Oxford DNB Oxford Dictionary of National Biography

Oxford DNB: August 2020

Welcome to the sixty-fifth update of the Oxford DNB, which comprises seventeen new articles, containing seventeen newly-added lives, accompanied by one portrait likeness. The new articles record the lives of astronomers active from the late eighteenth century to the end of the twentieth century.

From August 2020, the Oxford Dictionary of National *Biography* (*Oxford DNB*) offers biographies of 63,782 men and women who have shaped the British past, contained in 61,474 articles. 11,800 biographies include a portrait image of the subject – researched in partnership with the National Portrait Gallery, London.

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Introduction to the biographies of astronomers

I am pleased to introduce this collection of biographies of astronomers, mainly from the nineteenth and twentieth centuries. Their lives illustrate the progressive professionalisation of astronomy in parallel to the change of its subject matter towards astrophysics.

The two systemic changes are linked. The positions and motions of celestial bodies can be studied after a training in geometry, to a level that can be attained in school, and the use of relatively simple sighting instruments derived from widespread navigational techniques. Robert Waddington, John Franklin-Adams, David Edney, and J.G. Porter all rose to a high level on such foundations.

Studying the nature of celestial bodies requires a deeper understanding through a formal university education in the underlying scientific principles, especially of physics, and a facility with advanced mathematics. Most of the rest of the people documented here fall into this category – Ida Busbridge, Herbert Dingle, Becky Elson, David Evans, J.S. Hey, Zdenek Kopal, David Thackeray, and Richard Twiss. Thomas Elger, Stanley Monck, and James Tennant are unusual if viewed through twenty-first century spectacles, in that they built their astronomical activities on university

education in subjects other than physics and mathematics (civil engineering, surveying, and theology). J. Franklin-Adams and Thomas Elger are also unusual to today's eyes, changing career direction from business into astronomy, a route made possible by amassing a comfortable capital sum. Kenneth Mees, on the other hand, switched from astronomy to industry, a route that is common today when, driven by personal interest, many more students study astronomy in university than can ever be given employment in that subject. In Mees's case, though, he went on to develop new photographic techniques which were crucial to advances in astronomical photography.

What has not changed in the two hundred years spanned by these lives is human nature. Some of the subjects evidence admirable personal strengths beyond astronomy, like Ida Busbridge's and J.G. Porter's dedication to education and Becky Elson's skilful devotion to poetry. But a subset reveal very human weaknesses, like Herbert Dingle, James Tennant, and Robert Waddington, who engaged in scientific disputes conducted, like the Big Enders and the Little Enders of *Gulliver's Travels* who argued passionately about where to crack open a boiled egg, with an intensity out of proportion to the context.

Something else in human affairs has changed only a little: just two of the seventeen subjects were female, each of them flourishing in the final quarter of the two-hundred-year period in question. The gender disparity in this scientific profession was ameliorating but continues to this day. Apart from this, the collection shows the variety in the Britons who manifested an interest in astronomy and made contributions to its advancement. That variety is also something that persists into the twenty-first century.

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August 2020: summary of newly-added lives

A mathematical instrument maker from Hull, **Robert Waddington (*d.* 1779)**, who came to attention by submitting solutions to mathematical problems, was appointed by the Royal Society to assist in observing the transit of Venus from St Helena in June 1761. During the voyage he made determinations of longitude by measuring the angular distances of prominent stars from the Moon and, settling in London where he established a mathematical academy, subsequently published an account of his method with tables, but could not compete with those which were officially-produced. He turned instead to teaching practical mathematics and navigational astronomy, as well as undertaking land surveying, and working on improvements to nautical instruments. A master at a school in Spitalfields, east London, **John Williams (1797-1874)** was a member of the Spitalfields Mathematical Society and became its secretary, and later secretary of the Royal Astronomical Society. Also active in other learned societies, he published papers on subjects including oriental currency and Egyptology, for which he devised a method of stone rubbing for copying inscriptions. He turned to Chinese history, becoming proficient in the language, and published papers on pre-telescopic Chinese observations of sunspots and eclipses. His

major work was a compilation and translation of Chinese observations of comets from 611 BC to 1640 AD. An army officer in the service of the East India Company, **James Francis Tennant (1829-1915)** had gained a distinction in mathematics while training at Addiscombe College, Croydon, and joined the trigonometrical survey team of the Bengal Engineers. A fellow of the Royal Astronomical Society, he became prominent in the fields of eclipse and transit studies, and organized observing programmes in India for the solar eclipses of August 1868 and December 1871, and the transit of Venus in December 1874. He is regarded as a pioneer of solar physics, spectroscopy, and astronomical photography.

Born and schooled at Bedford, the son of a mayor of the town, **Thomas Gwyn Empy Elger (1836-1897)** studied mathematics at University College, London, before making civil engineering his profession. Returning to Bedford, he continued the family tradition of involvement in civic life, and pursued amateur interests in astronomy, making a name for himself as a gifted lunar observer and a major contributor to the work of lunar mapping. His 1895 summary of his cartographic findings was characteristic of the direction of lunar study in the decades to come. The Irish lawyer **(William Henry) Stanley Monck (1839-1915),** who became chief

registrar in bankruptcy at the High Court in Dublin, was a polymath who pursued philosophical interests, and was among a group of Trinity College, Dublin, graduates who undertook astronomical research. His series of papers analysing spectroscopic, photometric, and dynamical data on bright stars contributed to the emerging discipline of astrophysics. Among his other contributions was his proposal (1894) for a new unit of distance for stars, later known as the 'parsec', which was adopted by the International Astronomical Union in 1922. During a successful business career at Lloyds of London, **John Franklin-Adams (1843-1912**) took up astronomy and built his own observatory in Argyllshire, where in the 1890s he embarked on a photographic survey of the Milky Way. His subsequent work at the Royal Observatory, Cape Town, and at Hambledon, Surrey, was cut short by ill health, but helped to lay the foundations for later all-sky surveys. Born in Greenwich, **David James Reginald Edney (1875-1964)** was among the local boys educated by the Boreham Foundation who received a naval education which emphasized navigation and astronomy, and which was ideal training for calculating work at Greenwich Observatory, where in 1891 he became a 'computer'. He was among the generation of computers who lived close to the observatory and retaining a long-term

connection with it, working for over 45 years there in various capacities, his own published work including a study based on his observations of Neptune's satellite Triton.

Taking a BSc by research at University College, London, **(Charles Edward) Kenneth Mees (1882-1960)** worked on photographing the spectra of the new-discovered noble gases. He was drawn instead to the science underpinning the photographic process and went on to join a photographic supplies company where he introduced products used in spectroscopy and astronomy. In 1912 he moved to Rochester, New York, to direct the Kodak Research Laboratories, and went on to publish on the theory of the photographic process. He was always aware of commercial opportunities and promoted the researches which led to the development of Kodachrome film. **Herbert Dingle (1890-1978)** began his working life as a clerk in his native Plymouth, but continued his scientific education at technical college, and won a scholarship to study physics at Imperial College, London. Graduating in 1918, he went on to concentrate on the astronomical applications of spectroscopy. Later he moved into the field of the history and philosophy of science at University College, London, and in retirement pursued a sustained attack on relativity theory, which brought him

notoriety within the scientific establishment but led to him being revered during the Chinese cultural revolution as a critic of Western science. A boyhood interest in astronomy was developed by **John Guy Porter (1900-1981)**, a London University chemistry graduate, while teaching chemistry and mathematics for nearly twenty years at a technical college. As director of the computing section of the British Astronomical Association he went on to take a London PhD for research on the orbits of meteors and comets. His monthly talks for the BBC on 'The Night Sky' ran from 1946 to 1961, combining this with his work as a scientific officer for the Nautical Almanac Office. The mother and maternal grandfather of **Ida Winifred Busbridge (1908-1988**) were both schoolteachers, and she went on to win scholarships to Christ's Hospital school for girls, and then Royal Holloway College, where she took top position in the London University final BSc exams in mathematics. She went on to undertake graduate work at University College, London, and at Oxford, where she taught mathematics and in 1946 became the first woman mathematician to hold a college fellowship. She provided mathematical rigour to the study of the problem of radiative transfer in the atmosphere of stars, and gave her name to the Busbridge polynomials used to solve the equation of radiative transfer.

The son of a Lancashire cotton mill owner, **James Stanley Hey (1909-2000)** won scholarships to study physics at Manchester University where he undertook research on X-ray crystallography before becoming a schoolmaster at Burnley. Wartime work on anti-aircraft radar led to his discovery that the sun is sometimes an active source of natural radio interference. This foundational discovery in radio astronomy was followed by others arising from his work to develop systems to detect V-2 rockets. After the war he spent his professional working life as chief scientist at the Radar Research Establishment on defence-related work, though he also set up a radio astronomy group. Recognition of the extent of his scientific achievements was delayed both by wartime secrecy and his own reserved and modest character.

The son of a Cambridge biblical scholar, **(Andrew) David Thackeray (1910-1978)** became an assistant at the Solar Physics Observatory in Cambridge in 1937 before becoming in 1950 director of the Radcliffe Observatory in Pretoria, South Africa, which under his leadership established itself as one of the most important centres for astronomical research in the world. His study of variable stars in the Magellanic Clouds established that the cosmic distance scale determined by Hubble was underestimated by a factor of two, a finding

which in effect doubled estimates of the size of the universe. **Zdeněk Kopal (1914-1993)**, the son of a professor of romance languages at Czech universities, had his interest in astronomy sparked at the age of fourteen. Aged seventeen he published his first book, on stars whose light varies, and at Charles University began research into the structure of double stars. Appointed professor of astronomy at Manchester University in 1951, he supported the new science of radio astronomy and the work of Jodrell Bank. He wrote his foundational work on Close Binary Stars before turning, in the space age, to the question of the origin of the moon, and detailed lunar mapping, which proved fundamental to the Apollo programme of manned landings. Born in Cardiff, **David Stanley Evans (1916-2004)** read mathematics at Cambridge and went on to doctoral work on hydrogen in stellar atmospheres before becoming assistant astronomer at the Radcliffe Observatory in Pretoria, South Africa, moving to the Cape Observatory, where he produced the Cape Photographic Atlas of Southern Galaxies (1957). He led the project to find a site for a new observatory in South Africa, established as the Sutherland Observatory.

After gaining a distinction in the mathematical tripos at Cambridge, **Richard Quintin Twiss (1920-2005)** undertook

war work at the Telecommunications Research Establishment and after the war joined the Services Electronics Research Laboratory. His mathematical background enabled him to prove that an instrument developed at Jodrell Bank, an intensity interferometer, to measure discrete radio sources, would work. His research on intensity interferometry led to the identification of the Hanbury Brown Twiss effect, which was one of the foundations of quantum optics. Born in Montreal, **Rebecca Anne Wood (Becky) Elson (1960-1999)** took a master's degree in physics from the University of British Columbia. This began her interest in globular clusters of stars, which she extended during her doctoral work at the Institute of Astronomy at Cambridge where she established an international reputation in the field and led local involvement in some of the largest projects with the Hubble space telescope. Her determination of the age sequence of the stellar clusters in the Magellanic Clouds offered a series of snapshots of evolution in progress and was a milestone in the field.