obituary

Hermann Träuble was born on April 7, 1932 at Nellingen, near Ulm, and died on July 3, 1976.

It was about nine years ago that Hermann Träuble first put his head round my door with a rhetorical "Am I disturbing you?" This pleasant young man who stood there before me, with a modest and yet forceful presence, was by no means an unknown quantity to me. His teacher and supervisor at the Max-Planck-Institut in Stuttgart, Alfred Seeger, had notified me of his visit, with the words which Mozart is said to have used of Beethoven: "Keep an eye on him, one of these days he'll make the news".

Hermann Träuble had already made the news. Together with Uwe Essmann he had successfully carried out an experiment which others had only dreamed of—the direct, visible demonstration of a quantum effect. This experiment is so typical of its performer's straightforward, goal-directed methods of thought and work that I would like to outline it here in a few words. I shall try to relate the story in the way which Hermann Träuble himself described it to me.

The experiment was an attempt to demonstrate the quantisation of magnetic lines of force in a particular class of superconductors, the so-called Class II superconductors, which are characterised by a particular kind of behaviour in a strong magnetic field.

How does one make the paths of magnetic flux lines visible? The answer is known even to schoolboys: use fine iron filings—but just how fine must the filings be, to demonstrate the quantum phenomenon? One would answer intuitively: "As fine as possible, best of all a dust made up of individual atoms or small aggregates of atoms." But that would be a hasty answer, for we must recall that ferromagnetism is not a property of individual atoms, and it can only appear in ordered crystalline structures.

The question should therefore more precisely run: how small must the particles be, to respond to a quantum effect, and how large must they be to act ferromagnetically and to appear on the screen of an electron microscope.

The two young scientists grasped the bull by the horns, and simply started to experiment. Using an inert-gas atmosphere, they succeeded in producing tiny crystals with an edge length of ~ 0.000001", and then in condensing these onto the surface of a semiconductor in a magnetic field. The circulating currents in the semiconductor induced by the magnetic field are divided up into tiny vortices, which rotate about an axis parallel to the magnetic lines of flux. The minute ferromagnets deposited themselves preferentially onto this lattice of 'quanta of magnetic flux' and build up crystal nuclei, which could be seen under an electron microscope.

Result: a direct, macroscopic observation of a microscopic quantum effect!

The Physics Prize of the Göttingen Academy of Sciences awarded to these two scientists was a clear expression of the recognition with which the world of learning received this great achievement. For Hermann Träuble this was, however, not the first distinction. A short while previously he had received the Masing Preis of the German Metallurgical Society for his work on the magnetisation and hysteresis in ferromagnetic single crystals, which he had carried out as part of his doctorate.

Now he was standing in front of me. All he wanted was a post as an assistant —a man who had a brilliant career in solid-state physics in front of him and to whom a university chair was already open. All he wanted was a small laboratory, he assured me, maybe a hundred square feet—after taking a critical look at the dimensions of my study. He had taken it into his head to get into biophysics and a true Swabe can never be deflected from his intended course.

Hermann Träuble's interests in Göttingen were particularly directed at the structure and function of lipid membranes. In 1971 he published a comprehensive article in *Die Naturwissenschaften*: 'Phasenumwandlungen in Lipiden', whose subtitle 'Possible Switching Processes in Biological Membranes' already looked to the future. He hitched his own work onto that of Dennis Chapman, who had demonstrated calorimetrically the phase transitions between crystalline and liquid-crystalline states. Hermann pioneered the development of new and above all fluorimetric methods which made it possible to follow these rapid co-operative transformations. Thus he was able to investigate not only the static but also the dynamic aspects of these processes. The high speed of the phase transformations is closely connected with their potential significance as biological switching processes. Collaboration with Hansjörg Eibl made possible a comprehensive study of those membranes whose lipid constituents were already well known. Models were developed, their electrostatic interactions were studied, and the findings compared in each instance with similar or related effects in biological systems.

These were the pioneer years of a new 'membrane biophysics', full of excitement and creativity. Seldom did Hermann go home before daybreak, and even then he was always back in the Institute at five to two in the afternoon—just in time to grab something to eat in the canteen.

Wherever co-operation was offered, it was taken up. Peter Overath contributed his wide experience of the Coli membrane, and through this collaboration a detailed picture of the structure and phase transformations of bacterial membranes was put together, backed up by studies with models. Together with Erich Sackmann, who was familiar with the technique of electron spin resonance, he attacked the problem of lateral diffusion of the lipid molecules in the membrane. This turned out to be a neck-and-neck race with the group of Harden McConnell in Stanford.

He also applied his research to fundamental biological problems—a classic example of this is the paper with Hansjörg Eibl and Hideo Sawada "Respiration—a Critical Phenomenon?"; it is still too early to see the significance of his investigations for the final understanding of nerve membranes. Not without good reason was Hermann Träuble a much sought-after discussion partner in numerous workshops in the Neurosciences Research Program in Boston, USA. Listening to his lectures was a pure delight. His vital asset was that, where others had only answers, he always posed the right question.

The walls of his original laboratory had long since become too narrow. In 1974 the Max-Planck-Gesellschaft received him as a Scientific Member, and only a few weeks before his death he was appointed to a directorship in the Institute for Biophysical Chemistry in Göttingen. His research group had grown uninterruptedly in recent years, and includes today a dozen scientists, who will undoubtedly go on to extend the ideas which they and Träuble developed.

Neither was there any lack of new honours. The Faculty of Human Medicine of the University of Giessen awarded Hermann Träuble the Ludwig Schunk Prize in 1972 and the German Bunsen Society for Physical Chemistry the Bodenstein Prize in 1975.

The man, just 44, was called away at the zenith of his career. We shall not meet Herman Träuble again in the corridors of the Institute, or be enlivened at our tea colloquia by his burning enthusiasm and swabish charme; we shall not race together down the ski slopes in January, and I shall never have another chance of digging with him for fossils in California. Certainly, death is an integral part of life. But this insight cannot take the pain away.

Manfred Eigen

Ian Macpherson, head of the Department of Virology at the Imperial Cancer Research Fund Laboratories, London, died on September 11, 1976 at the age of 46, in the middle of a distinguished career. He was married with three children.

Macpherson was born and educated in Scotland, as a Foundation Scholar at George Herriots, and after at Edinburgh University, leading to a Carnegie Fellowship and a Ph.D. in virology in 1955. He then worked at the Microbiological Research Establishment, Porton, for four years before moving to Glasgow in 1959. After a year in the Department of Genetics, he became a founder member of the new Institute of Virology and of the Medical Research Council's Experimental Virus Research Unit. Except for a year as an Eleanor Roosevelt Cancer Fellow at the Wistar Institute, Philadelphia, he remained in Glasgow until 1968 when he was appointed to the senior staff of the Imperial Cancer Research Fund Laboratories in London to head a substantial department.

Macpherson began to study tumour viruses in Glasgow and it was for his unique and pioneering contributions to the study of virus transformed cells that he will be remembered. Of great importance was the isolation of the first line of cultured cells (BHK 21 cells) which could be used for precise quantitative evaluation of the transformation process, and which allowed direct comparison of transformed and untransformed cells from the same clonal population. Then came the discovery, with Montagnier, of the agar suspension assay system, which, with its various modifications, is of profound importance in tumour cell biology. Macpherson also isolated the first revertants of transformed cells, thus paving the way for the use by others of this important method for studying the transformed cell phenotype. In recent years Macpherson and his colleagues in London concentrated on the altered surface chemistry of transformed cells, and in particular developed the use of conditional mutants for elucidating the role of the virus.

Through Macpherson's wide reputation, his laboratory attracted visitors from far and near. He lead his group from the laboratory bench, not only by his originality and knowledge but by his experimental ability. Those associated with him soon discovered another aspect of his character as well—his impish sense of humour. This was often expressed in remarkable collages in which he delighted to ridicule any pompous and unjustified aggrandisment.

Ian Macpherson's hobby was golf, in which he also excelled, and it was on the golf course that he died.

The eminent organic chemist **George O. Curme, Jr** died on July 28 at his summer home at Oaks Bluff, Massachusetts. He was born in Mount Vernon, Iowa in 1888, the son of a professor of German who was also a renowned grammarian. Curme graduated at Northwestern University, then as a graduate student moved from Harvard to the University of Chicago, where he obtained his Ph.D. Next he went to Germany, then the Mecca of organic chemists (it has been said that in the first half of the century all organic laboratories were built pointing towards Berlin) to study under Fritz Haber and Emil Fischer at the Kaiser Wilhelm Institute and the University of Berlin.

On returning to America he worked from 1914–1920 as a research fellow at the Mellon Institute, and it was here that he started on the work which founded the synthetic alipathic organic chemistry industry in America. (Aliphatic chemistry deals with chain-like compounds of carbon, as opposed to aromatic chemistry which deals with ring compounds.) He initially sought a method for the commercial manufacture of acetylene; he later widened his horizons to many other alipathic compounds.

In 1917 he started to work for Union Carbide, with whom he was to remain (eventually becoming a director) until his retirement. From the Union Carbide laboratories in 1925 he announced the discovery of a process to make ethylene glycol, which soon replaced alcohol for use as an antifreeze in cars' radiators, and which rapidly developed into a multi-million dollar industry. Dr Curme continued his research, producing a new synthesis of ethyl alcohol, and later playing an important part in the wartime synthetic rubber programme.

Among the many awards he was given was the Willard Gibbs Medal, bestowed on him by the American Chemical Society in 1944 for his fundamental role in bringing "leadership in organic chemistry from Germany to the U.S.A."

announcements

Meetings

November 17–19, **ACTH and Related Peptides: Structure, Regulation and Action,** New York (Mr Charles Roarty, The Barbizon-Plaza Hotel, 106 Central Park South, New York, New York 10019).

Winter Gordon Research Conferences: January 3–7, **Deformation and Failure Mechanics in Polymer Composites; Bacterial Cell Surfaces.**
January 10–14, **Polymers; Organic Thin Films and Solid Surfaces.**
January 17–21, **Electrochemistry; Agricultural Science.**
January 24–28, **Chemical Oceanography.**
January 31–February 4, **Hormone Action.**
(Alexander M. Cruickshank, Director Gordon Research Conferences, Pastore Chemical Laboratory, University of Rhode Island, Kingston, Rhode Island 02881).

June 1–3, **Frequency Control,** Atlantic City, New Jersey (Deadline for abstracts: January 21) (Commander, US Army Electronics Command, ATTN: DRSEL-TL-MF (Dr J. R. Vig), Fort Monmouth, New Jersey 07703).

September 5–9, **Precise Electrical Measurements,** Brighton, Sussex (Conference Secretary, The IEE, Savoy Place, London WC2R 0BL).

September 5–10, **Geochronology, Cosmochronology and Isotope Geology,** Pisa, Italy (Deadline for abstracts: May 15) (Gabriella Bonadonna, C.N.R.-Laboratorio di Geochronologia, Via Cardinale Maffi, 36, 56100 Pisa, Italy).