Obituary Notices

Dr. J. K. Fotheringham, F.B.A.

JOHN KNIGHT FOTHERINGHAM, who died on December 12 of last year, was the greatest authority of his time on ancient chronology. The name Fotheringham is derived from the Manor and Castle of Fotheringay, held in the twelfth century by the royal family of Scotland as part of the Honour of Huntingdon in Northamptonshire. Mr. Walter de Fodringaye was one of the executors of Devorgilla, Lady of the Manor and wife of John de Baliol in 1289, and was appointed by her as the first principal of Baliol (Balliol) College, Oxford. By their close connexion with the House of Baliol, some of the Fotheringay family settled in Scotland at the end of the thirteenth century and the name was changed to Fotheringham. One William Fodringhay had a charter from David II of lands in Aberdeen and Banff. In 1296 Hugh de Foderingaye of Perthshire and Roger, vicar of Kilmuir in Ross-shire, did homage to Edward I. Duncan, Bishop of Dunkeld, granted Fordell, County Perth, to Walter de Fotheringham in 1340.

The family has, therefore, a long Scottish ancestry. They became Presbyterians at the Reformation. Dr. J. K. Fotheringham's father was born at Dunbarrow Bridge, and was minister of Glanton Presbyterian Church, Northumberland, in 1859–65, and of Tottenham Presbyterian Church, Middlesex, in 1865–1905; he was moderator of the Presbyterian Church of Scotland in 1912. John Knight Fotheringham was born at Tottenham in 1874, one of three brothers. He was a delicate child, and had indifferent health during his whole life. The inheritance of his remarkable genius must be partly attributed to his maternal ancestry; his mother was Jane Ross, also descended from an ancient Scottish family; her father was master of the Lancasterian School at Tottenham, and she taught at that school. He was educated at a school in connexion with the Tottenham Presbyterian Church and then at the City of London School, where he came under the instruction of Dr. Abbott, the headmaster. Under Abbott and Rushbrooke he received a sound classical training and entered Merton College, Oxford, in 1891 with a leaving scholarship. At Merton he obtained a first in Greats in 1896 and then proceeded to obtain a first in Modern History in 1897. Magdalen College gave him a Demyship, 1898–1902; he attended the British School in Athens for one year, settled in Oxford and became a coach. Magdalen College elected him to a research fellowship in 1909. He became reader in ancient history, University of London, 1912, and was a lecturer in classical literature at King's College, 1904–9, lecturer in ancient history at King's College, 1909–12.

About 1898, Fotheringham began the serious study of mathematics and astronomy, and made such astonishing progress that in 1908 he was able to make a valuable correction to the work of Ginzel, Nevill and Newcomb on eclipse calculations. He was made assistant at the Observatory at Oxford in 1918. About 1910 he became interested in Babylonian astronomy, and I then made his acquaintance; from that time until his death we collaborated constantly. In the meantime, he had been applying astronomy to Greek chronology, and had produced fundamental results. He now began to apply Babylonian astronomy to still earlier chronology and attained the undisputed position of the greatest living authority in these matters. The University of Oxford, therefore, created for him a post as reader in ancient astronomy and chronology in 1925 and he was elected to the British Academy in 1932.

It will be seen that the mental range of this scholar probably exceeded that of any one of his contemporaries in any land. An excellent classical scholar, a man of wide reading in modern history, an astronomer of great originality, a brilliant mathematician, and a specialist in ancient history—these are his attributes. Moreover, he was regarded as an authority on Presbyterian Church policy and was a devoted layman and elder.

The first contribution of Fotheringham to learning was an edition of the text of Jerome's version of the "Chronicle of Eusebius" (1905). The Bodleian MS. together with two others (Undine and Paris) is reproduced in collotype prefaced by a history and palæographical examination of all the extant manuscripts. For this work he visited many European libraries. In 1923 appeared his printed Latin text of the "Chronici Canones" of Eusebius with a complete *apparatus criticus*, and Latin introduction. It is obvious that this work of Eusebius on the *fila regnorum* or lists of reigns in Jewish, Persian, Assyrian, Greek and Roman history with historical comments was of fundamental interest to him as a student of ancient history; the tale that he took up this work because his birthday fell on August 14, a day dedicated to a Saint Eusebius, is surely apochryphal. In 1906 appeared vol. 11 (1801–37), second edition 1911, of Longman's "Political History of England", but henceforth his life was to be almost entirely devoted to astronomy and its application to ancient history. Here he was destined to make contributions to science on which his great fame will for ever rest.

Fotheringham edited the fragments of Cleostratus with a critical discussion of his importance as the first astronomer to introduce the signs of the zodiac into Greek science, together with the eight-year cycle of intercalation. In this work he combined a knowledge of philology with astronomy so as to enable him to clear up the meanings of several Greek words and to interpret passages which had baffled the greatest classical scholars. Several articles were devoted to the date of the Crucifixion, or the problem, "In what year between A.D. 27–34 did Nisan 14 or

15 fall on a Friday". His tables for the visibility of the new moon enabled him to place this problem on a more scientific basis, but he never came to a conclusion which he proclaimed infallible. In his last article he prefers A.D. 33, April 3.

In 1915 Fotheringham published a very learned work on Marco Sanudo, the Venetian prince who conquered the whole of the Grecian Archipelago in 1205–6 for his native city in wars with Genoa. To do this piece of work he had to use Italian, Byzantine Greek and French sources. He showed himself master in this department of medieval history, a strictly philological investigation. But astronomy was claiming more and more of his attention, particularly the history of that subject, and he was naturally drawn to Babylonian astronomy. I supplied him with the texts of the observations of the risings and settings of Venus during the reign of Ammizaduga, tenth king of the First Babylonian Dynasty. The book which we published together, "Venus Tablets of Ammizaduga", contains his *opus magnum*. I cannot enter into details here, but suffice it to say that he and his colleague Carl Schoch undertook to construct tables by which the new moons and risings of Mercury, Venus, Mars, Jupiter and Saturn can be fixed back to 3507 B.C. in the case of the moon, 2099 Mercury, 2999 Venus, 2148 Mars, 2153 Jupiter, 2123 Saturn. By elaborate astronomical control of the calendar and by the Venus tables, Fotheringham's calculation for the sixth year of Ammizaduga at 1916–1915 B.C. was agreed to by Schoch after long discussion; Schoch, recognized as the most brilliant constructor of historical planetary tables, at first opposed this calculation, but was finally convinced. (So far as I know, astronomers were convinced by Fotheringham's work, with the exception of Neugebauer.)*

Fotheringham also devoted much time to the work of the Babylonian astronomers Naburianos and Cidenas, whom he regarded as the principal sources on which Greek astronomy was founded. In the last months of his life he made a brilliant interpretation of figures on Babylonian astrolabes which had baffled Assyriologists to the present day. He studied the voluminous publications of Greek astronomical texts, "Catalogus Codicum Astrologorum Græcorum", and was able to prove that much of it was borrowed from Babylonia.

Fotheringham was now recognized as a man of unique knowledge; in fact, no man living combined his immense classical knowledge with astronomy and chronology. His fame spread in intellectual centres all over the world and his correspondence was heavy. He left a minute catalogue of all his books and articles, together with a list of all the inquiries he received on chronology and astronomy. The list of inquiries runs to more than 350, and includes most of the eminent names of archæologists of the last three decades in all lands. This notice is only a very restricted résumé of the work which J. K. Fotheringham accomplished. The printed testimonials which he submitted from various astronomers when he stood for the Savilian professorship at Oxford fill 34 pages. One of them states concerning his work on the secular acceleration of the sun and moon, "Fotheringham's theory is the only one which definitely solves the problem and means the death blow to the gravitation theory (as applied to eclipses) and will be the theory of the future", and this scholar pronounced Fotheringham to be the most brilliant mathematical astronomer of his age. He had a profound influence in Germany and America; in fact, he was far better known abroad than he was in Great Britain. I must for my own part assert that I was always fully aware of his almost unlimited ability. His death has completely deranged my plans. He was a typical Oxford product, modest, accurate and profound. One can readily believe after working with him more than twenty-five years that he was never angry about anything in his life. Many were his disappointments in academic promotion, and worst of all he suffered constantly from poor health. All these things he bore like a Christian gentleman, a title which gave him more satisfaction than any other.

S. LANGDON.

*Neugebauer's objection to Fotheringham's dating of the First Babylonian Dynasty seems to be subjective and unscientific, for he himself adopted Fotheringham's values for the acceleration of Venus and the moon.

An astronomical correspondent writes as follows:

Dr. J. K. Fotheringham's interest in astronomy developed from the study of ancient chronology. In order to be able to study astronomical chronology he took some lessons in spherical trigonometry and elementary mathematical astronomy from the late Prof. H. H. Turner, and afterwards received some further help in the use of lunar tables and the calculation of eclipses from Prof. J. B. Dale, of King's College, London, and Dr. P. Cowell, superintendent of the Nautical Almanac Office. With this modest preparation for astronomical studies, he proceeded to write a series of papers, in which his knowledge of ancient chronology had full scope, which are of great astronomical importance. In these papers he discussed the occultations of stars by the moon preserved in Ptolemy's "Almagest", the equinox determinations of Hipparchus, and ancient observations of solar and lunar eclipses. The result of these investigations was to establish that the sun has a secular acceleration of 3·0″ per century per century, and the moon has a secular acceleration of 21·6″ per century per century. Lunar theory predicts a secular acceleration for the moon of 12·2″. The residual acceleration, 9·4″, for the moon, and the whole of the secular acceleration of the sun cannot be accounted for by gravitational theory. It is now generally accepted that these secular accelerations are attributable largely, if not entirely, to the action of tidal friction, more especially in narrow seas such as the Irish Sea and the Bering Straits.

From these studies, Fotheringham was led on to the study of the discordances between the observed positions of the moon and the positions computed from pure gravitational theory. Newcomb had allowed for the major discordances by the introduction of an empirical periodic term. This so-called "Great Empirical Term" was incorporated by Brown