deduced from their X-ray diffraction patterns, and a knowledge of the method of preparation. The elements uranium, neptunium and plutonium are closely related crystal-chemically in all known valence states. They are closely related to thorium and particularly cerium in the tetravalent state, and to the elements lanthanum...samarium in the trivalent state. A formal valency of two is shown by cerium, thorium, uranium, neptunium and plutonium in some compounds, the structures of which are of the interstitial type.

In the discussion which followed, Mr. H. S. Peiser said that some work on uranium compounds had been done in England, and raised the question of the value to be taken for the atomic radius of uranium.

Dr. D. Harker began with an account of X-ray work on metals done in the United States. He gave a short description of the work of C. S. Barett on X-ray topographs which show the variation of perfection over the surface of a crystal, and went on to mention investigations on the problem of agehardening of aluminium-silver and gold-copper alloys. He concluded with some remarks about the mechanism of crystal orientation in iron-silicon sheet.

Prof. L. O. Brockway spoke about electron diffraction work. He described some commercial types of apparatus available in the United States, in two of which great space-saving has been achieved by using a high-frequency unit for the generation of high voltage. He gave examples of results achieved. first in the structure of organic liquids and then in the study of monomolecular layers on polished metal He emphasized the fact that different surfaces. patterns may be obtained from X-ray and electron diffraction studies of the same substance, but to get full information both techniques should be used.

Dr. D. MacLachlan described the principle of construction of a machine for the mechanical computation of two-dimensional Fourier series. It depends upon the spreading of layers of sand in sinusoidal waves over a scale plan of the unit cell, so that the height of the sand layer at any one point is proportional to its relative electron density.

AUDREY M. B. DOUGLAS (PARKER) H. S. PEISER BARBARA W. ROGERS (LOW)

OBITUARIES

Prof. John J. H. F.B.A. PROF. JOHN LAIRY, regius professor of moral philosophy in the University of Aberdeen since 1924, died on August 6 at the age of fifty-nine. He had been in bid health for some time, but a paper read for him as a conference in July showed no falling off in charity and incisive wit.

Laird was born on Deeside, not far from the birthplace of Reid, also a son of the manse. He studied philosophy at Edinburgh under Pringle-Pattison and Seth, and then went on to Cambridge, where he was a scholar of Trinity College. The idealism of his Scottish teachers was less congenial to him than the critical, analytic temper of Moore and Russell at Cambridge, though it may have helped him to avoid the extreme, where that temper turns into a one-sided and rigid metaphysics expressed in negations.

Laird's own philosophical temper is well seen in his

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book reviews, of which he wrote very many. He approaches each author prepared to examine his position on its merits and in its own terms, and as nearly as possible without prejudice, except a prejudice against anything sloppy, pretentious or obscure. The two volumes of his Gifford Lectures delivered in Glasgow ("Theism and Cosmology", 1940; "Mind and Deity", 1941) display that temper on the large scale. Laird set himself to examine the philosophical arguments that have been used to support theism. Carefully, systematically, relentlessly he winnows the chaff from the wheat; at the end, almost disappointed that his work is ended, and there is actually some wheat left. It seems unlikely that anybody will need to do this work again for a long time, and until that time nobody can consider himself a competent student of the subject without reading Laird. The only defect one can point to is a tendency to avoid any aspect of his subject which is not capable of clear statement in abstract terms. This kind of limitation is present, but is scarcely a defect, in his last book ("The Device of Government" 1944), an admirable elementary discussion of political theory. The work which is perhaps the most comprehensive and distinctive of any that Laird wrote is "The Idea of Value" (1929); a specially useful contribution to thought, constructive as well as critical, because so much recent philosophy is centred on the notion of value, and no previous writer has dealt with the subject as a whole.

There are few aspects of philosophy which Laird left untouched, though his main interest was in ethics; and he wrote a great deal. In these days when a reputation for profound scholarship can be earned by writing nothing or by making it unreadable, so prolific and easy a writer is suspected of being superficial. Such a judgment of Laird is entirely unwarranted. Moreover, it is hard to find any signs of carelessness or haste in his writing, and he repeated himself less than most. Four or five of his books have it in them to become classics, and it may well be that future generations will read them when contemporary works now more popular are quite A. D. RITCHIE forgotten.

Prof. B. H. Bentley

THE death was announced on June 24 at the age of seventy-three of Prof. Bertram H. Bentley, emeritus professor of botany in the University of Sheffield. A scholar of Keble College, Oxford, Prof. Ben ley secured a first class in natural sciences in 1896. Going to Sheffield as assistant lecturer in biology in Firth College helped to mould the biology in Firth College, he helped to mould the fortunes of the young university and served it until his retirement in 1939. As the number of botany students under his care increased, he was appointed lecturer in botany in 1905 and eventually became head of a newly formed Department of Botany; but it was not until 1931 that the University appointed him to a full professorship.

Although of an inquiring mind and demanding a critical approach from his students, Prof. Bentley will be remembered for his teaching rather than his original work. Much influenced by A. H. Church, for whom he had the greatest respect, and by the distinguished contributions of Bower and others to the study of phylogenetic problems, his teaching was based always on a morphological approach, and he took pains to see that his students were well grounded

in this aspect of botany. The great advances in physiology and genetics which marked the later years of his life never seemed to capture his imagination in the same way.

Prof. Bentley was a real lover of plants, in the field and also in the garden and allotment which he tended with such care. He took pleasure in bringing in fresh material of all kinds for his students to examine, and was always anxious that they should not accept without question the text-book accounts of familiar plants. He showed great skill in Nature photography and illustrated his lectures with many slides of his own making. Before his retirement, a

good deal of his time was spent in the devoted care . of his wife who, following overstrain in the First World War, was somewhat of an invalid. His own latter years in Cheltenham were clouded by her death and by the gradual loss of his eyesight.

WE regret to announce the following deaths:

Nikolai Morozov, honorary member of the Academy of Sciences of the U.S.S.R., known for his general writings on scientific topics, on July 13, aged ninetytwo.

Mr. H. G. Wells, on August 13, aged seventy-nine.

NEWS and VIEWS

Mathematics at Edinburgh :

Sir Edmund Whittaker, F.R.S.

On September 30, Sir Edmund Whittaker vacates the chair of mathematics in the University of Edin-burgh, which he hapfield for a third of a century. Educated, at Mathematics Grammar School and Trinity Jollege, Gambridge, he was second wrangler (epiced with J. H. Grace), Bromwich being senior wrangler; afterwards, he was first Smith's Prizeman and he was cleated to a following in 1800 and he was elected to a fellowship at Trinity in 1896. Much of Sir Edmund's earlier scientific interest centred in theoretical astronomy, particularly in celestial mechanics; during 1901-7 he was secretary of the Royal Astronomical Society and in 1906 he was appointed Royal Astronomer of Ireland. Although his election to the chair of mathematics at Edinburgh in 1912 terminated his official astronomical career, Sir Edmund retains a lively interest in theoretical astronomy, particularly, in these latter days, in the problems of relativistic cosmogony to which he has made some notable contributions, among which may be mentioned his Riddell Lectures at Durham in 1941 on "The Beginning and End of the World". One of his achievements at Edinburgh was the institution of a Mathematical Laboratory in which students obtained a training in the science and practice of computing; the "Calculus of Observations" written by him in collaboration with G. Robinson (a member of his staff) is now the standard work in this field of mathematical discipline. Sir Edmund's other books are "Modern Analysis" (with G. N. Watson), "Treatise on Analytical Dynamics", "Theory of Optical Instruments" and the "History of the Theories of the Aether and Electricity". When Sir Arthur Eddington died in 1944, he left a nearly completed manuscript of a book on "The Fundamental Constants of Nature"; there could only be one choice of editor to see the book through the press, and Sir Edmund has given his time unsparingly in this cause, now nearing fruition.

Sir Edmund was elected to the Royal Society in 1905 and was awarded the Sylvester Medal in 1935. He was president of the Mathematical Association in 1920-1, president of Section A of the British Association in 1927 and president of the London Mathematical Society in 1928-29, being De Morgan Medallist in 1935. During 1939-44 he occupied with distinction the presidential chair of the Royal Society of Edinburgh; it is not too much to say that the Society owes an immeasurable debt to him for maintaining its activities at the highest level during these difficult war years. He has received honorary degrees from several universities and his knighthood in 1945 came as a fitting reward for a life of devoted service and notable achievement.

Dr. A. C. Aitken, F.R.S.

DR. ALEXANDER CRAIG AITKEN has been appointed

by Alization of the University of Edinburgh. Dr. Alization of the University of Edinburgh. Dr. Alization, who was born at Dunedin, New Zealand in 1995, graduated at the University of Other, and wat in 1923 as a research student to Edinburgh, where his subsequent life has been spent. After two years he submitted a thesis of such quality that, on the recommendation of the examiners, the Senatus awarded him the degree of D.Sc. instead of the Ph.D. for which he had entered. He was then appointed to the staff, and in recent years has attracted a steady flow of research students from all over the world. An original impetus towards numerical mathematics doubtless came from his own extraordinary powers in mental arithmetic : for the benefit of those who are not gifted in this way, one of his earliest achievements was to devise methods by which most of the problems with which the practical mathematician is confronted can be reduced to repetitions of a process peculiarly suited to an arithmometer, namely, a cross-multiplication followed by a division. His original papers of the last twenty years have effected notable advances in the theory of matrices and determinants, and the mathematical theory of statistics; and there have been occasional irruptions into other branches of mathematics, such as his remarkable theorem which comprehends in one formula Taylor's theorem and the other expansiontheorems which involve derivatives, all 'single-line' difference interpolation formulæ, and a multitude of other possibilities. Mb

Physiology a Manchester: Prof. W. Schlapp Dr. Waty Schlapp, who will succeed Prof. H. S. Raper (see Nature of August 17, p. 233) in the Brackenbury chair of physiology at the University of Manchester, received his early training in Edinburgh. Helfirst studied chemistry under Sir James Walker and then physiology under Sir Edward Sharpey