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WILLIAM HERBERT STEAVENSON

William Herbert Steavenson was born on 1894 April 26, the youngest of the four children (three sons and a daughter) of Frederick Robert Steavenson. William's father was a graduate of Emmanuel College, Cambridge, who had taken Holy Orders in 1876 and, after various curacies in the Cotswolds, had settled as Rector of Quenington in 1887. His father before him had been Vicar of Newmarket, and several members of the family had served in the professions of the law, the Church, and medicine. William spent his first years in the Cotswold countryside which he was always to love, but a happy childhood was crossed by two shadows: in an accident in childhood play the sight of his right eye was completely destroyed, and his father at a relatively early age was stricken with a severe illness that made him an invalid for his remaining years. The family left Quenington in 1904 and settled in Cheltenham, enabling William to enter first the preparatory school and then, with a scholarship in classics, Cheltenham College as a day boy. The headmaster was the Reverend Canon Waterfield, whose son Reginald was to become a lifelong friend and another amateur astronomer.

Although a student of classics William had other interests; natural history, photography, and cycling in the Cotswolds. Ten years after the event he recorded precisely the beginning of his interest in astronomy; on Christmas Day 1907 he was given a small folding telescope of 1·75 inches aperture and ×15 magnification: he was surprised to find how much it showed of the Moon and the Milky Way, and from that moment his life's interest was determined. His mother bought him a 3-inch refractor in 1908 and soon he was using this also as a guider for a camera with a portrait lens of 3 inches aperture working at $f/4{\cdot}8$ with which he contrived, despite a crude and flimsy mounting, to get good photographs of star fields. He early adopted the habit, which he maintained throughout his life, of keeping regular observing books (18 bound volumes of them, covering almost 50 years, together with other items of correspondence and photographs, have been presented to the Library of the Society by his executors). He started these books in earnest at the age of 15, when he recorded the bright comets of 1910, and he was soon writing with authority about these and other matters for *Knowledge*, the *English Mechanic*, and for the local Press. On 1911 September 24 he photographed Comet Brooks and noted that he must 'verify as soon as possible' a suspicious object he had spotted on the same plate near β UMi: this he did on September

26, and realized that he had discovered a new comet. Unfortunately he had been forestalled by Quénisset on September 23, but the independent discovery of a comet by a schoolboy deservedly attracted attention: on November 10 his discovery was described to the Society and having been proposed by the Astronomer Royal he was elected a Fellow of the Society at the meeting on 1912 January 12. The school got an extra half day holiday to mark the event.

His father had died a few years before, and William determined that he could not go to University: he wanted to become an astronomer, but he felt he had neither the mathematical ability that was then the prerequisite for entry into the profession, nor any interest in the largely routine observational programmes that still dominated the major observatories. He deliberately looked for a profession that would provide him with a competence but would leave him some freedom to prosecute astronomy, and he selected medicine. In 1912 July he left school, again with a classical scholarship, to go to Guy's Hospital where he qualified as a Licentiate in Medicine and Surgery of the Society of Apothecaries in 1918. His mother and sister moved to London with him to the London suburb of West Norwood, conveniently located for Guy's Hospital, and here the family remained until 1939. He worked as a Civil Surgeon at the Queen Alexandra Military Hospital for a year after qualifying, and then as a Captain in the R.A.M.C. until 1921, serving for several months in Egypt in 1920.

All the time he was observing: a small observatory was immediately set up at West Norwood, to be augmented in 1915 by a 15-inch reflector, and through his membership of the British Astronomical Association, which he had joined in 1913, he became friendly with T.E.R.Phillips and other amateurs who had well-equipped observatories where he was a frequent and welcome visitor. At first he observed widely, but by 1915 had settled to a particular interest in the observation of planets and their satellites, of variable stars and the remnants of old novae, and of comets, and with only occasional excursions into other objects of topical interest these remained his principal concerns for the rest of his life. His early curiosity was very wide, as when on his way to visit Phillips at Headley Rectory one summer evening he found a glow-worm whose spectrum the two studied and noted with interest.

Within a few years his persistence, care and skill as an observer, as exemplified by his early contributions to the *Journal of the B.A.A.* in 1914 and 1915 on the satellites of Jupiter and Saturn, were already becoming widely known. In 1916 he carried out at Guy's Hospital an experiment that demonstrated his other lifelong interest – the study of the eye and the telescope as a single observing instrument to be fully

understood if the best results were to be obtained. It was then commonly supposed (largely on the authority of William Herschel) that the maximum aperture of the pupil of the dark-adapted normal human eye was 1/5 or at most 1/4 inch. The figure is important because it determines the lowest power (and widest sky field) that can efficiently be used with a given linear aperture of telescope. Steavenson carried out a simple but ingenious experiment on a few of his medical student friends. He allowed them to become fully dark adapted and then photographed the eyeball in the light of a magnesium flash before the pupil had time to contract. The pupil he found to be more nearly 1/3 inch diameter, and this value has been used in the design of optical instruments for night use ever since.

The 28-inch Grubb refractor at the Royal Observatory was not, at the end of the war, being heavily used and he was given the unusual privilege for a young amateur of observing with the instrument, which he did at first occasionally, and then regularly through the 1920s: some of his finely rendered pencil drawings of Mars are reproduced in *Greenwich Observations* for 1924. In Egypt he was able to visit the Helwan Observatory, but for the greater part without a telescope he observed what he could, notably making naked-eye magnitude estimates of Mercury, which he saw every day near eastern elongation between June 2 and July 11 in 1920.

Released to civilian life he settled in Idmiston Road, West Norwood, with his mother and sister, and put up his plate as a general practitioner. He chose, however, never to develop a large practice, having but few patients and occasionally undertaking *locum* duty for nearby colleagues. In 1921 he acquired a fine 6-inch equatorial by Wray and in 1930 a 20·5-inch equatorial reflector by J.H.Hindle, the amateur telescope maker of Blackburn. This latter was his principal instrument at West Norwood until 1939.

Apart from a few papers shortly to be noticed, the principal results from Steavenson's observations in the years between the Wars – and indeed from his later ones to which we shall return – were largely published in papers and notes in the *Monthly Notices* of the Society, and in the *Journal of the B.A.A.* They relate to planetary detail, particularly on Mars and Saturn, and the phenomena of the satellites of Jupiter: he was a patient and careful observer, content to wait for the best seeing and then to record what he saw with skill, preferring that to numerous but indifferent observations which he thought of little value. He had also become interested in seeking out the remnants of old novae and noted in particular in about 1920 that the stellar remnant of Nova Persei 1901 was an irregular variable star, and as soon as he became possessed of sufficiently powerful instruments he extended these

observations to fainter remnants of other old novae, finding them variable and sometimes with slowly changing nebular envelopes. His long series of observations, published almost annually in *Monthly Notices* from 1923 to 1939 and again from 1946 until 1953, are of great value by their continuity and care.

It is convenient to record here other major contributions that he made in the years between the Wars. The first stemmed from his interest in observing and instrumental technique. As might be expected from his interests he was a devoted disciple of the great observer William Herschel, and he was widely recognized as an authority on the master's work. At various times from 1923 he was invited by the Herschel family to visit Observatory House at Slough and identify and investigate the instruments in the extensive collection there. These were the subject of a series of articles published variously in the *Monthly Notices*, *Journal of the B.A.A.* and *Observatory* in the years 1924 to 1927, and particularly in *Transactions of the Optical Society (of London)*, **26,** No. 4, 1926, which includes an important catalogue. He investigated the remarkable high-power eyepieces that Herschel occasionally used and tested the figure of specula last touched by Herschel, but he derived the most pleasure from the ingenious detective work that led to the discovery of the long-lost first speculum of the 40-ft telescope, hidden under the staircase of the Cottage at Observatory House. (*Observatory*, **50,** 114, 1927.)

On 1927 June 29 he was fortunate to see the total eclipse of the Sun at Giggleswick through a large gap in an otherwise clouded sky. He was struck by the intense brightness of the inner corona, which he had not expected from accounts he had previously read. As a consequence he went later in the summer to the Gornergrat (10 389 ft) in Switzerland, taking a simple but carefully-designed camera which was in effect a primitive coronagraph, to attempt to photograph the corona outside of eclipse. He thought one photograph showed signs of corona-like structure (as indeed it did), but he never claimed that he had achieved more than 'encouraging results', which was probably a correct assessment: it is doubtful if the scattered light had been sufficiently reduced.

He had trained himself to great experience in the testing of telescope optics both in the laboratory and on the telescope, and in the assessment of the sources of bad seeing, which (like Herschel before him) he knew could be as much inside the telescope as in the upper atmosphere. In an age before many of the devices of today were known or readily available at the telescope he could look at a bright star through a large refractor and after assessing the structure of the image outside, at, and inside focus, write down a complete description of the spherical, zonal, and chromatic features of the correction of the lens. In 1929

May he went on a private visit to North America and visited most of the East Coast observatories where he tested numerous large refractors; his unpublished notes, together with others made on the many refractors that he later tested in Europe and South Africa, are of great interest. His knowledge of the relative merits of the large lenses of Merz, Grubb, Clark, and other makers was probably unrivalled by anyone before or since. This experience of telescopes and seeing he was invited to place at the disposal of the Radcliffe Trustees, who asked him to advise them on the siting of the new reflector they were planning in South Africa. Steavenson spent the first six months of 1930 on a hill to the south of Pretoria (he named it jocularly 'Steavenskop'), observing nightly with a 6-inch refractor borrowed from the Royal Observatory. Although the methods lacked the sophistication of modern site-testing technique, the later success of the Radcliffe Observatory testified to the shrewdness of his appraisal of the site. He also took whilst there, with a Ross lens of short focus and wide (50°) field, a superb set of Milky Way photographs that have often been reproduced.

He had planned to retire from what medical practice he had in 1939 to devote himself even more fully to astronomy, but the war intervened and he returned to Cheltenham to engage more actively in general practice. He had, however, been in treaty with his friend J.H.Hindle to provide for him a 30-inch reflector with a skeleton tube on a fork mounting, and Eddington had agreed with Steavenson to provide a dome for the instrument in the grounds of the Cambridge Observatory. The telescope and dome were complete by 1939 but Steavenson was not to use it until 1945. Light, robust, and with superb optics in a simple but effective mounting, it was an ideal instrument for his purposes, and he was now equipped with what was undoubtedly the finest instrument for visual observing in the British Isles. (He had agreed that when he had no further use for it the telescope with its dome would pass to the University of Cambridge; in the event with his consent the University transferred the telescope to the Cape Observatory but it is now, in slightly modified form, in store at the Royal Greenwich Observatory with the hope of using it for photo-electric photometry at an outstation in the Spanish Sierras.)

Now alone, Steavenson settled in Cambridge in a bed-sitting room at the rear of the Hermitage Guest House (later to become part of Darwin College) and always referred to his residence, from its modest location just inside the back gate, as Dustbin Lodge. With a bicycle for transport to the Observatory a mile and a half away, he began to enjoy the use of his fine instrument, sharing his pleasure with many visitors to the Observatory and particularly with the more enthusiastic observers of the undergraduate Astronomical Society, who later acknowledged his interest by making him a life Vice-President. Amongst

other observations he resumed a previous interest in the motion and magnitude of the satellites of Uranus, and with a characteristically simple and elegant micrometer (consisting of an eye-piece, a strip of red gelatin to reduce the light of the primary, and a small divided circle that had belonged to John Herschel) he made careful studies which were published in the *Monthly Notices* in 1948 and more extensively in the *Journal of the B.A.A.* in 1964. He was also the last observer to make systematic use in Cambridge of the Newall 25-inch refractor before its transfer to Greece in 1954, and he contributed his time generously to helping the Observatory staff on 'Open Nights' and in many other ways. But his years of observing in Cambridge were fewer than he had planned: one among several reasons that persuaded him to return again to Cheltenham in 1960 was probably that the sight in his one eye began to weaken, and although it fortunately lasted for his remaining years he felt his own high standards for observing could not be maintained.

For above all he was an observer, and his skill as an observer was remarkable: he treasured recollections of a few hours, in a lifetime, of near-perfect seeing (which he called, not irreverently, *nunc dimittis* seeing). In them he made some noteworthy observations, for example of Jupiter, where he thought 'the lighter parts showed a granular structure all over' and on another night 'granulation, as if the markings were drawn on a ground glass, and illuminated from behind': this was forty years before the close-up photographs from spacecraft showed the mottled structure that is now thought to indicate rising convection cells. He also delighted to use his shrewd knowledge of what was possible to do the unexpected, as exemplified in his observation on 1930 March 3 at the Union Observatory, Johannesburg: 'Sirius; saw companion easily with 26½ inch at 18.00 with Sun still streaming in at window, seeing 7.'

Steavenson served both the national astronomical Societies devotedly. He was on the Council of the R.A.S. many times and was President 1957–59; he was the first amateur astronomer to occupy the chair after an interval of over twenty years and he quietly appreciated the honour as much as he had the award of the Jackson–Gwilt Medal in 1928. His service to the B.A.A. will doubtless be noted elsewhere more fully than space permits here, but particular tribute must be paid to his work as Director of the Instruments and Observing Methods Section for almost thirty years, in which he gave shrewd advice and encouragement, largely by correspondence, to literally thousands of amateur astronomers about their telescopes and observing. He was always very generous in helping the enthusiast: in the course of his life many telescopes and mirrors passed through his hands, but although not a wealthy man he never sold a single one, but gave them to younger

people he thought would use and value them. He had many other interests and activities in the world of astronomy: he was an early broadcaster of science talks on the radio, the astronomical correspondent of *The Times* for thirty years from 1938, Gresham Professor in Astronomy from 1946 to 1964, and he advised, and tested optical components for, a well-known London firm of opticians. He published only one book, *Suns and Worlds, an Introduction to Astronomy* (1933), but he had revised Proctor's *Half-hours with the Telescope* in 1926, and was perhaps best known for his joint editorship and part authorship of *Splendour of the Heavens* (1923), an encyclopaedic illustrated volume published originally in monthly parts that had a well deserved popularity in its day and is still very readable for its historical interest.

To write of Steavenson the man, rather than of his work, is more difficult, for his character had many facets, and a natural reserve disinclined him to reveal all of them to all people. In later years he was known to younger amateurs as an almost legendary 'Dr Steavenson'; to his contemporaries and a wide circle of friends in the international astronomical community he was always 'Steave'. Although not in any formal sense a churchman he retained throughout his life the characteristics that one might associate with an upbringing in a country rectory eighty years ago; a love of the classics and a regard for courteous behaviour and seemly speech; a feeling for the English countryside and especially for the beloved Cotswolds where he had cycled in his youth; a liking for, and a considerable knowledge of, topography, archaeology, and natural history. Although his life was for the greater part a rather solitary one and lived by choice very simply, he was neither a lonely nor an unsociable person. He loved conversation and good food and wine in the company of friends, and derived great pleasure from his long membership of the Society's Dining Club; he enjoyed the company of women, and, perhaps surprisingly to those who did not know him well, of children. His own natural curiosity about the world, and an enduring delight in simple things like wild flowers, and bonfires in the garden, and cats, struck a naturally responsive chord in the young, who doubtless also shared his view that the animal cartoons of Walt Disney were a major art form, and also admired his remarkable vocal ability as a mimic and animal imitator.

If he did not conceal his liking for these and similar things, it must be admitted that in later years particularly he did not always conceal some of his dislikes either: he was impatient of mathematicians who wrote learnedly of stars but who had 'never looked through a telescope in their lives', and he was scornful of young astronomers who had good scientific ideas to share with an audience but who had not troubled to learn to speak audibly, grammatically, and connectedly.

But if he could be a martinet about the correct use of English, even here his whimsical humour would break through, for not only was he a master of the language (and of *The Times* Crossword Puzzle) but he moulded and adapted it to turns of phrase that suited his own meaning. Thus his delight in good food and his knowledge of astronomical optics of the 19th century were blended in his eulogy of a present he had just received, 'a remarkable Cheshire Cheese, fully ten inches in aperture'; a friend who had triumphantly acquired an inexpensive but large and rambling old vicarage to house a growing family was said to be living in 'something like a wreckerage or a victory'. Steave also had an extensive knowledge of the works of Conan Doyle, and any large telescope seen for the first time would be admired as 'a formidable instrument, mounted on a tripod' (*Hound of the Baskervilles*, Chapter 11). This compound of invention, allusion and cryptic synonym he developed into an almost private language that was understood by a few of his close friends, but, it must be admitted, could seem disconcertingly eccentric when he used it – as he often did – in the presence of strangers.

After living for some years in retirement in Cheltenham, Steave spent the last years of his life in the loving care of a nephew's home in the Wiltshire village of South Marston; after a short terminal illness in hospital he died on 1975 September 23. He was laid to rest in the southeast corner of the quiet village churchyard, which is surrounded by open fields and in sight of the ancient Ridgeway on the Downs: the road that was already old when the Romans came, lined with the monuments of prehistory and bright with the wild flowers of the chalk uplands. It is a suitable place, for Steave loved all these things. At his request his headstone bears only the facts of his name and the dates of his birth and death. One could have wished he had allowed to be added the one word 'astronomer', for few have better deserved the epitaph.

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