

the 22nd N.Y. Volunteer Regiment as a private, and during the year of his service was promoted to corporal, second sergeant, first sergeant, colour-sergeant, sergeant-major, and second lieutenant of Company C in the field. At the expiration of his term of enlistment he entered the Navy, and on the U.S.S. *Florida* took part in the blockade off Wilmington, N.C.

On the close of his service he entered the Columbia Law School, graduating with the degree of LL.B., and pursued the practice of law in New York City, having the care and management of the family estate.

Later in life he took up the study of astronomy as a recreation with marked success, and at his country place in Bayport, Long Island, built one of the best equipped amateur observatories in the country. He was one of the astronomers attached to the Eclipse Expedition of the Naval Observatory to Brownsville, Georgia, in 1900, and the same year received the honorary degree of Master of Arts from Columbia College in recognition of his astronomical work.

Post was a member of the Naval Order of the United States; a Fellow of the American Association for the Advancement of Science; a Fellow of the New York Academy of Sciences; a Fellow of the Astronomical and Astrophysical Society of America; a member of the Astronomical Society of the Pacific. He also belonged to the Delta Phi Fraternity, the Union Club, and many other social and literary organisations. He died in New York on 1921 April 26.

He is survived by his wife, Marie Caroline, *née* de Trobriand, daughter of General Comte de Trobriand, and two daughters, Mrs Duncan Candler and Mrs Goelet Gallatin.

He was elected a Fellow of the Society on 1895 Feb. 8.

WILLIAM EDWARD ROLSTON was born at Birmingham in 1876 on October 18, the second son of William Woodman Rolston, a maker of scientific instruments. He was educated at the Birmingham Municipal Technical School, and after a course as Teacher in Training at the Royal College of Science, where he was also a demonstrator in the courses on Astrophysics, and did some work as computer in the Solar Physics Observatory for a short time, he went in 1898 as science master to Cleobury Mortimer, and in 1899 to Cheadle Hulme, near Stockport.

In 1901 he returned to the Solar Physics Observatory as computer, and on the transference of the Observatory to Cambridge in 1913 he was appointed on the staff as first junior observer. His earliest work at South Kensington related to the observation of the ultra-violet extension of the spectra of stars selected as representatives of the various stages in Sir Norman Lockyer's classification of stars in two branches of ascending and descending temperatures. The spectra of pairs of stars were for this purpose photographed with a special prismatic camera, provided with a calcite prism and a quartz lens. The selected pair of stars, in general widely separated in the sky, were to be photographed when they were approximately at the same altitude. Isochromatic plates were used, for it was desired to make comparisons of the intensities at the red end of the spectra as well as the ultra-violet, effort being directed to obtain each pair of spectra of equal intensity in the

region between  $H_{\beta}$  and  $H_{\gamma}$ . It was a troublesome bit of observational work successfully carried out by Mr. Rolston in collaboration with Mr. Goodson. The results were given in Sir Norman Lockyer's paper entitled "Further Researches on the Temperature Classification of Stars," communicated to the Royal Society and published in the *Proceedings*, 73, 227 (1904).

Rolston took part in other researches carried out at South Kensington, such as wave-length reductions of enhanced lines of various metals (1906) and the observation of widened lines in sun-spot spectra. Another piece of work in which he was closely concerned was that relating to the orientation of stone circles and temples in various countries, a subject in which Sir Norman Lockyer was much interested, in the hope that thereby the date of inauguration of such structures might be determined. The results were communicated by Sir N. Lockyer in the years 1906-7, some in a series of papers to the Royal Society and others in his book on *Stonehenge and other British Stone Monuments* (1906). In all of these Rolston is referred to as having undertaken the reductions for the orientations.

He was responsible too for the compilation of a memoir on the "Phenomena of New Stars," summarising in a very serviceable way a great deal of scattered material. It was published under the auspices of the Solar Physics Committee in 1914. For several years he contributed the notes for the astronomical column in *Nature*.

After the transference of the Observatory to Cambridge in 1913, his first work was concerned with comparisons of stellar spectra, and he devoted considerable time to investigations with the new spectrograph attached to the Huggins 15-inch equatorial. He had successfully got this instrument into excellent working order when the war broke out. He then went into training with the Officers' Training Corps at Cambridge, and in 1915 he got a Commission in the Buffs (5th Weald of Kent). He went to France in February 1918, attached to one of the Sound Ranging Sections in the 4th Field Service Battalion. After the Armistice he went with the Army of Occupation to Cologne. There he was attached to the Military Governor's Staff and became the founder and managing editor of the *Cologne Post*, a remarkable daily newspaper printed in English by German compositors, and much appreciated by the British troops in Cologne. Rolston threw himself with unsparing zeal into the labours of his task; and when British Forces went into Upper Silesia in the summer of 1921, an Upper Silesian edition of the *Cologne Post* was issued, which aimed at supplying news at Oppeln forty-eight hours ahead of that in the papers received from home. It seems clear that he must have overtaxed his strength, for he died after a few hours' illness on 1921 August 9, in the midst of his work, and on the very day that he was expecting his wife and children to join him at Cologne. He was buried at the Südfriedhof with military honours—a man of earnest character and of public-spirited interests. His early death in the prime of life is a matter of deep regret to his colleagues and many friends.

Captain Rolston was elected a Fellow of the Society in 1904 April 8.

H. F. N.

WILLIAM SHACKLETON was born in 1871 at Keighley, and was educated at the Keighley Trade and Grammar School and the Royal College of Science, South Kensington, where he obtained his Associateship in 1891. He then became an assistant to Sir Norman Lockyer at the Solar Physics Observatory at South Kensington, his practical skill and enthusiasm as an observer during the next ten years contributing largely towards the successful pioneer work of the observatory.

During this period he took part in two eclipse expeditions organised by Lockyer, the first in Brazil with Mr. A. Taylor in 1893, and the second in Novaya Zembla in 1896 with Dr. E. J. Stone. Successful photographs of chromospheric spectra were obtained on both occasions, and at Novaya Zembla the series included some excellent photographs of the corona and, for the first time, a photograph of the complete "flash" spectrum, with perfect definition. This fine result was only made possible by Mr. Shackleton's skill and resource under great difficulties. The grounding of Sir George Baden Powell's yacht *Otaria*, which had conveyed the observers to the eclipse station, and bad weather conditions during the period before the eclipse, were not encouraging; but by taking advantage of every interval of clear sky, Mr. Shackleton completed his preparations in time to achieve a well-earned success.

During his stay in Brazil in 1893 he contracted malaria, recurrence of which affected his general health considerably for some years. In 1900 he was selected as physicist to go with Scott on his first Antarctic expedition, but after organising the instrumental equipment necessary for the observations contemplated, he was finally left behind on medical disqualification.

For some years he assisted Dr. A. A. Common in his observatory work, and in work connected with the design and manufacture of gun-sights and range-finders.

After Dr. Common's death in 1903, Mr. Shackleton was again in the Royal College of Science, acting for a short time as assistant in the Physics Department. Illness prevented his going to Spain in 1905 to observe the solar eclipse, for which he had designed a combined coronagraph and prismatic camera of 40 feet focal length, which was constructed and taken with the expedition. On this occasion, however, no observations were possible owing to bad weather conditions.

Later in this year he was appointed Inspector of Scientific Supplies at the India Stores Depôt, which post he retained during the remainder of his life. He gave himself whole-heartedly to the work of this Department, for which he was so well equipped by his extensive and expert practical knowledge of the design, construction, and performance of scientific instruments generally.

Various modifications and improvements in design and manufacture were due to suggestions made by him, and he introduced several improved methods of testing optical instruments. His careful work in supervision of details of design of the instruments required in India, and in testing them to ensure that all instruments sent out were satisfactory in performance for the particular purpose required, was much appreciated by scientific workers in that country.

In 1913 Mr. Shackleton became an active member of the Optical