

# HENRYK NIEWODNICZAŃSKI

1900—1968

Professor Henryk Niewodniczański, Director of the Institute of Nuclear Physics in Cracow and Director of the Institute of Physics of the Jagellonian University died in Cracow on 20 December 1968 at age of 68. His sudden death is a tremendous loss for Polish science and the Cracow centre of nuclear and atomic physics, to whose organization and development programme he devoted the last twenty-three years of his life, has suffered a particularly severe blow. The great majority of younger Polish physicists had the privilege of starting their scientific work as his students and collaborators and, though many of them are now dispersed among scientific centres in Poland and abroad, none of them will ever forget the great charm of his splendid personality, his wide knowledge and his rich sense of humour.

Before beginning the story of his life and work I should like to say something about my personal connections with him. Professor Niewodniczański was a close friend and university colleague of my father and even as a young boy I was impressed by his greatness. It was the frequent contacts with him which aroused my interest in physics and during the Second World War I started to attend his excellent lectures in the underground courses organized in Wilno in the terrible times of the German occupation. When the war ended Professor Niewodniczański invited me to join him in Cracow and from that time to the last moments of his life he guided me through my scientific and academic career. There is nobody to whom I owe so much as I owe to him and I make no apologies for including here this personal note.

Henryk Niewodniczański was born in Wilno on 10 December 1900. He graduated in 1924 at Stefan Batory University and two years later he received his doctor's degree from the same University. His scientific work began long before he concluded his studies of physics. In 1921 he joined the staff of the Physical Laboratory of Stefan Batory University as a scholar of the Department of Education of the Temporary Governing Committee of Central Lithuania. A few years later he was appointed assistant under Professor Waław Dziewulski. The main field of interest of the Physical Laboratory in Wilno was at that time optics of metals. Niewodniczański's first scientific works on the absorption and fluorescence of mercury vapour extended this field to molecular optics. In 1927 he was granted a fellowship enabling him to spend two years in Tübingen on research work in molecular optics at the famous laboratory of Walther Gerlach. By studying the influence of the magnetic field on the fluorescence of mercury vapour, he proved the atomic nature of the excitation of band fluorescence.

On his return to Wilno, Niewodniczański continued this line of research, which led him to the important discovery of magnetic dipole radiation. He proved the  $M1$  character of the forbidden line in lead  $\lambda$  4618 Å by observation of the polarization of its components in the transversal Zeeman effect. This discovery aroused much interest among theoretical physicists and started very fruitful collaboration with the young and talented theoretician Jan Błaton.

From 1934—1935, as a fellow of the Rockefeller Foundation, he worked in the Mond Laboratory and in the Cavendish Laboratory in Cambridge — the world famous centre

of nuclear physics headed by Lord Rutherford of Nelson. With great enthusiasm he joined this, to him, new field of research, performing with C. H. Westcott the first experiments with "cold" neutrons.

On his return to Poland he organized in Wilno one of the first Polish laboratories of nuclear physics. In 1937 he was appointed to the chair of Experimental Physics at the University of Poznań and two years later he moved back to Wilno to take charge of the Physical Laboratory of Stefan Batory University as successor to his former teacher, Professor Dziewulski. The outbreak of World War II deprived Professor Niewodniczański of his scientific workshop: Stefan Batory University was closed in December 1939. Five dark years of struggle for survival followed. But Professor Niewodniczański did not interrupt his teaching. He was engaged in the secret teaching of physics on the Wilno underground University, often using his own flat for the purpose, and did his best to keep track of the development of physics by reading the scarce scientific papers and organizing numerous scientific discussions.

When the war ended at last, he left his native town for which he kept a deep sentiment throughout the rest of his life. For a few months he lectured at Maria Curie-Skłodowska University in Lublin and then at the University of Wrocław. In May 1946 he was appointed to the chair of Experimental Physics at the Jagellonian University and settled in Cracow. It was here that he started the most fruitful period of his life. Here, at first together with Professor Konstanty Zakrzewski and then, after the latter's death in January 1948, alone, he threw all his energy into organizing from the foundations scientific research and didactic activity in the field of experimental physics. The Professor's interest in atomic optics and nuclear physics, his experience, and great talent for organization, led to a flourishing development of these branches of physics in Cracow. Full of inexhaustible enthusiasm and optimism, he created a group of young scientific workers who, undaunted by the difficult conditions, built with him the necessary equipment and, under his inspiration, began research works. During the years 1948—1950 the ion accelerator with a Van de Graaff generator was built, and in 1949 construction was begun of the small cyclotron, which was put into operation in 1956 and to this day is a valuable tool for scientific works on low energy nuclear physics. In putting in motion the scientific research of the Institute of Physics of the Jagellonian University, in the obtaining of equipment, and in the training of pupils and collaborators, a great role was played by Professor Niewodniczański's personal contacts with outstanding foreign physicists, renewed during his visits in the first years after the war to Great Britain, Sweden, and Switzerland.

Professor Niewodniczański's well-known talent for organization, his experience, and the concentration of the large group of scientific workers trained by him led in 1955 to the decision to site in Cracow the U-120 cyclotron ordered in the U.S.S.R. and to the creation of the present Institute of Nuclear Physics in Cracow (IFJ).

As Director of the Institute of Physics of the Jagellonian University and of the Institute of Nuclear Physics, Professor Niewodniczański was the initiator of most of the lines of research followed in these two institutes. It is a striking fact that, though between them they employ over a hundred and fifty scientific workers, the Professor knew exactly not only the course of each individual research but the smallest details of the apparatus used in the work.

After the putting into operation of the IFJ cyclotron Professor Niewodniczański took

part in the first works in the field of nuclear reactions. These were pioneering measurements of the polarization of neutrons produced in stripping reactions and of angular and energy distributions in these reactions. His later works in this field were part of a wide programme of the determination of the optical model parameters for elastic scattering of deuterons and alpha particles on various nuclei. In the field of nuclear spectroscopy he was the co-author of many papers on beta and gamma radiation of several radioactive neutron deficient nuclei from the rare earth region. In the field of atomic optics Professor Niewodniczański's works, carried out together with his pupils, concern above all the intensity ratios and hyperfine structure of spectral lines.

From the end of the Second World War Professor Niewodniczański went abroad scores of times in order to form scientific contacts and take part in discussions, as a delegate of the High Commissioner for the Uses of Atomic Energy, as a member of the Scientific Council of the Joint Institute for Nuclear Research in Dubna, and to participate in many conferences devoted to nuclear physics and atomic optics.

Professor Niewodniczański trained many physicists. Among his pupils four are now professors and twelve docents of physics. He was promoter of more than forty doctors. From 1951—1953 he was Pro-Rector of the Jagellonian University.

In 1932 Professor Niewodniczański was elected a member of the Faculty of Mathematics and Natural Science of the Association of Friends of Science in Wilno and in 1937 he became a member of the Association of Friends of Science in Poznań. In 1947 he was elected a corresponding member of the Polish Academy of Science and Letters in Cracow and in 1951 an active member of the Warsaw Scientific Society. As soon as the Polish Academy of Sciences (PAN) was founded in 1952 he was appointed a corresponding member of it. In 1960 he became a member of the Executive Committee of this institution and in 1961 an active member.

His contribution to the Branches of the Polish Physical Society in Wilno, Poznań and Cracow was very great. In Cracow he was several times Branch President and, among other activities, organized the XIII and XIX Symposia of Polish Physicists in 1949 and 1955 and many international specialist conferences of which should be mentioned above all the conference in 1961 devoted to the problems of cyclotrons and their operation. He was also a member of the Société Française de Physique, the Società Italiana di Fisica and the American Physical Society. In 1968 he was elected President of the Cracow Branch of the Polish Astronautical Society.

Apart from this, Professor Niewodniczański was a member of the State Council for the Uses of Atomic Energy, a member of the Physical Committee and the Astronomical Committee of PAN and vice-president of the Committee for the Peaceful Uses of the Atomic Energy of PAN. From 1957—1960 he was President of the Commission of the International Geophysical Year of the Executive Committee of PAN and on this account he visited the Polish Expedition to Spitzbergen in 1958.

From 1947 he was for some years scientific adviser of the Central Office of Weights and Measures and was several times a member of its Scientific Council. In 1965 he was elected a member of the International Committee of Weights and Measures.

For his scientific achievements Professor Niewodniczański was awarded in 1959 and 1964 a II Degree and in 1962 a I Degree Prize of the State Council for the Uses of Atomic

Energy. In 1967 he received the Prize of the Minister of Education. He held the Golden Cross of Merit, the Officer's Cross and Commander's Cross of the Order of the Restitution of Poland and the I Class Order of the Banner of Labour.

At the time of his death, Professor Niewodniczański was deeply involved in far-reaching plans for the development of the Cracow physics centre. These included the installation of a huge new cyclotron and a pulsed reactor in the Institute of Nuclear Physics and an electron accelerator and a Van de Graaff machine in the Institute of Physics of the Jagellonian University.

Friends, colleagues, and pupils will sorely miss Professor Niewodniczański, that dear, excitable giant, who enriched their lives with his inexhaustible energy and enthusiasm, his love for science, his sense of fun, and undaunted optimism. To his wife, his two sons, and his young daughter, who survive him, we extend our deepest sympathy in their loss.

*Andrzej Hrynkiewicz*

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