

this meeting there was no one from the U.S.S.R. Had there been, they could have been reminded that they, who have exploited this technique more than any other people, are greatly indebted to the Italian Spallanzani, and their hosts could have been given further reason for their rejoicings by the knowledge that Spallanzani's early sowings had produced so abundant a harvest.

The foreign delegates were housed in the Collegio Ghislieri and in the Almo Collegio Borromeo. 'Housed' is certainly the wrong word, for the hospitality they received was so warm and so friendly, and the accommodation itself so welcoming, that they who had come as strangers, left as friends.

During the days of the congress when for brief intervals the clamour of discussion died down, there were pleasant excursions to the Certosa di Pavia, a Carthusian monastery crowded with works of art; to the town of Pavia itself; and to the

Spallanzani Museum at Reggio. In addition there were evening concerts, exquisite yet informal, such as could only be enjoyed in Italy, in the rooms of the Circolo del Littorio. The foreign delegates came away full of admiration and gratitude, entertaining the wish that all congresses, if not meeting in Italy where they do these things so well, should at least be constructed on the Italian model.

This celebration was notable also for the appearance of the first number of a new journal, *Scientica Genetica* (see NATURE of April 22, p. 676). This is a matter of some considerable interest for it truly marks a stage in the development of this science in Italy. A rapidly growing school exists and the stage of its development is indicated by the recognition of the need for the publication of a specialist scientific journal which will cater primarily for the geneticists of the Latin-speaking countries.

F. A. E. CREW.

Obituary Notices

Sir Frank Dyson, K.B.E., F.R.S.

IT is with much regret that we record the death at sea on May 25 of Sir Frank Dyson, Astronomer Royal from 1910 until 1933, whilst on the voyage home after a visit to Australia.

Frank Watson Dyson was born on January 8, 1868, and was educated at Bradford Grammar School and Trinity College, Cambridge. He was second wrangler in the Mathematical Tripos in 1889, and was placed in Class I, Division 2, in Part II of the Tripos in the following year. He was awarded a Smith's Prize and elected to a fellowship at Trinity College. In 1892 he was appointed to an Isaac Newton Studentship, being the second holder of the studentship, which had shortly before been endowed by Mr. Frank McClean for research in astronomy or physical optics.

In 1894 there occurred a vacancy in the post of chief assistant at the Royal Observatory, Greenwich, through the election of H. H. Turner to the Savilian professorship at Oxford, and Dyson was selected by the Astronomer Royal, W. H. M. Christie, to fill the vacancy. The choice proved to be a singularly happy one, and Dyson threw himself with characteristic energy and enthusiasm into the various branches of the work at Greenwich.

Dyson's first important work, undertaken in collaboration with W. G. Thackeray, one of the assistants, was a new edition of Groombridge's Circumpolar Catalogue. Stephen Groombridge, a retired West Indian merchant, had made at Blackheath between the years 1806 and 1819 some 27,000 observations of more than 4,000 circumpolar stars, using a 3½-inch aperture transit circle of 5 feet focal length. The observations had been well made, with

careful attention to the instrumental adjustments, but the reductions were not in accordance with modern ideas of accuracy. A complete new reduction was made, starting from the original observing books. The Groombridge stars were re-observed at Greenwich, and from the comparison of the two series of observations, supplemented by such other observations as were available, the proper-motions of the stars were derived. These proper-motions were discussed for the derivation of the constant of precession and the solar motion. The work was completed in 1905 and provided a valuable addition to the available data on the proper-motions of the stars. The publication came at an opportune time. In the previous year Kapteyn had announced his important discovery of star-streaming from the analysis of the proper-motions of the bright stars observed by Bradley in the years 1750-62. The Groombridge proper-motions were used by A. S. Eddington, who succeeded Dyson as chief assistant at Greenwich on the appointment of Dyson in 1906 as Astronomer Royal for Scotland, to confirm the existence of star-streaming amongst these fainter stars, which extended to a greater distance from the sun than the stars used by Kapteyn.

The work on the Groombridge Catalogue directed Dyson's attention to the problems of stellar motions, in relation to the distances and luminosities of the stars and to their distribution in space. Both whilst at Edinburgh and after his return to Greenwich in 1910 as Astronomer Royal, on the retirement of Sir William Christie, he published a number of papers on these subjects.

As chief assistant, Dyson had also taken a considerable part in the Greenwich share in the international co-operative plan for photographing the

heavens and preparing an astrographic catalogue : the zone of the sky allotted to Greenwich was from declination 65° N. to the pole. On his return to Greenwich as Astronomer Royal, many of the programmes of work were directed to making the information about this zone of the sky as complete as possible. Measurement of the parallaxes of stars of large proper-motion, determinations of photographic magnitudes and of effective wave-lengths were undertaken. The whole zone was photographed again, the photographs being obtained through the glass ; by placing corresponding early and late photographs film to film, the proper-motions of the stars were conveniently and rapidly derived from differential measures.

The problems to be solved at total eclipses of the sun claimed much of Dyson's attention. He took part in several himself and was fortunate in never having cloudy weather. In the total eclipse of 1927, which was visible in England, he selected Giggleswick as the station for the Greenwich party, and this proved to be almost the one place where the eclipse was observed under favourable conditions. His own work on the spectra of the chromosphere and of the corona made important contributions to the subject. It was in large measure as the result of his initiative and energy that two expeditions went from England to observe the total eclipse of May 1919. Dyson had pointed out in 1917 that this eclipse would afford a particularly favourable opportunity for testing whether there was a deflection of rays of light passing near the sun of the amount predicted by Einstein from his theory of relativity. Preparations were made for the two expeditions in the hope that the Great War would end in time to make it possible for them to set out. How the expeditions set out, obtained their observations and vindicated Einstein's prediction is well known. This successful confirmation, coming at so crucial a time, undoubtedly did much to bring about a general acceptance of Einstein's theory. After his retirement in 1933, Dyson wrote, in conjunction with Dr. R. v. d. R. Woolley, "Eclipses of the Sun and Moon", published in 1937, which is the best book that has been written on this subject.

Dyson took a great interest in problems of time-keeping and in the craft of clock-making. He was responsible for the distribution through the B.B.C. of the 'six-pips' time signals, the signals being sent direct from Greenwich and making accurate time more readily available than it had hitherto been. He was for many years president of the British Horological Institute, which awarded him its Gold Medal in 1928, and he was a member of the Court of Assistants of the Clockmakers Company, of which he was twice master.

After the Great War, when international co-operation in science had lapsed to a considerable extent, Dyson played a prominent part in the reconstitution of international scientific co-operation with the International Research Council and in the formation of the International Astronomical Union. The success that this Union has achieved in securing international co-operation in different branches of astronomy is in no small degree due to Dyson's wise

guidance. His election as president for the period 1928-32 was a fitting recognition of his services to the Union.

Dyson received many honours. He was president of the Royal Astronomical Society, 1911-13 ; president of the British Astronomical Association, 1916-18 ; vice-president of the Royal Society, 1913-17. He was awarded a Royal Medal of the Royal Society in 1921, the Bruce Gold Medal of the Astronomical Society of the Pacific in 1922 and the Gold Medal of the Royal Astronomical Society in 1925. He received honorary degrees from the universities of Oxford, Cambridge, Edinburgh, Durham, Leeds, Toronto, Perth and Melbourne, and was foreign or corresponding member of various national academies. He was created a Knight Bachelor in 1915 and a K.B.E. in 1926.

Dyson was a man of engaging personality and of singular charm. To all of his staff he was not merely a chief but also a friend. He married Caroline Best, daughter of Mr. Palemon Best ; she died in March, 1937. They had two sons and six daughters. Foreign astronomers from all parts of the world and many other visitors to Greenwich were sure of a warm welcome and of friendly hospitality in their home. Dyson had a keen sense of public duty, and much of his leisure time was spent in work for the various schools, hospitals, charities and other good causes in which he was interested. Of no man might it more appropriately be said :

"His life was gentle, and the elements
So mix'd in him that Nature might stand up
And say to all the world 'This was a man !'"

H. S. J.

Engineer Vice-Admiral Sir Henry John Oram,
K.C.B., F.R.S.

Of the many engineers who held high positions during the Great War, none had a more onerous and responsible task than Engineer Vice-Admiral Sir Henry Oram, who died at Cranleigh on May 5 at the age of eighty years. From October 1907 until June 1917 he was engineer-in-chief of the Fleet, and as such was responsible for the design, construction and maintenance of the machinery of hundreds of warships from battleships to armed trawlers, and for a personnel of something like 70,000-80,000 officers and men. He had served in various grades at the Admiralty from 1884 until 1907, when he succeeded Engineer Vice-Admiral Sir John Durston and "under him", as *The Times* said, "was created the post-Dreadnought Fleet, which formed the backbone of the Navy in the conflict with Germany, and the very high standard of efficiency obtained under the stress of war in the engine rooms of ships of all types and classes reflected the highest credit upon his professional skill, sound judgment and administrative ability".

Though, unfortunately, little has been published on the work of the engineering branch of the Navy during the Great War, both Admiral Jellicoe and