

he was appointed to the Sterling chair of physiology at Yale, where one of his first decisions was to name his new home the 'Laboratory' rather than the 'Department' of Physiology. Many came to him from outside, attracted, as *The Times* obituary notice of him stated, by his breadth of outlook, humanistic approach, and personal example, his own interests being mainly electrophysiological, electro-cardiographic, and endocrinological, with the physiology of aviation becoming an outstanding fourth during the Second World War.

In Oxford he had married Lucia Pickering Wheatland, and in 1956 there was a reception in the History of Medicine Library at Yale to mark his total of twenty-five years of service in the Laboratory of Physiology and in the Department of the History of Medicine. Fulton was given a bound copy of a special issue of the *Yale Journal of Biology and Medicine*, and a silver medal which his friends had inscribed to him as physiologist, teacher and humanist.

In 1959, on his sixtieth birthday, friends met again, this time at his home at Mill Rock, to be presented with copies of "The Making of a Library", in the letters on which it was based being one from Arnold C. Klebs which quoted:

"Grau ist alle Theorie
Und grün der goldne Baum des Lebens",

and in which he stated that he believed in loving the old authors when they had something lovable. Wilmarth S. Lewis briefly said that Dr. Fulton alone survived of the three friends (Harvey Cushing, Klebs and Fulton) who brought the Historical Library to Yale, and that November 1, 1959, was a moment of congratulation and thankfulness: of thankfulness for Fulton's restored health, and of congratulation on his being only sixty, with years more of discovery and instruction before him. Elizabeth Thomson, who with Madeline Stanton was responsible for most of the planning of the reception, wrote to me that Mrs. Fulton was meeting guests at the top of the steps looking lovely and giving no hint of the strain of arranging a party of seventy *sub rosa*. However, Fulton found everything a real surprise and he was simply delighted with the book.

For myself I am indebted to him for countless kindnesses over the years, including the period after the First World War, and I am truly sorry that I am not to greet him in person at the tercentenary of the Royal Society, and at the centenary of the National Hospitals for Nervous Diseases. He would, I know, have entered with zest into both occasions.

KENNETH J. FRANKLIN

Dr. S. F. Birch

STANLEY FRANCIS BIRCH was born in November 1899 at Pewsey in Wiltshire, and was educated at Hurstpierpoint College and St. Paul's School, before going to the Imperial College of Science and Technology, whence he graduated. Working with Prof. J. F. Thorpe, he obtained the degree of doctor of philosophy for research work on three-carbon tautomerism, after which he joined the staff of the (then) Anglo Persian Oil Company, with which he was to spend the whole of his working life.

His great interest was in research connected with organic chemistry, and it was in this sphere that, in 1923, he commenced his career. Under Dr. A. E. Dunstan and with a small band of scientists, he

worked in a country house at Sunbury-on-Thames; these premises he was to see develop into the Research Centre of the British Petroleum Co., Ltd. An investigation of the malodorous components of the lighter fractions from Persian crude oils led to the identification of mercaptans and from this discovery stemmed a major research effort, concerning the nature and properties of sulphur compounds in petroleum, which he continued, with some interruptions, for the next thirty-five years. In this field he was regarded as an authority, and he published numerous scientific papers and gave many lectures both in Britain and the United States. He visited the latter country many times and was well known in many industrial research centres, universities and organizations connected with the American Petroleum Institute and American Chemical Society, of which he was a member.

The study of the reactions of hydrocarbons was, however, a branch of chemistry in which he made signal contributions to the petroleum industry. This work had, as its major achievement, the discovery of the sulphuric acid alkylation process in 1936 which, together with processes resulting from the determination of the octane numbers of pure hydrocarbons, and studies of the fractionation of petroleum distillates, formed the basis of the supply, by the Abadan refinery, of vast quantities of aviation spirit during the Second World War. His researches connected with the reactions of hydrocarbons made him realize, from a very early date, the potentialities of the petroleum chemical industry, and at his death on March 25 he held the position of research associate in the Petroleum Chemicals Department.

Birch believed very strongly that research could only be directed by those in close contact with the practical operations and that most discoveries came about as a result of critical observation and experimental skill. Until the last three years of his career, when administrative duties forced him, reluctantly, to move, he occupied an office situated close to the laboratories and was a frequent visitor to the bench where many informal technical discussions took place. 'Bill', as he was known to his friends, had wide-ranging interests apart from his research work. He was keenly interested in the theatre and ballet and antique works of art, and many of his leisure hours were spent building electronic and other gadgets.

He died on March 25, and is survived by his wife, Hilda Mary, whom he married on June 24, 1925. His many friends will sadly miss the pleasure of his company and the stimulation of his personality.

R. A. DEAN

Dr. J. H. Oliver

ON June 1 James Herbert Oliver died suddenly in Ankara. He had undertaken a visit to Ceylon and India and was returning to Britain by way of Turkey, where, in pursuance of a life-long interest, he was proposing to study native barleys.

Born in Portsmouth in 1901, he was educated at St. John's College, Southsea, and the Municipal College, Portsmouth, and after a period of private study he graduated in 1920. His first post was at the Olympia Agricultural Research Station near Leamington, where he worked under Dr. Herbert Hunter, who was widely known for the production of the brewers' barleys, Spratt Archer and Plumage Archer. It was here that Oliver developed the interest that he followed so assiduously throughout

his life. Returning to Portsmouth after the closing of the Research Station at Leamington, Oliver obtained a Salters fellowship and went to London to read for a doctorate at the Imperial College of Science; he entered into the full life of the times and rowed for his College.

In 1924 Dr. Oliver joined the firm of Briant and Harman, brewing consultants in the City of London, and three years later was offered a partnership. He eventually became recognized all over the world as the most authoritative consultant to the brewing industry in Britain and represented Great Britain on the Analysis Committee of the European Brewery Convention in 1947.

After the Second World War, Dr. Oliver developed an interest in the chemistry of the sea, with particular regard to its phosphate, nitrate and iron content, and he maintained a private laboratory at Hayling Island for this work. His researches in this

field led him to the conclusion that coastal mud and sand become an important reservoir for these nutrients, which are distributed during times of storm and gale.

Dr. Oliver was a member of the Salters' Company, honorary hydrologist to the Zoological Society, and a member of the Challenger Society, whose meetings frequently were enlivened by erudite contributions delivered with a refreshing humour. He was a tireless and inventive worker, always striving to improve his apparatus or to increase the accuracy of his results. His energy and enthusiasm were infectious, and he was ever ready to lay aside his own work to help others. Over all his life there pervaded an ebullient and generous personality. He enjoyed life to the full because he had come to terms with it—his terms. He was a gracious and charming friend, and he will be sorely missed by all who had the good fortune to know him.

N. INGRAM HENDEY

NEWS and VIEWS

New Foreign Members of the Royal Society :

Prof. G. Beadle

PROF. GEORGE BEADLE'S recent election to foreign membership of the Royal Society will give pleasure to many. Already a familiar name to cytologists and geneticists, especially for his work on maize and that with Ephrussi on eye transplants in *Drosophila*, he became one of the famous names in the history of biology when, in collaboration with Prof. E. L. Tatum, he established the possibility of studying the genetics of vital biochemical syntheses using *Neurospora* as material. This was the work for which Beadle and Tatum shared part of the Nobel Prize for Physiology in 1958. There had been biochemical genetics before. In fact, the concept that genes controlled biochemical synthesis followed clearly from the work of Garrod in man, and that of Haldane, Scott-Moncrieff and Lawrence on flower colours. But the *Neurospora* work provided a new kind of material, both in the sense that it was far more easily and quickly handled, and, most important, because it permitted study of the biochemical effects of genes that affect the vital metabolic processes of organisms, for the deficiencies could be made good by supplying appropriate metabolites externally. This work, incidentally, provides a strong argument against those who maintain that genetics only involves insignificant variation of organisms and that the really important evolutionary changes are inherited in some way that Mendelian techniques cannot investigate. But its important result is that it has led to the knowledge of the relation between genes and proteins that we have to-day, and is a direct ancestor of the exciting developments that are now the forefront of progress of biological knowledge and are coming to be called 'molecular biology'. Prof. Beadle was recently in Britain and gave the first Mendel Lecture of the Genetical Society.

Prof. Ragnar Granit

PROF. RAGNAR GRANIT is professor and director of the Nobel Institute for Neurophysiology at the Royal Caroline Institute in Stockholm. Earlier in his career he worked in Sir Charles Sherrington's laboratory in Oxford, and it seemed appropriate, and a measure

of the great honour in which he is held by physiologists, that he should have been chosen in 1954 to deliver the Silliman Memorial Lectures, exactly fifty years after the delivery by Sherrington of the classical series published as "The Integrative Action of the Nervous System". Granit's researches in sensory physiology have explored the relationship between sense organs and the nerve centres into which they send signals, and which, in turn, exercise centrifugal control over receptor sensitivity. In 1947 he published an important book, "Sensory Mechanisms of the Retina". The retina offered him a central nervous structure, uniquely accessible to stimulation by the natural and selective agency, in which the interplay of excitation and inhibition could be studied. More recently, he has found that the sensitivity of the retina can be modified by signals sent out to it from the brain. Newer work in his laboratory has extended his general approach to sensory problems to the special case of muscle receptors. This work has shown that these receptors are under the control of the central nervous system, and that such control can drive the motor nerve cells of the spinal cord servo-fashion over the muscle reflex arcs. The bold conception of a balance between direct control and servo-control of muscle is a typical product of Granit's imaginative insight, and is likely to stimulate research into the physiology of posture and movement for many years to come.

Prof. G. B. Kistiakowsky

THE announcement of the election of Prof. G. B. Kistiakowsky as a foreign member of the Royal Society will have given great pleasure to physical chemists everywhere and especially to those interested in reaction kinetics. He was born and received his school education in Kiev, but his lifelong interests were probably shaped during his research student days in Berlin which, in the 1920's, was surely the world centre of the maturing science of physical chemistry and which has been the seminary of so many distinguished workers in this field. In 1926, Dr. Kistiakowsky went to Princeton and in 1930 he migrated to Harvard. From his pen have come numerous accounts of investigations which have always been marked by an elegance in conception,