

heliograph that had been used at Kew was installed in the Observatory grounds, both of which were given into Maunder's charge.

Thus began the forty-year series of photographs of the sun that was made under his direction. The first decade of the period was before the general use of the gelatine dry-plate, and the task of taking photographs by the collodion process daily, as weather permitted, was somewhat arduous. Maunder was partly relieved of this by the appointment of a skilled helper, and was able to devote some time by day to spectroscopic examination of the chromosphere and prominences, whilst at night the instrument was used for measuring the displacement of lines to determine velocities in the line of sight, occasionally for mapping the spectra of planets and stars, or, sometimes the telescope was used without the spectroscope for visual examination of, or for micrometric work on, the planets. Notes on the spectra of two Novæ, with others on similar subjects, are to be found in the *Monthly Notices of the Royal Astronomical Society* under Maunder's name, and for the most part the observations here mentioned are in the volumes of that publication. After the accession of Christie to the office of Astronomer Royal, the work of photographing and recording the sunspots was developed in several ways. The photo-heliograph was adapted so that (from April 4, 1884) the solar image had a diameter of 8 inches instead of 4 as hitherto, and the Greenwich photographs were supplemented by others taken at Dehra Dun and elsewhere to make the series complete.

This naturally made more demand on Maunder's time, and the personnel of the department was increased, but about the time of the sunspot maximum of 1894, the spectroscopic work at Greenwich was given up that he might devote himself wholly to the sunspots. The record of their positions and areas was kept by him with care and skill until his retirement in November 1913, and beyond the bare record, his ingenious tabulations and diagrams are of much value. A re-determination of the position of the sun's axis, published in 1912 and 1913, and a diagram showing the distribution of spots in latitude during three or more cycles, known as the 'Butterfly' diagram, may be mentioned, but his papers that received most attention were those on the association of terrestrial magnetic disturbance with the appearance of sunspots. A diagram in the *Monthly Notices* of November 1904, which displayed the solar longitude of the centre of the disc that was contemporaneous with the occurrence of magnetic disturbances in the years 1882 to 1903, showed unmistakably that magnetic storms are of solar origin. The idea of a short period in magnetic phenomena was not new, but it is doubtful whether it had been before exhibited so vividly.

It does not belittle Maunder's actual astronomical work to say that his greatest service to the science was the founding of the British Astronomical Association. In his early years at Greenwich he had formed a large circle of astronomical acquaintances, and in the year 1890 he was led to conceive

the idea of an Association of amateur astronomers for mutual help, who because of their sex, or by other circumstances, might be precluded from joining the Royal Astronomical Society. Mainly by his efforts such an Association was formed, and the position of the organisation to-day, with its roll of a thousand members, many of whom are contributing observations of unique character and importance to astronomy, testifies to its success.

Maunder went abroad on six occasions to observe a total solar eclipse—twice as a member of a British official expedition; once as a guest of the Canadian Government, and three times he was a member of a party organised by the British Astronomical Association. On four of these occasions he was favoured with fine weather.

Maunder had a ready pen, considerable command of language, and wrote much. He was acting editor of the *Observatory* magazine from 1881 until 1887. At one period he contributed the Astronomical Column to this journal, and at another did similar office for the now defunct *Knowledge*. He edited the *Journal of the British Astronomical Association* from its foundation until the end of the fourth volume, and from 1896 until 1900; and the complete series contains many articles by him on topics of varied nature, archaic astronomy being one of them. His book, "Astronomy without a Telescope," has found many readers, as has his "History of the Royal Observatory," whilst his elucidation of certain scriptural passages in his work "Astronomy of the Bible" elicited commendation from ecclesiastics in high position, the book itself being in keeping with the devoutness that was a marked feature of his character.

Maunder was twice married. His first wife died in 1888, leaving a family of three sons and two daughters, who survive him. In 1895 he married Miss A. S. D. Russell, who was formerly on the staff of the Royal Observatory, and is not unknown in the astronomical world. He joined the Royal Astronomical Society in 1875, and was a member of its council for several years, serving as honorary secretary from 1892 until 1897. He retired from his post at the Royal Observatory at the end of the year 1913, but was recalled during the years of the War to carry on the sunspot record.

PROF. THEODOR CURTIUS, emeritus professor of chemistry in the University of Heidelberg, died at Heidelberg on Feb. 9 in his seventy-first year. Curtius, who was well known as the discoverer of hydrazine, hydrazoic acid and the azides, discovered also the method of obtaining aliphatic diazo-compounds. Lead azide, which he first prepared, soon became an important substitute for mercury fulminate as a detonator.

WE regret to announce the following deaths:

The Right Hon. Viscount Cave, G.C.M.G., who had just resigned from the office of Lord High Chancellor, and Chancellor of the University of Oxford since 1925, on Mar. 29, aged seventy-two years.

Dr. William C. L. Eglin, vice-president of the Philadelphia Electric Company and president of the Franklin Institute, on Feb. 7, aged fifty-eight years.