

them to the Great Fisheries Exhibition in London in 1883, where they attracted the attention of all marine zoologists, and stimulated those specially interested in the fisheries to further investigations. He was truly the pioneer in this department and was worthy of the distinction, though subsequent observations demonstrated that the ways of Nature in the ocean are not at the mercy of currents. Thus, for example, the young cod, hatched in the offshore, seek the rocky margins of the inshore when about an inch in length, whilst the haddock passes this stage in deep water. The herring, moreover, appears to be independent of drift and currents, its eggs being adherent to the bottom, producing larvae and young which remain near their birthplace until their powers of swimming enable them to follow Nature's instincts. Currents, again, will not fully explain the life-history of the eel. Be this as it may, G. O. Sars has the honour of leading the way into this important field. In 1874 he was appointed to the chair of zoology in the University of Oslo as successor to Prof. Halvor Rasch.

Sars' continuous researches in marine zoology during a long life are almost unequalled in the history of the subject, and strike the observer both with respect and amazement. Not only did he largely extend the boundaries of knowledge in relation to his own wonderful seas (not to allude to his work in editing various posthumous memoirs of his father), but also most of the important expeditions, from the *Challenger* to the "Voyages of the Prince of Monaco," sent him materials for study. Further, collections from New Zealand and Australia, China and the Polar Sea, South and Central Africa to Tanganyika and other places, furnished materials for his eager microscope, even dried mud from Australia and New Zealand disclosing new forms to the indefatigable worker. Moreover, when we reflect that whilst his special studies centred in the wide field of the Crustacea with autograph figures of all the Norwegian species, his unceasing labours comprehended Protozoa, Cœlenterates, Echinoderms, Bryozoa, Annelids, Mollusca (including a volume of 446 pages and 52 autograph plates on those of Norway), and even added to our knowledge of the Blue Whale and the Finner, our admiration is involuntary. No self-seeking element was there, only the inborn and genuine love of Nature and her works. His numerous original memoirs were mostly illustrated by his own facile pencil and brush, and when it is mentioned that no less than two thousand two hundred and thirty plates—including a few maps—were a portion of the result of his untiring zeal, some idea of the stupendous task may be estimated, a task at which even a more robust frame may have quailed. His studies on the copepods alone were sufficient for a reputation.

Sars' strenuous life made him more or less a recluse, but he was beloved by his students and friends, and he was ever ready to help a scientific visitor from other countries with his great knowledge and experience. As a foil to his labours he was wont to solace himself with his violin, as befitted a member of a musical family. Of a wiry

frame and with refined features and dark hair like his mother and his late charming and accomplished sister, Mrs. Fridtjof Nansen, he was enabled to carry on his researches until a week or two before his somewhat sudden death—from weakness and old age. He passed away just as his colleagues, friends, and pupils had thought to celebrate the old scientist's birthday, and they had to be content with assembling at the grave to pay a last tribute. Yet though his hair whitened and his sight became dim, whilst the cramp of age somewhat affected his writing, his drawings to the last lost little of their pristine firmness and beauty—so much valued in his early years by his father. His long and busy life of unswerving devotion to marine zoology was as noble as it was rare. His career throughout was an honour to science, to his country, and to his race, and though Norway has a roll of many distinguished zoologists and explorers, it will be long before so enthusiastic and so persevering a student of the rich creeks, bays, and seas of his native country will be found.

Sars was an honorary member of numerous scientific societies in Europe, the United States, and New Zealand. He was also Commander of the 1st Order of St. Olav of Sweden; indeed, he was the recipient of many honours appreciative of his distinguished services to science. W. C. M.

PROF. M. F. FITZGERALD.

PROF. MAURICE FREDERICK FITZGERALD, B.A. (Dublin), D.Sc. (Belfast), was born on July 10, 1850, and died on May 4. The eldest son of the late Right Rev. Wm. FitzGerald, Bishop of Killaloe, he came of a family greatly distinguished in science. A brother of the late Prof. George Frances FitzGerald, F.R.S., and nephew on the mother's side of the late George Johnston Stoney, F.R.S., and Bindon B. Stoney, F.R.S., the eminent engineer, he early showed mental powers of a high order. He entered Trinity College, Dublin, in 1867, gained a scholarship in mathematics, and graduated with honours in 1871. In the following year he became a pupil with Messrs. Easton and Anderson of Erith ironworks. Under that firm he had experience on the sewerage of Doncaster and the erection of pumping machinery on the Clyde, and in 1875 went to Russia to instal similar plant at the Cronstadt graving docks. He was afterwards employed by the Russian Government on works at Riga and Odessa, and on his return to Ireland took part in important drainage works on the Shannon.

In 1884 FitzGerald was appointed to the chair of engineering in Queen's College, Belfast, a post which he filled with conspicuous success for twenty-six years. He endeared himself to a long succession of students by his most lovable character and striking individuality as a thinker and teacher. His pleasant voice with its slight touch of southern brogue, his keen sense of humour, and his zest in handling mathematical problems, gave his teaching a constant charm, increasing as the course advanced. The gentle, happy manner in which he put at their service his great natural and acquired abilities

made an unforgettable impression on those who knew him as a teacher and a friend. No pains were too much for him in training men for the arduous career of an engineer, and his guidance and help were freely extended to them after they had graduated. Poverty in material equipment was the lot of all engineering schools until recent times, but FitzGerald had the gift of making improvised models serve the purposes for which expensive apparatus is now widely available.

Before his retirement in 1910, largely due to the stress and strain of his constant but always unobtrusive work in Belfast, FitzGerald had the joy of framing the main lines of a modern engineering school with laboratories in the reconstituted Queen's University. His services were always freely given for the furtherance of the best interests of Belfast and its University. He co-operated heartily with the civic authorities in the foundation and development of their great technical institute, which is most happily linked with the University, and his advice was much appreciated. He took, as Fleeming Jenkin did, an active and potent interest in the improvement of the status and methods of craftsmen employed in plumbing and drainage. This was work of a kind

dear to his heart, as he loved the workman, and longed to bring all good knowledge to his aid. He was an indefatigable worker, and filled in any free periods by the pursuit and criticism of questions of the higher mathematics and the subtle riddles of philosophy. He was, moreover, an excellent classical scholar.

His brother George and he had very acute and analytical minds and foreshadowed, if they did not reveal, some of the important discoveries and now accepted theories which have made later students famous. Withal FitzGerald was one of the most modest and unselfish of men, caring not at all for credit so long as good results were secured. His main work was that of a teacher, but some papers by him on rotating discs, whirling shafts, and other abstruse subjects were published in the proceedings of scientific societies. He prepared, after barometric observations over long trails on the Mourne Mountains, an interesting map of their contours.

In 1893 he married Annie Maria Charnock. Their only child, William, joined the Royal Flying Corps early in the War and was killed on service in France. To know Maurice FitzGerald was to gain an added faith in humanity.

### News and Views.

THE Colonial Office Conference at its meeting on May 27 adopted the Report of Committee A on Colonial Scientific and Research Services. The committee restricted its inquiry to the three major groups of applied science affecting the non-self-governing Dependencies—namely, medicine, agriculture with its auxiliary branches, and veterinary science and forestry. Since, however, in most of these territories agriculture, including stock-raising, is the principal occupation of the populations, the committee has dealt chiefly in its report with the organisation of the agricultural services. It recommends the constitution of a central council with a chairman appointed by the Secretary of State for the Colonies (who should be a layman), a director (who should be a scientific worker of standing), and a deputy-director (with Colonial administrative experience). The functions of the council should be to make recommendations to the Secretary of State in regard to the broad lines of research programmes, the establishment and maintenance of a chain of Imperial research stations, the creation of a clearing-house of information, the organisation of a pool of scientific workers, and the organisation and general principles of administration of a Colonial Agricultural Research Service. Liaison is to be established and maintained with the Empire Marketing Board, the Medical Research Council, and any other body already existing or set up for the prosecution and encouragement of research of importance to the Dependencies. Although the committee recommends the immediate establishment of distinct services for medical, agricultural, and forestry research, and so on, the possibility of their eventual fusion into one common research service is

not discounted. In the formation of the Colonial Agricultural Research Service the committee states that the following condition should be fulfilled: it must be well paid, the members of the service should be liable to transfer, but an officer entering the service must be safeguarded against any loss on transfer.

THE annual report for 1926 of the Imperial Institute shows the progress that has been made since the passing of the Imperial Institute Act of 1925, under the administration of the new Director, Lieutenant-General Sir William Furse. The Institute is divided into two departments, dealing respectively with plant and animal products, and with mineral resources. The former, which has seven committees and is under the chairmanship of Sir David Prain, appears the more active; it has during the past year answered 920 inquiries on subjects, of which a selection are mentioned in the report; they include the prevention by planting of the migration of sand dunes in Somaliland, the utilisation of locusts for the manufacture of oil, the machinery for oil palm, and inquiries as to many vegetable products. The Mineral Resources Department during the year has answered 430 inquiries, and has a list of 16 committees. The most active development during the year has been the rearrangement of the exhibition galleries on modern museum lines, aided by contributions from seventeen out of the forty-four British Dominions and Colonies. The reserve material is being removed to store and sample rooms, where it will be readily available for examination by experts. The galleries are being devoted to exhibits of popular interest with many attractive dioramas and transparencies. An Empire Art Gallery offers to exhibit gratuitously