ERNEST WILLIAM BROWN—IN MEMORIAM*

Ernest William Brown was born at Hull, England, on November 29, 1866, the only son of a prosperous farmer. He went to school at East Riding College where he showed such an aptitude for mathematics that it was decided that he was to go on to Cambridge. Here he was graduated in 1887 as sixth wrangler, and was elected a fellow. In 1891 he received a call from Haverford College. There he remained till 1907, when he was appointed professor of mathematics at Yale University, in a sense as successor to Willard Gibbs. When the Sterling professorships were established at Yale in 1921, he was among the first to receive one of these appointments. In 1931 he was elected first incumbent of the Willard Gibbs professorship. The next year he retired because of ill health and because he found his teaching duties somewhat irksome. His retirement did not mean, however, the cessation of his activities.

At Cambridge the instructor who most influenced him was George Darwin. On his advice young Brown turned to a study of Hill's great memoir of 1877 on the lunar theory. He became more and more deeply interested in this subject, and when he went to Haverford he had decided to undertake the enormous task of computing the moon's orbit on this theory. This was to occupy him to the practical exclusion of every other research for the next quarter of a century; indeed he was busy on one phase or another of the lunar problem throughout the remainder of his life. So thoroughly and minutely did he carry out this work that it is difficult to imagine that it will need revision in any form for many decades to come. In the progress of this work he acquired a facility for throwing mathematical expressions into easily computable form that has rarely been equalled.

His chief object was to ascertain whether the attractions of the known bodies in the solar system would account for the moon's motion. He found that in two respects they apparently fail to do so. The first is with regard to the "secular acceleration" discovered by Halley two centuries earlier. Part of this turns out to be a secular *retardation* of the rate of rotation of the earth; two English geophysicists have since shown that tidal friction in shallow channels (the Irish Sea and Behring Strait, for example) is of the right order to correspond to the observed retardation. The other respect in which gravitation fails to account for the moon's motion is the presence of "fluctuations" (so called by Newcomb, who discovered them), alternate retardations and accelerations in the moon's place in periods between two and four decades. Brown showed that these too are in all probability irregularities in the rotation of the earth, though their origin is still mysterious.

Once the moon was out of the way, Brown went on with great success to other difficult problems in celestial mechanics, notably those of the orbits of the eighth satellite of Jupiter and of the Trojan group of asteroids, objects that form with Jupiter and the sun an approximate equilateral triangle. During the last two or three years of his life he turned his attention, again with happy results, to the stellar case of three bodies.

Although he was not very fond of teaching, Brown performed these duties with

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* In R. C. Archibald's *Semicentennial History of the American Mathematical Society*, p. 173–183, there is an article on Professor Brown, containing a bibliography with one hundred eighty-one entries. Since this was finished after Professor Brown's death, it may be regarded as complete. In the present notice, unnecessary duplication of data given by Archibald has been avoided.