



LESZEK JANISZEWSKI

(1925-1996)

We mourn with deep sorrow the death of Professor Leszek Janiszewski, a great scientist and a great man, and a pioneer in electrophysiological investigations using intracellular microelectrode techniques in Poland. He was a man whose distinguished work, unique personality, and love for life and people will always be remembered. He was an ardent, devoted friend of his co-workers and students, and of all Mankind. His death is a great loss for Polish science and for all of his friends and pupils.

He spent almost half a century on research in neurophysiology and comparative physiology. He left behind him a rich legacy of scientific and intellectual achievement. In his research he was highly acknowledged both in Poland and abroad.

Professor Janiszewski was born in Bydgoszcz on June 4, 1925. During the Nazi occupation he was deported to Germany and later, in 1944, he joined the Signal Corps of the Polish Armed Forces in the West where he served until the end of 1946. He then went to Scotland where he continued his education. He returned to Poland in 1947, completed his secondary education in Bydgoszcz in 1948, and that year entered the Faculty of Mathematics and Natural Sciences at the Nicholas Copernicus University in Toruń as a student of biology. He graduated in 1952, receiving the M.A. degree in biology, and was employed as a research assistant at the Department of Neurophysiology and Comparative Physiology of the N. Copernicus University in Toruń headed by Professor Janina Hurynowicz. He was associated with this Department for over 40 years. In 1960 he obtained his doctorate (Ph.D. in physiology) and in 1965 the habilitation (Doctor of Science in physiology). Janiszewski's achievements in teaching and research were soon recognized. In 1972 he was appointed a full professor of physiology.

Besides purely scientific work, Professor Janiszewski was also involved in several other important activities. From 1970-1972 he was Vice-Director of the Institute of Biology and from 1972-1975 Dean of the Faculty of Biology and Earth Sciences. Since 1966 until almost the end of his life Professor Janiszewski served as Head of the Department of Animal Physiology at N. Copernicus University in Toruń, gathering generations of talented people around him and developing, with Professor Juliusz Narębski, the Toruń School of Animal Physiology. He inspired his pupils with enthusiasm for scientific work, and their achievements, even small, made him delighted. In this way, by combining friendliness and intellectual honesty, he was able to create in his laboratory an unique atmosphere conducive to creative scientific work. He officially retired on October 1, 1995, but he did not stop his didactic and publishing activity.

Professor Janiszewski's main research was in comparative neurophysiology, comparative muscle physiology and sensory physiology. His studies involved a variety of different electrophysiological techniques including chronaximetry, electroencephalography and intracellular microelectrodes.

As far as the intracellular microelectrode technique is concerned, Professor Janiszewski was the first in Poland to establish a laboratory utilizing microelectrode techniques. In this laboratory he educated many of Poland's finest scientists and several foreign scientists.

The scientific interests of Professor Janiszewski were, at the beginning of his research, focused on the physiology of the nervous system. He turned to one of the basic and fundamental problems in physiology - the excitability of the nervous system. The first line of his research was studies on the excitability of the vestibular system in rabbit, which he investigated in various conditions. Initially he directed his interest to changes in bioelectric activity of the brain (EEG) and in chronaxy of the vestibular system of the rabbit. Later on he studied the autonomic nervous system, focusing his attention mainly on the excitability of the vasomotor nerves. In his Ph.D. thesis, using the chronaximetric and plethysmographic methods for determination of the excitability of the peripheral vasomotor system, he analyzed the mechanisms connected with the origin and symptoms of the states of weariness and fatigue in white-collar workers.

Shortly after his doctorate, in 1961, Professor Janiszewski received a Rockefeller Foundation Fellowship. He went to the USA where he worked in the Laboratory of Neurophysiology in the Department of Neurology at Columbia University in New York, headed by Professor H. Grundfest. There he became acquainted with the most advanced methods and problems in neurophysiology. The result of this one-year stay in the USA was a study carried out in collaboration with E. Aljure, N.L. Morlock and K. Kusano on the pacemaker and oscillatory behaviour of K-conductance in electroplaques of electric eel and on the ionic nature of conductance increases induced in electroplaques of electric skates by depolarizing and hyperpolarizing currents. Janiszewski's research carried out with H. Grundfest and E. Aljure first demonstrated spike electrogenesis by chloride activation (a regenerative Cl spike) in electric skates' electroplaques. This important discovery was published in 1962 in the *Journal of General Physiology* and is quoted in many monographs on electrophysiology. Professor Janiszewski came back to the USA for 6 months in 1969, appointed as a visiting professor by the senate of Columbia University in New York.

Inspired by his stay in the USA which gave him splendid opportunities to master the most recent electrophysiological methods including intracellular electrophysiology, soon after returning to Poland he expanded on existing laboratory methods by introducing intracellular microelectrode techniques and initiated his microelectrophysiological studies in Toruń, working on invertebrates. This research originated in the USA where Professor Janiszewski studied, together with K. Kusano, the genesis of bioelectric phenomena in muscles of mealworm larva. The next step in his career was the dissertation

for the Doctor of Science degree - a comparative study of elementary bioelectric phenomena in some invertebrates. In the following years his collaborative research entirely focused on investigating bioelectric potentials in single nerve and muscle cells of invertebrates. He studied mechanisms involved in resting membrane potential electrogenesis (the nature of ionic currents and pumps underlying the resting potential maintenance). These studies allowed him to conclude that muscle cells of many invertebrates do not behave as predicted from the potassium electrode model, i.e., that at rest they are multi-ionic electrodes. Another sphere of his interest was the mechanisms of neuromuscular transmission (ionic requirements for transmission, and identification of transmitter substances at nerve-muscle synapses) and ionic mechanisms underlying the production of action potentials. Experiments carried out on *Helix pomatia* and *Planorbis corneus* allowed him to demonstrate that giant neurones of these two species of snails have different ionic requirements for their action potential genesis. Much of Professor Janiszewski's recent research was devoted to sensory physiology in insects; he was mostly interested in mechano- and chemoreception. After over thirty years of studies he summarized, in a sense, his ideas and knowledge concerning sensory mechanisms in his book "Sensory Physiology" honoured with a prize of the N. Copernicus University in Toruń. Many of his results were presented at international meetings. He also readily undertook the popularization of science.

A lasting trace of his indefatigable scientific activity remains in his 180 publications (experimental papers, reports, monographs, textbooks, discussions and book reviews), often quoted in foreign publications. The majority of publications were prepared on a team basis. They are all now assembled in the archives of the Department of Animal Physiology in the Institute of Biology and Environmental Protection of the University of Toruń. Professor Janiszewski was for many years a consultant and member of the Scientific Board of the Studio of Educational Films in Łódź, and the author of running commentary on five scientific films. These films, very reputable, were distinguished with awards at the Film Festival in Dresden, and are a valuable tool for teaching of electrophysiology.

Professor Janiszewski was not only an eminent scientist but also a devoted teacher. The lectures held by him deserve mentioning. They were clearly delivered, based on contemporary knowledge. He was a gifted lecturer. It was truly a pleasure to listen to his lectures and seminars. His lectures for biological students in comparative physiology were vivid, brilliant and showed not only his high competence, but also his great sense of humor. He was probably one of the few specialists in natural sciences who could quote Homer, Virgil or the greatest physiologists as readily as the newest results in physiology. He inspired his students and friends with his enthusiasm and style of delivery for his chosen subject. He was the author or co-author of four textbooks on physiology for students of medicine and biology. As co-author of "Animal Physiology" he was granted grade I award of the Ministry of National Education.

Professor Janiszewski was more a friend than a chief for his already independent co-workers, ready to discuss their fields of interests and pleased with the successes of his students and colleagues. He was an excellent mentor, and supervised far more than one hundred master's degree dissertations. Out of his scientific collaborators and assistants in Toruń five successfully presented their theses for the Ph.D. degree and one for the Doctor of Science degree in physiology. He was also reviewer of 32 theses for the Ph.D. degree, 18 for the D.Sc. degree and 26 applications for the nomination to the title of professor.

Professor Janiszewski also had wide international contacts. He played the main role in establishing permanent, lasting sometimes thirty or more years, very friendly and fruitful relationships between his laboratory and related laboratories in Poland and abroad. For years he had been cooperating with laboratories in the UK, USA, Germany, Ukraine, France and Japan. Young people from the Electrophysiology Group of the Department of Animal Physiology worked for the period of 1 month to 1 year at

many of those laboratories or paid shorter visits and presented their papers there. Also several foreign scientists worked at the Department of Animal Physiology, some of them for a year. Professor Janiszewski had been also collaborating for years with the Nencki Institute for Experimental Biology in Warsaw. He appreciated the need for scientific contacts and cooperation, both at personal and institutional levels.

Professor Janiszewski took an active part in many international scientific congresses and symposia all over the world. Most recently, in September 1992 he participated in the First International Congress of Polish Neuroscience Society. In September 1993 he was one of organizers of the XIXth Congress of the Polish Physiological Society in Toruń. In September 1994 he attended the 17th Annual Meeting of the European Neuroscience Association in Vienna, vigorous and full of energy as always. He had also intended to take part in the Second Congress of the Polish Neuroscience Society in 1995, however, could not come because of poor health. It is hard to accept that these were his last meetings with many of his friends:

Professor Janiszewski was a member of many learned societies, among them the Polish Neuroscience Society, the Polish Physiological Society (Vice-Chairman of Central Board from 1986 to 1990), the Polish Zoological Society (member of Central Board for many years), the N. Copernicus Polish Society of Naturalists and the Society for Experimental Biology (in the UK); he was for many years Chairman of the Toruń Section of the Polish Physiological Society and of the Section of Experimental Zoology of the Polish Zoological Society. Professor Janiszewski was also an active member of several Committees and Commissions of the Polish Academy of Sciences; he was Vice-Chairman of the Physiological Committee and Chairman of the Commission of Muscle Physiology of the Polish Academy of Sciences. He was also a member of Central Board of the Ministry of National Education and expert of that Ministry in physiology. Professor Janiszewski was an active member of the New York Academy of Sciences (USA). He was also on the editorial board of journals *Zoologica Poloniae* and *Phronesis* (Spain).

For his scientific and teaching achievements Professor Janiszewski received many Polish distinctions and awards, including the Cavalier's Cross of the Order of Renaissance of Poland and Medal of the Polish Commission of National Education. He was decorated with the British War Medal and Polish Army Medal (London). His honours also included honorary membership of the Polish Physiological Society. His doctoral thesis, promoted by Professor J. Hurynowicz, was awarded with a prize by the Polish Physiological Society. In appreciation of his accomplishments both in research and in teaching he twice received grade III State Awards of the Ministry of Education. He was also distinguished several times with awards for research excellence by the President of the N. Copernicus University in Toruń. Professor Janiszewski was an outstanding scientist and a person of merit in the organization of science and teaching at that University.

He was the most encouraging of senior scientists, both in retaining his enthusiasm for new knowledge and in helping the development of younger people's careers. He was a man of great knowledge and experience, always eager to discuss both scientific and non-scientific problems with younger colleagues and students. He was also always ready to give help in everyday problems to anyone in need. He had a rare ability to make friends everywhere, and his joy of life, his great heart, and his love for all human beings were outstanding.

Professor Janiszewski was a warm and generous man. He was unflinching in his kindness and immediate willingness to help others. This was especially evident in his dealing with young scientists and students. We shall greatly miss his cheerful companionship.

Professor Janiszewski died unexpectedly in Toruń on February 28, 1996, causing an irretrievable loss to Polish science. We shall miss him deeply.

Maria J. Katkowska, Toruń, Poland