

in the Central Province of India during 1906, following the discovery that certain manganese minerals were magnetic. A dip needle gave very different readings over manganese ores and over the adjoining gneisses and schists. Due to a defect in the instrument, a systematic survey was not made and the observations were not published. Nevertheless, it was of interest to note that the Geological Survey of India had employed successfully the magnetic method in the search for manganese. Referring to the production of adverse magnetization by the processes suggested by Néel, Dr. S. A. Vincenz stated that the first need not be discussed since no such substance is known; but the second process is feasible. The latter is based upon the presence of two constituents, of differing Curie points, and their concentrations in aggregates or "amas". Using the formula developed by Néel and the observed properties of the Mull rocks, the required concentration in the aggregates can be determined. For the lavas and the olivine gabbros, these prove to be 42 per cent and 58 per cent, respectively, and he asked if there is any evidence for a distribution of ferromagnetic minerals in concentrations of this type. Dr. Vincenz also stated that the Swynnerton Dyke possesses remanent magnetism perpendicular to the present field, and similar results have been observed in some Tertiary Welsh dykes. It was pointed out by Dr. H. Manley that only one rock shows adverse magnetism in the laboratory compared with the many hundreds which behave normally.

A remarkable anomaly, associated with a dolerite sill in New South Wales, was described by Mr. A. Day, in which comparable positive and negative centres occur. As titanium is found in the rock, he suggested that a microchemical analysis for titanium in the magnetite of abnormally magnetized rocks might be useful. A similar case in the Allard Lake District, Quebec, was cited by Prof. D. Williams, where massive ilmenite-haematite gives negative anomalies but disseminated ore gives positive anomalies. A plea for the examination of the accessory minerals was made by Dr. W. Bullerwell, who indicated that, in Mull, the acid rocks are all normally magnetized. He inquired if their magnetism is less stable than that of the basic rocks, but was informed that their behaviour does not suggest this. On this point Dr. J. Sutton said that valuable data might be obtained from the mixed acid and basic formations of Mull. Replying to a further question by Dr. Bullerwell, Mr. Hospers stated that his suggested time for a change in the field was not based on theory but on observations of consecutive lava flows.

Mr. F. Lowes showed that Graham's argument, repeated by Mr. Creer, which is based on two oppositely magnetized deposits that are contemporary on the basis of their fossil content, does not condemn the idea of a field inversion. A fossil may persist for a million years—a period sufficient to embrace a number of reversals. The discordantly magnetized Welsh Dykes may represent a period of change. Mr. R. Hide pointed out that sedimentary rocks might show the secular change in the past, and the direction of drift during a period of reversal would be an important factor in sustaining or condemning modern theories of the main field.

Summarizing, Prof. Tilley said that many outstanding questions still remain and further data are necessary on sediments and igneous rocks. In particular, a knowledge of the accessory minerals is essential.

J. M. BRUCKSHAW

OBITUARIES

Prof. Philipp Ellinger

PHILIPP ELLINGER died in London on September 12, 1952, after a long and painful illness. He was born in 1887 in Frankfurt am Main, where he spent his early years before proceeding to Munich to study natural sciences under von Bayer and Roentgen. He took the D.Phil. degree in chemistry at Greifswald under von Auwers in 1911, and passed on to Heidelberg to study medicine and finally graduated D.Med. in 1913. During the First World War he served as a medical officer in the German Army and returned after the cessation of hostilities to Heidelberg, where he occupied successively the position of assistant, lecturer and deputy director in the Pharmacological Institute there and served under three distinguished pharmacologists, Gottlieb, Wieland and Heubner. Towards the end of 1931 he was called to the chair and directorship of the Pharmacological Institute at the Medical Academy of Düsseldorf. By 1933, however, the political situation in Germany rendered his position untenable, and he found refuge in Britain, where, at the Lister Institute, he took up his research problems again and remained until his retirement in June 1952.

Ellinger's early work was largely in the field of toxicology; but by the time he came to Britain he had already turned to physiology, had published important work on renal function and had invented a technique for intravital microscopy which employed fluorescent dyes. With Koschura in 1933 he worked on flavin pigments which he isolated from whey, and thus he contributed materially to the discovery and identification of lactoflavin (riboflavin) as a member of the vitamin B complex and helped to establish the presence of this biologically important material as a constituent of Warburg's yellow enzyme. In 1937 he visited Egypt on behalf of the Medical Research Council to study pellagra, and returned to complete his investigations in 1938. During the second visit he became seriously ill and never fully recovered his normal health in after-years. As a result of the studies carried out in Egypt he concluded that the occurrence of pellagra resulted from two concomitant but independent factors. First, that a condition of latent pellagra arose from malnutrition, or malabsorption, due to the presence of intestinal infections. He believed that external factors such as hard physical work brought on an active pellagra when the latent state had developed. Ellinger examined the effects of a deficiency of different members of the vitamin B group on the excretion of abnormal porphyrin pigments, and just before the Second World War attempted to isolate and identify the light-sensitizing materials in buckwheat. Somewhat later (1942) he interested himself in the metabolism of nicotinamide in man and animals, and studied very thoroughly, during the next few years, the elimination of nicotinamide methochloride in normal and nicotinamide-deficient persons. The results of these researches revealed that the intestinal bacterial flora can form a very significant extra-dietary source of nicotinamide. His last investigations, on the heredity of the nicotinamide methylating mechanism in the rat and the elaboration of a new spectrophotometric method for tracing unknown urinary metabolites, remained unfinished.

Ellinger was highly cultured and widely travelled, and had many of the qualities of the typical German

Gelehrter, particularly the encyclopædic knowledge derived from much reading. He had a special love for pictures and a keen appreciation of the fine arts.

He was never a robust man, and during the closing years of his life, when his health deteriorated rapidly, his colleagues were deeply impressed by his fortitude, his complete occupation with the problems in hand and his absolute disregard of his own general frailty. Ellinger is survived by his wife, two sons and a daughter.

W. T. J. MORGAN

WE regret to announce the following deaths:

Prof. Jules Haag, director of the Institute of Chronometry at Besançon and non-resident member of the Paris Academy of Sciences, on February 16, aged seventy.

Dr. T. A. Jaggard, since 1940 research associate in the Hawaii National Park and an authority on volcanology, aged eighty-one.

Prof. Sergius Winogradsky, For.Mem.R.S., the distinguished bacteriologist, on February 24, aged ninety-six.

NEWS and VIEWS

Physical Chemistry in the Chester Beatty Research Institute, London: Dr. J. A. V. Butler

DR. J. A. V. BUTLER, who has just been appointed to the recently established chair of physical chemistry in the University of London tenable at the Chester Beatty Research Institute (Institute of Cancer Research, Royal Cancer Hospital), graduated in 1921 in the University of Birmingham, of which he became D.Sc. in 1927. During 1922-27 he was assistant lecturer in chemistry at the University College of Swansea, and in 1928 was awarded the Meldola Medal of the Institute of Chemistry. Then for the next twelve years he was lecturer in chemistry in the University of Edinburgh, and later spent two years as Rockefeller Research Fellow at the Rockefeller Institute, Princeton, N.J. He played an important part in the early days of the British Commonwealth Scientific Office in Washington, of which he was executive officer during 1942-44. In 1945 he became Courtauld Research Fellow at the Courtauld Institute of Biochemistry, Middlesex Hospital Medical School, London. Dr. Butler joined the Chester Beatty Research Institute in 1949, from which time he has devoted himself, with his school, to the application of the methods of biophysical chemistry to the problems of growth, the mode of action of ionizing radiations, and the mechanism of interaction of carcinogenic agents with nucleic acid and nucleoprotein.

Prof. Butler has contributed a notable series of papers and other publications to the scientific literature. A specially distinguished essay was his "General Thermodynamical System of Gibbs" (in "A Commentary on the Scientific Writings of J. Willard Gibbs", ed. F. G. Donnan and A. Haas, Yale 1936). A successful general work is his "Man is a Microcosm" (1950), and Prof. Butler has more recently acted as editor of "Electrical Phenomena at Interfaces" (1951), and (with Prof. J. T. Randall) of the important series "Progress in Biophysics and Biophysical Chemistry". His interest in the application of physical chemistry to biological problems is a new and significant development which the establishment of this new chair is intended to encourage and extend.

William Froude Memorial Fund

FOLLOWING a suggestion made at the Sixth International Conference of Tank Superintendents, held in Washington, D.C., during 1951, the Council of the Institution of Naval Architects has been considering a proposal to commemorate the pioneer work of William Froude, F.R.S. (1810-79), a pioneer in ship model research and naval architecture generally. His

main work was carried out for the Admiralty, and in 1872 he undertook the building of an experimental tank for ship research at a site near Torquay, Devon, this being the first tank of its kind in the world. It has been decided that the memorial should consist of two parts: the erection of a bronze plaque at a suitable point (in a country lane) nearest to the site of the experimental tank; and the publication of a volume containing all Froude's published technical papers. The total sum for this is estimated at £2,500, and subscriptions to the memorial fund are invited. It is understood that about half the proposed sum has already been promised. Subscriptions should be sent to the Secretary, Institution of Naval Architects, 10 Upper Belgrave Street, London, S.W.1, from whom all further information can be obtained.

Finances of Research Associations

A DEBATE was held on March 3 in the House of Commons on the Draft Cotton Industry Development Council (Amendment No. 2) Order, 1953, the chief purpose of which is to increase from £300,000 a year to £450,000 the maximum amount of the levy which the Cotton Board can, with the approval of the Board of Trade, impose, and during the course of the debate numerous tributes were paid to the work and achievements of the Cotton Industry Research Association. The Order will make it possible for the Cotton Board to increase by the amount of the additional levy its contribution to the British Cotton Industry Research Association (Shirley Institute) for the promotion of research, and the Order received warm support from all sides of the House. Nevertheless, and in spite of general recognition that the work of this and of other research associations is already seriously embarrassed by rising costs, the debate was marked by general concern for more information regarding the actual expenditure on research of the research associations and the Department of Scientific and Industrial Research. Some of the questions in the minds of members, such as the possibility of effective development, of overlapping in technical research and of proper liaison between different research associations concerned with natural and synthetic fibres, could not be raised under the terms of the debate. It was clear that members wished to be satisfied that the considerable sums of money concerned are, in fact, being wisely expended and without waste. The debate, in fact, testified to the value of more independent scrutinies of the work of the research associations such as has already been conducted for the British Leather Manufacturers' Research Association.