Although he attained success in his professional life he was much more widely known, popularly as well as among scientific people, as an amateur astronomer. His interest in astronomy began at an early age, and he always said that he did not remember the time when he did not know the constellations. He became an active amateur before he reached his twenties, and in 1886, when he was nineteen, he constructed a 7-inch reflecting telescope and continued the observational work which he had already begun with a small refractor. During his lifetime he owned more telescopes than pass through the hands of most astronomers, either professional or amateur, and made a number of the mirrors himself. In 1893 he made a tour, observing the eclipse of the Sun on April 16 in Chile with the party from the Lick Observatory, and visited many of the observatories in America and Europe; many of the contacts made at this time were maintained. Immediately on his return to Australia he became actively interested in the organisation of amateur astronomy, and was largely responsible for the formation, in 1894, of the New South Wales Branch of the British Astronomical Association. He was the first Secretary of the Branch, and his interest in it and his influence may be judged by the fact that on twenty-one occasions he was its President. In 1944 the Branch held a complimentary meeting to him on the occasion of the fiftieth anniversary of his membership of the Association, and the Association in London elected him to honorary membership. Another position in which he rendered valuable service to astronomy was as a member of the Board of Visitors of Sydney Observatory. He was on this Board for twenty-eight years, being its chairman at the time of his death.

During the whole of his lifetime he has been a most assiduous observer, always recording with care the observations he was making. He independently discovered seven comets, of which three (1894 *b*, 1912 *a* and 1927 *f*) bear his name. This alone is testimony to many patient hours spent at the telescope. His work as an observer of the planets Mars, Jupiter and Saturn has been most extensive, and many drawings were published in the *Journal* and *Memoirs* of the British Astronomical Association. In 1892 he discovered several previously unobserved "canals" on Mars, and was the first to note the presence of the "oases". Several double stars which he discovered bear his name.

Gale was elected a Fellow of the Society in 1893, and was awarded the Jackson-Gwilt Medal in 1935 "for his discoveries of comets and his work for astronomy in New South Wales". His life was a very full and active one right to the end, and undoubtedly was greatly enriched by his pleasure in astronomy and his activity in the Astronomical Association, to which his death is a serious blow. He enjoyed the meetings of our Branch, which he very rarely missed during the whole of his more than fifty years of membership. His ready participation in discussion is something that will long be remembered. Only two days before his death he attended and actively participated in one of these meetings. He always took pleasure in giving advice and help to beginners, and promoted education in astronomy by many public lectures on the subject.

He is survived by his widow, two sons and four daughters.

H. WOOD.

ARTHUR ROBERT HINKS was born in London on 1873 May 26, and died at Royston on 1945 April 18. He studied at the Whitgift Grammar School, Croydon, and at Trinity College, Cambridge. In 1895 he was appointed Assistant at the Cambridge Observatory, and promoted to Chief Assistant in 1903, a position which he held for ten years. During this time he was active in developing photographic astrometry, following the then novel methods originated by Turner and Kapteyn. As early as 1902 he planned a campaign for photographic determinations of stellar parallax with the 12-inch Sheepshanks photovisual coudé. The writer—whose first introduction to the subject came from Hinks's lectures—was fortunate enough to have a large part in the execution of this plan, and can testify to the thoroughly modern character of the work, which was

conducted on principles almost exactly the same as those developed independently by Schlesinger at about the same time, which have served as the basis for all later work.

His own energy was already devoted in 1903 mainly to the determination of the solar parallax from the observations of Eros secured during the international campaign of 1901. Only one thoroughly familiar with the intricacies and pitfalls of the photographic method could have carried this laborious work to a successful conclusion. His final result published in the *Monthly Notices* for 1910, had a greater weight than all previous determinations, and, as a by-product, led to a correspondingly strong determination of the mass of the Moon. This admirable work was justly recognized by the award of the Gold Medal of our Society in 1912.

Only after thirty years has this value been superseded by Sir Harold Spencer Jones's discussion of the observation of Eros in 1930–31, when its parallax was almost twice as great as in 1901.

Hinks was not only a master of the theory and practice of photographic reductions; he was an excellent observer. Every detail of the Sheepshanks telescope, its mounting and the building in which it was installed, had his careful attention. He enjoyed telling how the architect, after he had protested about the presence of shiny brass handles inside the dark-room, turned on him saying, "Are you going to black your face when you look at the plate?"

The measuring-machine of the Cambridge Observatory was also largely of his design, and proved to be rapid and accurate in the measurement of plates provided with a réseau.

In 1913 he resigned his position at Cambridge, and was appointed Assistant Secretary of the Royal Geographical Society—succeeding to the Secretaryship two years later. The full story of his thirty years' distinguished service in this new field has been told elsewhere. He was a recognized authority on map projections, and his book bearing this title is a standard work. In recognition of his contributions to the preparation of military maps during the war of 1914–18 he was made a C.B.E. in 1920. He edited the *Geographical Journal* for many years, and his advice was of value to many travellers and explorers.

This gain to a sister-science was, however, a great loss to British astronomy. Hinks, more than anyone else in his generation, was the inheritor of the tradition of Turner, and his diversion to another field left work in this one to be done in other countries. As a Cambridge man, who has never lost the interest in photographic astronomy which he learned there, the writer may be pardoned for regretting that it was not continued there under so able a representative.

In addition to the honours already mentioned, Hinks was elected a Fellow of the Royal Society in 1912—while still an astronomer!—and received the Victoria Medal of the Royal Geographical Society in 1938 and the Cullum Medal of the American Geographical Society in 1942.

He was elected a Fellow of the Society on 1899 January 13, served on its Council from 1903 to 1913, as a Secretary from 1909 to 1912, and as a Vice-President from 1912 to 1913.

In 1899 he married Lily Mary Packman, who died in 1928. Two sons survive them.

Personally Hinks was a forthright Englishman, with frank and honest Tory convictions—in politics at least—which did not interfere with a wide circle of friendship. The writer cannot close these lines without an expression of gratitude to him and his wife for great kindness in his student days which, after a lapse of more than forty years, is keenly remembered.

H. N. RUSSELL.