

John A. Robey

## Prototype lantern clocks. Part 1: The inspiration for the first lantern clocks and the Harvey workshop

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# Prototype lantern clocks

## Part 1: The inspiration for the first lantern clocks and the Harvey workshop

John A. Robey\*

*For many years it has been surmised that there must have been experimental and prototype clocks made before the earliest-known lantern clock appeared in its fully developed form shortly after 1604. The recent discovery of an early prototype, a slightly later fragment and a much altered dial-less clock has enabled the evolution of the first English domestic clocks to be reevaluated. Part 1 considers the background, the development of the lantern clock based on Flemish examples, and the first English makers of these clocks. Part 2 discusses in detail the newly discovered clocks, especially their unusual technical and constructional features, that enable the chronology of these experimental clocks to be established.*

For a long time it has been remarked that, based on the surviving examples, the English lantern clock suddenly appeared in its fully-developed form, without any precursors or experimental clocks being known.<sup>1</sup> It is reasonable to suppose there would have been many stages of development before the final version was produced, and it was so successful that its basic form remained virtually unaltered for almost two centuries. There were detailed developments in the design of dials, frets, finials and feet, as well as taking advantage of the latest technology to improve timekeeping by replacing the balance escapement with a short pendulum and a verge escapement from about 1660, and increasingly after about 1670 by a long pendulum with an anchor escapement. Several clocks have been proposed as precursors of the lantern clock, but none of them stands up to close scrutiny — they are either of Continental origin, their movements have been altered so that what was there originally cannot be determined,

or have been incorrectly dated and are not as early as supposed.<sup>2</sup>

The only known weight-driven clock made in England that is earlier than any of the accepted early lantern clocks is the well-known one by Francis Nowe dated 1588. It was once considered to be the earliest surviving English lantern clock, but there is little of the original clock that survives — just the outer case, Doric pillars, finials and feet. This is not sufficient evidence to regard it as a prototype lantern clock.<sup>3</sup> The desire to trace the origin of the brass lantern clock back to the iron Gothic clock was so great that the clock shown in Fig. 1 was deliberately restored to include lantern clock characteristics. It was once regarded as transitional between a late Gothic clock and a lantern clock, and it has been described as such in many horological books. It is now totally discredited and is actually a mid-seventeenth-century French movement with many missing parts restored, including a new dial, bell, bell frame and other components.<sup>4</sup>

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1. Cecil Clutton, G. H. Baillie & C. A. Ilbert, *Britten's Old Clocks & Watches* (9th edition, 1982, revised and enlarged by Cecil Clutton), p. 24. This also appears in the 7th edition (1973), but not in the 6th edition.

2. John A. Robey, 'The origin of the English lantern clock, Part 2: The earliest lantern clocks'. *Antiquarian Horology*, March 2017, 25–50.

3. Opinion of the Victoria and Albert Museum, <https://collections.vam.ac.uk/item/O78570/astronomical->



Fig. 1. A mid-seventeenth-century French clock with an iron Gothic-style frame and brass wheels. The dial, bell, bell frame, balance and many other parts are modern, added to make it look like a transitional lantern clock. British Museum BM1958, 1006, 2096. (© Trustees of the British Museum)

Recently a genuine example of one of these long-sought-for experimental lantern clocks has been discovered and two other prototypes have been identified. These clocks are discussed in Part 2 of this article.

## The development of the first English domestic clocks

While church clocks had been made in Britain

since monastic times, there are very few records of makers of domestic clocks before the beginning of the seventeenth century. In 1526 the Prior of Worcester, William More, paid 41 shillings to Walter Smyth (also known as 'Walter Marsshe ye clockemaker') for 'ye makynge of a new lytull clock'.<sup>5</sup> This would have been an iron clock, perhaps similar to the small Flemish Gothic clock with a brass dial, made by James Porrvis in 1567 for John Webb of Salisbury.<sup>6</sup> In December 1600 seven clocks worth £60 13s 4d and five watches worth £14 10s were stolen from William Jannian (also Jennings), clockmaker of Chester.<sup>7</sup> It is not known if these clocks were Continental imports or made in London or elsewhere in England, and they raise many unanswered questions.

Towards the latter part of the Elizabethan era, with the rise of a prosperous class of merchants, lawyers, doctors and the like, some English makers of church clocks realised that there was an opportunity to produce modern, attractive yet relatively simple and affordable domestic clocks that would appeal to English tastes.

While French-style spring clocks were being made in London by Bartholomew Newsam for the highest echelons of Elizabethan society, there was a growing potential market for more affordable — though by no means cheap — clocks for the next rank of the population. These simpler clocks still conformed to the well-established posted-frame construction with going and striking trains set end-to-end behind each other, but Continental-style iron frames and wheels were replaced by brass, which was both more attractive and easier to work. Continental clocks, both complex spring table clocks often with an astronomical dial and simpler weight-driven wall clocks, were usually comprised of a movement made entirely of iron sitting inside a separate gilded and engraved brass case.<sup>8</sup>

4. British Museum, No. 1958, 1006, 2096. A detailed technical report by John Leopold can be found at [https://www.britishmuseum.org/collection/object/H\\_1958-1006-2096](https://www.britishmuseum.org/collection/object/H_1958-1006-2096).

5. C. F. C. Beeson, 'Some Tudor Clockowners', *Antiquarian Horology*, June 1963, 86–88; p. 87.

6. John Robey & Leighton Gillibrand, 'The Porrvis Clock of 1567', *Antiquarian Horology*, December 2013, 503–18.

7. Brian Loomes, *Clockmakers of Britain 1286–1700* (Mayfield, 2014), p. 297.

8. Robey, 'The origin of the English lantern clock, Part 2', p. 44, shows a German table clock dated 1554 with an iron movement in a gilt brass case.



Fig. 2. A late sixteenth-century Flemish spring clock with a gilt-brass base and frieze, iron pillars, pierced bell frame and removable latched side panels. (Richard Newton).

The continuation of this construction was largely due to the very strict rules of the trade guilds, especially in the Germanic states, whereby the different trades could not overlap. Clockmakers could only make the mechanical parts, cases were the domain of specialist casemakers, and were engraved by those in the appropriate guild. Apprentices had to produce a 'masterpiece' clock of a specified traditional type, which stifled innovation and contributed to the decline of Germany's supremacy in clockmaking.

In England, and especially London, which was the centre of trade, fashion and of course wealth, these rigid regulations did not apply. Due to the 'customs of London', provided a tradesman was a Citizen of the City of London

by virtue of being a member of any guild, he could work in any trade, not necessarily that of the guild to which he belonged. For instance, most of the early makers of lantern clocks were, before the formation of the Clockmakers' Company in 1631, members of the Clothworkers' Company, while many makers of turret clocks belonged to the Joiners' Company.

Whereas Germanic clocks were comprised of a separate all-iron movement enclosed in a completely separate gilt-brass case, Flemish clocks developed a more integrated construction, though some purely decorative elements were simply attached to the main structure, rather than being either entirely separate from it or part of it. The result was a rather complex construction, as exemplified by the spring clock shown in Fig. 2, with several clocks of a similar type known. The brass movement plates are attached to the iron pillars with screwed nuts at the bottom and latches at the top. A substantial bell stand is fixed to the top plate, then the top finial screws in place to secure the dome and the gilt brass top casting. The base section, which like the top casting is purely decorative without a practical function, is attached to the bottom plate with a single central screw.<sup>9</sup>

By the late sixteenth century some Flemish clockmakers had started to make weight-driven clocks with a more integrated construction. While the well-known complex carillon clock dated 1598 by Nicholas Vallin, who had emigrated from Flanders to London, is of this basic form, it can be regarded as Flemish, not a prototype lantern clock. Clocks similar to the one shown in Figs 3–4 provided the inspiration for enterprising London clockmakers. This has plates fixed to the pillars by screw-on feet and finials, while decorative gilt-brass base and pediment castings were replaced by less prominent mouldings attached to the dial and side covers. Brass frets replaced the pierced dome and a cruciform frame and top finial supported the bell. The pillars, feet, finials, bell frame and all the movement are made of iron, though by the 1570s brass was being used for the wheels and movement bars.<sup>10</sup> This construction

9. Information from Richard Newton.

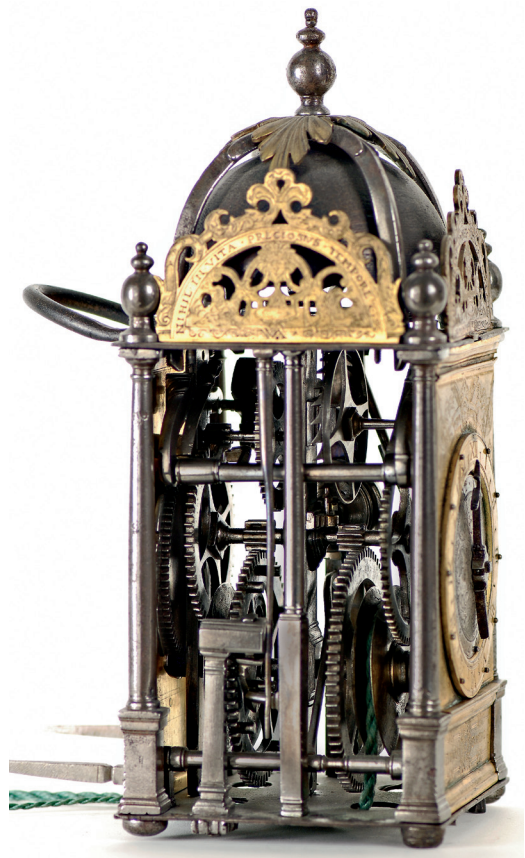
10. Robey, 'The origin of the English lantern clock', Part 2', p. 42, Figs 25a–c. Other Flemish clocks are known with brass wheels and movement bars.





provided the inspiration for the lantern clock and English clockmakers simplified this basic form even further by making the following modifications to the Continental design:

- simplified construction with plates fixed to pillars by screw-on finials and feet
- brass replaced iron for the wheels and all the components of the frame
- the Renaissance style pillars were simplified and made of brass instead of iron
- warned striking replaced the more usual unwarned striking using a nag's head
- the usual Continental vertical rotating hammer was abandoned in favour of a swinging hammer hitting the inside of the bell
- removable side panels were replaced by



Figs 3-4. A fine late seventeenth-century Renaissance Flemish weight-driven wall clock, with a brass dial, frets and latched side panels, iron wheels, pillars, finials, feet and bell frame. Reconverted back to balance escapement. The hammer shaft is vertical. (© Auktionen Dr Crott).

opening side doors having pin hinges at the rear

- side arms on the front and rear movement bars were used instead of the usual Continental method of pivoting the strike-work and hammer arbors between the pillars. These cruciform movement bars were necessary because the hinges had to be set forward of the rear pillars and the rear edges of the doors would have fouled arbors pivoted between the pillars.

All these modifications would not have occurred simultaneously, but developed over a period of time, with prototypes and changes as some features were found to work better than others, until the typical English lantern clock eventually emerged.

## The Harvey workshop

While there was a group of immigrant clockmakers from Flanders working in Blackfriars, London, at the end of the sixteenth century, including Francis Nowe, John Vallin and Nicholas Vallin, mainly making (or more likely selling imported) horizontal table clocks and other types of spring clocks,<sup>11</sup> they do not appear to have ventured into producing true English lantern clocks. Instead it was a group of makers and repairers of church clocks, who developed this new style of timekeeper.

The earliest surviving truly British domestic clocks whose maker can be identified were made by Robert Harvey, also Harue and Haruie (Fig. 5).<sup>12</sup> The most characteristic and distinguishing feature of lantern clocks from the Harvey workshop is the shape of the plates. Instead of simply being square, the central section of each side is recessed, leaving the corners protruding. This means that the pillars, finials and feet stand forward slightly from the dial and side doors. This was probably a deliberate attempt to give more prominence to these decorative features. This type of plate was largely abandoned after about 1625–30. Cruciform movement bars were devised by the Harvey workshop and were of the same pattern normally used by makers before about 1640. The straight arms taper from the right where the hammer is pivoted to a wider left-hand end to accommodate the two strike-work arbors (see Fig. 9). The rear left-hand arm is filed to give clearance for the countwheel detent. This type of bar was later superseded by arms with up- and down-turned ends. The early Harvey-school clocks also often feature a lugged bell, an iron bell strap and a top finial sitting on a short pedestal, all held together by a stout taper pin.

Robert Harvey's origins in the clock trade can be traced back to Peter Medcalfe, sometimes Metcalf, who was the son of William



Fig. 5. Lantern clock signed 'Robertus Harue Littell Britain London fecit'. (Agecroft Hall, Richmond, Virginia).

Medcalfe and free in the Clothworkers' Company by patrimony in November 1565.<sup>13</sup> His master is not documented, but from at least 1567 to his death in 1592 he was living in the parish of St Olave, Southwark. In 1567–71 he was a smith with seven Dutch 'servants' or workers, most of them old enough to have been fully trained. He was living next door (or at least with no intervening immigrants) to John Ageldar (or Geldar), a Dutch smith born about 1525, who had arrived in London in 1546.<sup>14</sup> Ageldar worked on a London church clock in 1571, while Peter Medcalfe made four

11. Percy G. Dawson, C. B. Drover & D. W. Parkes, *Early English Clocks* (Woodbridge, 1982), pp. 17–41.

12. Brian Loomes, 'The Harveys', *Clocks*, September 2012, 11–26; 'Robert Harvey', *Clocks*, October 2013, 11–14; 'Robert Harvey revisited', *Clocks*, November 2013, 11–15. Genealogical and apprentice information is from Brian Loomes, *Clockmakers of Britain*, and A. A. Finch, V. J. Finch & A. W. Finch (2022) 'A Directory of Early Clockmakers and Apprentices' (<https://adrianfinchblog.wordpress.com/clockmakers/directory-of-early-clockmakers-and-apprentices/>), unless noted otherwise.

13. Brian Loomes, *Clockmakers of Britain*, p. 343.

14. R. E. G. Kirk & Ernest F. Kirk, *Returns of Aliens in the City and Suburbs of London, 1528–1571* (The Huguenot Society, vol X, 1900–7), part 1, pp. 349, 473; part 2, p. 111; part 3, p. 369.

clocks for London churches and maintained or repaired others, from 1576 (when he was described as a 'Clok-Smythe'<sup>15</sup>) to 1591.<sup>16</sup> As only about a quarter of the surviving churchwardens' accounts have been searched this is almost certainly an underestimate, as is the amount of repair work carried out by the Harvey workshop (see below).

Since John Ageldar was about 25 years older than Peter Medcalfe, he is likely to have taught him the skills necessary to make clocks. While immigrant craftsmen were often resented by Londoners, Medcalfe seems to have taken advantage of them by associating with, learning from and employing skilled Dutch workers. After 1571 he took on nine English apprentices, all in the Clothworkers' Company, six of them not free until after his death and turned over to other masters.

In 1587 and 1591 Peter Medcalfe was granted a certificate of residency for tax liability in the royal household, probably at a lower rate.<sup>17</sup> At both these dates there were changes to the royal clockmaker and delays in appointing a successor, so it is likely that as well as attending to turret clocks in royal palaces, he was also tasked with looking after the royal collection of Continental spring clocks.<sup>18</sup> Although Peter Medcalfe is not well known and no clocks signed by him have survived, he may have had an influence on the development of the earliest lantern clocks. He was the first London freeman to be trained as a clockmaker and had a direct lineage via apprenticeships to the most important clockmakers of the mid-seventeenth century. He can be regarded as the 'father of English clockmaking'.

Peter Medcalfe's apprentices included John Harvey, who was bound about 1571 and free in 1578 (as Jo: Haray), and Symon Harvey, not free until 1608. John Harvey made and installed a new turret clock for the Newcastle-

upon-Tyne Guildhall in 1586, there being no local clockmaker at that time. It was probably transported by sea from London. Two years later a daughter was born there to John Harvie clockmaker, a godfather being the Sheriff of Newcastle, so he was clearly highly regarded.<sup>19</sup>

He has achieved fame as the 'ingener' who in February 1599 set sail from London with the organ builder Thomas Dallam, to deliver a magnificent organ and automaton clock to the Sultan of Turkey as a gift from Queen Elizabeth I, arriving there in August 1599 and returning to London on 1 May 1600.<sup>20</sup> The commission was given to the royal clockmaker Randolph Bull, who, since he was primarily a watchmaker and goldsmith, presumably subcontracted Dallam, Harvey, a joiner and a painter to actually construct the organ clock,

Apart from presumably his eldest son Robert, John Harvey took Henry Stevens as an apprentice about 1591, who was made free in 1598. Two other apprentices who were not free until after John's death were probably turned over to Stevens. Though John Harvey is not recorded as repairing church clocks, he would be skilled in this work from his apprenticeship with Medcalfe, and no doubt he assisted his master to service royal turret clocks and Continental spring clocks. His reputation was high enough for him to be chosen to make a new clock for Newcastle Guildhall and the Queen's prestigious gift to the Turkish sultan. No signed clocks by John Harvey are known. He died on 1 September 1602 at Aldersgate, London.

In 1592 Peter Medcalfe left a bequest to 'Symon Harvey, my servannte, my great Anvill and twoe of my best vices with the Bellowes'. This implies that Simon Harvey was working as a journeyman for Medcalfe and hence born before 1570. He is very likely to have been a younger brother of John Harvey. Considering

15. Robert Wilkinson, *An Historical and Descriptive Account of the Parish Church of St. Peter upon Cornhill* (1837), p. 11.

16. Churchwardens' & Vestry Accounts, Guildhall Manuscript Library, details of clockmakers compiled by Jeremy Evans, and information from James Nye.

17. National Archives, E/115/279/30, E/115/263/153.

18. Information from Adrian Finch.

19. Brian Loomes, 'Virgin Islands Clock', *Clocks*, July 2017, 11; Keith Bates, *Early Clock and Watchmakers of the Blacksmiths' Company* (2018), p. 211.

20. Ian White, *English Clocks for the Eastern Market* (AHS, 2012), pp. 49–52.



that Medcalfe had a number of other workers, Simon must have been held in very high regard to be left the most important tools in the workshop. Simon Harvey was free in the Clothworkers' Company as a former apprentice of Peter Medcalfe, but for some reason not free until 1608.<sup>21</sup> He had four apprentices, two of them sons of blacksmiths, and he was Ironmonger to the Clothworkers' Company in 1622–30. He was the longest serving member of the Harvey workshop, being there for at least forty years. No signed work by him is known as he probably worked primarily on turret clocks.

John Harvey's oldest son Robert was born about 1583 and also mentioned in the will of Peter Medcalfe: 'I give and bequeathe unto Robert Harvey, a boy which I keepe, the somme of ffyve poundes', which implies that Robert (who would have been aged about nine or ten at the time) had received some early training from Medcalfe. He was free in the Clothworkers' Company by patrimony in 1604, and had three apprentices, including his younger brother Thomas. He repaired church clocks between 1602 (even though not yet free) and 1614. He died in May or June 1615, aged only about 32 years. Known clocks by him are a timepiece alarm signed 'Robertus Haruie fecit', a lantern clock signed 'Robertus Harue Littell Brittain London fecit' and another signed 'Robert Harue London fecit'. He worked in Little Britain, Aldersgate, probably occupying his late father's premises.

Robert's brother Thomas, younger by about 11 years, was born about 1594, apprenticed to Robert in December 1608 and free in December 1615, six months after Robert's death. Thomas Harvey had only two recorded apprentices. Several lantern clocks signed by Thomas Harvey are known. A man of this name died in 1636, but it is not confirmed that this is the clockmaker.

John Harvey's first apprentice, was Henry Stevens, who was bound about 1591 and free in 1598.<sup>22</sup> Though his birth has not been traced, he was born about 1577, almost certainly in the hamlet of Eaton in Appleton



Fig. 6. Lantern clock made by Henry Stevens for the goldsmith John Peacock in 1620. A lugged bell has since been restored. (Merseyside Museums Service).

parish, near Abingdon, Berkshire. Edward Stevens, probably a relative, perhaps a nephew, was apprenticed to Peter Closon, who was the brother-in-law of Henry Stevens and one of his apprentices, as was William Selwood, also from the same small hamlet of Eaton. By the mid-seventeenth century both Closon and Selwood became two of the most prolific makers of lantern clocks.

Henry Stevens repaired London church clocks in 1599–1625, including one that had also been repaired by Peter Medcalfe and Robert Harvey, and made the chimes for another.<sup>23</sup> Only three lantern clocks are known by Stevens (Fig. 6), two of them with typical Harvey-style plates, which implies

21. Loomes, *Clockmakers of Britain*, p. 248.

22. Loomes, *Clockmakers of Britain*, p. 457.

23. Information from Jeremy Evans.





Fig. 7. A Harvey-style clock signed 'William Bowyer fecit 1617'. The fret, top finial, bell and strap f are recent. This is the earliest known dated English lantern clock. (Bonhams).

a continued association with the Harvey concern. Since he was about six years older than Robert Harvey, it has been convincingly argued that Stevens would have been in charge of the workshop while John Harvey was absent installing the organ clock in Turkey, Robert not having finished his apprenticeship. Stevens may also have been in charge in the period between John Harvey's death in 1602

and Robert's freedom in 1604, as well as during the six months between Robert's death and Thomas's freedom.<sup>24</sup> Henry Stevens died in 1632.

Whereas, apart from family members, John Harvey had three recorded apprentices, Robert Harvey and Thomas Harvey just two, Henry Stevens took on nine apprentices from about 1596 to 1624. Even though Symon Harvey was probably the most senior member after the death of John Harvey in 1602 and delayed his freedom for another six years, he may have left the running of the workshop to others. Allowing just two years for each apprentice to work as a journeyman after he was free — in practice for some this might have been much longer — even ignoring the influence of William Bowyer (see below), the number of artisans rose to an average of at least thirteen in the period 1610–20. The Little Britain workshop must have become a bustling place, with work on turret clocks being carried out on the ground floor and lantern clocks made in an upper room.

It is significant that church clocks were being repaired at the same time as the construction of lantern clocks. While no doubt church contracts were lucrative, they relied on the uncertainties of demand for repairs, and especially if new clocks were also ordered. To provide a useful additional source of income when church orders were slack there was a diversification into making domestic clocks, initially as a sideline, until eventually lantern clocks became the main product.

Another important early clockmaker associated with the Harvey workshop, though the details are at present not fully understood, was William Bowyer. This connection arises from the Harvey-style clock in Fig 7, dated 1617, which is not only the earliest known dated English lantern clock, but also the only clock Bowyer is known to have made using Harvey-type plates and movement bars.<sup>25</sup> He was born about 1585, son of Ralph Bowyer, yeoman of Warfield near Reading, Berkshire. Several Warfield Bowyers, including his uncle John, a spoon maker, and others who are almost certainly related to William, became

24. Brian Loomes, 'Virgin Islands Clock', *Clocks*, July 2017, 11.

25. Brian Loomes, 'William Bowyer, an exciting and important discovery', *Clocks*, June 2018, 9–12.



pewterers, including some who worked in the Aldersgate area of London, near to the Harveys. William Bowyer appears to have been free in 1607 in the Pewterers' Company,<sup>26</sup> through which he took apprentices John Pennock (free 1629) and William Almond (free 1631), both being clockmakers. Who trained William Bowyer as a clockmaker, and when he became associated with the Harvey workshop, is not recorded, but he was probably working on his own account by or shortly after 1617. He died about 1653 after making numerous very fine lantern clocks.

26. Carl Ricketts, *Pewterers of London, 1600–1900*, (2001), p. 53. There appear to be two William Bowyers in the Pewterers' Company about the same time, and the master of an apprentice free in 1616 is probably not the clockmaker.



Fig. 8 (left). Unsigned clock from the Harvey workshop that has spent much of its life in the American Virgin Islands. (Private collection, courtesy of Brian Loomes).

Fig. 9 (right). Cruciform movement bars of a design used by the Harvey workshop. (Private collection, courtesy of Brian Loomes).

As well as clocks signed by Robert and Thomas Harvey, Henry Stevens and William Bowyer, there are a number of unsigned clocks that can be identified as originating from the Harvey workshop (Figs 8–9). Exactly why these clocks are unsigned is not clear, but they may have been made during the periods that Henry Stevens was left in charge.

The newly discovered early experimental lantern clock and a couple of slightly later prototypes are discussed in Part 2.