

# Obituary Notice

## HAROLD KNOX-SHAW

Harold Knox-Shaw was born at St Leonards-on-Sea, Sussex, on 1885 October 12, the eldest of a family of four, son of C.T.Knox-Shaw. He won scholarships to Wellington College and to Trinity College, Cambridge, where he graduated Sixth Wrangler in 1907. His interest in astronomy was aroused by a Wellington mathematics master, S.A. Saunder (Secretary R.A.S. 1907–1912), and strengthened at Cambridge by A.R.Hinks under whom he worked in positional astronomy as Sheepshanks Exhibitioner.

Only a year after graduation he left Cambridge for Helwan where he served as astronomical assistant at the Khedivial Observatory under B.F.E.Keeling. The Observatory had acquired by free gift from J.H. Reynolds a 30-inch reflector, and Knox-Shaw, who became a life-long friend of Reynolds, was successful in putting it into commission and securing photographs of little-known southern nebulae down to  $-40^\circ$  Dec. (His first paper published in *Monthly Notices* in 1909 deals with the inclination of the planes of spiral nebulae.) He achieved early success in obtaining the first photograph of Halley's Comet (1909 August 24) on its 1910 return. He made a special study of the variable nebula near R Cr A (now classed as a T Tau variable). H.H.Turner has left a graphic account (*Observatory*, 32, 110) of life at Helwan in those years.

Knox-Shaw succeeded Keeling as Superintendent of the Observatory in 1913 and continued in that post until 1924. He was appointed Director of the Meteorological Services of Egypt and the Sudan during 1918–1924. During World War I, he was engaged in welfare work for British troops, work which was recognized by the award of the Order of the Nile, Class 4, while his scientific work earned him the same Order, Class 3, in 1926.

On 1924 August 18 he took up his duties as Radcliffe Observer in charge of the Radcliffe Observatory, Oxford. His predecessor, A.A. Rambaut, had died ten months earlier, and during the interregnum the Radcliffe Trustees had enlisted the services of J.L.E.Dreyer (in retirement at Oxford) as their adviser.

The Radcliffe Observatory at Oxford had been traditionally engaged in long-term positional astronomy and meteorological records. Both

Rambaut and Knox-Shaw recognized the high quality of the numerous (unpublished) meridian observations of stars, Sun, Moon and planets made by Hornsby, the first Radcliffe Observer, from 1774 to 1798. Knox-Shaw succeeded, where Rambaut had failed, in securing support for the publication of this material. Aided by the Astronomer Royal, Sir Frank Dyson, a Royal Society grant was obtained for the necessary computation, and the results were reduced in collaboration with J. Jackson (Greenwich) and eventually published in 1932.

Rambaut had already obtained with the 24-inch refractor first-epoch plates of stars down to 14th magnitude in the 115 northern Selected Areas. Knox-Shaw's major commitment was to obtain second-epoch plates of some 32 000 stars and measure both series for proper motion, a massive project originally inspired by Kapteyn. The *Radcliffe Catalogue of Proper Motions* was published in 1934. (It is relevant to add here that this work will have additional value when third-epoch material is available; observations are being currently obtained with the same 24-inch refractor at the University of London Observatory for reduction in part at Royal Greenwich Observatory and in part at Groningen.) Never before had an observational survey been carried out to such a faint limit in the British climate. Coming from the clear Egyptian skies Knox-Shaw's reports show increasing impatience with the unsuitability of Oxford as a site for such observational astronomy.

Knox-Shaw had evidently begun seeking support for a move from Oxford by 1928 if not before. His report of that year to I.A.U. Commission 24 prompted a reply from its President (Schlesinger) urging the move of the Radcliffe telescope to a better site (out of England but apparently still in the northern hemisphere); this reply was duly quoted to the Trustees. When South Africa was first mooted is not clear, but it may well have been discussed during the 1928 General Assembly of the I.A.U. at Leiden. At any rate the summer of 1929 found Dyson and Knox-Shaw on their way to the meeting of the British Association in South Africa (with full support from the Trustees) to investigate the possibility of securing a site in the high veld.

In the meantime, the Medical School at Oxford and the Radcliffe Infirmary (next to the Observatory) had for many years been anxious to expand, and with the generous support of Sir William Morris (Lord Nuffield) they saw their opportunity when it became known that the Trustees were willing to sell their buildings and land. In November 1929, shortly after the return of Dyson and Knox-Shaw from South Africa, an agreement of sale to the Medical School was announced. Two months later W.H. Steavenson left for South Africa to make tests at a site near Pretoria close to the eventual site of the Radcliffe 1·88-m reflector.

While such preparations were in full swing, opposition to the move from Oxford, led by Professor F.A.Lindemann (Lord Cherwell) and aided by Lord Birkenhead, was growing. In May 1931 the Attorney-General objected to the scheme of spending so much capital of a charitable Trust outside the U.K. For a time the whole scheme was in jeopardy. But Knox-Shaw dug in his heels and with firm support from Dyson the Trustees decided to take the matter to Court. Enthusiastic support came from J.S.Plaskett of Victoria (whom Dyson and Knox-Shaw visited before the 1932 I.A.U. General Assembly). Plaskett, as President of Commission 30, carried a resolution later adopted by the General Assembly strongly supporting the move and the setting-up of a large reflector for measuring radial velocities of southern stars. In the legal proceedings, statements in support of the move came from Knox-Shaw, Dyson, Eddington, J.S.Plaskett, Schlesinger, Shapley, de Sitter and Spencer Jones. The proceedings cost money and *time*—far more seriously than realized in 1932. The astronomers won in July 1934 (*Observatory*, 57, 250, 1934) and Oxford enhanced its reputation as the home of lost causes, although the Trustees established the Radcliffe Travelling Fellowship as a continuing link with the University. A year later the contract with Grubb Parsons for the 1·88-m reflector was signed.

By 1939 Knox-Shaw was in residence at the new Observatory with Redman as Chief Assistant and E.Gwyn Williams (d. 1940) as Second Assistant. The telescope was up in its building waiting only for the primary mirror and the mechanical parts of the Cassegrain spectrograph. But the pouring of the glass blank by Corning had failed twice, and by the time World War II held up the project grinding had only just begun at Newcastle.

Thus it was that the mirror only arrived (silvered) in Pretoria in March 1948 at a time when Knox-Shaw had one assistant (D.S.Evans) and three African labourers. The war caused still greater delay in the completion of the Cassegrain spectrograph which did not arrive until early 1951 shortly after Knox-Shaw's retirement.

Although Knox-Shaw only witnessed the telescope in action (in very low gear) for the last two years of his career, he had twenty years of happy retirement at Elgin, Cape, while watching the triumphant vindication of the project which made his life. While he and Redman planned together most aspects of the Radcliffe reflector, Knox-Shaw takes full credit for the choice of a cylindrical 'turret' and the Newtonian carriage which has been found to be so practical; moreover, his experience of large diurnal ranges of temperature in Egypt led to his insistence on an extremely effective insulation of the mirror and of the whole building.

One of the last actions in his career was to partake in the initial negotiations for a Radcliffe–Cape agreement whereby, in effect, the Trustees sold one-third of the telescope time to the Admiralty for the use of observers from the Royal Observatory, Cape. By themselves the Trustees could not pay for more than three astronomers—an entirely inadequate complement for full-time operation. It is a tribute to the confidence that Knox-Shaw could inspire in others that the Trustees were nevertheless prepared to go forward with the venture despite this handicap and all the formidable opposition; as an astronomical project it could hardly fail to succeed, and once started further support from outside could be confidently expected.

Knox-Shaw had great personal charm which easily won him friends. He commanded a fund of humorous stories which he would tell with an infectious warmth, a merry twinkle, and an occasional nervous jingle of coins in a pocket. (The writer recalls the Annual General Meeting of the Society when Knox-Shaw from the Presidential Chair announced with regret and mock-solemnity that unfortunately the Treasurer (Reynolds) could not make his Report because he had ‘decamped’ to the Mediterranean.) He had great tenacity of purpose and meticulous attention to detail, qualities which served him so well through the years of the move from Oxford. Despite a modest and very gentle temperament, he could be roused to a state of hot fury by injustice or bad faith.

There is a story that Knox-Shaw and Eddington had a bet in the 1930s that the Hubble constant  $H$  was greater or lesser than a certain value, Knox-Shaw apparently favouring a smaller value. They agreed that they would not be in a position to settle the bet during their lifetimes and that the terms of the bet should therefore be a ‘new harp’. Most astronomers would agree that the bet has already been won by Knox-Shaw.

He married Maisie (née Weir of Pretoria) who survives him with their one son, Peter, born in 1944. Their home in Pretoria and later in Elgin was known to a very wide circle of friends which included his artist brother-in-law Keith Henderson and Dame Edith Evans. In childhood he had had an attack of infantile paralysis which caused lameness for life. But up to within a year or two of his death he remained active and travelled frequently to England (once visiting Helwan *en route* to see their modern reflector). On 1970 April 8 he suffered a stroke, losing consciousness an hour later and never recovering it. He died in Cape Town three days later.

His ashes were scattered in the Radcliffe Observatory grounds close to his old home on the hill that he himself had christened ‘Oxford Kopje’. A memorial plaque is now mounted on a pier of the Radcliffe telescope which bears the epitaph of his own choice. He has “loved the

stars too truly to be fearful of the night”—a modified form of a quotation from *The Old Astronomer* by Sarah Williams\* (1841–1868); an epitaph also used by J.A.Brashear.

Knox-Shaw was elected Fellow of the Society in 1908 and served as Secretary 1926–1930 and as President 1931–1932. He was also President of the Astronomical Society of Southern Africa in 1941–1942 and was the first recipient of that Society’s Gill Medal in 1956.

A.D.THACKERAY

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\*I am much indebted to Dr D W Dewhirst for his successful search for the origin of the quotation.