

A Brief History of Manchester Astronomical Society

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Manchester Astronomical Society celebrated its centenary in September 2003. But that centenary was of a hundred years as the MAS; the history of the society goes back much further, and can be traced directly to that great era of public awareness of astronomy and amateur interest in Victorian England in the last half of the nineteenth century. Allan Chapman has discussed this period in detail,¹ so the present paper concentrates on the MAS's particular influence on Manchester astronomers and recent work on the history of the society.²

Astronomy in the north-west of England goes back to the early to mid-seventeenth century. Jeremiah Horrox, William Crabtree and William Gascoigne, all known to one another, were working at the time of the English Civil War. Had their lives not been so tragically curtailed by their early deaths, they would surely have earned for themselves, especially Horrox, international recognition equal to that now enjoyed by their continental forebears in the understanding of planetary motion, Johannes Kepler and Tycho Brahe. Horrox's knowledge of Kepler's work was so thorough that he was able to show that it contained errors, which he was able to correct, and so predict a transit of Venus across the face of the Sun observed by himself and Crabtree in November 1639 (Old Style). In Gascoigne, Horrox and Crabtree we have, respectively, astronomers who hailed from geographical parts of the north-west that two centuries later were to spawn three big Victorian astronomical societies: Leeds, Liverpool and Manchester. Leeds AS was formed in 1859, Liverpool AS in 1881; Manchester AS traces its roots directly back to those of Liverpool and the British Astronomical Association.

An astronomical society for Liverpool

Liverpool Astronomical Society was formed in 1881 but missed by about two decades the heyday of the so-called Grand Amateur,³ when the likes of the Liverpool brewer William Lassell and the Manchester engineer James Nasmyth were building what were then giant telescopes in pursuance of their hobby. They had both moved on from what Chapman has called the 'battleship-rigged' reflectors of Herschel's day and were using the new technology of the Victorian ironmaster to construct their telescopes. Their telescope mountings, in particular, were innovative. Lassell had the first really big equatorially mounted reflectors, while Nasmyth designed and constructed the prototypical Nasmyth mounting, used by most twenty-first-century computer-controlled instruments. But neither Lassell nor Nasmyth had a local society at which to meet, although Nasmyth was a member of the Literary and Philosophical Society of Manches-

ter.⁴ Of course there was the Royal Astronomical Society, of which they were both members, in which like-minded astronomers could share their interests, but in many respects the RAS was 'not for the likes of us'. The RAS was an expensive and rather exclusive London Club to which the majority of those interested in astronomy were excluded by the sheer costs of membership and travel to London for midweek meetings. By contrast, the Liverpool AS, like Leeds twenty years before, was aimed at those who had some time for the hobby but not necessarily the means to finance what we would now call cutting-edge research. Having said that, membership was still a very middle-class affair, with self-employed businessmen, clergymen, lawyers and stockbrokers figuring prominently. Mr R.C. Johnson was the first president of Liverpool AS from 1882 to 1884.

Liverpool AS's main asset was the way in which it was structured into sections of specialised interests. There was a solar section, a lunar section, one devoted to double stars and one concerning the colour of stars. Its section directors were not necessarily local people, and in this and other respects Liverpool AS was a national and international society. It also laid claim to being one of the first scientific societies that allowed women members, forty years before the suffragette movement. Although Liverpool AS was the first really large provincial astronomical society, its success quickly became its downfall: less than a decade after its formation, it was essentially bankrupt. With more than three thousand members in the UK and as far away as South America, the cost of producing and sending its journals to its members became prohibitive. The society began to fail, both financially and within its management structure.

The BAA and its North Western Branch

In 1890, Miss Elizabeth Brown FRMetSoc, who lived in Gloucestershire, director of the Solar Section of the LAS since 1883, urged the formation of a new national amateur astronomical society. Soon after, on 18 July that year, a letter from William Henry Stanley Monck appeared in the

English Mechanic, a widely read publication devoted to technical and scientific matters. Monck's letter advocated the formation of an Amateur Astronomical Association to be based in London. This was not to be a rival of the Royal Astronomical Society but would cater for those amateur astronomers who found the subscription to the RAS too high, its papers too technical, or, being women, were excluded. The British Astronomical Association was founded, on 24 October 1890, in direct response to the general interest in matters scientific, particularly at an amateur level, prevalent in the country in the last decade of the nineteenth century. Like the Liverpool AS before it, the BAA was organised into observing sections. Subsequently, their section reports and memoirs would build up into a valuable archive of observations.

However, within two years of the founding of the BAA, there were plans to create a 'North Western Branch'. Many members lived in the north-west and had nowhere to meet locally. Leeds Astronomical Society was active, although it had suffered a rocky ride in its early days, but what was needed was a branch of the BAA in the north-west for members living on the Liverpool–Manchester–Leeds axis and taking in Lancashire, north Cheshire and parts of Yorkshire on the western side of the Pennines.

The first meeting of local BAA members was held in the Drawing Room of the YMCA, Peter Street, Manchester, on 18 January 1892. There were seventeen people present, and Mr Samuel Okell,⁵ a Manchester businessman, was voted to the Chair. Walter Maunder,⁶ explaining the need for such an association, gave a brief review of the history of the BAA. On Monday 1 February, in the library of the Manchester Geographical Society at 44 Brown Street, the decision was taken to form a North Western Branch of the British Astronomical Association.

Many of the Branch members lived in the then affluent Manchester suburbs a mile or so south of the city centre, in Ardwick, Longsight and Chorlton. We do not know how many of these were ex-Liverpool AS members or members of the Manchester Literary & Philosophical Society.⁷ Some lived in the 'good' areas of Salford. Relatively few, with the exception of professional men, doctors and clergymen, came from the Lancashire mill towns that extended in an arc north, north-east and east of Manchester. Those who did live further afield came from Hale, Wilmslow and Alderley, in the stockbroker belt of north Cheshire, 10 to 15 miles south of the city. And, in the wake of the collapse of the Liverpool AS, members also joined the Branch from Liverpool, Southport, Preston and the Fylde coast of Lancashire.

At the meeting on 1 February 1892, it was resolved that the Branch's catchment area was to be bounded on the north by the towns of Preston,

Clitheroe and Halifax, on the east by Halifax, Huddersfield and Buxton, on the south by Buxton, Macclesfield and Northwich, and on the west by the London and North Western Railway's main line 'which here runs almost due North'.

Fr Walter Sidgreaves SJ, FRAS became the first president of the Branch.⁸ Alfred Brothers FRAS,⁹ Samuel Okell and Thomas Thorp FRAS were elected vice-presidents.¹⁰ Another famous member at that time was Mrs Sallie Proctor-Smyth.¹¹

Independence for Manchester

Although within the first two years the Branch was to all intents and purposes flourishing, all was not well financially and things went from bad to worse. By the turn of the century it was apparent that the Branch could survive only if it became independent of the BAA. This did not happen until the end of 1902, when on 5 November members of the Branch met in the newly completed observatory atop the Manchester Technical College.¹²



Figure 1. The Godlee Observatory

The Godlee Observatory and its twin equatorial telescopes, an 8-inch (200-mm) refractor counter-balanced by a 12-inch (300-mm) Newtonian reflector on the same German equatorial mounting, by Grubb of Dublin, was a gift to the city from Francis Godlee, a local mill-owner and philanthropist.¹³ Immediately it became apparent that, provided it had the Godlee Observatory as its new home, the Branch could set up as an independent society within the auspices of the Manchester Technical College.

On 18 September 1903, a group of former members of the North Western Branch of the BAA

gathered in the lower room of the Godlee Observatory and decided to form the Manchester Astronomical Society (MAS). Professor Thomas H. Core MA took the chair and was elected its first president; Samuel Okell the honorary treasurer; and William C. Jenkins, the director of the Godlee Observatory and already employed by the college, the honorary secretary. The Manchester AS blossomed. Within ten years it had over a hundred members and could later command lectures from the highest scientific authorities in the land, including Professor R.A. Sampson, Astronomer Royal for Scotland, and Professor Sir Arthur Eddington.

In late 1919, after a difference of opinion between the then vice-president, William Porthouse,¹⁴ and the principal, J.C. Maxwell Garnett, MA, MAS moved out of the Technical College and into 65 George Street, the home of the Manchester Literary & Philosophical Society, and the former residence of John Dalton, the Manchester scientist and chemist. Shortly before the Second World War, MAS moved to the Central Library but its rooms were taken for war work. It was to be twenty-six years before MAS again called the Godlee Observatory its home, during which time the Manchester blitz not only destroyed 65 George Street, but forced MAS to suspend its activities, albeit temporarily, during 1941.

At the Council meeting held in the Milton Hall, Deansgate, on 19 May 1942, following the forced hiatus in the Society's proceedings during the blitz, Mr Porthouse noted that there was increased interest in the night skies, but 'the Society would have to be satisfied with the members it could get, and these were mainly of the "popular" type'. It is fascinating to conjecture what he meant by this odd statement. More than anything else, it shows that until 1939 the MAS had been a meeting place of academics and 'professionals', the well-to-do. Some had lived close to the city centre, and many of those had moved away at the onset of war. War was a leveller in more ways than one, and the Society, for its very survival, was obliged to welcome the average city-dweller who could not afford to leave the city during the blitz.

John Hindle

Two prominent members joined the society between the world wars. John H. Hindle joined in November 1917 and later became vice-president. By the 1930s he was internationally recognised as one of the leading optical experts of the time. Hindle built many large reflecting telescopes, including a 20½-inch (0.52-m) Newtonian-Cassegrain, 8 and 30 feet (2.4 and 9.1 m) in focal length, and a 30-inch (0.76-m) Newtonian. Both instruments were for his friend Dr William H. Stevenson, former president of the BAA and director of the Mars Section. The 30-inch was



Figure 2. 25 Inch Newtonian Reflector
by John H.Hindle

subsequently mounted at Cambridge University Observatory, by arrangement with Sir Arthur Eddington.¹⁵

Hindle frequently travelled abroad and always took the opportunity to visit major observatories. While in North America in 1931, he observed using the 72-inch (1.83-m) Brashear reflector at the Dominion Observatory, Victoria, British Columbia, but noted that he was 'very disappointed' with the star images. He had already described a new test for Cassegrain and Gregorian secondary mirrors,¹⁶ and Professor Sampson, considering this test to be a great improvement on previous ones, commissioned Hindle to make a new 19.5-inch (0.5-m) convex secondary for the 72-inch telescope. Unfortunately, we do not know whether this secondary was ever finished.

On the same trip, in California, he met with Professor Ritchey, formerly of the Mount Wilson Observatory and the man largely responsible for figuring the 100-inch mirror of the Hooker Telescope. He later met George Ellery Hale, in Pasadena, and again suggested his new method of testing secondary mirrors. Hale later intimated that Hindle's test might indeed be profitably used to test the mirror of the 200-inch telescope, then under construction. Although Hindle had doubts that this

great telescope would ever be completed, he was invited to see the pouring of one of the 200-inch blanks in 1934. This he described enthusiastically and vividly to William Porthouse. It is tempting to think that, had he lived longer, Hindle would have been invited to Mt Palomar in 1948 to see the commissioning of the Hale Telescope.

During a two-day stopover at Mount Wilson Observatory, where he observed with the 60-inch reflector (whose star disks were 'quite in order'), he was given a guided tour of the Hooker Telescope, then the world's largest. On his way home, via Chicago, where lack of time prevented him from visiting Yerkes Observatory, he had a meeting in New York with Albert Ingalls, associate editor of *Scientific American*, who was primarily responsible for the great surge of interest in amateur telescope construction in America during the 1930s. The descriptions of John Hindle's work have, for many years, been read by generations of telescope-makers on both sides of the Atlantic in Ingalls' famous trilogy, *Amateur Telescope Making*, first published by *Scientific American* in 1935.

Hindle is best remembered for the invention of his ovoid-stroke mirror grinding and polishing machine and for multi-point mirror floatation systems designed to support, without flexure, large telescope mirrors. A Hindle mirror-grinding machine is still in use by Norwich Astronomical Society. Hindle's reputation as a telescope-maker encouraged others in MAS to make their own instruments, a tradition that is still very much alive.¹⁷

Eric Burgess

In October 1935, Eric Burgess (b.1920) became a junior member of the MAS. A year later, he formed the Manchester Interplanetary Society. As a member of both the fledgling British Interplanetary Society (formed in Liverpool by P.E. Cleator) and the MIS, Eric was Manchester's first 'rocket man'. One of the London venues for BIS meetings was the Mason's Arms – or The Spaceshippers' Arms, as the London members came to call it – in Maddox Street. This was the scenario used by Arthur C. Clarke in his science-fiction anthology *Tales from the White Hart*. Clarke was one of the most active of the London members, and although he was slightly older than Burgess, their interest in space research followed remarkably similar paths.

A breakaway group from the MIS, the Manchester Astronautical Association, lead by Burgess, was formed in 1937. It was to play a key role in holding together interest in UK astronautics during the second world war. As war loomed, all BIS activities were suspended and it remained for Manchester to carry the 'interplanetary torch' throughout the war years, during which Burgess printed and distributed a mimeographed quarterly journal, *Spacewards*. Although he kept in touch with Clarke and Cleator,

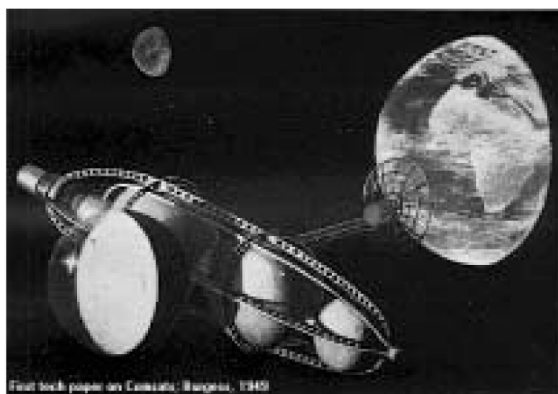


Figure 3. First technical paper on Comsats
Burgess 1949

he had no contact with the other BIS council members until the close of hostilities in Europe. By then, Eric had linked up with Kenneth Gatland to form the Combined British Astronautical Societies, which had about two hundred members and a printed journal, also with the title *Spacewards*. The Manchester Astronautical Association became its North Western Branch.

In 1944, Burgess and Gatland completely restructured the CBAS, and BIS members Cleator, Clarke and R.A. Smith, together with officials acting for the CBAS, circulated a policy document which contained plans for a post-war astronautical society. In September 1945, it was unanimously agreed that a new national society should be incorporated under the name of the British Interplanetary Society Ltd. Eric Burgess was the first to sign the new members' register and became chairman for the first post-war session, 1945/46, to be succeeded by Arthur C. Clarke in 1947.

In October 1945, Arthur C. Clarke published his seminal paper on the potential use of *manned* orbiting space stations to act as 'extra terrestrial relays' for radio and TV broadcasting.¹⁸ The next year, Eric Burgess followed it with an article published in the November 1946 edition of *Aeronautics*, proposing to use *automatic* robotic satellites in geostationary orbits for the same reason and for meteorological and other purposes. Clearly, it is this technology,¹⁹ first suggested by Burgess, that best describes modern global telecommunications.²⁰ Along with Charles A. Cross, NASA credits Eric Burgess²¹ for the introduction of the term 'interplanetary probe', first used in a joint paper, 'The Martian probe'.²² In September 1956, Eric and his wife Billie emigrated to California. He became a successful part-time science journalist and writer on space exploration.

Following the Apollo Moon flights, Burgess wrote or co-authored several very detailed books on NASA's exploration of the planets. In November 1971 Eric had dinner with Charles Cross and Carl Sagan, director of the Laboratory of Planetary

Studies at Cornell University. Sagan was visiting the Jet Propulsion Laboratory in Pasadena.²³ The topic of conversation centred on Pioneer 10, then nearing completion, and Burgess suggested to Sagan that a visual message should also accompany the vehicle. So was born the idea of fixing a plaque to the spacecraft.²⁴ Sagan was not at first optimistic that NASA would go along with it, but under extreme secrecy the plaque, depicting a man and a woman set against a diagram of the craft for scale and various other devices to show the origin of the probe, was designed by Carl Sagan and Frank Drake. A similar Burgess-inspired plaque was attached to Pioneer 11. Eric Burgess last visited Manchester in 1978 when he addressed the Manchester Astronomical Society at its 75th anniversary meeting. He was then in the UK as science adviser to the makers of the James Bond film *Moonraker*.

Postwar work

During the latter half of the twentieth century it has to be acknowledged that the MAS, like many amateur astronomical societies, can claim to have made only relatively minor contributions to the science in the light of burgeoning professional studies. Nevertheless, some individual contributions by its members are worthy of recognition. In 1946, the MAS returned to the Godlee Observatory and has enjoyed unrestricted access ever since. It is still one of the very few UK astronomical societies to meet weekly.

In 1952, Professor Zdenek Kopal was elected to the first chair of Astronomy at Manchester University. Kopal was a regular contributor to the MAS and became an honorary member. In 1954, Ken Brierley and Morris Marlowe were two of only a handful of observers to witness the total eclipse of the Sun from the British Isles, from the northernmost tip of Unst in the Shetland Islands. Other MAS members also went on to make significant contributions to astronomy and the sciences: Professor Wal Sargent was a student at Manchester University in the mid-1950s and subsequently, among other things, became director of the Mount Wilson and Palomar Observatories and Ira S. Bowen Professor of Astronomy at Caltech. His contemporary, also a former MAS member and now professor, Leon Lucy, devised the Lucy–Richardson deconvolution algorithm, used to correct the initial spherical aberration of the Hubble Space Telescope.

In 1969, MAS lunar observers John Bolton FRAS and Mike Duckworth FRAS, observed transient lunar phenomena (thought to be localised outgassing) in the vicinity of Aristarchus with the Godlee instruments that were apparently confirmed by the crew of Apollo 11.²⁵ Two years before, in January 1967, Duckworth and Kilburn observed a TLP in Gassendi. Patrick Moore and Terrance Moseley also saw it from Armagh, as did P. Sartory

from southern England. This observation was recorded by NASA.²⁶ Nigel Longshaw is now another, internationally respected, MAS lunar observer.

In the 1970s, John Rustige and Allan Maudsley were regular contributors to the BAA Solar Section and among the ten leading solar observers in the UK. MAS members Rustige and Ken Bispham were among the first solar observers to make detailed observations of polar faculae.

In the 1980s, MAS member Dr David Whitehouse joined NASA and went on to become a senior BBC science correspondent and author. Former MAS president Dr Peter Mack became assistant professor of astronomy at the University of Oklahoma and manager of MIT instruments at Kitt Peak before setting up his own business making research-grade telescopes and instrumentation in Tucson, Arizona.

In the closing years of the century, Mike Oates FRAS has become the most prolific comet discoverer to date, with a tally of 142 mini-comets discovered by analysing data from the ESA–NASA SOHO satellite. Oates is also co-discoverer in November 1997, with Tony Cross and the present writer, of Manchester AS's greatest astronomical find, an almost perfect copy of a star atlas, *Atlas Celeste* (1786), which should have been published in 1750 as John Bevis's *Uranographia Britannica*.²⁷

Manchester Astronomical Society is now only one of many dozens of such organisations in the UK, but as it enters its second century it looks forward to continuing its association with professional bodies in the UK and internationally in the pursuance of knowledge and the enjoyment of space to the benefit of its members and the public.

Notes and references

1. Allan Chapman, *The Victorian Amateur Astronomer* (Chichester, Wiley-Praxis, 1998).
2. K.J. Kilburn, *The Manchester Astronomical Society: A History* (Manchester, UMIST, 1992). New material is in preparation; see also <http://www.mikeoates.org/mas/history/intro.htm>.
3. A term coined by Allan Chapman.
4. The Manchester Literary and Philosophical Society was formed in 1781 and is one of the oldest learned societies in the UK.
5. Samuel Okell FRAS (1838–1932) was a manager of James Laing, Son & Co., Ltd of Manchester and London, and worked his way up to become a senior partner, retiring after seventy-five years with the company in 1931. The company were drysalts, supplying barrels of meat to ships re-victualling in the London docks and later in the Salford and Manchester docks complex. With the opening of the Manchester Ship Canal in 1895, and the immense amount of export trade to and from 'Cottonopolis' at the turn of the century, the business thrived and Okell became a wealthy man. He travelled widely, to South America, South Africa and to Jamaica, where he met and became friends with Professor William H. Pickering

- at the outstation observatory of Harvard University. Other friends included E. Walter Maunder, the astronomical writer Richard A. Proctor, and the telescope-makers George Calver and Andrew Ainslie Common. Common's 36-inch (0.9-m) telescope, built for the Halifax textile manufacturer Edward Crossley, was donated to Lick Observatory and is still doing useful work more than a century after its construction. (Obituary notice, *MNRAS*, **93**, 231 (1933).)
6. Solar observer at the Royal Observatory, Greenwich.
 7. The early membership records of Manchester Literary & Philosophical Society have been lost, possibly during the bombing in 1941–42.
 8. Director of Stonyhurst College, having succeeded the late Fr Stephen Perry.
 9. Pioneer photographer and the first to take portraits by the light of burning magnesium ribbon. Brothers was also the first to take pictures underground, in the Blue John Mines, Castleton, Derbyshire.
 10. A skilled instrument-maker and inventor. Thorp's company specialised in making scientific apparatus, recording instruments, gas meters and regulators. He is credited with the invention of the coin-in-the-slot gas meter. His advertisements in scientific publications such as the BAA journal included a range of replica gratings used in spectroscopy that formed the basis of a series of spectroscopes that he made and sold.
 11. Sallie Duffield Proctor-Smyth FRAS (1856–1941) was born Sallie Thomson, at St Joseph, Missouri. Her first marriage was to R.J. Crawley of Belfast, with whom she went to Australia. A year after Crawley's death in 1880, she returned to Missouri and became the second wife of Richard Anthony Proctor, the writer of many popular astronomical books, and stepmother to his six children by his previous marriage. The family moved to England and lived at Kew, London, before moving to Orange Lake, Florida, in 1884. Four years later, intending to move back to England, Richard Proctor fell ill en route to England via New York and died, apparently of a chill on top of malaria. Sallie Proctor hurried to New York and determined to fulfil the lecture tour of England that her late husband had arranged. This she did, reading from his prepared notes. By Richard Proctor she had two sons who both died in childhood. Sallie Proctor-Smyth became a member of the Branch when she moved to Altrincham, Cheshire, after marrying in 1890 her third husband, Dr J.C. Smyth (d.1905) of Belfast. She was a professional astronomical lecturer and gave at least three talks to the Manchester Astronomical Society after being elected to its Council in 1905. Her stepdaughter Mary Proctor (1862–1957), Richard Proctor's daughter by his first marriage and only six years younger than her stepmother, was also a regular attendee of the society. (Obituary notice, *MNRAS*, **102**, 73, 74 (1942).)
 12. Now UMIST, the University of Manchester Institute of Science and Technology.
 13. K.J. Kilburn, 'The Godlee Observatory in Manchester, England', *Journal of the Antique Telescope Society*, Issue 23, 19–24 (2002).
 14. Porthouse was a lunar observer and in 1946 had a crater in Mare Imbrium named after him, in H.P. Wilkins' great 300-inch map of the Moon.
 15. *Scientific American*, September 1939.
 16. *MNRAS*, **91**, 592 (1931).
 17. In November 2000, MAS members visited Telescope Technologies Ltd at Birkenhead and were shown three partly completed 2-m robotic telescopes, the first large instruments to be constructed in the UK since the demise of Grubb-Parsons Ltd in the mid-1980s. The wide-field Ritchey-Chrétien optics of these new telescopes were being tested by the same Hindle null test devised by John Hindle seventy years before.
 18. A.C. Clarke, 'Extra terrestrial relays', *Wireless World*, October 1945, pp. 305–308.
 19. Acknowledged in 1980, at the opening of the Smithsonian Air and Space Museum in Washington, by an exhibit showing his solar-heated, turbine-powered satellite, proposed and described in detail in 1949.
 20. E. Burgess, 'The establishment and use of artificial satellites', *Aeronautics*, September 1949.
 21. H.T. Wells, S.H. Whiteley and C.E. Karegeannes, *The Origins of NASA Names*, NASA SP-4402 (1976).
 22. E. Burgess, 'The Martian probe', *Aeronautics*, November 1952.
 23. R.O. Fimmel, J. Van Allen and E. Burgess, *Pioneer: First to Jupiter, Saturn, and Beyond*, NASA SP-446 (1980).
 24. Carl Sagan, in an interview about the plaque, *Washington Post*, 25 February 1972.
 25. Telegram from NASA to J. Bolton, 23:40, 19 July 1969. (Photocopy in the possession of K.J. Kilburn.)
 26. 'Chronological catalog of reported lunar events', NASA Technical Report TR R-277, July 1968.
 27. K.J. Kilburn, J. Pasachoff and O. Gingerich, 'The forgotten star atlas', *Journal of the History of Astronomy*, **34**, 125–134. (2003).