and treatment of disorders of the central nervous system; the other more realistic and more practical in putting their projects into effect and full of humanity and friendship. Every one engaged in the field of so-called functional neurosurgery owes a particular debt to both in their unique combination.'

Prof. B. Ramamurthy [6] of Madras: 'Life gives only to a few the privilege and opportunity of seeing the widespread benefit of their discoveries during their own lifetimes. More often the fruits of their labor become obvious years later or the discovery itself gets eclipsed or modified by further knowledge and discoveries. In his lifetime, Dr. Spiegel has been able to watch with satisfaction the worldwide expansion and application of the technique of stereotaxic surgery which he, with Dr. Wycis, were able to institute ... Since that time stereotaxic surgery has benefitted large numbers of patients who had no hope of relief and has also added greatly to our knowledge of the functioning of the human brain... If adding to the sum total of human happiness is the goal of human life, Dr. Spiegel has achieved it, and we, the followers in his footpath, add our tributes to the many that are being offered to him.'

The late Prof. T. Riechert [7] of Freiburg: 'I wish to express the admiration and gratitude which I have for a great scientist and physician who stood by me with advice and help as I entered a completely new field. Moreover, he and I are bound by personal ties; it was my honor to present him in New York with the Otfried Foerster Medal, the highest distinction which the German Neurosurgical Society has to bestow ... In Lisbon at the First European Congress for Psychosurgery, where the method and first results of stereotactic operations were made known, I was so fascinated by this method that it represented for me not only a new technique but also in the last resort a new area in neurosurgery.'

Prof. Georges Schaltenbrand [8]: 'I decided to visit Ernest Spiegel,
who at that time was working in Marburg's Neurological Institute in Vienna, and I was impressed by his myograph which he described in a monograph (in 1927) ... We have learned how valuable it is that the neurologist participate in this work which in its surgical part might be considered as minor surgery. It is a pity when the unique opportunity given by stereotaxy to learn facts which can never be gained by animal experiments is wasted. In doing this (collaborating) we follow the ampleof Spiegeland Wycis.'

Prof. Blaine S. Nashold, Jr. [4] of Durham: 'When Dr. Spiegel opened the first International Meeting of Stereoecephalotomy at Temple University in 1961 and noted that over 5,000 operations had been performed since his and Dr. Wycis'first case of Huntington's cho-rea, I was just beginning to follow their path. Looking now at the published volume of this historic meeting, I am impressed that stereoecephalotomy had already been in clinical use for 14 years and that it was recognized world-wide as having great potential for the treatment and diagnosis of neurological disorders... Recently I asked Dr. Spiegel what first stimulated his interest in developing a human stereoecephalotomy technique. He said that in the 1940s one of the most depressing problems as he saw it was the crudeness of frontal lobotomy. He said that the operation totally lacked precision of anatomical and physiological localization. He thought that a small stereotactic lesion in the medial dorsothalamic nucleus that would interrupt the corticothalamic connections to the frontal lobe could accomplish the same thing with less serious side-effects on the patient's intellect... As he spoke about his collaboration with Dr. Wycis, I felt as though we were witnessing his own personal moments of history. His ease and affection toward the past seemed clearly retained in the present without the effects of time or emotion lessened. His work as on that special day for me reflects a man of purpose and devotion raised to the highest degree by the quality of his understanding of human suffering and the needs of eternal care. Thus, it is not only an honor but a personal joy to have written here of the deep gratitude physicians, neuroscientists and humanity share toward Dr. Spiegel's pioneering efforts in stereoecephalotomy.'

And so, through the words of these colleagues, we recognize that Dr. Spiegel lives on as his ideas live on in the hearts and minds of his colleagues and scientists throughout the world. He lives on whenever the knowledge he initiated is passed on from teacher to student; he lives
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on whenever the techniques he originated are used to benefit mankind; he lives on whenever his memory inspires achievement; he lives on whenever a patient is relieved of suffering because Dr. Spiegel has lived.

Philip L. Gildenberg

References

On December 14, 1984, Hartwig Kuhlenbeck died in Philadelphia at the age of 87. With him one of the last classic morphologists of the Haeckel-Gegenbaur-Fürbringer School departed who, based on his own works on all the different fields and on his knowledge of the nearly infinite literature, was able to master and describe single-handedly the entire field of Comparative Neuroanatomy of Vertebrates in spite of the immense expansion of knowledge in this area. The second characteristic of this scientific personality was his sceptical and aporetic basic attitude: with him there was always doubt at the beginning, and he never evaded a difficult question. Since his very first steps in the field of science he already endeavored to penetrate and to clarify if necessary the foundations, the terminology, and the logical
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system of the special fields he was working in. Such striving rapidly led him
to general basic questions of science itself and thus to philosophy. This
behavior was enabled by his outstanding rational and linguistic talent and
by the early guidance of his father, Ludwig Kuhlenbeck, a scholar of law
and philosopher, translator, editor, and commentator on the works of
Giordano Bruno. L. Kuhlenbeck was called to hold a chairmanship for
German Law as a lawyer in Lausanne. It was already during his years spent
at school that Hartwig Kuhlenbeck selected as a goal for life his very own
field of research - Neuroanatomy in general and the question of the
relationship between brain and consciousness in particular, and he pursued
this goal, favored by the circumstances of the course of his life, with
admirable consistency and perseverance. Born in Jena on May 2, 1897, he
attended the Elementary School in Lausanne, the Junior High School
(Gymnasium) in Jena, and the Senior High School (the Dom-Gymnasium)
in Naumburg. He partici-pated in World War I as a volunteer from 1914 to
1918. In a decoding department of an intelligence troup he was introduced
to the theory of information which was minimally developed at that time.
After that he began studying both philosophy and medicine at the same
time; the first, with the Nobel prize winner R. Eucken as his teacher, he
complet-ed in 1920 with a doctoral thesis about Schopenhauer, the latter
with the state examination (Staatsexamen) in Jena in 1921. In 1922 he ob-
taine'oís medical doctor's degree in the morphology of the Urodela
prosencephalon and received his approbation as a medical doctor. He was
active in medicine for a relatively short time, as a surgeon, as a ship's
doctor, and in addition in his own practical surgery in Mexico City. It was
there that he married Ozelia Proteau. At the same time he answered a call
as a guest professor of neuroanatomy at the Imperial University of
Tokyo. He obtained this position because of this previ-ous works in
neuroanatomy in Jena. In Tokyo he remained for 3 years. Subsequently, he
spent some time as an assistant scientist at the Ana-tomical Institute of the
University of Breslau under H. v. Eggeling. He qualified as a University
lecturer in 1928 with his thesis 'The basic ele-ments of the Prosencephalon
in the light of the "Bauplanlehre"'. In 1933, after the Nazis came to
tower, he left Breslau for political reasons, travelling around in the USA
and Japan for some time. After that he worked at the Mt. Sinai Hospital
for a short time, together with the neuropathologist Globus, until, in 1935,
he was appointed professor of anatomy and chairman of the Anatomical
Institute of the Woman's
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Medical College in Philadelphia, Pa., USA. At this college, which was later renamed The Medical College of Pennsylvania, he actively represented the field of anatomy in his teachings and in research for the 36 years from 1935 to 1971. Appointed Emeritus Professor he continued to be a member of the Medical Faculty of the Medical College of Pennsylvania until his death, for a total of 49 years. During World War II this membership was interrupted for 30 months from 1944 to 1946, during which he served in the US Forces as a Captain and Major MC, first as an officer for hygienics in the field of geomedicine, then as neuropathologist. Even after rejoining the Medical College of Pennsylvania he remained a consultant for neuropathology to the Army Institute of Pathology and was repeatedly active there as a scientist for short times until 1955. In 1963, H. Kuhlenbeck resigned as the director of the Anatomical Institute, was appointed 'Research Professor', and dedicated himself mainly to research. From that time it was not until after the death of his wife in 1982 that his scientific work ceased, because of serious deterioration of his health.

The aforementioned linguistic talent and a comprehensive knowledge of present-day and historical languages, including the Sino-Japanese language and Sanskrit, enabled him to establish connections with people in many countries and facilitated access to the essential works of the present and the past in the fields of his interest. These did not only include neurobiology, the exact sciences, and mathematics, but also philosophy, preferring George Berkeley, David Hume, Immanuel Kant, Arthur Schopenhauer, Hans Vaihinger, and the Wisdom of the Orient. The worldwide open-mindedness demonstrated by these interests also showed in his activities as a universal world traveler, as a private pilot, mountain climber, and skier.

As a scientist Kuhlenbeck is characterized by the strictest self-criticism, thoroughness, and reliability of his findings and references. Consequently, he only very rarely had to revise his views and interpretations. Already his first survey in the 'Lectures about the Central Nervous System of Vertebrates' (1927) is still valid today in an astonishing number of individual and general applications. The lasting achievements of Kuhlenbeck concern (1) general anatomy, (2) neuroanatomy, and (3) philosophy:

1. With K. Voit he recognized already in 1932 the significance of deoxyribonucleic acid as the effective element of the chromosomes, especially of the nucleus chromatin.
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In respect to the individual problems of neuroanatomy his writings about the ontogenetic development of the bird's brain, pretectal areas of the vertebrates, the problems of the fissuration of the human occipital lobe as well as his publication about the human supraoptic crest (crista supraoptica) are worth mentioning. As far as neurophysiological problems are concerned, already in 1927 he initiated a theory of memory by assuming constant synaptic changes in complex neuronal networks; this theory was not mentioned by later authors. In the same early years he drew attention to the occurrence and significance of direct neuronal feedback. Finally, his monographic studies on rare material (Gymnophions, Chimaera, Callorhynchus) are to be mentioned. The crowning seven-volume neuroanatomical final work 'The Central Nervous System of Vertebrates' (1967-1978) is a documentation of his singularity and caused the President of the German Anatomical Society to state in 1977: 'The morphologists of the world are indebted to you.' In this monumental work notwithstanding an immense wealth of facts he presents summarily his contributions to basic problems of neuroanatomy and even general morphology in total. In one sentence, the contributions may be worded as follows: Based on the 'Bauplanlehre' of Jacobshagen which had not come into recognition until that time and which had been materially lost in the turmoil during World War II, Kuhlenbeck worked out the 'topologization of morphology' as the foundation of neuroanatomical comparisons, first with the help of Kohler's 'Gestalttheorie', later on the basis of mathematical topology using the concepts of variance and transformation. Thus, since 1929 he created a system of nomenclature and terms which placed the morphological comparison procedure in neuroanatomy on firm grounds.

H. Kuhlenbeck's contributions to philosophy are rooted in his neuroanatomical works and in the problem of the relationship of brain and consciousness, with which he concerned himself longer and more intensely than anyone ever had before. The final result he presented in his conclusion three-volume work 'The Human Brain and its Universe' (1982) in its preface he tries to present a quintessence. Two monographs on the subject 'Brain and Consciousness' (1957) and 'Mind and Matter' (1961) as well as some essays about individual questions preceded this work a long time before. His philosophical teachings can be summarized as 'Neurological Epistemology' on the basis of 'Transcendental Neutralism'. The underlying basic thought can be expressed as
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follows: Neurologic Epistemology deals with the problems of knowledge on the basis of the assumption that consciousness (synonymous with mind) is a function of the brain. Since it is evident that consciousness does not pertain to - that is, has no logical existence in - the do-main of sciences dealing with observable behavior, but should nevertheless be included in the domain of neurobiology, a number of intricate questions arose, many of which involve aspects traditionally dealt with in philosophy. Kuhlenbeck's contributions analyze the problems resulting from the inclusion of mental phenomena into neurobiologic science from an entirely new and, as far as possible, unprejudiced viewpoint. Individual publications refer to the brain paradox which, in its significance, was clarified as a bridge between neurobiology and philosophy and Schopenhauer's principle of sufficient reason which was extended and brought to the light it deserves by Kuhlenbeck.

The fact that the established science has so far almost ignored the significant work of an unusual personality is explained, on the one hand, by the new totally unaccustomed aspects of mental fields which contradict some deep-rooted customs. On the other hand, it is explained by personal characteristics which are to be highly estimated ethically, but which obstruct general acknowledgement: an uncompromisingly critical openness even against highly respected authors of the scientific scene. Thus, the honors conferred on him are not very numerous: in 1947 Fellow of the College of Physicians in Philadelphia, in 1954 the first foreign honorary member of the Society of Japanese Anatomists, in 1963 foreign scientific member at the Max Planck Institute for Brain Research and the Max Planck Society, in 1965 honorary doctor of his own Medical College of Pennsylvania, and, finally, in 1974 honorary member of the American Society of Neuropathologists.

At the same time, during his entire life as a scientist, Kuhlenbeck was a highly respected teacher who not only conveyed knowledge, but also the basic ethics of being a doctor. Generations of students were shaped by him. Their attachment was expressed in many ways. He himself took pains never to miss a single one of the lectures he had announced and to be just and human in all examinations. Modifying a judgement by Nietzsche of Schopenhauer we may say of him: 'What he taught will last for ever, what he lived will remain. Behold him. He was never subject to anyone, always his own master.'

J. Gerlach, Würzburg
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