

obituary

The news of **Michael Polanyi's** demise caused deep sadness in the hearts of his many friends and admirers. There were, and are, few people in our century whose interests were as extended as were his, whose friends were as devoted to them as were those of "Misi".

Polanyi was born in Budapest, Hungary, on March 11, 1891. He took his degree as an MD in Budapest at the age of 22, but wrote his first paper (on the hydrocephalic liquid) long before that, at the age of 19. His interest then centred on biology, principally human biology, but his articles soon became sprinkled with references to, and conclusions drawn from, physical chemistry, and, in particular, the second law of thermodynamics. The first such paper was written in collaboration with a life-long friend, J. Baron, but the other papers written during the first world war, when he served in the army, were by him alone. They were concerned not only with applications of the second law, but also with the foundations of the third law, then called Nernst's Theorem. His last article during the war period, however, was on a subject which remained long close to his interest: the theory of adsorption.

Soon after the end of the war, Polanyi moved to Germany—for a year to Karlsruhe, where he met his wife, then to Berlin where he worked first at the Kaiser Wilhelm Institut für Faserstoffchemie (chemistry of fibres), and then at Haber's Institute, the institute for physical and electrochemistry. He moved to Manchester, England, in 1933, when Hitler came to power, a reason very similar to that which had originally prompted him to leave Hungary.

The breadth of Polanyi's interests manifested itself in his days as a scientist by the wealth of subjects to which he made important contributions. Several of them continued to attract his interest virtually all through his scientific career. His first articles on the subject mentioned before, the adsorption of gases to solid surfaces, were written in 1914 and 1916, the last one referring to this subject in 1946. His chief interest was, however, concentrated on the rate of chemical reactions. He contributed decisively both to the theory and to the development of experimental methods to investigate them. His first paper on the



subject was written in 1920, a theoretical paper which was later fully justified by quantum mechanical considerations in 1925 and his concluding paper on this topic dates from 1949. In addition to these, he contributed significantly to our understanding of the strength of materials and the role of the crystalline glide-planes in this connection, to the X-ray analysis of fibres and crystals, also of poly-crystalline materials and, finally, to simple chemistry (and perhaps to other subjects which this writer fails to recall).

Two thirds of Polanyi's scientific articles written after 1920 (he published 201 such articles) were published jointly with collaborators, some of whom have acquired world fame. He not only stimulated interest in his collaborators, he also established close personal relations with most of them and they maintained their devotion to him and his ideas throughout his life. This applies also to the present writer.

Eugene P. Wigner

Were it not that he was one of the great polymaths of this century, it would be surprising, as it was apparently regrettable to some of his science colleagues, that Michael Polanyi, after coming to the University of Manchester in 1933 as Professor of Physical Chemistry with a great international reputation in science, should in 1948 have been appointed as Pro-

fessor of Social Studies. Yet it is intriguing to speculate as to why he made the decision, with the general approval of his University and the warm welcome of the economists there, to shift the balance of his intellectual interests. Running through his writings in economics—USSR Economics in 1935; Patent Reform 1944; Full Employment and Free Trade in 1945; Profits and Polycentricity in 1946; and The Span of Central Direction 1948—there seems to be one leading strand: how best to reconcile the safeguarding of individual liberty with the controls upon the individual inseparable from a complex and organised society or, as he succinctly put it, the relation between spontaneous and social order.

Within two years of reaching Manchester he had produced his small but pathbreaking book *USSR Economics*. It was the result of a flash of understanding of the kind which genius enjoys. He saw that the idea of rational planning of the whole of the economic system by Governments was a complete illusion. Then, with remorseless logic, he asked himself: if central economic planning is indeed a chimera, what is it that Governments which set out to engage in it, are in fact doing? And, prophet as he was, he foresaw the answers. In countries, such as Russia, where the ideas were then being ruthlessly pursued, the result would be the creation of a slave state. In other Western countries (and he had in mind among these Britain) where individual freedom was more deeply entrenched and tenaciously defended, the attempts of Governments at central planning would simply lead to great muddle, with increased public intervention in industrial investment, economic debility, widespread price controls and inflation.

This central discovery he filled out in his later writings. He sought to explain by word, and by an ingenious film, the subtleties and efficacy of free market operations. Admitting to weaknesses in a system of private enterprise he developed ideas, along Keynesian lines, for the prevention of mass unemployment and for the more active encouragement of technical advance. He displayed in novel ways how, as an industrial organisation grows in size, it tends towards inefficiency in operation. He argued for the crucial role of profits in a free economy: "There exists no fundamental alternative to the system

of money-making and profit-seeking".

After 1948 his mind moved into more abstract and philosophical fields. But in a remarkably short time he had left behind him a set of writings which economists in the future will turn to and find rich and stimulating.

John Jewkes

Though Michael Polanyi wrote a number of studies in the philosophy of science, his contribution rests mainly upon a single work, *Personal Knowledge*, first published in 1958. In both style and content it ran strongly counter to the logicist trends of the time, and was not easily assimilated into professional philosophy of science, though it was greatly appreciated by many working scientists. Written in a limpid, urbane style, drawing upon a

wider range of experience than was usual in philosophy of science, it might be properly thought of as setting a trend towards 'science criticism', bearing a somewhat similar relation to science that literary criticism does to literature.

Two philosophical themes dominated this work, and all Polanyi's reflection on the nature of science; the theme of 'tacit knowledge' and the theme of the analogy of perception. Polanyi never tired of emphasising in many contexts that we know 'more than we can tell', a truth not only of the practical arts but as he persuaded many of his readers, of the intellectual arts as well. Explicit scientific knowledge rests for its intelligibility and grounding upon an undetermined basis of tacit knowledge, which if made explicit rests again

upon its own basis of the tacit. Explicit knowledge is public knowledge, but tacit knowledge is private, and both sorts of knowledge are encompassed within science.

The relation of explicit knowledge to its penumbra was to Polanyi either identical with or perhaps only similar to the relation between focal and subsidiary awareness in perception, attending from something to something else. He elaborated this metaphor in a number of works.

That science was a part of society, that it was within the larger society a society itself, but a society with a peculiarly morally demanding mode of being, was both exemplified by the man himself, and the central message of his philosophical work.

Rom Harré

announcements

Appointments

Dr Peter W. Likins, of the University of California, Los Angeles has been named dean of Columbia University's School of Engineering and Applied Science.

Dr Michael A. Moore of Sussex University to Professor of Theoretical Physics at the University of Manchester.

Dr R. J. Ellis to a personal Professorship of Biological Sciences at Warwick University.

Dr Hugh Burkhardt to Professor of Mathematical Education at Nottingham University.

Sir John Habakkuk, Vice-Chancellor of the University of Oxford, has been elected Chairman of the Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom for the year 1976-77.

Awards

Professor N. Kurti of the University of Oxford has been made a Chevalier de la Légion d'Honneur.

Professor C. T. Dollery of the Royal Postgraduate Medical School has been made a Chevalier de l'Ordre du Mérite.

Dr Charles Elton of the University of Oxford, **Dr Rene Dubos** of the Rockefeller University and **Dr Abel Wolman** are the recipients of this year's Tyler Ecology Award.

International meetings

May 27-28, **The Handling of Toxicological Information**, Bethesda (Dr Arthur A. Wykes, Toxicology In-

Person to Person

Information is required on national and international efforts to popularise science, on famous science writers from all over the world and on awards given to science writers. Scientists who communicate to laymen please send their opinions to Zaka Imam, Assistant Editor, Science Reporter, Council of Scientific and Industrial Research, Rafi Marg, New Delhi 110001, India.

Astronomer attending international meeting wishes to exchange 3-bedroomed house (sleeps 6 and baby) in Sussex for house or flat (sleeping 5 and baby) near Grenoble, France, for one month during August 1976 (until about 3rd September—meeting ends on 2nd). Enquiries to Dr R. C. Smith, 38 The Avenue, Lewes, Sussex BN7 1QU, England.

There will be no charge for this service. Send items (not more than 60 words) to Martin Goldman at the London office. The section will include exchanges of accommodation, personal announcements and scientific queries. We reserve the right to decline material submitted. No commercial transactions.

formation Program, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20014).

June 2-4, **Frequency Control**, Atlantic City, N.J. (Dr John R. Vig, USAECOM, ATTN:DRSEL-TL-MF, Ft. Monmouth, N.J. 07703).

July 17-22, 1977, **Macromolecules**, Dublin (Symposium Officer, Macro

Dublin 77, Institute for Industrial Research and Standards, Ballymun Road, Dublin 9, Ireland).

September 6-9, **Structure and Kinetic Approach of Plasma Membrane Functions**, Grignon, France (Deadline for application: May 15) (Dr Alain Paraf, Station de Virologie et d'Immunologie, Route de Thiveral, 78850 Grignon-Thiveral, France).

September 22-23, **Laboratory Animal Housing**, Washington DC (E. W. Grogan, Executive Secretary of ILAR, National Research Council, 2101 Constitution Avenue, N.W., Washington, DC 20418).

September 22-24, **Congress of the European Chemoreception Research Organisation**, Reading, UK (Deadline for registration: June 30) (Dr G. H. Dodd, Department of Molecular Sciences, University of Warwick, Coventry CV4 7AL, UK).

October 11-15, **Structure and Uses of Biopolymers** (Professor Alan G. Walton, Department of Macromolecular Science, Case Western Reserve University, Cleveland, Ohio 44106).

October 18-20, **Platinum Co-ordination Complexes in Cancer Chemotherapy**, Dallas (Deadline for abstracts: June 30) (Third International Symposium on Platinum Co-ordination Complexes in Cancer Chemotherapy, Wadley Institutes of Molecular Medicine, 9000 Harry Hines, Dallas, Texas 75235).

November 9-10, **Techniques for the Retrieval of Chemical Information**, London (Dr John F. Gibson, The Chemical Society, Burlington House, London W1V 0BN, UK).