

V. C. Bailey

## VICTOR ALBERT BAILEY

## Died 7 December 1964 Elected to Fellowship 1955

Born Alexandria, Egypt, on 18 December, 1895; educated King Edward VI School, Southampton, England, and Queen's College, Oxford. Demonstrator in Electrical Laboratory Oxford. M.A., D.Phil. (Oxon). Associate Professor of Physics, then Professor of Experimental Physics, then Research Professor of Physics, University of Sydney 1952; Emeritus Professor 1961. Visiting Professor of Engineering Research, Pennsylvania State University 1953-54. Walter Burfitt Prize and A. D. Olle Award Roy. Soc. of N.S.W. T. K. Sidey Medal and Prize Roy. Soc. New Zealand.

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Professor Bailey's early work was in the field of the motions of electrons in gases, developing the lines originated by Professor J. S. Townsend of Oxford. In 1933 he was in Sydney, in contact with the team of radio research workers assembled by Professor J. P. V. Madsen (now Sir John Madsen). At that time there appeared in "Nature" a letter from Tellegen, an engineer working in the Philips laboratory in Eindhoven, describing how when listening in Holland to a radio programme from Switzerland on medium wavelengths he had received mixed with it the programme from Radio Luxemburg, a long wave radio station situated approximately half-way between Holland and Switzerland. Taking account of the competence of the observer this was clearly not due to faulty radio receivers: it had to be a phenomenon of Nature. Bailey quickly realized that the effect was likely to be due to interaction of radio waves in the ionosphere; the powerful Luxemburg transmitter might raise and lower the electron temperatures in the ionosphere in consonance with the programme modulation; this is turn could affect the ionospheric absorption, and hence the modulation of another radio programme passing through the same region. Here lies Bailey's most generally accepted contribution to science, and possibly his most important. He invited the collaboration of D. F. Martyn, and between them they laid down the now classically accepted explanation of interaction of radio waves in the ionosphere.

In later years Bailey went on to examine the effects of interaction of radio waves at the gyro-frequency of electrons in the ionosphere, with results which are still not fully understood.

Collaborating with A. J. Nicholson, Bailey contributed significantly to the theory of the natural control of insect populations. Using mathematical arguments, Bailey conferred greater precision and generality upon conclusions previously noted by Nicholson, who had used verbal arguments supplemented by arithmetical examples.

Later still he developed far-reaching hypotheses regarding interplanetary magnetic fields and electrostatic charges on stars and on bodies within our own galaxy. It is too early to assess the value of his conclusions on these topics.

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