

John Twysden and John Palmer: 17th-century Northamptonshire astronomers

Mike Frost

Past-Chairman, Coventry and Warwickshire Astronomical Society

John Twysden (1607-1688) and John Palmer (1612-1679) were two astronomers in the circle of Samuel Foster (*circa* 1600-1652), the subject of a recent paper in this journal. John Twysden qualified in law and medicine and led a peripatetic life around England and Europe. John Palmer was Rector of Ecton, Northamptonshire and later Archdeacon of Northampton. The two astronomers catalogued observations made from Northamptonshire from the 1640s to the 1670s. In their later years Twysden and Palmer published works on a variety of topics, often astronomical. Palmer engaged in correspondence with Henry Oldenburg, the first secretary of the Royal Society, on topics in astronomy and mathematics.

In 2006, I published in *The Antiquarian Astronomer* a paper on ‘Samuel Foster and his Circle’¹. Foster (*circa* 1600–1652) was an authority on (sun)dialling and spherical trigonometry. He was Gresham Professor of Astronomy in 1636 and again from 1640 to 1652, and was part of the group from which the Royal Society sprang. From an astronomical point of view, Foster’s most significant publication was a series of *Observationes Eclipsium* made between 1638 and 1652 in conjunction with his colleagues John Twysden (who edited Foster’s papers) and John Palmer. Foster and Palmer were both educated at Emmanuel College, Cambridge, then England’s leading centre of Puritan thinking. Other Emmanuel graduates who knew Foster included John Wallis (1616–1703) and Jeremiah Horrocks (*circa* 1618–1641).

The intention in my first paper was to include brief biographies of Palmer and Twysden (along with other people with astronomical connections to Samuel Foster, such as Walter Foster and Nathaniel Nye). However I found that I had substantial amounts of material on Twysden and Palmer, and the paper already tested *The Antiquarian Astronomer*’s length guidelines!

Consequently, this second paper expands my information about the lives of John Palmer and John Twysden. I give details, too, on the entries in *Observationes Eclipsium* that did not involve Foster, and present John Palmer’s own, independent, catalogue of eclipse observations. Also mentioned is correspondence held at the Royal Society between their first Secretary, Henry Oldenburg, and Palmer and others, which sheds light on the scientific activities taking place in the shires during the 17th century. Twysden and Palmer might have observed from Northamptonshire, but they were part of a wider community of natural philosophers.

John Twysden and his siblings

John Twysden (Figure 1) was born at Roydon Hall, East Peckham, Kent, England², on 1 May 1607, the 4th son of Sir William and Lady Anne Twysden. All dates in this paper are Old Style³.



Figure 1

John Twysden (1607-1688)

This is one of 69 family portraits housed in the Great Hall of Bradbourne House, East Malling, Kent.⁴

By courtesy of Kent Archaeological Society.

This portrait has been described as:

“Portrait, in black coat with plain white falling collar tied by white string with tassels. *Circa* 1650 (30" x 25¼"). Artist: unknown.”⁵

Another portrait, also thought to be of John Twysden (Figure 2), hangs on the main staircase of Bradbourne House.



Figure 2

Possible portrait of John Twysden

From the main staircase of Bradbourne House.
By courtesy of Kent Archaeological Society.

Many of John Twysden's siblings are characters of historical interest in their own right. The eldest son, Sir Roger Twysden (born 1597) (Figure 3), was the author of *Certain considerations on the Government of England* (circa 1655) and *An Historical Vindication of the Church of England* (1657), and was described by his biographer as "England's first constitutional historian"⁶. Elizabeth, the eldest daughter (born 1600) married Sir Hugh Cholmley, who defended Scarborough Castle during the English civil war. Sir Thomas Twisden (born 1602) (Figure 3), the second son, is known with a different spelling of the family name, and began a branch of the family based at Bradbourne House, at East Malling, just to the north of Roydon, in Kent. Thomas Twisden's brother-in-law, Colonel Matthew Thomlinson, attended King Charles I on the night before his execution, and was present at the scaffold: Charles's golden toothpick was a Twisden family heirloom for many years. There was a younger daughter, Anne (1603) who in 1630 married Sir Christopher Yelverton, of whom more below. Two younger sons, William (born 1605) and Francis (1609) had undistinguished careers.

Bradbourne House remained with Thomas Twisden's descendants, albeit they were in increasingly straitened circumstances, until 1937, when the line died out on the death of John Ramskill Twisden. Fortunately, the majority of the family



Figure 3

Twysden family portraits

Upper panel: Sir Roger Twysden (1597–1672).
Lower panel: Sir Thomas Twisden (1602–1682).

By courtesy of Kent Archaeological Society.

portraits were kept together, under the ownership of the Kent Historical Society, and were reunited with other portraits in the care of the National Portrait Gallery. The building and grounds of Bradbourne House are now owned by the East Malling Trust for Horticultural Research. Much of the upper house is used as offices; the larger, ground floor reception rooms can be hired as locations for wedding receptions and business meetings.⁷

Although, unlike Foster and Palmer, John Twysden did not attend Emmanuel College, his two oldest brothers, Roger and Thomas, both matriculated to Emmanuel on 9 November 1614, even though Thomas was only 12 years old. They would certainly have known Walter Foster (who matriculated April 1614) and probably knew Samuel Foster, who matriculated in 1616. The names of Roger and Thomas Twysden appear on the college register on the page opposite Walter Foster's.

Neither Roger nor Thomas completed a Cambridge degree. Throughout his life Sir Roger Twysden had enormous respect for tradition and precedent, so the radical protestant climate in Emmanuel College may not have been to his liking. Instead of attending Emmanuel, as his elder brothers did, John Twysden went instead to University College, Oxford. From there, like Roger, he went to the Inner Temple, becoming a barrister-at-law in 1634,⁸ but it is not clear that he ever practised law.

The younger Twysden brothers, William, John and Francis, all travelled to the continent during the 1630s, perhaps financed by small bequests from their father, who died in 1629.⁹ John Twysden went to France in 1634 in the company of Sir George Stone and possibly Hugh Cholmley. (Sir Roger's excellent knowledge of French and Italian suggest that he, too, might have made similar journeys at some time.)

John Twysden studied medicine in Angers, France. A century later Roger Newdigate, a descendent of Thomas Twysden, visited Angers on his own grand tour, and wrote:

"We took a walk into the Manege yesterday. I saw Mr Bromley's and Sir Thomas Twysden arms up there which is the custom when people go away."¹⁰

I know of no evidence that Thomas Twysden ever visited Angers, but presumably his brother John used the same arms, or different only by their respective cadency marks (brisures).

John Twysden had returned to England by 1638. He was present at the death-bed of his mother, Lady Anne Twysden, when she died on 14 October of that year. At her last communion, on 3 October, Anne beseeched the three sons present, Roger, William and "Jack" "... to love the Lord Jesus and to love one another."¹¹

I have already recorded the observations made by Foster, Palmer and John Twysden for the lunar eclipse of 9 December 1638.¹² These were made from New House, Coventry, which was owned by Sir Christopher Yelverton. Twysden also tells us that he joined Foster in London, to view "The Eclipse of the Sunne which happened May 22 P.M. 1639, observed in Old Bayly at London."¹³

By the winter of 1645-6, however, John Twysden was in Rouen; he also writes (in 1685) about being in Paris around 1645. I do not know what caused him to return to France. One possibility was to allow him to continue the studies that he had started in Angers; another was the deteriorating political situation in England. Sir Roger Twysden, John's older brother, became involved in a petition from the people of Kent to parliament, which led to his imprisonment and to a series of seemingly interminable lawsuits and further petitions to parliament. As the Civil War deepened, Sir Roger, who had failed in an attempt to flee the country himself, sent his infant son, William, to stay with his uncle in Rouen. Separately, Sir Hugh Cholmley, who had held Scarborough Castle for the King, was forced out of the country on its fall, and went to stay with his brother-in-law, John Twysden.¹⁴

John Twysden was back in England by the spring of 1648.¹⁵ He spent at least two years at the family seat in Kent, Roydon Hall, where another long-term resident was a mysterious figure called Johannes Hind, originally from the north German region of Mecklenburg, then part of the Holy Roman Empire. Hind was a man of learning, famous for his red powder, which was:

"... very effectual in diseases of the spleen, coughs, asthmas, worms, purulency of the chest, the plague, all manner of fevers, smallpox, measles and catarrhs."¹⁶

Twysden, professor of medic, was anxious to know how to prepare the powder, but Hind would not tell him. Twysden, noting that Hind asked for any vipers found on the estate to be delivered to him, carried out experiments and eventually discovered the secret of the powder. Jessup¹⁷ states that Twysden did not himself reveal the secret of his "viper powder"; however, a manuscript now held in the Centre for Kentish Studies appears to give the recipe.¹⁸ Chapter 2 memorably begins: "Take a viper, cut off his head and his tail ..."

Twysden left Roydon Hall on 26 April 1651, perhaps in some fear for his safety or freedom. Two days earlier, troops had come to the hall to re-arrest Sir Roger Twysden and search for arms and letters.¹⁹ Twysden moved in with Sir Christopher Yelverton at Easton Maudit, and observations from there (see below) place him in Northamptonshire on 2 July 1651, 14 and 29 March 1652, and during December of the same year.

Foster died in 1652. Twysden described him as "A learned, industrious and most skilful mathematician."²⁰ John Twysden became the editor of Foster's papers (Foster, because of illness, had published very little during his tenure as professor of astronomy at Gresham College from 1641–

1652). All Foster's works were published by William Leybourne of London. It would appear that Twysden was now based in London, for Taylor's brief biography of him in *The Mathematical Practitioners of Tudor and Stuart England*²¹ asserts that Twysden was "... one of those who foregathered at Elias Allen's shop in the Strand where he sometimes met William Oughtred."

Two, possibly three, of Twysden's original publications had an astronomical theme.²² In 1659 he published *The Whole Art of Reflex Dialling - Shewing the way to draw all manner of Dials which shall show the hour by a spot of light from a Glasse upon Ceiling, or other Object Whatsoever, without any respect had to the Axis of the World, either projected or reflected*. This was Twysden's own contribution to the theory of dialling, featuring "... an easie Instrument fitted with lines to that purpose"; but a rather cumbersome apparatus.

In 1667, William Tompson, bookseller of Harborough, Leicestershire, published *The Semi-Circle in a Sector: The description of a general and portable instrument, whereby most problems (reducible to instrumental practice) in Astronomy, Trigonometry, Arithmetic, Geometry, Geography, Topography, Navigation, Dyalling &c are speedily and exactly resolved*. The author is listed as "J.T.", which the British Library identifies as John Taylor, an astrologer and mathematical practitioner of Norwich. However, Sawyer has pointed out²³ that the introduction to this work mentions "... the famous Samuel Foster ..." and "Problems I first learned from the reverend Mr. Palmer's *Catholik Planisphere* (see below), so an alternative identification of "J.T." with John Twysden is certainly plausible. Market Harborough is only 20 km north of Northampton, but it is about 150 km west of Norwich.

Much later, in 1685, came Twysden's *The Use of the General Planisphere, called the Analemma, In the Resolution of some of the Chief and most useful problems of Astronomy*. Appended to it are works by Samuel Foster (*The description and use of the nocturnal*) and John Palmer (*The planetary instrument, or, the description and use of the theories of the planets*, discussed below). In a rather wistful Preface, Twysden regretted the passing of his two friends.

Twysden's *Use of the General Planisphere* concerned itself more with dialling than with what we would now consider astronomy. The work appears to originate from much earlier in Twysden's life; in particular, from his time in France. Twysden starts by saying that:

"The Uses now given thee, were by me applied to this instrument many years since, when I was in Paris, about the year 1645, which hath made

me in some of the examples make use of the Elevation of the Pole at that Place."

The latitudes mentioned in the worked examples are mostly 49° north, or in one example, 48° 50' - both consistent with Paris or its locality. The latitude of southern England, 52° north, is mentioned only once, as is 46° 12' north - the latitude of central France. The latitudes of Rouen (49° 30' north) and of Angers (47° 30' north) are not mentioned.

Among John Twysden's non-astronomical publications were:

A small Treatise of Architecture Military, or Fortification and Certain mathematical problems, concerning triangles as well obliquant as rectangled, analytically resolved and effected. (1659)

A Disquisition touching the Sybills and Sybilline Writing in which Their Number, Antiquity, and by What Spirit they were Inspired, are succinctly discussed. The Objections made by Opsopaeus, Isaac Casaubon, David Blondel, and others, are examined, as also the Authority of those Writings affected. Which may serve as an Appendix to the foregoing Learned Discourse touching the Truth and Certainty of Christian Religion. (1662)

Medicina Veterum vindicate, or An Answer To a Book Entitled Medela Medicinae; In Which the ancient Method and Rules are defended, and further shewed, that there is no such change in the Diseases of this Age, or their Nature in general, that we should be obliged to an alteration of them. Against the Calumnies and bitter Invectives of an author who calls himself Mr N. Med. Londinens, but in the Epistle before a Book, put out by Mr. Bolnest, gives himself the name of Mar. Nedham. (1666)

In this latter work, Twysden styled himself: "By John Twysden, Doctor of Physic, and one of the King's College of Physicians in Lond."

Twysden never married. He died on 13 September 1688, and was buried at St Margaret's church, Westminster (London).

Easton Maudit, Northamptonshire

Easton Maudit (sometimes known as Easton Mauduit, Easton Macudit or Easton Maudinit) is a small village 15 km to the east of Northampton in the East Midlands of England, to the south of the River Nene. The Yelverton family acquired a manor house in the village in 1578, which Sir Henry Yelverton (1566–1629), father of Sir Christopher, probably rebuilt.²⁴ The Easton Maudit manor was a large house, rated at 43 hearths on the 1673 Hearth Tax Returns. The house remained in the Yelverton family until 1801, when it passed to the Comptons (of nearby Castle Ashby) who demolished it. The site of the manor is now an undistinguished field to the immediate north of Easton Maudit's church (Figure 4). An engraving, 'A view



Figure 4

The site of the Yelverton family's manor in Easton Maudit, Northamptonshire, England

Photograph by author, July 2007, from the north-west.

of the Earl of Sussex's House at Easton Mauduit taken in the coach yard, 7 aug 1721' [British Library reference C13092-29], now held in the British Library, shows an elegant residence with ivy-clad walls and a spacious, tree-lined, courtyard.

In the early 17th century, the Yelvertons were an important family. Sir Christopher Yelverton (died 1607) was speaker of the House of Commons. His son, Sir Henry Yelverton, was Solicitor General from 1613 to 1617, and Attorney General from 1617 to 1621. Henry's son, Sir Christopher was admitted to Gray's Inn in 1607 (16 years before Sir Roger Twysden). Sir Christopher's son, another Henry (Harry), studied at Wadham College, Oxford, under John Wilkins of whom more below.²⁵ Harry married Susanna Longueville, from a wealthy Kent family.

In a previous paper¹, I detailed the astronomical observations in a paper entitled *Observationes Eclipsium*, which appeared in Samuel Foster's *Miscellanies* (published in 1659). This latter work was edited by John Twysden after Foster's death, and dedicated to Susanna Longueville. The majority of these observations were made by Samuel Foster from London, but Twysden tells us that:

"... The observation of the eclipses, the motion of the late comet, with some other things, I have added of my own, which being of themselves not worthy of the presse, I made choice to hide under the shadow of so great a Person [i.e. Foster]."

The "some other things" include the treatises described above on fortifications, certain mathematical problems and dialling. Although publishing under Foster's name, Twysden fastidiously identified his own work.

John Twysden's observations from Easton Maudit were as follows:

1. A sunspot

" Upon Tuesday the second of July in the year 1651, about eight of the clock at night, at Easton in Northampton, under the elevation of the North Pole 52 d. 15 min., I saw in the body of the Sun (through an excellent Telescope whose Glasses were very clean) a very dark round spot in diameter about 12 part of the Suns diameter, which to my sight appeared still in the same place for a matter of 9 or 10 min through thin clouds often interposed, and hindered me from the sight of the Sun for a short time. The left margine of the Sun was very uneven, and tooth'd in the manner of a Saw, as in the adjoining Scheme [see Figure 5]. I conceive that it was one of those spots which Galileus, Scheinerus, Hevelius and others have observed. For I cannot suspect Mercury in that place."

This is the only place in Foster's *Observationes Eclipsium* where a telescope is explicitly mentioned. The description does not sound very much like a sun spot, as sunspots are much smaller than one twelfth of the Sun's diameter, and not always round. However, one explanation, a transiting planet, is (correctly) ruled out. Twysden was well-informed to know about the solar-watching activities of Christopher Scheiner and Johannes Hevelius, whose work dated from the 1610s (Scheiner) and 1640s (Hevelius).

2. A lunar eclipse

" The Moon's Eclips observed as it happened at Easton in Northamptonshire, March the 14th, 1652, about three of the clock at night, Latitudo loci 52 gr. 15 min. A Joh Twysden & Joh Palmer"

John Palmer includes this lunar eclipse in his own list of eclipses, published in 1658 (see below). Lunar eclipses, at full Moon, are often associated with a solar eclipse at the preceding or following new Moon, as in this case.

3. A solar eclipse

" The Sun's Eclips observed at Easton in Northamptonshire 1652, March 29 current, about 9 in the morning Lat. 52 gr. 15 min.

11 ¼ digits for 12 obscured 10.28, 10.31 corrected. The times of several phases of the eclipse were observed by a minute clock, exactly made and corrected by a true hour found by the Sun's azimuth, often observed during the Eclips, which I judged the better way in this eclips, because the end of it falling near noon, a little error in the altitude would have caused a considerable difference in the time, which by this way is avoided."

Eleven and a quarter digits out of twelve eclipsed would have been a spectacular sight, although John Palmer, observing nearby in Ecton (see below), commented that:

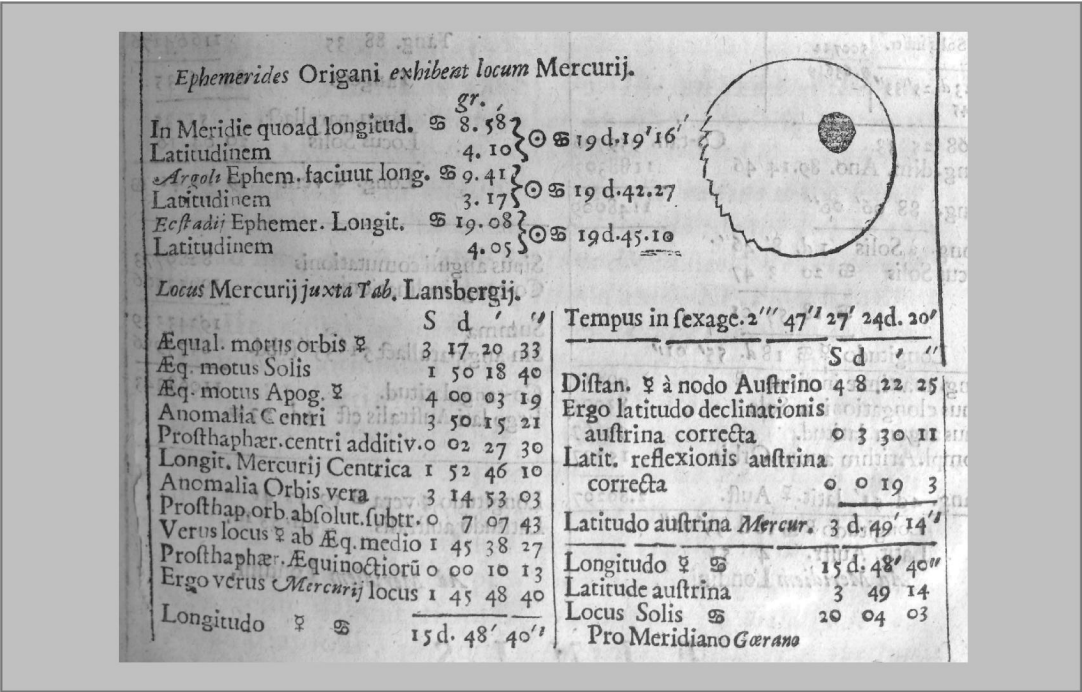


Figure 5

Possible sunspot observed by John Twysden on 2 July 1651

From Page 19 of Samuel Foster’s *Observationes Eclipsium*, edited by John Twysden, published in 1659.

“...though this eclipse was so great, yet we could read in the time of greatest darkness within Dore’s, notwithstanding that the window was covered with a Blanket.”

This solar eclipse in 1652 was total over lowland Scotland. Only four total eclipses have been visible in mainland Britain since then. Samuel Foster observed the eclipse from London.

4. A comet

“The motion of the late Comet as it was observed at Easton in Northampton-shire Anno 1652, Lat 52 d. 15 m.

Tuesday Decem 14, when the middle starre in the section of Taurus was South. The Comet was distant from the right foot of Heniochus 21.00. From the Bull’s eye 12.00. And was West from the rest as in the figure. His longitude at this observation will be found Taurus 26.45. With North Latitude 3.30.

Wednesday the 15 Decemb. Distance from the right foot of Heniochus 22g 17m. From the bright star called Hircus 25.00. Therefore his longitude was Taurus 25.17. North Latitude 0.09.00. The Southernmost in the Whales-tail was in the Meridian.

Thursday 16 December. A right line extended through the Centers of the two starres in the left foot of Perseus, touched the lower limb of the

Comet, and they were at an equal distance, one from the other.

Friday 17. Was cloudy.

Saturday 18. It made very neer an equilateral Triangle with the two bright starres in Medusas head.

Sunday 19. Was cloudy, but once I saw in the light of it much decayed about two degrees distant from Gorgons eye, and very neer in a straight line with the Bulls eye.

Wednesday the 22. The Comet was intercepted by a right line that passed through Gorgons eye, and the obscure starre in the left shoulder of Perseus. It was distant from the Gorgons eye Westward 4d. 40m. It was a little above those starres toward the North, and in the middle between them very neer. The first in the Whales head was in the Meridian.

Thursday 23, a little past eleven. The comet was distant from the Gorgons eye 5d. 25m. Westward, yet above it toward the North, and in a right line with the left shoulder of Perseus. Its light was very dimme.

Friday the 24. It was distant from the Gorgons eye 6d. 23m. and in a right line with the left shoulder of Perseus. The light was so dimme, I could hardly see it. It seemed to tend to our Zenith.”

The comet, nowadays given the designation C/1652/Y1, was first recorded by Jan van Riebeeck, governor of the newly established Cape Colony of South Africa. Johannes Hevelius observed it a few days later, and there are many other accounts of it. Edmund Halley computed the orbit and decided that it was non-periodic.²⁶ An engraving of the comet, as observed from the Bavarian town of Regensburg (then in the Holy Roman Empire) is shown in Figure 6. This confirms the motion of the comet, although curiously the Pleiades are rendered the wrong way up. It has been suggested that this is evidence that the observer was using an astronomical (inverting) telescope.²⁷

To these observations from Easton recorded by Twysden we can add one further lunar eclipse, seen by John Palmer from Easton on 8 October 1641, which is detailed later in this paper.

John Palmer and family

John Palmer was born on 18 November 1612, the first son of Joseph Palmer, gentleman, of Cropredy, Oxfordshire and Anne Dod.²⁸ Palmer’s maternal grandfather was John Dod, the Rector of Canons Ashby and Fawsley, near Daventry, Northamptonshire. Dod achieved some fame as a “decalogist” or writer on the ten commandments. Dod had three children, a son and two daughters – Anne (John Palmer’s mother) and Jane (Palmer’s aunt). Jane was the mother of John Wilkins (1614–1672), Warden of Wadham College, Oxford (from 1648), Bishop of Chester (from 1668), author of ‘*The Discovery of a World in the Moone*’ (1638), a natural philosopher, and a leading light in the foundation of the Royal Society. Wilkins tutored Harry Yelverton during his time at Wadham College.

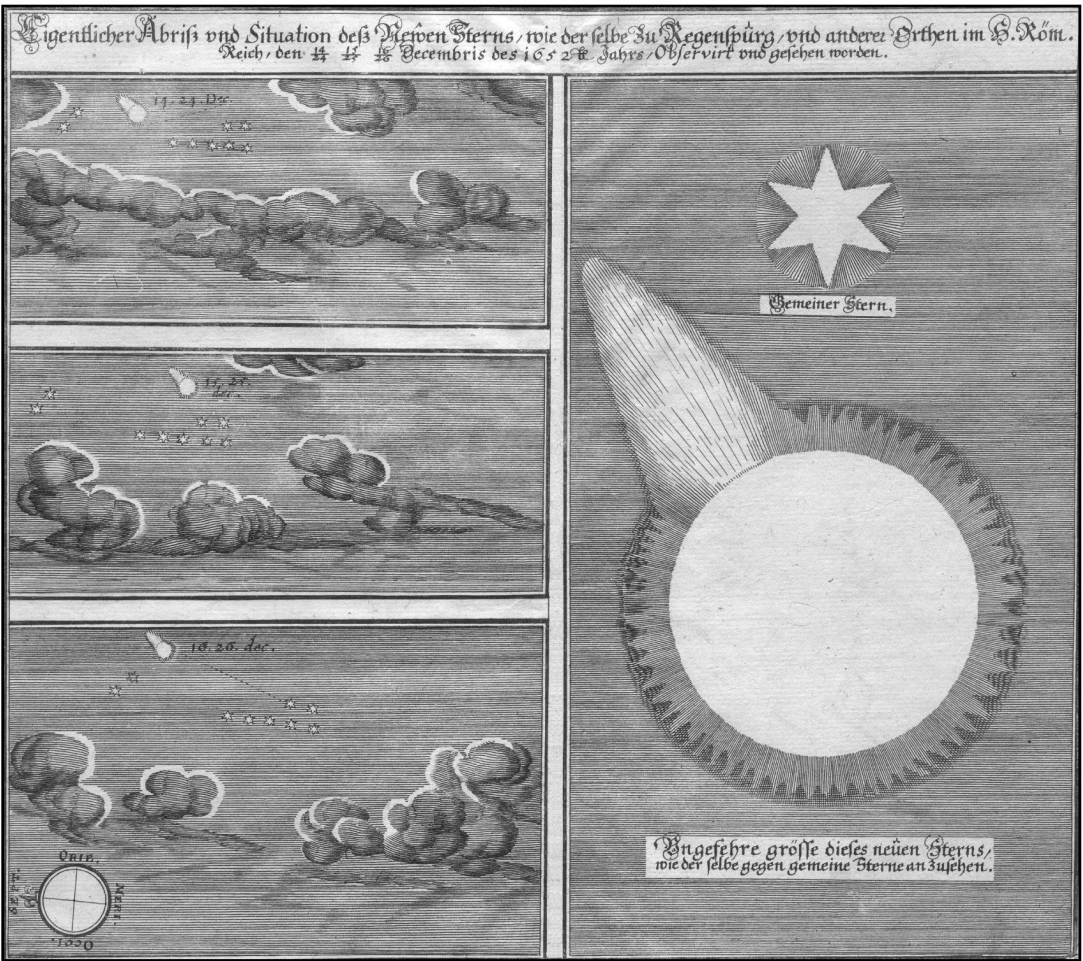


Figure 6

The comet of 1652, as observed from Regensburg

The literal translation of the inscription at the head of the engraving is: “Actual outline and location of the new star as seen and observed at Regensburg and other places in the Holy Roman Empire on 14/24, 15/25 and 16/26 December, 1652.”

Reproduced by courtesy of Henk Bril. Translation by Madeline Cox.

John Twysden and John Palmer

John Palmer was admitted to Emmanuel College, Cambridge on 7 May 1629, received his B.A. in 1632 and M.A. in 1636. The first location I can place him with certainty after Cambridge was in Coventry for the lunar eclipse 9 December 1638, already mentioned. The second of Palmer’s lunar eclipse observations was made from Easton Maudit, on 8 October 1641.

Palmer became the Rector of Ecton, Northamptonshire, on 18 November 1641, and remained in this post for the rest of his life (died 1679). Shortly after becoming Rector, Palmer married Bridget, daughter of Clifton Catesby, the squire of Ecton. They had three sons and five daughters. The eldest two sons, John and Thomas, also attended Cambridge University.

Ecton is a beautiful Northamptonshire village, 8 km east of Northampton, on the northern slopes of the Nene Valley. In recent years, Northampton has grown to within a kilometer of the village but green-belt regulations have so far maintained the character of the village. Three kilometers to the south-west, across the river, is the village of Little Houghton, where Samuel Foster’s cousin, Thomas Martin, was Rector. Easton Maudit is 8 km to the south-east of Ecton.

Perhaps the most famous family to live in Ecton were the Franklins, ancestors of Benjamin Franklin. Benjamin’s uncle, Thomas Franklin (Junior) (1637/8–1702) and aunt, Eleanor Franklin (died 1711) are buried in the churchyard of the Ecton church of St Mary Magdalene (Figure 7). The graves receive regular visits from students of American history. Benjamin Franklin himself visited Ecton in 1759.²⁹ Benjamin Franklin’s grandfather, Thomas Franklin (Senior) (1598–1682) was the subject of the pamphlet *A short history of the*

Family of Thomas Franklin of Ecton in Northamptonshire, written by his son, Benjamin Franklin the elder, and dated 21 June 1717. It says of Thomas (Senior):

“ He was a historian, and has some skill in Astronomy and chymistry which made him acceptable company to Mr John Palmer the Arch Deacon of Northampton.”³⁰

Palmer’s family is also well known in Ecton; his son John succeeded him as Rector, from 1680 until his death in 1715. Five years later, John Palmer’s grandson, Thomas, became Rector. Thomas’s brother, also called John Palmer, built the village ‘school for poor children’, which still bears a monument to him. This John Palmer had his portrait painted by William Hogarth.

There are several monuments to the Palmer family in the Ecton church of St Mary Magdalene. On the north wall of the nave is a one giving a family tree for the Palmer family and their descendants, the Whalleys. In the chancel is a monument to John Palmer (the elder), surmounted by a marble bust (Figure 8), dating from 1732, by Rysbrack. The bust shows a cavalier-like figure with flowing locks. A terracotta study of the bust is kept in the entrance hall of the Rectory, Ecton House, which was built for John Palmer Junior in 1693. The former Rectory is now a private house. Another bust by Rysbrack commemorates John Palmer (junior).



Figure 7

The church of St Mary Magdalene, Ecton, Northamptonshire

Photograph from the south-west by the author, June 2006.



Figure 8

The monument to John Palmer in the church of St Mary Magdalene, Ecton, Northamptonshire

Photograph by the author, June 2006.

Another monument reads, in translation:

JOHN PALMER M.A. (Eldest son of JOSEPH PALMER, Gentleman, of Cropredy). Archdeacon of Northampton and faithful Pastor of this church. He married BRIDGET daughter of CLIFTON CATESBY, Esquire. They had eight children whose births are inscribed below. Died in Christ 9th December A.D. 1679 in his 67th year. Rector for 39 years.

BRIDGET PALMER daughter of CLIFTON CATESBY of Ecton, widow of JOHN PALMER, Archdeacon of Northampton. Born 5 February 1626. Died 19 May 1680 in her 54th year.

ANN Oct 8 1648. ANN Sep 2 1648. MARY May 25 1651. SUSANNA Sept 18 1653. JOHN July 19 1656. SARAH May 30 1658. THOMAS Dec 30 1660. GEORGE Nov 22 1663.

Several likenesses of the Palmer family survive. Bridget Duckenfield is a descendant of Nathaniel Bridges, a brother of John Bridges (1666–1724) the antiquarian and author of an early history of Northamptonshire. In her family's possession are three portraits of the Palmer family by Thomas (?) Shipley: John Palmer, and his sons Thomas and George (Figure 9). To my mind, the portrait of John Palmer is not unlike that of John Twysden, from Bradbourne House (Figure 1), but a short caption on the portrait confirms that it is indeed Palmer.

Palmer's eclipse observations (see below) place him in Northamptonshire (Ecton and Easton) on many dates during the period 1641 to 1658. However, his degree was incorporated at Oxford in 1657, and his first work published in London in 1658, so he was certainly not confined to his immediate rural neighborhood. In addition, from 1665 to 1679 Palmer was Archdeacon of Northampton.

John Palmer died on 9 December 1679 and was buried at Ecton on 12 December 1679. His wife died on 19 March 1681 and was buried at Ecton three days later.

John Palmer's publications

In 1658, Palmer edited an edition of John Blagrave's *Mathematical Jewel*, published by Joseph Moxon. The original edition of this work (Figure 10) had been published by John Blagrave of Reading in 1585. It described the usage of a spherical planisphere to solve various astronomical problems. The full title of Palmer's version of the work is: *The Catholique Planisphaer, which Mr. Blagrave calleth the mathematical jewel; briefly and plainly described in five books: hereunto is added a brief description of the cros-staf and a catalogue of eclipses*. Palmer dedicated the book "To My Honoured Friend John Twysden Doctor of Physic, Ecton April 1st 1658."

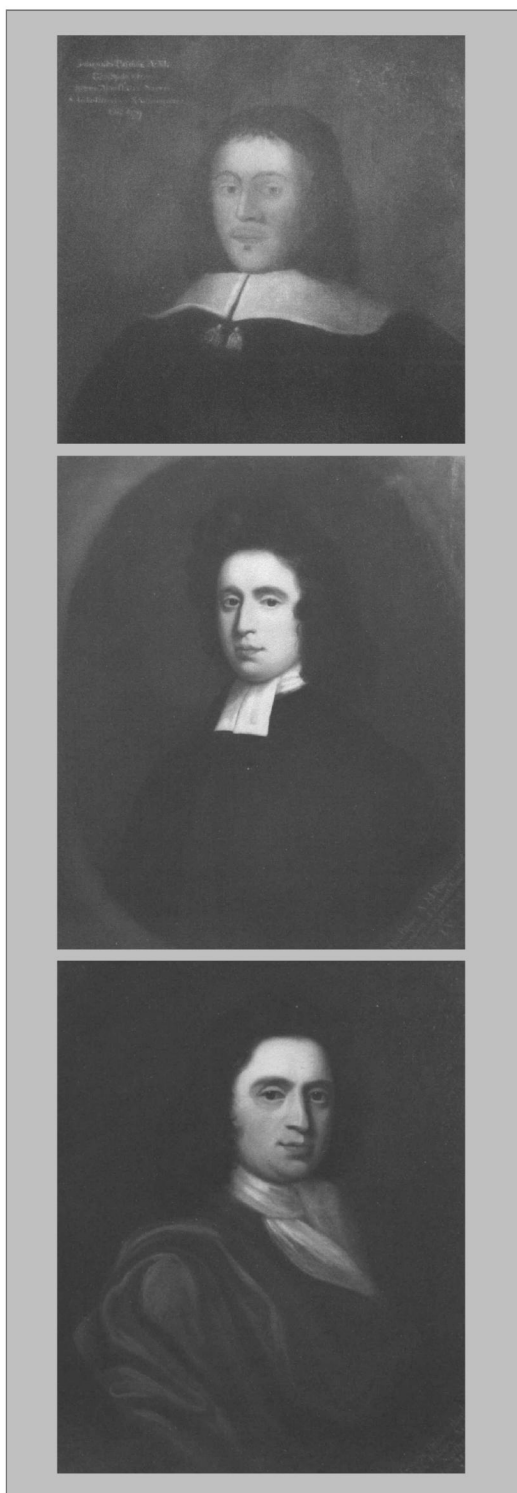


Figure 9

Details from Palmer family portraits

Upper panel: John Palmer (1612–1679).

Middle panel: Thomas Palmer (1660–1715).

Lower panel: George Palmer (1663–1723).

By courtesy of Bridget Duckenfield of Surrey.



Figure 10

The title page of Blagrave's *Mathematical Jewel* published in 1585

By courtesy of Reading Library.

In *The Whole Art of Reflex Dialling*, John Twysden praised Palmer fulsomely for the planisphere.

“Of all projections of the Sphear I know none so none so exact for the performance of all things necessary for making these Dials, as the solution of all other Astronomical Problems, as that commonly called Blagrave's Jewel, now put out, everything much amended, and altered by Mr. John Palmer, Rector of Eton in Northamptonshire my especial friend.”

Likewise, in Twysden's preface to Foster's *Miscellanies* he writes:

“My especial friend Mr. John Palmer, the learned Rector of Ecton in Northamptonshire, hath under a new method made clearly new the Universal Planisphere of Gemma Frisius, furnished with its Rect. By John Blagrave, exhibiting at one view several projections of the Sphere.”

The *Catholique Planisphere* begins with instructions on how to build the planisphere, followed by detailed instructions on how to use it:

“... for representing several projections of the sphere ...”,
 “... for resolving all problemes of the sphere, astronomical, astrological, and geographical ” and

“...for making all sorts of dials both without doors and within upon any walls, cieling, or floores, be they never so irregular, where-so-ever the direct or reflected beams of the sun may come”.

The section on astrology is a fulmination against the art, which Palmer clearly disapproved of:

“I could never see any good reason why the influence of the stars should make more impression upon the Child in the moment of his nativity, than they did at any time before his birth.”

It is perhaps not surprising that Palmer should follow his friends Foster and Twysden by including detailed instructions on sun-dialing.

The addendum on the use of the cross-staff is a short instructional manual. From an astronomical point of view, the most interesting section is the second addendum on observations of eclipses. As with Foster's *Observationes Eclipsium*, Palmer's catalogue contains a wealth of detailed measurements. In summary, the catalogue of Eclipses is:

1. Coventrie, Tuesday 11 December 1638, a lunar eclipse. [Viewed with Samuel Foster and John Twysden.]
2. Easton Maudit, Friday 1 October 1641, a lunar eclipse.
3. Ecton, Monday 11 August 1645, a solar eclipse.
4. Ecton, Wednesday 16 May 1649, a lunar eclipse. [Observed with Samuel Sulesby of Queens College, Cambridge.]
5. Ecton, 25 October 1649, a solar eclipse. [Observed by telescope.]
6. Easton Maudit, Monday 15 March 1651/2³¹, a lunar eclipse. [Observed with John Twysden.]
7. Ecton, March 29th 1652, a solar eclipse, observed by a telescope with a minute watch, “in the company of Gentlemen and Ministers my neighbors.” [Palmer estimated that the greatest eclipse was 11.22 ½ digits of 12, at 10:32.04 A.M. Compare this with Twysden's estimate of 11.15 digits and 10:31 maximum time from a location just a few km to the east.]
8. Ecton, Tuesday 7 September 1652, a lunar eclipse.
9. Ecton, Wednesday 2 August 1654, a solar eclipse observed by telescope “in the company of many learned men my Neighbors and friends.”
10. Ecton, Thursday 17 August 1654, a lunar eclipse. [Observed by telescope.]
11. Ecton, Tuesday 1 January 1655/6, a lunar eclipse. “Clouds hindered, but I observed.”
12. Ecton, Monday 25 January 1656/7, a lunar eclipse.
13. Ecton, Thursday 10 December 1657, a lunar eclipse.”

Palmer then comments (perhaps with some pride):

“ From the first Eclipticall opposition mentioned in this catalogue to this last is the space of a Metonique Year.”

Palmer’s “Metonique Year” is our Metonic cycle of 19 tropical years, after which eclipses etc. repeat with an error of around 2 hours. The eclipse reports for Ecton and Easton include determinations of latitude and longitude for these two locations. These later became reference points for the map of Northamptonshire that John Morton published in his *Natural History* ... of the county³²

A second edition of the *Catholique Planisphere* was published by Walter Hayes, an instrument maker, in 1685. However, the edition I have seen of this, in Cambridge University Library, does not contain a section on eclipses, so I do not know of any further observations of eclipses by Palmer after 1658.

Taylor’s biography of Palmer³³ has him as one of the sponsors of Thomas Salusbury’s *Mathematicall Collections* (1661–1665), an important translation of works including some by Galileo and Kepler. However, the introduction to a 1667 edition of this work held online as part of the Archimedes collection³⁴ fails to mention Palmer amongst those whom Salusbury thanks.

During the 1660s, John Palmer became associated with the fledgling Royal Society. Palmer’s cousin, John Wilkins, was a founder member of the Royal Society; also Palmer’s degree was incorporated at Oxford in 1657, so there were opportunities for him to become acquainted with Royal Society members. In a letter to Robert Boyle dated 1 September 1664³⁵ Henry Oldenburg writes:

“ On Munday last a Club of our Philosophers went to Pauls, to make Experiments of falling bodies, and of pendulums; There were Sir R. Moray, Dr Wilkins, Dr Goddard, **Mr Palmer**, Mr Hill, Mr Hook, and some of us went to ye top of ye steeple, and let downe a pendul of 200. ft long, with an appendant weight of [14] lb, and found 2. vibrations thereof made in 15". Time would not then give leave to proceed to ye other Experiments yt were deseigned, among which will also be ye Torricellian: but they will be set upon within 2. or 3. dayes.” [emphasis added]

In another letter, from John Wallis to Johannes Hevelius, dated 1 April 1664, Wallis writes:

“ As for the marvelous star in Cetus that appears and disappears from time to time (about which you wrote a commentary), which my countryman John Palmer has observed from the year 1639 onwards, and others upon his instigation, I have nothing to add to what I imparted to you in the letter I sent last year, except that (which is also remarkable) he advised me that for some years he inquisitively investigated that star, he could never

see it in the western hemisphere even when it was visible in the eastern hemisphere. For after he had observed it in the east and had noted its approach toward the meridian, when the star reached that point it unexpectedly disappeared and could not be seen beyond it. And it is quite true that after he had sought for it vain over many years, at last he saw it even beyond the meridian towards the west sometime, but only rarely.”³⁶

The “marvelous star in Cetus” is the variable star omicron Ceti, to which Hevelius gave the name Mira, “the wonderful”, by which it is known today. It was first noted (as a nova) by Fabricius in 1596; Hevelius and Palmer were among the first to study its behavior systematically. Palmer’s report that it could be seen only in the eastern hemisphere is, at first sight, bizarre. One possible explanation is based on the fact that Mira’s brightness varies between approximately 3rd and 9th magnitude over a period of around 337 days; quite close to a year. If Palmer observed Mira only at the same time each night, then year-on-year Mira would be at its brightest at approximately the same time of year, and therefore in the same part of the sky; however, this would change gradually because Mira’s period is 28 days short of a year.

On 3 December 1667 Oldenburg invited Palmer³⁷ to enter into a “... Philosophical correspondence especially in Astronomy and Algebraical Aequations.” Oldenburg noted that Palmer had made “... many choice observations in Astronomy.” Palmer replied on 12 December,³⁸ expressing his thanks and appreciation, but regretting that his duties as Archdeacon of Northampton meant that he had been “... much diverted from following these studyes wherein I so much delighted.” He made a suggestion of observing the Moon’s meridian altitude from a variety of locations “... at Edinburgh, Aberdene, or Catness [Caithness]” so that “... the distance of the Moon might be solidly demonstrated ...” by triangulation. Palmer also suggested that the start and end times of lunar eclipses might be noted from “... Smyrna, Aleppo or Bantam [Java] in the east & with Bermuda ... Barbados or Jamaica in the west”, also with the aim of determining the lunar distance by triangulation.

Oldenburg was taken with these suggestions. In a second letter to Palmer, dated 21 December 1667,³⁹ Oldenburg told Palmer he had published these suggestions in the Royal Society’s *Philosophical Transactions*. He also passed on to Palmer observations made by Cassini about the motion of the planet Venus upon its axis (observations which we now know to be spurious). In a postscript he questioned Palmer about his skill in mathematics:

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“... having been informed that you had a way of resolving all Equations and hard Problems of Arithmetick by Regulus Falsi.” [ie False Position, a technique for solving linear equations]

On 24 February 1667/8⁴⁰ Palmer replied to Oldenburg saying that he did indeed have a method of:

“... resolving all Algebraicall Questions by the Rule of False [Position]”;

However, he intended to

“... spend some further thoughts about it & as soone as I can come to any conclusion, I shall acquaint you with it.”

This was read to the Royal Society on 27 February 1668, when “... it was ordered that should be encouraged in his undertaking by a letter of thanks.” However, no further correspondence between Palmer and the Royal Society is recorded.

The final work of John Palmer to be published was *The Planetary Instrument, or Description and Use of the Theories of the Planets*, edited by John Twysden and published by Walter Hayes in 1685, after Palmer’s death. This short work contains two diagrams (Plates as Palmer refers to them) eight inches in diameter, drawn by Hayes, showing the solar system to scale, during the period 1672-1680. The first is the “Saturn Plate” showing the outer planets; the second the “Mars Plate” showing the inner solar system. Palmer gives instructions on how to locate the planets in their orbits, and then gives a series of worked examples on the usage of the planetary instruments in real situations. Two examples show that Palmer was still observing during the 1670s:

“1675 April 1st. I saw Mars above the foremost foot of Apollo [?], and he seemed to be much diminished in magnitude.”

“1673 May 25th. In the day time I saw Venus with a telescope, horned like the Moon at 3 or 4 days old.”

Palmer explains both these observations in terms of the relative positions of Earth, Mars and Venus in their orbits. Clearly he had a strong practical grasp of solar system astronomy. He also pointed out that there would be a transit of Mercury across the Sun on 28 October 1677 (7 November New Style). This was the transit observed by Edmund Halley from St Helena. In view of the discussion in my previous paper¹, it is worth noting that Palmer does not mention a transit of Venus.

Palmer describes his Plates as “... excellent schemes to help the conceptions of young astronomers.” It is very interesting to consider that Kepler’s laws of planetary motion, which had been discovered only in the first two decades of the 17th century, were before the closing decades of that same century, the subject of ‘how-to’ manuals.

Conclusion

John Twysden and John Palmer were not major figures in the history of English astronomy, but their lives are still of significance, as they are indicative of the importance of gentlemen scientists during the 17th century. Certainly major advances in natural philosophy were taking place in London and in the universities at this time; but in the shires, professional, well-educated men were doing astronomy to a high standard, for their own interest.

I think that John Palmer was the better astronomer of the two; certainly he was more focused on the subject. John Twysden seems to have been more of a polymath, and it would appear that his first love was medicine. Perhaps Twysden’s most important service to science was to edit for publication the work of two of his fellow astronomers, Samuel Foster and John Palmer.

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Fred Sawyer of the North American Sundial Society sent me a presentation he has given on John Twysden. During the course of his researches into Samuel Foster, Fred discovered that he was John Twysden’s third cousin, ten generations removed. As far as I know, I am not related to any of my astronomers.

Jenny Parkin, the current vicar of Ecton, who directed me to a local historian in the village, Rodney Ingram, who gave me a tour of Ecton Church. He also put me in touch with Bridget Duckenfield, who provided the portraits of John Palmer and family and much valuable information.

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Material quoted from Samuel Foster’s *Miscellanies, or mathematical lucubrations* (Edited by John Twysden, London, 1659) is by kind permission of the Master and Fellows of St John’s College, Cambridge.

Notes and References

1. Frost, Mike. 'Samuel Foster and His Circle'. *The Antiquarian Astronomer: Journal of the Society for the History of Astronomy*. December 2006, Issue 3, 31-48.
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13. Foster, Samuel. *Observationes Eclipsium*. Published in: Samuel Foster. *Miscellanies, or mathematical lucubrations*. Edited by Twysden, John. London: Printed by R&W Leybourn, 1659. Page 9. A copy is held in the library of St John's College, Cambridge at classmark 2.47.24. Accessed by kind permission of the Master and Fellows of St John's College.
14. Jessup. *Roger Twysden*. Reference 6. Page 86.
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17. Jessup. *Roger Twysden*. Reference 6. Page 94.
18. John Twysden's recipe for Viper powder is held in the Centre for Kentish Studies, Maidstone, Kent. Classmark U49 Z.3.2.
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20. Ward, John. *The lives of the professors of Gresham college: to which is prefixed the life of the founder, sir T. Gresham. With an appendix, consisting of lectures and letters, by the professors, with other papers*. London: For the Author, 1740. Pages 85-88. A copy is held in Cambridge University Library, at Classmark Oo.1.32.
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22. The following manuscripts, held digitally in the Early English Books Online (E.E.B.O.) catalogue at Cambridge University Library (abbreviated hereafter to C.U.L.) have been consulted whilst preparing this paper.

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Problematum quorundam mathematicorum (de triangulis tam rectangulis quam obliquangulis,) analytica solutio, et constructio. Twysden, John. London: Walter Leybourn, 1659). C.U.L. Classmark: Wing (2nd ed.)/T3545A.

The whole art of reflex dialing. Twysden, John. London: R&W Leybourn, 1659. C.U.L. classmark: Wing (2nd ed.)/T3549.

A disquisition touching the sibylls and the sibylline writings. Twysden, John. London: No publisher named, 1662. C.U.L. classmark: Wing/T3546.

Medicina veterum vindicata, or, An answer to a book, entitled Medela medicinae. Twysden, John. London: John Crook, 1666). C.U.L. classmark: Wing/T3547.

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25. Osborne, Dorothy (1627-1695). *The Love Letters of Dorothy Osborne to Sir William Temple (1652-54)*. Edited by Parry, Edward Abbott. This e-book is available online at <http://infomotions.com/etexts/gutenberg/dirs/1/2/5/4/12544/12544.htm>. In letter 36, Osborne takes credit for arranging marriage between Susanna Longueville and Harry Yelverton: "I have now given my consent that she shall marry a very pretty little gentleman, Sir Christopher Yelverton's son, and I think we shall have a wedding ere it be long." Parry's notes to this letter include the following: "Sir Harry Yelverton seems to have been a man of superior accomplishments and serious learning. He was at this time twenty years of age, and had been educated at St Paul's School, London, and afterwards at Wadham College, Oxford, under the tutorship of Dr. Wilkins, Cromwell's brother-in-law, a learned and philosophical mathematician."
26. See www.cometography.com.
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30. Huang, Nian-Shang. 'Franklin's Father, Josiah: Life of a Colonial Boston Tallow Chandler, 1657-1745'. *Transactions of the American Philosophical Society*. New Series. 2001, 90 (3) i-viii plus 1-155. Page 107. The original is in the Beinecke library of Yale University. I am very grateful to Rodney Ingram for bringing this to my attention.
31. During the 17th century Britain, new year was deemed to begin on 25th March, although the new calendar started on 1 January. There was, therefore, ambiguity about dates from 1 January to 24 March inclusive. For example, Palmer refers to a lunar eclipse happening on "15 March 1651/2" to indicate that this date lies in the year before 25 March 1652, rather than one year later, just before 25 March 1653. Thus we can now unambiguously interpret the date of his observation 15 March 1652.

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32. This information comes from: Taylor. *Mathematical Practitioners*. Reference 21. Page 213. Morton's book is: Morton, John. *Natural History of Northamptonshire; with some Account of the Antiquities. To which is annex'd a transcript of Doomsday Book, so far as it relates to that County*. London: R. Knaplock and R. Wilkin, 1712.
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39. Hall and Hall. *Oldenburg Correspondence*. Reference 35. Volume 4, Page 71. The original letter is held in the archives of the Royal Society, reference EL/O1/52.
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The author

Mike Frost, M.A., M.Sc., M.I.M.A., M.I.E.T., C.Eng., was born in the north-west of England but now lives in Rugby, Warwickshire, where he is a systems engineer for Converteam Ltd, putting computer control into steel mills around the world. (Much of this paper was written in Wuhan, China.) He is a member and past-Chairman of Coventry and Warwickshire Astronomical Society, a member of the British Astronomical Association, and a founder member of the Society for the History of Astronomy. His research interests for the S.H.A. include the history and mythology of sky phenomena, eclipses and transits. During the run-up to the long-anticipated transit of Venus in 2004, he investigated the life of Jeremiah Horrocks – a fellow Lancastrian and student of Emmanuel College, Cambridge – and was delighted to find that Horrocks's correspondence included mention of astronomers based in the English Midlands: the lives of Samuel Foster, John Twysden, John Palmer and others have been a fertile source of research material ever since. Other astronomers in which he has a special interest include Norman Lockyer, the solar astronomer; William Pearson, co-founder of the Royal Astronomical Society; and Henry Beighton, 18th century polymath. All of them were born, or were active, within twenty miles of Rugby.

