

Astronomy, where he lectured in Turkish. He finally retired in 1947 to live in Southport until his death. He was survived by his widow with two daughters and a son.

He was elected a Fellow of the Society on 1913 January 10.

F. J. M. STRATTON.

JOHN LESLIE RUDD collapsed suddenly at Holmbury St. Mary on 1955 March 11, and failed to regain consciousness. He was waiting for a bus with his wife and two children while on his way to a meeting of the Royal Astronomical Society.

Rudd was born at Greenwich on 1914 February 21 and educated at the Boreman Foundation (Royal Hospital School). He was appointed as a computer at the Royal Observatory in 1930 and became a member of the established staff in 1936. After a period of service in the Tidal Branch of the Admiralty, he rejoined the Observatory as a member of the Time Department in 1940 when a war-time station was being set up at Abinger. He was married in 1941 to Betty Fry, the daughter of two other employees of the Observatory. He was notified in 1954 that he would take up new duties at Herstmonceux the following spring, and he and his family were eagerly making preparations for the removal.

During the period that Rudd was in the Time Department, he was primarily concerned with the essential day-to-day operation of the Time Service and in recent years he had been in charge of all the work at Abinger concerned with the reception and measurement of radio time signals, the current assessment of clock performance, and the exchange of data with co-operating establishments. He was an experienced observer and took regular duties on the Bamberg transit instrument.

Much of the work of a national observatory provides little scope for dramatic individual achievement: it demands efficient, conscientious, smooth-running team work. Rudd was ideally suited to work of this nature and his colleagues will long remember his co-operative, friendly and straightforward manner. He took a leading part in staff social activities, and at many local functions. His sudden death at the early age of 41 was a profound shock to all relatives and friends. He leaves a widow and two daughters, Susan and Lindsay, aged 8 and 5.

He was elected a Fellow of the Society on 1944 February 11.

ROBERT MELDRUM STEWART was born on 1878 December 15 in Gladstone, Manitoba. His death on 1954 September 2 brought to a close a life of devotion to his family and to his chosen profession of astronomy. Actively associated with the Dominion Observatory, Ottawa, for 44 years, he was its Director for half that period and as Dominion Astronomer was Canada's counterpart of the Astronomer Royal.

Born of Scottish-Canadian parents, he was the son of Rev. James J. and Mrs Stewart. As a Presbyterian clergyman, Rev. Stewart was engaged in missionary work in Western Canada at the time of his son's birth. For some years the family resided in small communities where educational facilities were not always the best, and as a result Rev. Stewart tutored his son until he was prepared to enter High School.

Although thoroughly grounded in Greek, Hebrew, Latin and in English literature, his love for the logic of mathematics finally turned his thoughts toward a scientific career. He entered the University of Toronto in 1898 after winning practically all the scholarships offered by his school. Following a course in Mathematics and Physics, he graduated with high honours and was the Gold Medallist of his year. A master's degree in 1903 closed Meldrum Stewart's university education, but he never ceased to be a keen student, not only of the developments and progress being made in astronomical and allied scientific fields, but also of the classics. His was a well balanced education, giving him a love for and appreciation of the finer things of life.

At the turn of the century Canada was still a young country and her Astronomical Branch—later to become the Dominion Observatory—was engaged in the establishment of a network of latitude and longitude stations across the country; this work had been undertaken in connection with the construction of a transcontinental railway. Meldrum Stewart joined the Branch in 1902 and immediately showed marked aptitude for precision and detail. He realized that an efficient time service was necessary for accurate longitude determinations and that with the inevitable growth of the country precise time would become increasingly important. This phase of work formed the centre but by no means the boundary of his interest and research throughout his long association with astronomy.

When the astronomical staff moved from temporary quarters to the present Dominion Observatory building in 1905, Mr Stewart was appointed Superintendent of the Time Service, and retained that position until he was named Director of the Observatory in 1924. Upon his shoulders fell the task of establishing this basic astronomical work and to him must go much of the credit for developing Canada's Time Service to the high degree of efficiency which it has attained.

During the first few years much time was required for organization and for making plans upon which the future of the Observatory would be founded. The installation of a 6-inch Meridian Circle telescope in 1907 was one of the first major problems assigned to Mr Stewart. He proved his versatility in dealing with and surmounting the many instrumental difficulties which were encountered. For many years he did a considerable amount of the observing, as well as supervising an extensive programme undertaken to determine fundamental star positions. The three published catalogues containing accurate positions of many thousands of stars now form a lasting tribute to R. Meldrum Stewart's meticulous endeavours.

As a pioneer in Canadian astronomy it was Mr Stewart who devised the system of obtaining longitude by the use of wireless time signals, when that programme was extended to stations remote from telegraphic communications. The first station thus occupied was in the province of Quebec in 1914. Longitude work in connection with surveying was discontinued by the Observatory in 1923, but three years later and again in 1933, Canada, under Mr Stewart's direction, participated in world longitude programmes.

As had been anticipated by Mr Stewart the need for the distribution of time to many parts of the country was increasing with the continued growth of Canada, and it was evident that existing facilities would require vast improvement and extension. While the Observatory was declared the source of official

time for Canada only in 1941, it had served unofficially in that capacity for many years prior to that date. Time impulses had been sent from the Observatory to the local telegraph offices as early as 1905, but the first wireless transmission over local broadcasting stations did not come until 1923. Four years later radio broadcasting was to emanate directly from the Observatory, using short wave frequencies. Until 1935 the basic instrument with which time observations were taken was the Meridian Circle telescope. It was then replaced, for time observations only, by a 3-inch broken-type Cooke transit telescope. More recently the latter has been superseded by a Photographic Zenith telescope.

During the mid-thirties an idea was evolving in the fertile mind of Mr Stewart and his conception was later realized with the construction of his Time Signal Machine. In 1938 this unique machine went into operation, marking another advance in time distribution methods. A pendulum provided the control for the instrument, which at that time was cleverly held to true time by a Shortt pendulum clock. When a crystal clock was installed in 1942, it became the controlling unit rather than the Shortt clock. Services supplied by this machine included (1) the noon broadcast over the Canadian Broadcasting Corporation network; (2) continuous short wave time signals on three frequencies from the Observatory's transmitting station CHU.; (3) other radio transmission such as to the two major telegraph companies; (4) additional services including the control of some 800 dials in various Government buildings.

Mr Stewart's scientific interests were broad, and ranged from radio-activity, meridian work, time service, longitude by wireless, to the theory of errors. As Dominion Astronomer he was the guiding spirit not only of the Dominion Observatory with its five major divisions of research (Positional Astronomy and Time Service, Stellar Physics, Terrestrial Magnetism, Gravity and Seismology) but also of the Dominion Astrophysical Observatory at Victoria, British Columbia. His administrative duties increased with the passing of years, but in spite of this his constructive interest in all research problems of both observatories never waned. As a lecturer and writer he was well known and many of his scientific papers have appeared in various astronomical publications.

Mr Stewart took an active part in a number of scientific organizations. He was a Fellow of the Royal Astronomical Society of Canada and of the Royal Society of Canada, and held various offices in the former society. Other organizations in which he held membership or office were, National Committee for Canada of the International Astronomical Union; American Association for the Advancement of Science; American Astronomical Society; *Astronomische Gesellschaft* and *La Société Astronomique de France*.

In his younger days he was active in a number of sports, boating being his chief outdoor recreation in later years. His indoor interests included carpentry and chess, and like many other scientists Mr Stewart had a fondness for music. Following in the tradition of his father, he and his family were members of St. Andrews Presbyterian Church, Ottawa.

Because of his retiring nature, it was not given to many to know Mr Stewart intimately, but he will be remembered by his co-workers for his keen analytical mind, and high standards of integrity and duty. Those who, like the writer, were privileged to be associated with him in his scientific work knew him as a brilliant mathematician—considered outstanding in his day—and learned to

appreciate his many sterling qualities.

Astronomy has suffered a severe blow; his colleagues have lost a loyal and sincere friend, and society a truly distinguished gentleman. Without scientists like Robert Meldrum Stewart, Canadian astronomical and geophysical research would not have attained the position it now holds in international circles.

Mr Stewart is survived by his widow, the former May Dickson, whom he married in 1904, two daughters, Mrs W. K. Ross of Montreal and Mrs Wilfrid Saunders of Toronto and six grandchildren. Three children predeceased him, two daughters, Dorothy and Molly who passed away in recent years, and a son who died in infancy.

He was elected a Fellow of the Society on 1915 April 9.

MIRIAM S. BURLAND.