cyclohex-2-enyl hydroperoxide as the primary product. Farmer's subsequent work showing the widespread importance of α -methylenic reactivity, and his discussions of its mechanistic features greatly stimulated activity in this field, notably in the United States, and also served to advance the opinion that the chemistry of complex substances is often resolved most expeditiously by initial studies of model systems. His final researches were concerned with the reactions between sulphur (in various forms) and olefins, and have provided a new experimental background from which to approach the intricacies of rubber vulcanization.

Farmer leaves a widow, Marjorie (*née* Wilson-Smith), whom he married in 1930; she has assisted him in some of his researches.

GEOFFREY GEE

Prof. Kurt H. Meyer

KURT HANS MEYER, whose death at the age of sixty-eight occurred on April 14, was the son of the late Hans Horst Meyer, the veteran Viennese physiologist and pharmacologist. Kurt Meyer was a chemist of quite unusual breadth of interests within his science. From early youth he was strongly attracted to the field of biology, and indeed he began his academic career as a medical student. This orientation was scarcely surprising, since his father was that very Meyer whose name, linked with that of Overton, is known to all biologists in the Meyer-Overton theory of the role of lipoids in cell permeability. For K. H. Meyer, however, the appeal of organic chemistry proved too strong to be ignored. A pupil of Zincke and Hantzsch, he made his name in Baeyer's laboratory with work on the keto-enol equilibrium of aceto-acetic ester; and in 1918, at Willstätter's invitation, he took over the organic department at the Chemisches Institut in Munich, where he continued his study of aceto-acetic ester and accomplished the separation of keto and enol forms by a simple distillation.

Meyer's growing interest in dyes and dyeing soon led to his appointment as director of the Hauptlaboratorium der I. G. Farbenindustrie at Ludwigshafen. From that laboratory, he and H. Mark published in 1930 their historic treatise, "Der Aufbau der hochpolymeren organischen Naturstoffe (auf Grund molekular-morphologischer Betrachtungen)", the outcome of joint researches begun in 1927. In this early study they put forward, as part of a general scheme, molecular models developed by them for cellulose, cellulose derivatives and related substances, such as hemicelluloses and chitin; for rubber, gutta percha and balata; for proteins (in particular for silk fibroin); and they discussed the importance of the chain-molecule concept in plant and animal morphology, its relation to macroscopic and molecular changes in shape, and to muscular contraction and protoplasmic movement in particular. At the time of publication it was a bold and daring work, in sweep of conception without precedent; it remains, a little more than two hundred pages in extent—an impressive epitome of a field which it is unlikely will ever be reviewed in a single volume again.

In the early 'thirties, feeling the need for developing his ideas in the freer climate of the academic world, Meyer moved to the University of Geneva as professor of organic and inorganic chemistry. As chief 'assistant' he brought with him Dr. A. J. van der Wyk, and was always the first to acknowledge how

much he owed to his second-in-command, not only for constructive criticism but also, as shown by their many works of collaboration, in the formal elaboration of his ideas.

During the war-years he again reviewed the field of high-polymer chemistry in his "Natural and Synthetic High Polymers", with its remarkable sub-title, "A Textbook and Reference Book for Chemists and Biologists". Never before had the biologist found himself in such distinguished company. The second edition of this work, published in 1950, probably reached the limit of one man's ability to review a field which in twenty years had become the province of new and major industries, and had shown itself to be the proper science of many of the oldest arts and crafts of mankind. To every part of that field contributions had been made by Meyer and his school in Geneva. The diversity of his interests was such that few of his colleagues can have been familiar with all aspects of his work. In Great Britain he is probably best known for that series of researches which led to the kinetic theory of rubber-like elasticity, researches covering an extraordinary range of materials, from plastic sulphur, amorphous selenium and other inorganic elastomers, through rubber and synthetic plastics to natural products, such as collagen, elastin, keratin and muscle itself. Of scarcely less general interest was his work on polysaccharides: on the structure of cellulose, on the permeability of cellulose membranes, on polysaccharides containing amino-sugars, and on the constitution and enzymatic breakdown of starch. To these may be added pioneer work on the crystallography of peptides, on narcotics, recent work on hormones, and a series of papers on the properties of high polymers in solution.

Kurt Meyer had a unique sympathy for and interest in the biological field, and he saw, as no chemist before him, that morphological chemistry is as intimately related to plant and animal morphology as it is to physiology. He was essentially a morphologist himself: he believed intensely in the value of three-dimensional models of molecular structure as a means of refining concepts (by providing a concrete picture for criticism), and as a means of limiting the immediate field of inquiry. Those who worked with him will remember his infectious enthusiasm and tireless energy, and that fertility in hypothesis which he restrained by constant appeal to evidence obtained by the application of as wide a range of techniques as possible: X-ray analysis, studies of elastic and thermo-elastic properties, viscosity and solubility data, chemical analyses—any model must take into account all these; to rely on one technique was to court disaster. The biologist will remember that in papers as early as 1929, as well as in his book with Mark, Kurt Meyer pointed the way to a new cytology; for he saw, perhaps more clearly than anyone else at that time, the relevance of the growing field of high-polymer chemistry to biology.

L. E. R. PICKEN

Prof. F. H. Newman, C.B.E.

FREDERICK HENRY NEWMAN was born in Bath in 1891 and his first school was St. Saviour's, Bath, whence he went by scholarship to the City of Bath Boys' School in 1904. In 1911 he entered the Royal College of Science, London, graduated in 1913 and, after a further year of research, became an assistant lecturer at University College, Aberystwyth. In 1916

he joined the Royal Warwicks and afterwards the Scottish Rifles, being demobilized in 1919 with the rank of captain.

Newman's appointment in 1919 as lecturer in physics at University College, Exeter, began an association which continued until his death on April 15. The early years at Exeter were very full ones, and to an exceptionally heavy programme of lecturing and practical class supervision he somehow added a great deal of research work which was described in a continuing flow of papers during the decade 1920-30. They were concerned mainly with absorption and the spectroscopy of discharge tube effects, and the degrees of M.Sc., Ph.D. and D.Sc. followed in successive years.

In 1922 he was promoted to the chair of physics at Exeter, and at the time of his death he was also director of the Washington Singer Laboratories and

acting principal of the College. For his numerous public services during and after the Second World War he was awarded the C.B.E. in the 1949 King's Birthday honours.

His publications include "The Production and Measurement of Low Pressures" (1925), "Electrolytic Conduction" (1931), "Recent Advances in Physics" (1931) and, in collaboration, "The General Properties of Matter" (1929).

Newman's earliest, and always his foremost, interest was his students, of whom his continuing remembrance was remarkable. From the institution of an honours school in 1920 to the end of his career, their welfare was his main concern, and the Department which he shaped is a not unworthy memorial. To many a physicist it is a matter of pride to be able to claim to have been one of Newman's men.

VICTOR H. L. SEARLE

NEWS and VIEWS

Royal Society : New Foreign Members

At a meeting of the Royal Society held on May 1, the following were elected foreign members of the Society : Prof. Sven Hörstadius, professor of zoology, University of Uppsala ; Prof. Albert Jan Kluyver, of Delft ; Prof. Albert Marcel Germain René Portevin, of Paris ; and Prof. Tadeus Reichstein, of the University of Basle.

Prof. Sven Hörstadius

PROF. SVEN HÖRSTADIUS is an experimental zoologist whose researches are so fundamental that they mark an epoch. By means of operations involving the removal, grafting and substitution of blastomeres of sea urchins, he has demonstrated objectively for the first time the existence of levels of quality (gradients) of differentiation coinciding with the axis of the egg. Applying the results of this analysis, and selecting appropriate combinations of blastomeres, artificially assembled by him, he has been able to produce embryos with all desired degrees of normality and abnormality under rigorously controlled conditions. In other experiments involving fertilization of enucleated eggs of one species of sea urchin by sperm of another, and, taking one blastomere of such larval hybrids and grafting it into an embryo of the species of egg, he has been able for the first time to demonstrate the properties of the matter contained in a single nucleus in determining the quality of differentiation of the resulting embryo. He has applied the same analysis to other embryonic material, for example, from the Nemertines. He has also analysed the factors which determine the orientation of the mitotic spindles in sea urchin eggs and obtained positive results which have enabled him to produce modes of cleavage at will. Turning his attention to vertebrate material, Prof. Hörstadius has been able not only to demonstrate the power of different regions of the neural crest of newt embryos to differentiate into the various structures to which it gives rise, but also to show how the quality of such differentiation is determined by the presence of other structures. This is the first time that the phenomenon of complex and additive inductive action by different structures has been demonstrated under controlled conditions. Finally, it should be

emphasized that, in spite of the almost incredible difficulties of the operative techniques used, Prof. Hörstadius's results are based, not on small numbers, but on hundreds, of experiments.

Prof. A. J. Kluyver

PROF. A. J. KLUYVER, president of the Royal Netherlands Academy of Sciences, became professor of microbiology at the Technische Hoogerschool at Delft in 1924. At that time such knowledge as was available concerning the chemical activities of bacteria was bewildering in its diversity. Kluyver's insight prompted him to believe that all this variety of activity was based upon a fundamental unity in biochemical activity, and that the organized study of the reactions of micro-organisms should have a contribution of immense importance to make to the study of the fundamental chemistry of the living cell. In a series of lectures given in the University of London in 1930, he put forward a masterly synthesis of the facts then known about bacterial metabolism, and emphasized that such studies of 'comparative biochemistry' should have the same influence on the development of biochemistry as studies of comparative anatomy had had on the development of anatomy as a science. The comparative aspect was the basis of the studies of the Delft school on the bacterial metabolism of carbon compounds and led to the rise of modern microbiology and its relation to biochemistry. Many of the reactions postulated by Kluyver twenty years ago have now been disproved ; but the truth of his belief in biochemical unity has been amply demonstrated during recent years, while the inspiration of his approach is acknowledged in biochemical and microbiological laboratories throughout the world. Prof. Kluyver is best known to microbiologists in Great Britain for his clear-sighted and lucid expositions of the chemical principles underlying bacterial metabolism, which he has continued to give on such occasions as the inauguration last year of the Microbiological Panel of the Society of Chemical Industry.

Prof. A. M. Portevin

PROF. A. M. PORTEVIN, who was born in Paris in 1880, has had a career characterized by wide interests