

foundation of modern histological research; that on the membranes of Mucorineæ and Peronosporaceæ is still the basis of text-book descriptions.

From the physiology of fungi and the structure of membranes it seemed logical to pass to the study of fungal infections, and this Mangin did with such effect that he is rightly regarded as one of the founders of French phytopathology. His best-known investigations are those on the diseases of wheat, chestnut, vine (with Viala) and fruit trees; he also studied rots of timber.

In 1904, Mangin was appointed professor of the classification and natural families of Cryptogams at the Museum national d'Histoire naturelle in succession to Dehérain, who had held the chair since 1880, but as professor of vegetable physiology. Here his enthusiasm and administrative ability resulted in his being surrounded by a group of active workers—but in conditions which were surprisingly bad. He continued his investigations and became interested in phytoplankton. One aspect of his work which has not received the recognition due to it, was the attempt to add precision to the description of moulds. In 1920, he was elected by his colleagues to succeed

Edmund Perrier as director of the Museum. His administrative duties, particularly heavy on account of the effects of the War, left him little opportunity for research, but he devoted what time he could spare to the study of phytoplankton. By the time he retired in 1931 he had extended the activities and raised the prestige of the Museum; but perhaps his greatest service was the building of the magnificent new Botanical Gallery at a cost of twenty million francs, of which the Rockefeller Institution gave five millions.

Louis Mangin showed his character in his work; when one met him he appeared somewhat reserved but alert and practical, though ever ready to extend to younger men courtesy of a kind suggestive of an older generation.

J. R.

WE regret to announce the following deaths:

L. B. L. Belinfante, secretary of the Geological Society of London in 1916–30, and editor of the *Quarterly Journal* in 1890–1930, on April 10.

Dr. A. P. Wills, professor of mathematical physics in Columbia University since 1910, on April 17, aged sixty-four years.

News and Views

Royal Society: New Fellows

At the meeting of the Royal Society held on May 6, the following fellows were elected: Dr. J. D. Bernal, lecturer in crystallography, University of Cambridge; Prof. A. C. Chibnall, assistant professor of biochemistry, Imperial College of Science and Technology; Prof. G. R. Clemo, professor of chemistry, Armstrong College, University of Durham; Dr. A. N. Drury, lecturer in pathology, University of Cambridge; Prof. H. Munro Fox, professor of zoology, University of Birmingham; Prof. W. E. Garner, professor of physical chemistry, University of Bristol; Dr. S. Goldstein, lecturer in mathematics, University of Cambridge; Dr. Percival Hartley, director of biological standards, National Institute for Medical Research; Prof. H. L. Hawkins, professor of geology, University of Reading; The Rev. J. E. Holloway, lecturer in botany, University of Otago; Dr. W. Hume-Rothery, Warren research fellow of the Royal Society; Dr. T. G. Mason, Cotton Research Station, Trinidad; J. Reid Moir, archæologist; Dr. M. L. E. Oliphant, assistant director of research, Cavendish Laboratory, Cambridge; Dr. C. F. A. Pantin, lecturer in zoology, University of Cambridge; Dr. D. R. Pye, deputy director of scientific research, Air Ministry; Dr. E. C. Stoner, reader in physics, University of Leeds.

Coronation Honours

THE following names of scientific workers and others associated with scientific work appear in the list of Coronation honours conferred by H.M. the King: *Barons*: The Right Hon. Christopher

Addison, first Minister of Health, 1919–21, and Minister of Agriculture and Fisheries, 1930–31; Sir John Cadman, chairman, Anglo-Iranian Oil Company and Iraq Petroleum Company. *G.C.M.G.*: Sir Frederick Leith Ross, chief economic adviser to His Majesty's Government. *K.C.B.*: E. J. Forsdyke, director and principal librarian, British Museum; Prof. E. Mellanby, secretary of the Medical Research Council. *K.C.M.G.*: Sir David Chadwick, secretary of the Imperial Economic Committee and of the Executive Council of the Imperial Agricultural Bureaux; Prof. A. P. W. Thomas, emeritus professor of botany, zoology and geology, Auckland University College, New Zealand. *Baronet*: Sir David Milne-Watson, president of the National Gas Council and Governor of the Gas Light and Coke Company. *Knights*: Prof. R. W. Chapman, professor of engineering, University of Adelaide, South Australia; Brigadier H. J. Couchman, surveyor-general of India; Dr. Allen Mawer, provost of University College, London, and director of the Survey of English Place Names; Colonel A. Olver, expert adviser in animal husbandry to the Imperial Council of Agricultural Research; Dr. R. H. Pickard, director of the British Cotton Industry Research Association; Dr. D'Arcy W. Thompson, professor of natural history, University of St. Andrews. *C.H.*: Prof. C. T. R. Wilson, for services to experimental physics.

C.B.: Major-General H. M. Perry, honorary surgeon to the King, director and professor of pathology, Royal Army Medical College; Dr. D. R. Pye, director of scientific research, Air Ministry; B. Rackham, keeper, Department of Ceramics,

Victoria and Albert Museum. *C.M.G.* : A. J. Findlay, director of agriculture, Zanzibar ; C. F. M. Swynerton, director of tsetse research, Tanganyika Territory. *C.I.E.* : J. F. Blakiston, director-general of archaeology in India ; Colonel J. Taylor, director, Central Research Institute, Kasauli ; Lieut.-Colonel C. Newcomb, chemical examiner to the Government of Madras, and principal, Medical College, Madras ; F. Ware, officiating expert adviser in animal husbandry to the Imperial Council of Agricultural Research.

C.B.E. : Prof. A. L. Bowley, emeritus professor of statistics in the University of London ; Prof. E. L. Collis, emeritus professor of preventive medicine in the University of Wales, a member of the Miners' Welfare Committee ; G. S. Colman, member of the Pastoral Research Council, Commonwealth of Australia ; Dr. A. D. Crow, director of ballistics research, Research Department, Royal Arsenal, Woolwich ; Colonel J. Heatly-Spencer, honorary physician to the King, professor of tropical medicine, Royal Army Medical College, and consulting physician to the Army.

O.B.E. : W. P. Brewis, chairman of the Newcastle Society of Antiquaries, member of the Council of the Roman Society ; H. J. Burrell, for contributions to natural history in the Commonwealth of Australia ; R. Daubney, chief veterinary research officer, Kenya ; H. N. Linstead, secretary and registrar of the Pharmaceutical Society of Great Britain ; A. Main, chief inspector of agriculture, Department of Agriculture for Scotland ; A. Morley, lately staff inspector, Board of Education ; Prof. A. J. Perkins, formerly director of agriculture in the State of South Australia ; F. S. Richards, deputy surveyor-general to the Egyptian Government ; H. W. Simmonds, entomologist, Fiji ; Dr. J. M. Stagg, senior technical officer, Meteorological Office, Air Ministry ; D. Stewart, deputy conservator of forests, United Provinces ; J. G. Stewart, chief inspector of agricultural education, Ministry of Agriculture and Fisheries. *M.B.E.* : W. L. Watt, agricultural officer, Kenya ; L. F. Wachter, agricultural officer, Basutoland. *I.S.O.* : A. H. Cockayne, director-general, Department of Agriculture, Dominion of New Zealand ; A. More, deputy Government chemist.

Prof. W. L. Bragg, O.B.E., F.R.S.

PROF. W. L. BRAGG, who has been appointed director of the National Physical Laboratory, has held the Langworthy chair of physics in the University of Manchester since 1919. Beginning his research work at Cambridge in 1912, about the time when v. Laue had announced his discovery of the diffraction of X-rays by crystals, Prof. Bragg was attracted to this field of work. One of his early papers explained, in terms of the 'reflection' principle, the nature of the patterns observed in the Laue photographs. Along with his father, Sir William Bragg, he developed the X-ray spectrometer. The determination of the structures of the simpler crystals followed, until in 1915, their work was recognized by the joint award of the Nobel Prize for Physics. After his appoint-

ment at Manchester, Prof. Bragg quickly established a school of workers engaged in investigations of the solid state of matter. His own particular interest has been in the orderly arrangement of atoms in crystals and in relations between atomic arrangement and the properties of a crystalline substance. The field is a very wide one, and is of interest, not only to the physicist, but also to the chemist who is seeking to understand the nature of the forces which bind atoms together and to the industrial research worker who wants information about the structure of his working materials.

FOLLOWING the first period, in which the simpler crystal structures were investigated by X-ray methods, the determination of the structures of more complex crystals was made possible, principally through the development of methods of analysis using the intensities as well as the directions of reflection of the X-rays. In this phase of the work, Prof. Bragg and his co-workers have determined a range of complex structures of minerals, particularly silicates and zeolites. During the last few years, Prof. Bragg and his team of research workers have been particularly interested in an experimental and theoretical study of the atomic arrangements in alloys and in the effect of heat treatment on these structures. Prof. Bragg's laboratory in Manchester has been one of the principal centres in Great Britain for the investigation of the structure of crystals, and students from all parts of the world have visited the laboratory, either for training in this field of research or for the privilege of working under Prof. Bragg's supervision.

Prof. A. O. Rankine, O.B.E., F.R.S.

It is announced that Prof. A. O. Rankine, professor of physics in the Imperial College of Science and Technology since 1919, will resign that position at the end of the present academic year in order to join the staff of the Anglo-Iranian Oil Company as chief physicist. Prof. Rankine has for some years acted as geophysical adviser to the Company and in his new position he will take charge of all physical investigations carried out by the Company. The appointment is another interesting and significant example of the migration from the academic to the industrial world of a distinguished man of science, and is evidence of the ever-growing importance of science and scientific research in modern industrial development. It may be remembered that Sir John Cadman, the chairman of the Anglo-Iranian Oil Company, was himself at one time a professor in the University of Birmingham. During his chairmanship of the Company, since 1927, notable work in the development of the relatively new science of geophysics has been carried out since 1924 by the Company, which introduced geophysical surveying in the country formerly known as Persia and now to be called Iran. In the development of geophysical science, Prof. Rankine has played a notable part, and will no doubt find in his new sphere increased scope and opportunity for further advances.