

At a dinner, held in Leith Academy when he retired, Dr Mackie was presented with his portrait, painted in oils by Mr Donald Moodie. We wished him many years of continued happiness. Unfortunately illness marred the too-short period of retirement and he died in January 1955.

Our deepest sympathies are conveyed to Mrs Mackie and her son and daughter.

T. M. M. ALLEN.

W. M. H. GREAVES

William Michael Herbert Greaves was born, 1897, September 10, in Barbados ; his family came from the west of England. He had a brilliant career in mathematics and astronomy at Cambridge where he was Tyson Medallist 1919, Smith's Prizeman 1921, Isaac Newton Student 1921-3, and Fellow of St John's College 1922. He was Chief Assistant at the Royal Observatory, Greenwich, 1924-38. He was then appointed Astronomer Royal for Scotland and Professor of Astronomy in the University of Edinburgh. He was elected F.R.S. in 1943. He died suddenly in Edinburgh on Christmas Eve 1955. In 1926 he married Miss Caroline Grace Kitto, who survives him with their son.

Greaves was Secretary of the Royal Astronomical Society, 1933-39 and later filled the office of President with great distinction, 1947-49. He had been Secretary and Recorder of Section A of the British Association. He had attended all of the general assemblies of the International Astronomical Union since 1935 and had been President of its commission on stellar photometry, 1948-55 and a very active member of other commissions. In the Royal Society of Edinburgh, he was Secretary 1940-45, Vice-President 1946-49, and Chairman of the Robert Cormack Bequest Fund Committee.

Before going to Greenwich, Greaves's work was entirely mathematical and in his early researches he had the advice of H. F. Baker, F.R.S. He always retained an appreciation of neat or powerful mathematical reasoning. In celestial mechanics, he made contributions to the restricted three-body problem, the theory of Saturn's rings and to problems in perturbation theory. At Greenwich, the part of the Chief Assistant was to foster the research aspects of the Observatory's work both by initiating new investigations and by consultation on those

already in progress. Greaves maintained this tradition with exceedingly fruitful consequences. He took to practical astronomy with ardour, but also with clear-minded attention to all sources of possible error; his results earned a reputation for the highest attainable reliability. He developed a method for measuring the relative gradients of the continuous spectra of stars and, later, of determining "absolute" gradients by using a laboratory comparison-standard. This work became a major Greenwich programme from 1926 to 1939. The results, published mainly in 1932 and 1940, are recognised as a first-rate advance in observational knowledge of stellar radiation. Greaves reviewed this department of astronomy and its significance in a notable presidential address to the Royal Astronomical Society, 1948. Amongst other Greenwich programmes in which he took an energetic interest was that on geomagnetic effects produced by the sun and he shared in important discoveries about solar conditions associated with various types of magnetic "storms." His second presidential address gave him occasion to survey this subject. These addresses illustrate the mastery that Greaves possessed of the entire departments of knowledge in which he worked besides the particular branches in which his own contributions were made. In Edinburgh, Greaves returned to the field of spectrophotometry but now to measurements on spectral lines instead of continuous spectra. Again he developed methods of maximum reliability (extremely exacting ones in execution) and again the published results gained world-wide recognition. Greaves regarded those of 1955 as the best work of his career and he was busy with further developments at the time of his death.

By scientific and personal distinction, Greaves was eminently qualified to direct one of our national observatories. Six wartime years came soon after he went to Edinburgh, when most normal astronomical activity had to be suspended. But Greaves saw to it that the Observatory's resources, and in particular its director, made every possible contribution to the national effort. He undertook a large and effective share of responsibility for the time-service and, in spite of wartime difficulties, made some significant improvements. By about the end of the war, his scientific staff was reduced to a single individual and trained recruits were scarce indeed. However, in the ensuing years, Greaves succeeded in making a series of noteworthy appointments and brought the strength to a level never before attained. He added new departments, brought old instruments up-to-date and acquired important new equipment. The latter included that of the

solar department and the first conventional Schmidt telescope to be used regularly at a British observatory. At the same time he reinvigorated the department of astronomy in the University, establishing new courses and stimulating the interest of numbers of students in mathematics and physics. He was keenly interested in his duties as a member of the Senatus. He did great service to astronomy in Scotland and took special interest in the Edinburgh Astronomical Society. .

Greaves was a personality. He was big and generous in thought and action. He had an exuberant zest for life and a great devotion to friends and colleagues. He delighted in their society, particularly when he could regard them as "characters" — he was too lacking in self-consciousness to think that he was one himself. Edinburgh gave him the milieu in which he could flourish and he responded with warm affection for its institutions and their members. It was deeply gratifying to him that Edinburgh was the place of the first meeting of the Royal Astronomical Society ever to be held away from London and that during his term as President. His principal researches were done with collaborators in Greenwich and Edinburgh and he insisted upon their sharing in full in the recognition received. In negotiations of all kinds, he relentlessly urged whatever action he held to be right; many who reaped the benefit knew nothing of how he had battled for them. But he was peculiarly sensitive to any human appreciation shown to himself. Of British astronomers belonging to Greaves's generation and that just before it, tragically few still survive. But Greaves was a host in himself and his loss is irreparable.

Greaves was a member of our Society and gave lectures at some of its meetings.

W. H. MCCREA.