given a premium for his proposal and appointed one of the consulting engineers of the Company. In 1897–98 he was employed by the Egyptian Government to survey the cataracts of the Nile with a view to their use as electric power for the Nile railway. He published several works on electrical subjects.

The astronomical problem to which Forbes gave much thought was an attempt to find an ultra-Neptunian planet. In 1880 he published in the *Proceedings* of the Royal Society of Edinburgh a paper with the title "Comets and Ultra-Neptunian Planets," and gave an abstract in the *Observatory* magazine. From the analogy of the comets associated with Jupiter he looked for a similar relationship between seven comets whose distances at aphelia were between 96 and 124 astronomical units. Marking their positions on a globe, he found that four of them were in one plane. He took this plane for the orbit of a planet at distance 100 units with a period of 1000 years, and found that it passed sufficiently near the positions of the comets at their aphelia for them to come under its attraction. He found additional support for this somewhat speculative theory by the failure to return in 1848 of the [illegible] comet of 1556 which was supposed to be identical with that of 1[illegible] *Monthly Notices*, December 1908, he suggested that this comet l[illegible] broken up into three parts, the comets of 1843, 1880, and 1882, as th[illegible] of these comets showed a nearly identical position at aphelion. With the additional data he computed the following elements for the unkno[illegible] planet :—

Ω	i	e	π	a	P	Perihelion Passage
°	° ′ ″		°			
247·34	52 0 30	0·1665	114·57	105·1	1076	A.D. 1072

From these elements an ephemeris was computed and a photographic search made by Hough at the Cape Observatory, but in vain.

From the year 1920 he was interested in clocks, and made designs for a half-seconds pendulum of fused silica, but in view of the improvements in clocks made about this time, did not construct such a clock.

Forbes became acquainted with Gill between 1869 and 1871, and met him again at the meeting of the Astronomische Gesellschaft in 1873. He stayed with Gill on two occasions in South Africa, and saw him frequently after his return to England. Shortly after Gill's death he wrote a life of his friend in which he gives a true and vivid picture of the enthusiasm and energy which Gill threw into his work and play, and it is an admirable biography. Among Forbes's other books may be mentioned *A History of Astronomy*, published in 1909, and *Puppets: A Work-a-day Philosophy*, in 1911.

Forbes was elected a Fellow of the Royal Society in 1887, and a Fellow of the Royal Astronomical Society on 1873 January 10. F. W. D.

JOHN KNIGHT FOTHERINGHAM, who was born on 1874 August 14, was not originally an astronomer or mathematician, but an historian. He was an exhibitioner of Merton College and took Second Class Honours in Classical Moderations in 1894, and First Class Honours in Literæ Humaniores

in 1896, and in Modern History in 1897. From 1898 to 1902 he held a Senior Demyship at Magdalen College and it was during this period that he began to study Ancient Chronology. In 1904 he became Lecturer in Classical Literature at King's College, London, and eventually he was appointed Reader in Ancient History in the University of London. He remained an active teacher at King's College till 1915.

In the course of his chronological studies he soon found that many historians were falling into obvious errors through astronomical misunderstanding and he began to pay attention to mathematical astronomy itself. This line of activity brought Fotheringham into touch with Mr., now Dr., Cowell. At the time (1906) Cowell was writing his papers on ancient eclipses. Fotheringham freely placed at Cowell's disposal his knowledge of ancient literature in its bearings on chronology, and Cowell initiated Fotheringham into the technical aspects of such astronomy as entered into the use of eclipses to determine the motions of the Sun and Moon. Fotheringham also received a great deal of encouragement from H. H. Turner, and it was not long before he began to write astronomical papers himself. Some of his early papers, the first of which appeared in 1908, were concerned with astronomical chronology, including the conditions of the visibility of the lunar crescent to the naked eye. But he had found a sphere of his own in strictly astronomical research and he began a series of papers on the lunar and solar accelerations as determined from different classes of observations. This work culminated in 1920, when he arrived at the definite conclusion that all classes of ancient observations comprising lunar and solar eclipses, occultations, and observations of the time of passage of the Sun across the equator, were adequately satisfied by a secular acceleration of the Sun of $3''\cdot0/(\text{century})^2$ and a secular acceleration of the Moon of $21''\cdot6/(\text{century})^2$.*

This important result has been discussed by Jeffreys. Subtracting from the lunar acceleration the part predicted by the lunar theory, the residue consisting of $9''\cdot4/(\text{century})^2$ for the Moon as well as the full acceleration of $3''\cdot0/(\text{century})^2$ for the Sun should be attributable to the action of tidal friction. But there are theoretical difficulties here for accepting the value for the Moon, the theory of tidal friction then gives an upper limit of $1''\cdot26/(\text{century})^2$ for the acceleration of the Sun. This is considerably lower than the observed value, and it appears that the difference is too large to be ascribable to the error of the observational determination. It seems as if some unexplained cause were effective.

In the meanwhile Fotheringham had been elected in 1909 to a Research Fellowship at Magdalen College on condition of undertaking to make and prepare for publication a critical edition of Jerome's Latin version of the *Chronica* of Eusebius, a task which was duly performed. His Fellowship expired in 1916 at a time when his work at King's College had been suspended by the War. This left him without income and without duties. After spending some months in a Government office from which he had to retire owing to ill-health, and subsequently producing an astronomical paper as a

* The actual figures given by Fotheringham were half these, as he gives the coefficients of T^2 in the longitudes.