Reverend Doctor William Pearson in South Kilworth, Leicestershire

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William Pearson (1767-1847) was a 19th-century astronomer, renowned for his work in positional astronomy and the design of astronomical instruments, both practical and instructional. He was a co-founder in 1820 of the Astronomical Society of London, which later became the Royal Astronomical Society, where his portrait hangs. For 30 years of his astronomical career he was the Rector of South Kilworth, a village in Leicestershire, England, where he erected several observatory buildings, as well as extending the village church and building the village schoolroom. This paper documents his activities in South Kilworth.

In 2003 I was invited by friends to visit their house – the Observatory, South Kilworth, England. The house was built in 1834 by the Reverend Doctor William Pearson (1767-1847), who was Rector of South Kilworth from 1817 to 1847. From this quiet south Leicestershire village, Pearson carried out a decades-long programme of stellar observation.

From information supplied by the owners of the Observatory, I wrote a brief article about Pearson's life, which was published in July 2006[1]. The principal sources for that article were a biographical article from the *Quarterly Journal of the Royal Astronomical Society*[2], and Pearson's obituary in the *Monthly Notices of the Royal Astronomical Society*[3], fleshed out with detail from articles in the South Kilworth parish magazine[4].

The purpose of this paper is to record some of the additional material relating to Pearson's life in South Kilworth that I have identified.

The Life of William Pearson

William Pearson was born in Whitbeck, Cumbria, England on 23 April 1767. He attended Hawkshead Grammar School. William Wordsworth, three years his junior, was a fellow student. In later years they had correspondence over a boathouse on the shores of Grasmere that Pearson built, of which Wordsworth disapproved. Wordsworth wrote[5]:

> " His manners when he came to Hawkshead were as uncouth as well could be, but he had good abilities, with skill to turn them to account."

Pearson's early career was as a schoolmaster, first at Hawkshead Grammar School, then in 1793 in Lincoln. He was owner of preparatory schools in Parson's Green, London (1800) and East Sheen, London (1811). In parallel, he became, in 1793, curate of St Martin's church, Lincoln; and was Rector of Perivale, near East Sheen, between 1810 and 1812.

Perhaps his most lasting achievement was the foundation, in conjunction with Francis Baily and others, in 1820, after several attempts, of the Astronomical Society of London. This society, of which Pearson was the Treasurer between 1820 and 1827, became the Royal Astronomical Society (R.A.S.) in 1831. A family portrait (Figure 1) of Pearson, his first wife Frances and his daughter, also named Frances, hangs in the Council Room of the R.A.S. in Burlington House, London.

Figure 1

William Pearson and family

Also visible is one of the orreries that Pearson designed. By courtesy of the Royal Astronomical Society.

Pearson was famous as a designer and manufacturer of instruments such as orreries, satellitia and planetaria. He began to build these during his time in Lincoln, probably as demonstration

Figure 2

A satellitium designed by William Pearson and built by J Fayrer

Top image: The Fayrer satellitium and its accessories. The two candle holders to the bottom left probably represent the Sun and the Earth. The circular brass disk contains zodiacal markings. **Centre image**: A detail of the satellite model itself. It measures approximately 12 x 8 x 2 inches. The handle turns a crank at the bottom right-hand corner of the mechanism. **Bottom image**: The satellitium in its carrying box.

These photographs are published by courtesy of the Museum for the History of Science, Oxford.

aids for his public lectures. However, from 1802 he was designing instruments for Thomas Young at the Royal Society. He also designed clocks, one of which is in possession of the Royal Astronomical Society. Surprisingly few of Pearson's other instruments seem to have survived, but one that has is a satellitium, shown in Figure 2. This was built to Pearson's design by James or John Fayrer of Pentonville, London. It demonstrate the movements of the Galilean satellites of Jupiter. I viewed the satellitium in 2005, and am pleased to report that it is still in good working order.

Pearson began his career as an observational astronomer at the observatory which he built in East Sheen. However, his major work was done once he had moved to South Kilworth in 1821. In his early years in the village, Pearson wrote the magisterial, two-volume work *An Introduction to Practical Astronomy*[6], for which he was awarded the Gold Medal of the R.A.S. for 1829.

His first wife died in 1831, and he remarried shortly after to Eliza Sarah, a woman 35 years old, the same age as his daughter. He died in 1847, out-lived by his daughter and second wife.

The Rectory Observatory

According to *White's Leicestershire Directory* for the year 1846[7]:

> " Kilworth (South) is a pleasant village, on the northern declivity of the river Avon, and on the Rugby and Market Harborough road, 3 miles W.N.W. of Welford, and 4½ miles E.S.E. of Lutterworth. Its parish has 478 inhabitants and 1418 acres of fertile land, mostly having a gravely soil."

The major landholders are listed as: "The Baroness Bray, lady of the manor … Pearson, … and a few smaller freeholders." It states that the rectory has 257 acres of glebe land, mostly allotted to the church in lieu of tithes at the time of enclosure in 1789. Figure 3 is taken from the ordnance survey map of South Kilworth (second edition 1901) since when the village has expanded little.

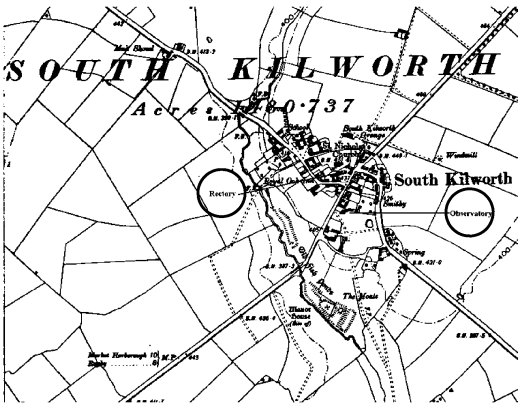

Figure 3

South Kilworth in the year 1901

This detail is from the Ordnance Survey Leicestershire Sheet LIII. Scale 1:10560. North is at the top. The indicators showing the position of the Rectory and of the Observatory are additions by the author.

Figure 4

St Nicholas church, South Kilworth, in 1821

This view, from the north-west, shows how the church looked when William Pearson first occupied the rectory.
County History of Leicestershire

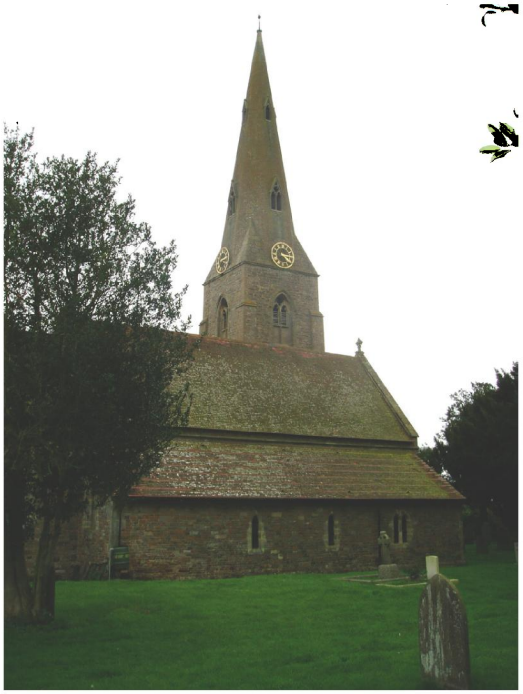

Figure 5

St Nicholas's church, South Kilworth, in 2006

Photograph from the north-east by the author.

William Pearson was made Rector of St. Nicholas's church in 1817, through the benefice of Lord Chancellor Eldon (whose grandson had been one of Pearson's pupils at East Sheen)[8]. However, he did not move to the village until 1821, after selling his very successful East Sheen preparatory school. Figure 4 shows how the church appeared when he first arrived in the village[9]. He substantially remodelled the church in 1840, building a new north aisle, which incorporated the Norman arches visible in Figure 5. *White's Leicestershire Directory* also mentions work on the south aisle in 1836. Unfortunately, his modifications were not successful and the nave had to be rebuilt by his nephew in 1868/9. Figure 6 shows a modern view of the church, with its much more substantial nave.

Figure 6

The southern aspect of the east wing of the South Kilworth rectory

Photograph by the author, September, 2006.

The Rectory stands immediately to the south of the church. Pearson built a new east wing to act as an observatory. Two sturdy brick pillars were bedded five feet into the ground, extending up to an upstairs observatory, to act as stands for Pearson's main two telescopes: a transit telescope probably by one of the father and son instrument makers, Thomas Jones of London (not yet confirmed), and an altitude and azimuth circle by Edward Troughton (1753-1835). The two pillars still stand within the east wing, but are not photogenic. However, the south-facing windows, through which the two telescopes were pointed, are clearly visible in Figure 6. Shutters in the roof gave each instrument a 180 degree view in the meridian, but neither the shutters nor the north-facing windows are now present.

In the gardens of the rectory, Pearson built a summer-house observatory, fitted with a conical revolving roof, running on rollers. There is now no clear evidence of where it stood. The roof was originally built in 1788 by John Smeaton (1724-1792) for the observatory of Alexander Aubert in Highbury. Pearson purchased it in 1806, after Aubert's death[10]. Revolving roofs for observatories were not common at the time. The flexibility afforded by such a roof meant that the telescopes in the summer-house could be used easily for plane-

tary observations rather being limited to the meridian. Pearson used a Tulley 6.8 inch refractor[11].

Martin Lunn of the Yorkshire Museum traced the history of the summer-house roof, and the telescopes held within. He wrote[12]:

> " The Rev William Pearson was very instrumental in the creation of the York Observatory. As you probably know, the York Philosophical Society built the Yorkshire Museum in 1829. In 1831 they hosted the very first meeting of the British Association for the Advancement of Science at the Yorkshire Museum. At that meeting the BA suggested that if the YPS would construct an observatory, members of the BA including Pearson would donate equipment.
>
> " Pearson donated a telescope, clock, plus books and charts. Unfortunately the telescope disappeared in the 1950s. We still have the original clock, which is a Barraud of 1811, which is still in perfect working order. There are some star charts, which we have recently discovered buried deep in our library; they had been lost for at least 50 years. These quite possibly were the ones donated by Pearson.
>
> " We have in the observatory a picture of the summer house roof that Pearson was offering to the YPS. However it was never used. A conical roof instead was used. It is unclear whether that was given by Pearson or was built here in York."

Figure 7 shows the original design for the York observatory, and the design as implemented. The former is clearly far too ornamental for practical use by York Observatory or by Pearson; perhaps this was the original roof of Pearson's summer-house. The practicable design bears a much closer resemblance to the design of roof from East Sheen, as shown in Volume 2 of *An Introduction to Practical Astronomy*. In particular, note the use of rollers immediately beneath the conical dome.

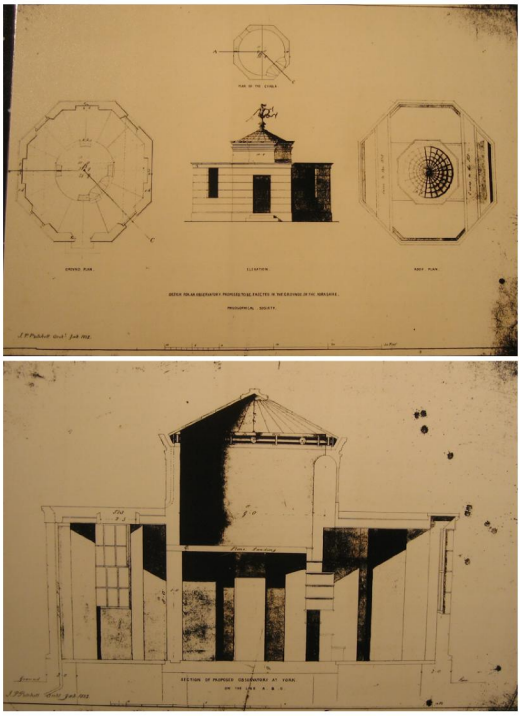

Figure 7

Plans of York Observatory

The original design is shown in the top image. The bottom image shows the observatory actually built.

Images courtesy by of Pip Strang, Yorkshire Museum, June 2006.

The South Kilworth Observatory

In 1834, Pearson decided that his observations were being spoilt by smoke from the houses to the south of the rectory[13]. He resolved to build a new observatory on the southern edge of the village, on glebe land. Figure 8 shows a plan and elevation of the new observatory.

The main structure is a two-storey octagonal building. Single-storey side rooms are attached to the west, east and north. The north room acted as a vestibule for the observatory. Presumably the side rooms allowed Pearson's assistants to time and record observations without allowing stray light into the main observatory. The upper stories are fitted with floor-to-ceiling, which therefore acted as the openings for the telescope(s). It appears that Pearson did not build instrument stands as he did in the rectory summer-house observatory.

The roof, like the observatory, had an octagonal structure (Figure 8), and was likely to have been tiled with either copper or lead tiles. The roof was topped by a copper boss, recently removed. There is evidence inside the roof of iron tie-bars holding it together. Ties went to each of the octagonal corners, and to the centre of each of the eight panels, except for those facing south and facing north. Horizontal, threaded, iron tie-bars held the octagonal shape. There is no evidence of a ceiling between the upper storey and the roof. This is similar to arrangements in the rectory east wing, allowing a 180 degree view along the meridian, with the north and south panels of the octagon being openable or detachable. There is no evidence that the roof could be rotated.

Due north from the rectory, was marked by a line painted on a nearby wall[14]. For the meridian from the new observatory, Pearson built a farmhouse 400 yards to the south, with a meridian mark built in. Unfortunately, this is now obscured.

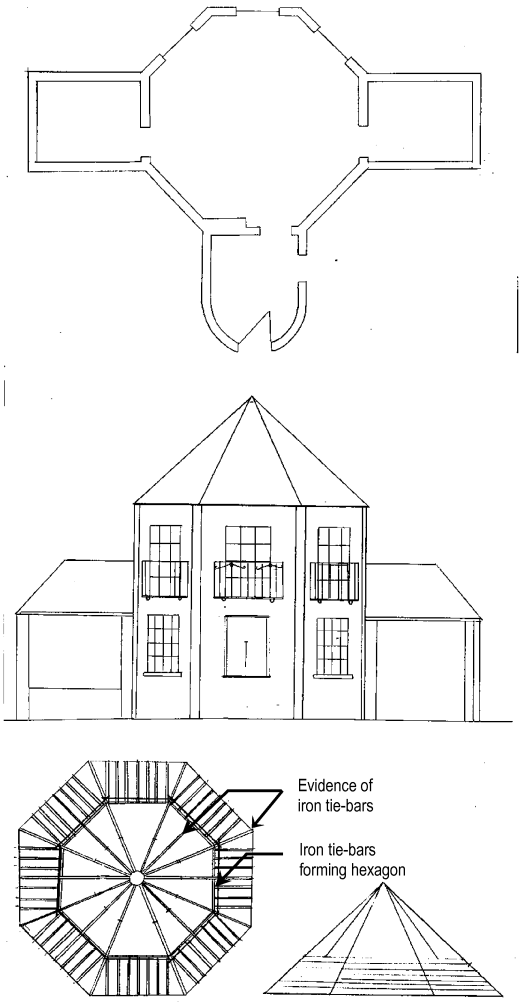

Figure 8

Pearson's South Kilworth observatory

The top and middle panels show, respectively, the plan and north elevation of the observatory. The bottom panel shows detail of the roof construction. In the plan, north is at the bottom. The scale in all panels is 1:50.

Two major observing programmes spanned Pearson's occupancy of the rectory and the observatory[15]. Between 1830 and 1838 he repeatedly observed and catalogued 520 stars capable of being occulted by the Moon. The second programme, carried out between 1828 and 1838, consisted of a series of observations of the Sun's altitude at noon, from which Pearson deduced an estimate of the obliquity of the ecliptic. Pearson's chief assistant for these observations was Ambrose Clark, who had earlier been studying mathematics privately. Village schoolmaster, Thomas Pooley, had been an earlier assistant.

After Pearson's death, the observatory went into decline. It was used first as a granary and then as a cowshed. However, in 1960 it was renovated and converted into a private dwelling. Figure 9 shows photographs, taken by the original renovator, and now in the possession of the current owners, of the Observatory as it appeared in 1960. On the south elevation (top panel) a sundial can be seen, mounted in the blocked off lower window. Figure 10 shows the dial in detail. At the top the geographical coordinates are given as: "N. Lat. = 5° 26' 47". - W. Long. 4' 26"." It was removed to the Snibston Discovery Park, Leicester, where it remains in storage; my attempts to view it have so far been unsuccessful. Figure 11 shows the Observatory as it appeared in 2004. Pearson's observatory is now a modern, comfortable home. The current owners are further renovating and extending the property, but we can be reassured that as it is in the hands of Pearson admirers, the work will be sympathetic to the building's heritage.

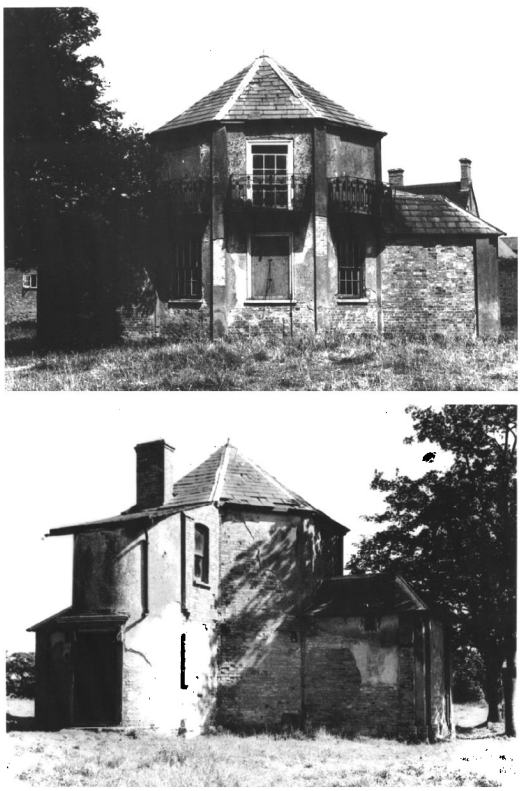

Figure 9

The Observatory in 1960

The top panel shows the south elevation. The bottom panel is taken from the north-east. These photographs are published courtesy of David and Sue Dilks.

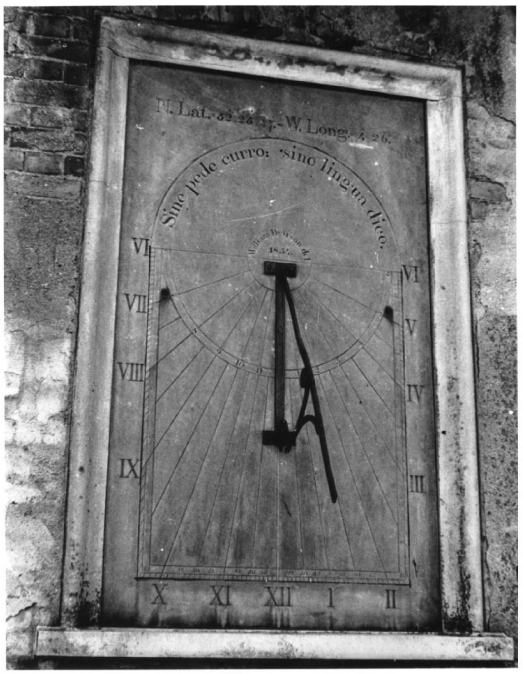

Figure 10

The sundial on the Observatory in 1960

This photograph is published by courtesy of David and Sue Dilks.

Figure 11

The Observatory in 2004

Photograph taken by the author from the south-east.

Pearson's Legacy in South Kilworth

It is difficult to form a definitive impression of Pearson's character. It is possible to trace a development of self-confidence and social standing, from the "uncouth" farmer's son studying at Hawkshead Grammar School; to the enthusiastic lecturer on astronomical matters in Lincoln and then London, designing his own orreries; to the owner of a thriving and profitable school, hobnobbing with the aristocracy. To my eye, the R.A.S. portrait shows a man confident in his career and circumstances.

Yet in 1817, even as he used his influence in London to assist in the founding of a Society for astronomers, Pearson accepted the Rectorship of a quiet, south Leicestershire village; and in 1821, whilst he was Treasurer of that very same society, and visitor to the Royal Observatory, Greenwich, he sold his profitable business in East Sheen and moved permanently to the Midlands. However, he continued to visit London on a regular basis.

Certainly Pearson threw himself enthusiastically into an observing programme. The suspicion must be that he wanted to reduce external commitments so as to concentrate on his observations, and the production of his magnum opus - *An Introduction to Practical Astronomy*. Yet, after four years as an absentee Rector, he also became a valued member of the South Kilworth community. He was a Justice of the Peace, sitting in nearby Lutterworth, and a freeman of the Borough of Leicester[16]. And, perhaps because of his earlier career as a schoolmaster, Pearson was determined to build a schoolhouse in South Kilworth.

A history of the South Kilworth schoolhouse reveals a campaign by Pearson during the early 1830s to secure funding for the erection of a new building, through the auspices of the National Society for Promoting the Education of the Poor in the Principles of the Established Church[17]. A letter dated 20 December 1833 reads:

> " I thank you for your obliging communication on the subject of the Assistance to be afforded in erecting a school by the committee of the National Society. I have looked over the printed Papers sent me at different times but cannot find the form of the Petition you allude. I think it was used on a former occasion when I made my first application."

The second application still exists, dated 29 January 1834. In a letter dated 11 March 1834, Pearson made clear the extent of his personal support for the scheme:

> " The Lord Bishop of Lincoln has been so good, as to inform me, that he forwarded my application of last month for pecuniary assistance towards building a school house. I recollect however that I omitted to state, that I propose to erect a school house for the Master and Mistress at my own expense as an appendage to the school; and if this addition be not recognised by the National Society, I shall certainly subscribe £30; the farmers not being able to advance any money by way of subscription. I have the honour to be, sir, your very humble servant W.Pearson."

South Kilworth was one of the first schools in the country to receive a grant. The schoolrooms opened later in 1834. However, like Pearson's building activities in the church, the construction of the school was not a complete success. A letter[18] from Assheton Pownall, Pearson's successor, to the National Society, in 1851, reveals that:

> " Seventeen years ago, my predecessor built a schoolhouse here, but unfortunately it was badly built, not large enough for our wants. I therefore very much wish to build a new school room more suited to our present requirements, and if I could succeed in this propose giving up one of those now in use, to the teachers, while I retain the other as a classroom."

Another insight into Pearson's character comes from two books bought at auction by the current owner of South Kilworth Rectory. They come from Pearson's personal library and bear his name plate: *Martial Biography, or Memoirs, of the Most Eminent British Military Characters* and *Lives of Illustrious Seaman*. Both were published in 1803 by J. Cundee of Ivy Lane, London. The titles suggest civic pride, patriotism, and perhaps a sense of self improvement.

Pearson observed from South Kilworth almost until his death in 1847, although the pace of his life slowed following a fall from his horse in 1844. Pearson is buried in the graveyard of St. Nicholas's church (Figure 12). The grave is in poor repair and the inscription on the headstone is illegible. There are two memorials to Pearson within the church. One is a wooden plaque recording his gifts to the parish:

> " The Revd Dr Pearson gave in 1846 the interest on L200. to Trustees for the education of ten poor Children of this Parish. Also a finger-organ by GRAY with two barrels for psalmody to the Rector and Churchwardens of this Parish for the time being. Also a service of new Plate for the Communion."

The second memorial at higher level (Figure 13) is carved in marble. This memorial is surmounted by a telescope, globe and books.

Figure 12

William Pearson's grave, St Nicholas's church, South Kilworth

(Photograph by the author, June 2004)

Figure 13

The memorial to William Pearson St Nicholas's church, South Kilworth

" To the Memory of the Rev^{d} W^{m} Pearson, L.L.D. F.R.S. Rector of South Kilworth Who Departed this life on the 6th September 1847 in his 81st year of his age. Universally Beloved and Regretted."

(Photograph by the author, June 2004)

Pearson's legacy to astronomy was the body of his observations; the instruments he built; his mammoth guide to serious observing, *An Introduction to Practical Astronomy*; and above all his rôle in the founding of the Royal Astronomical Society. In South Kilworth, he is perhaps better known for the work he carried out, unsuccessfully, on the church, and rather more successfully to The Rectory; his new observatory to the south of the village; and perhaps most importantly, the erection of a village schoolhouse. Those who care about the history of the village have made sterling efforts to preserve the memory of his achievements.

Acknowledgements

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