

OBITUARIES

Prof. Wolfgang E. Pauli, For.Mem.R.S.

UNEXPECTEDLY to all but those near him at the time, Wolfgang Pauli died on December 15, 1958, at the early age of fifty-eight.

Born in Vienna, Pauli graduated in Munich, and worked successively at Göttingen, Copenhagen and Hamburg. Nowadays, however, his name is mainly associated with Zurich, where he was professor of theoretical physics at the Federal School of Technology for the past thirty years, broken only by five years in Princeton during the Second World War.

Though Pauli died so young, it is no exaggeration to say that he was one of the leaders of theoretical physics throughout the past forty years. At the age of nineteen he was commissioned by his teacher, Arnold Sommerfeld, to write the article on relativity for the "Enzyklopädie der Mathematischen Wissenschaften". At that time, general relativity was novel and its literature scattered and understood by few. The young Pauli succeeded in presenting the entire subject in a work which was immediately recognized as masterly and which, in its scholarly precision, remains unsurpassed to this day.

Having demonstrated so early the depth and clarity of his insight into physical theory, Pauli did not take long to prove that as an originator of new ideas he was equal to the greatest. In 1924 he enunciated his 'exclusion principle' in terms of which so much of the then existing knowledge of atomic structure fell into order: we owe to Pauli the introduction of the two-valued variable required to characterize completely the state of an electron, and when, in 1925, Goudsmit and Uhlenbeck took the important step of interpreting their variable as an intrinsic angular momentum, it was Pauli again who showed how this concept could be consistently incorporated into the scheme of quantum mechanics and how the exclusion principle could then be formulated definitively as a symmetry requirement satisfied by the wave function of an atomic system. This also became the basis of the powerful concept of the Fermi statistics governing the behaviour of electrons. In 1945 Pauli was awarded the Nobel Prize for Physics, primarily for these achievements.

Though the nineteen-twenties undoubtedly represented a peak in Pauli's creative work, he in fact never ceased to produce work of comparable depth and to exert a profound influence on the development of physics. He continued both to bring forth new ideas and to clarify and consolidate the ideas of others. It was Pauli who, in an informal letter, first threw out the suggestion that an unknown, uncharged and massless particle was emitted in every radioactive β -disintegration. This entity, to which Fermi gave the name 'neutrino', to-day has an assured and important place in our picture of Nature.

We can only name a few of Pauli's great contributions to theoretical physics. With Jordan and with Heisenberg he laid the foundations of the quantum theory of fields, a subject still very much the concern of pioneering theorists, and when after 1945 great advances were made in this domain, mostly by physicists of the younger generation, Pauli, almost alone among the founders of quantum theory, participated directly in these developments. Previously, in 1940, he had firmly laid one corner-

stone of field theory, by giving a proof of the long-conjectured relation between the spin and the 'statistics' of any elementary particle. This result, so closely related to his great work of the 'twenties, gave Pauli himself particularly great satisfaction.

Pauli's writings are in daily use among research workers everywhere. Perhaps the work most greatly admired is his article on the principles of wave mechanics in the "Handbuch der Physik", Vol. 24, 1933. Younger theorists may perhaps not realize how much the orientation and emphasis of research to-day owe to the guidance given by Pauli in this and his many other writings.

Those whose good fortune it was to be close to Pauli at one period or another know how much more has been lost by Pauli's death than can be put into words. As a personality, no one more deserves to be described as unique. His rotund build and characteristic gait, his gestures and mannerisms, his sharp tongue and gleeful laugh will all be remembered vividly by his friends. Anecdotes around him abound, and the legend of the 'Pauli effect', spelling disaster to any apparatus he approached, is all but believed throughout the world.

When in personal contact with Pauli it was impossible to lose awareness of all his characteristics and of the sense of the extraordinary in his nature. As many of his students discovered, communication with him did not always come easily, least of all through formal lectures. But once one was drawn into discussion, the barrier was surmounted and the experience of sharing his thoughts became infinitely rewarding. Through his large correspondence he extended his influence far beyond his own Institute. With Pauli's death many a physicist has lost a guide and critic without equal.

Not all of us had the privilege of sharing his deeper thoughts on questions transcending his own science. In his later years particularly, his studies extended into the philosophical domain and a number of writings scattered at present but shortly to be published in a collected English edition testify to this.

All those who can look back to personal contact with Wolfgang Pauli feel a deep sense of loss. He will be remembered by all as a great scientist, an unforgettable personality and a sincere friend.

N. KEMMER

Prof. A. C. Pigou

DURING the first half of the twentieth century, the University of Cambridge had a galaxy of brilliant scholars, scientists and thinkers. Prof. Arthur Cecil Pigou was among the greatest of them, and by his death on March 7 the University, and in particular his College, King's, have suffered an irreparable loss.

Prof. Pigou will be remembered by economists so long as the development of their science is studied. The favourite pupil of the great Marshall, and chosen by Marshall to be his successor in the chair of political economy, Prof. Pigou built on the foundations which Marshall had laid. By his teaching, his books, his articles in economic and other journals, his membership of Royal Commissions, and his letters in *The Times*, he played a major part in winning for economists the wide authority which they have to-day.