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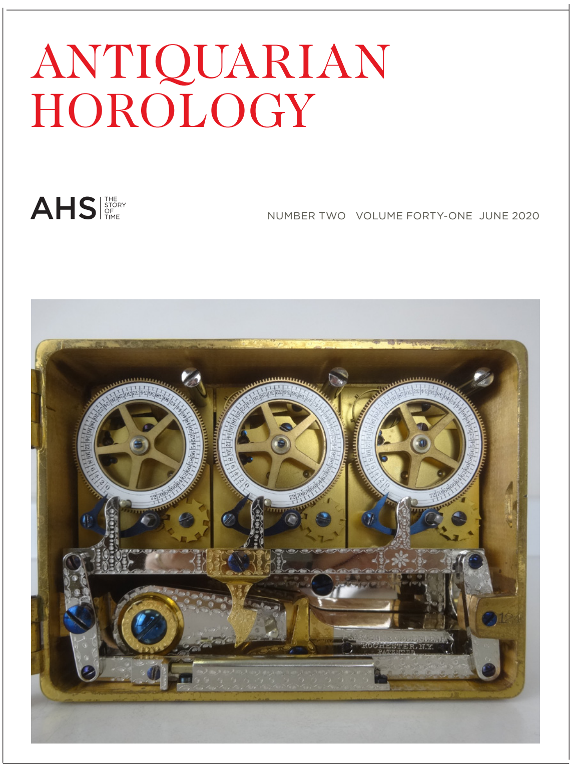

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English lantern clocks with an original balance

John A. Robey*

Very few balance lantern clocks avoided being updated to a pendulum, either with a verge escapement or a later anchor escapement, though many have been reconverted back to balance in recent times. Those that survived conversion are now eagerly sought after by collectors as examples of the earliest English domestic clocks. They are often said to number 'only a handful', but twenty-one are claimed to have an original balance escapement. After outlining the features that need to be considered when deciding on a clock's originality, all those known to the author that are said to be original are discussed. Seven of these clocks are regarded as being largely original, another seven do not appear to have ever been converted to a pendulum, but parts (such as the verge and/or the crownwheel) have been replaced due to wear. A possible four clocks may be unaltered, but their originality is not confirmed, while three clocks said to have an original balance are likely to be reconversions.

Introduction

Before the announcement in October 1658 of the application of the newly invented pendulum to domestic clocks, the only means of regulating a lantern clock was by a verge escapement and a balance.[1] Though some clockmakers, like Peter Closon, adopted the new pendulum escapement almost immediately, balance lantern clocks were still available, even in London, as late as 1696.[2] However, for most owners the advantages of the pendulum, in both its short and later its long versions, soon became apparent and there was a rush to get balance clocks upgraded to the latest technology, with printed instructions on how to do this being available to clockmakers.[3] Eventually very few balance clocks remained unconverted and these rare survivors are now eagerly sought after by collectors of English lantern clocks.

In the nineteenth and twentieth centuries, with a growing interest in early clocks, there was a desire to return modified movements to how they had originally been made, and many lantern clocks were reconverted back to balance. With so few completely original clocks for guidance, many restorers made inaccurate guesses as to what had been there before. Many replacement balances are too heavy or made of mild steel, despite there being only one known original iron balance, though it is on a clock that cannot be regarded as conventional (see Clock 8). The importance of undercut to the crownwheel teeth, to enable the balance to swing freely during recoil, was not appreciated, despite the very large undercut found on verge watches, and most reconversions have the leading edges at right angles to the wheel. Replacement crownwheels often have 25 teeth since, together with the usual counts of the remaining wheels and pinions, this results in a convenient 1-second beat, which was erroneously thought to be correct.

Ideally every potential original balance clock needs to be examined in great detail, with the mechanism completely dismantled

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1. This is the correct horological term, **not** balance-wheel, which is the wheel that moves the balance, i.e. the crownwheel. F. J. Britten, *The Watch & Clock Makers' Handbook, Dictionary and Guide* (14th edition, 1938), p. 54, defines balance wheel as 'The escape wheel of the verge escapement. This term is often applied by amateurs to the 'balance' proper', and this definition is used consistently in W. J. Gazeley's *Clock and Watch Escapements* (1956).

2. Brian Loomes, *Lantern Clocks & Their Makers* (Mayfield, 2008), p. 126.

Fig. 1. A small lantern clock by Matthew Crockford, London, 1670, reconverted back to balance. (Photo: private collection)

Fig. 2. Reconverted Crockford clock with an incorrect iron balance and a reinstated alarm. There is no aperture for the fly as it is below the top plate, which has an integral hoop. (Photo: private collection)

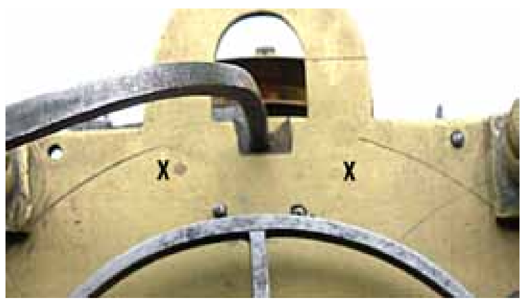

Fig. 3. Detail of the top plate of the Crockford clock, showing plugged holes (marked X) for a former pendulum back cock, the right-hand one being barely visible. The scribed circle was partly erased when the plugs were levelled. (Photo: private collection)

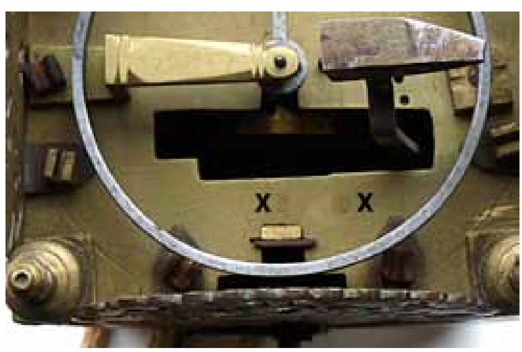

Fig. 4. Crockford clock with an enlarged aperture for a former anchor escapement, and barely visible plugged holes for a pallet cock. The top balance cock is uncharacteristically decorative. (Photo: private collection)

and individual parts examined thoroughly. In practice this is not feasible for various reasons, and where personal inspection has not been possible, reliance has had to be placed on the opinions of those who have studied the clocks, and on photographic evidence. With these limitations in mind, the evidence presented here is given in good faith, but may require modification as some of the clocks become available for examination in the future.

Evidence for an original balance

To determine whether a balance clock is original, a number of factors need to be examined in detail.[4]

• While former clockmakers modifying clocks usually made few attempts to disguise their work by filling redundant holes, this was not the case during reconversion, especially in the twentieth century, when there were great efforts to make previous alterations as invisible as possible. Even brass plugs of a matching colour may tarnish in a different manner to the top plate and eventually reveal themselves, There must be no evidence of filled or open holes in the top plate, apart from those for banking pins. A reconverted verge pendulum clock will have plugged holes for the front and rear cocks that supported the horizontal pallet arbor. A reconverted long pendulum will have blocked holes for the former backcock, and sometimes for a front one as well, though the anchor arbor may have pivoted in an extension of the front movement bar. It might even have been cranked to pivot in the front bar below the top plate. Also there will be a larger aperture for the anchor pallets. Originally this would have been only large enough to allow the hammer-head to pass through during assembly. Some of these features on a reconverted clock by Matthew Crockford are shown in Figs 1–4. In extreme instances the whole top plate may have been replaced, and if expertly done will be difficult to detect once it has aged. However, an unaltered top plate and hoop are not an absolute indication that the clock has not been changed. A clock converted to anchor is known, where the front pallet cock was a block soft-soldered to the front movement bar, the back cock was soldered to the hoop, and the escapewheel was mounted on the original pinion. Once the solder had been removed and the escapewheel changed, the conversion was very difficult to detect.[5]

• The conversion to both types of pendulum often necessitated the removal of the iron hoop for hanging the clock on a wall, so a reconverted clock will show evidence of reinstatement of the hoop, often with extra-large riveted areas to hide former back-cock holes. Even if the hoop has not been replaced, the rearmost section should not show signs of a former back cock fixed to it instead of to the plate, as was occasionally done. Conversely some clocks lost their hoops for other legitimate reasons, if for example they were fitted in wooden longcases, or panelling, or sat on shallow brackets. Hence a clock with a missing hoop should be examined with extra vigilance.

• The brass balance should have a rim cross-section of less than about 3⁄16in and a nominal diameter of about 4in (100mm) for a standard-size clock. The balance of a miniature clock can be as small as 2½in (62mm) or 2 13⁄16in (71mm) diameter. The balance should be filed from a casting and not turned on a lathe, and it will not be perfectly round or of even cross section. Also the lower inner edges either side of the single spoke may be chamfered to improve poise. There may be diametrically opposite punched or filed marks to indicate where lead weights were once located. Clock 7 shows these features (Figs 29–30), and has a balance measuring 102.8mm wide and 102.0mm along the spoke diameter, a rim thickness varying from 3.3mm to 3.9mm and a rim width of 3.5mm to 4.3mm.

• The crownwheel should have 19 or 21 undercut teeth. Derham and Elliott quote these counts,[6] and they are the only ones known on clocks accepted as being original where this information is available. The crownwheel should look old, not newly machined, and match the colour of the other

3. W. D [William Derham], *The Artificial Clockmaker*, 1696, pp. 62–8; Henry Elliott, *The Clock-Maker's Assistant*, 1726, pp. 11–14.

4. George White, *English Lantern Clocks*, 1989, Chapter IX 'Alterations and Restorations and How to Identify them' is especially informative.

5. Information from an anonymous reviewer. How the pallets were inserted without enlarging the pallet aperture is not known.

6. See note 2, also information from John Hooper. Clocks 3, 6 and 7 have crownwheels of 19 teeth.

Fig. 5. Clock 1, anonymous lantern clock. (© Trustees of the British Museum)

brass wheels, with worn tooth tips. A wheel that has been 'dished' to compensate for wear by moving the tips closer to the pallet faces is a good indicator of extensive use over a very long period.

• The verge (also called the balance staff) should be very slender, tapering from 2mm diameter at the bottom to about 4mm where the balance itself is attached. The pivot at the lower end may not have a section reduced in diameter, but just a continuation of the taper. The pallets should be reduced to half their thickness only up to the body of the verge, not filed straight across the verge axis, nor have supporting sides in the form of a very wide flat-bottomed U, as on the so-called 'book' pallets.

Fig. 6. Clock 1, top view showing the balance and repaired top cock. (© Trustees of the British Museum)

Fig. 7. Clock 1, movement. (© Trustees of the British Museum)

Fig. 8. Clock 2, Edward Norris. (Photo: Brian Loomes)

Fig. 9. Unaltered top plate of the Norris clock with its original balance and alarm. (Photo: Brian Loomes)

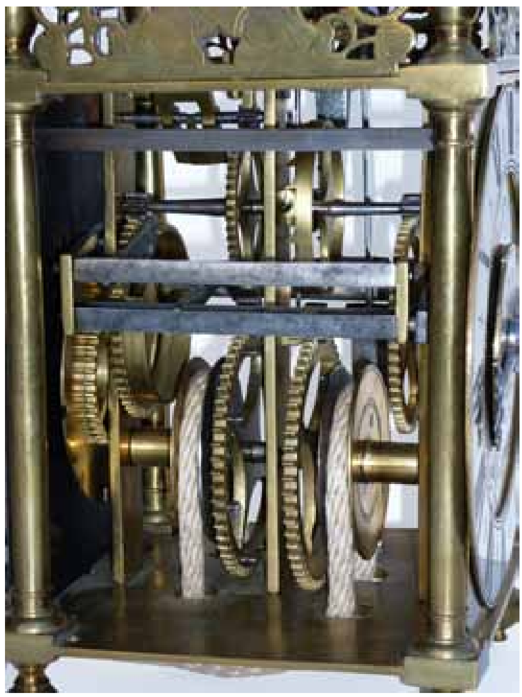

Fig. 10. Movement of the Norris clock. (Photo: Brian Loomes)

• Conversion to anchor escapement might retain the bridge in which the crownwheel pivoted, to accept the rear pivot of the escapewheel, but if there had been an intermediate stage with a verge-pendulum, then this might have been removed and the escapewheel pivoted in the central movement bar. Hence there should be no plugged hole for such a pivot, nor for a removed verge crownwheel potence, which will have been further up the bar than the original balance potence.

• After up to three-and-a-half centuries of use, the pinions and pallets will be very worn. While wear pits could be faked, this would be difficult to do convincingly and no examples are known to the author.

• Lantern clocks with an alarm often had the mechanism on the rear iron cover removed during a conversion to pendulum. Any clock with a reinstated alarm that otherwise appears to be original, should be regarded with caution. There are the inevitable exceptions,

Fig. 11. Clock 3, John Pennocke, with a restored alarm-setting disc. (Photo: W. F. Bruce, courtesy of J. Nye)

and verge pendulums may be located at the side or the front, particularly if the conversion took place in France or Germany respectively. A fret will have needed modifying, so a replacement or repair will provide additional evidence for a conversion.

• Any changes to the hammer shaft, such as filed clearance or an inserted semi-circular section, to avoid a former horizontal pallet arbor, indicate a reconversion from pendulum.

• Modifications to the motion-work to double the duration of the going train, such as an 8-leaf pinion and an identical idler to reverse the direction of rotation, driven by the original 4-pronged pinion-of-report, warrant further investigation. While this could have been done independently of escapement changes, it is more likely to have been part of a general update of the clock, including modifications to the escapement.

Fig. 12. The tarnished brass balance of the Pennocke clock with an original iron top cock. (Photo: W. F. Bruce, courtesy of J. Nye)

Fig. 13. The escapement of the Pennocke clock. (Photo: W. F. Bruce, courtesy of J. Nye)

Like any other mechanical device, the time will come when a balance clock needs repairs to keep it running reliably, especially those that have not had new parts fitted during conversion to a pendulum. As a minimum the pivots will have been reshaped and polished,

Fig. 14. Clock 4, Andrew Prime, a small striking clock with an alarm. (Photo: B. Calver)

Fig. 15. Unaltered top plate of the Prime clock. The original balance has two lead balls, one original, the other a replica. (Photo: B. Calver)

Fig. 16. The original Prime slotted balance weight (left) compared to a Civil War musket ball (right). (Photo: B. Calver)

and pivot holes rebushed, but eventually, even after dishing the crownwheel, the only way to keep the clock running would be to replace the crownwheel and the verge. Hence, as well as clocks that have avoided conversion to a pendulum, there are those that have always had a balance escapement, though worn-out parts have been replaced. The following survey includes lantern clocks that retain their original components, the only repairs being routine rebushing, and also those where the escapement has some replacement parts. Also included are those that are said to have an original balance escapement, but whose whereabouts are currently unknown and have not been confirmed by present-day horologists with practical experience of early lantern clocks.

All the clocks included here are striking lantern clocks of standard size or smaller, or miniature timepiece alarms; no large lantern clocks are known to have survived with an original balance. In the following list all places are London, except where stated otherwise, the clocks are listed alphabetically by maker within each section, and dates are approximate. They are all in private ownership unless stated otherwise.

Fig. 17. Clock 5, John Quelch. Oxon. (Photo: Brian Loomes)

A. Clocks with an original balance and escapement

These clocks are acknowledged as having an original balance, with the other components of the escapement, such as the crownwheel and verge, also being largely unaltered.

Clock 1. Anonymous, [London?], 1650s

British Museum, Reg. No. 1888, 1201, 145. George White, *English Lantern Clocks*, pp. 192–3, regards this as having an apparently original balance. Though the iron-topped balance cock suggests a later repair, and the pillars, finials and feet appear to have been over-zealously cleaned with abrasives and not accurately reassembled. From photographs taken by Oliver Cooke, Curator of Horology, the balance and escapement appear to be original (Figs 5–7). He also reports that the pinions and pallets show significant wear.

Fig. 18. Top plate of the Quelch clock. (Photo: Brian Loomes)

Fig. 19. Original balance and escapement of the Quelch clock. (Photo: Brian Loomes)

Clock 2. Edward Norris at the Cross Keys in Bethlem Londini fecit, 1660
George White, *English Lantern Clocks*, pp. 190–1, 210 states: 'Evidence suggests that the escapement is more likely to be original than a reproduction … though the adjustable pivot hole on the top cock is probably not an original feature.' The top plate has not been modified and the balance appears to be original (Figs 8–10).

Clock 3. John Pennocke of London within Bishop's Gate, 1630s
Lantern clock (Figs 11–13) with a very unusual balance cock made of iron, apparently original. See Loomes, *Lantern Clocks & Their Makers*, p. 81. Regarded by John Hooper as the only surviving pre-Civil War (Period One) lantern clock retaining its original balance escapement, and confirmed by W. F. Bruce, who has recently serviced it. Though the alarm has been removed and the hoop cut, this may have been when fitted into a case or on a shallow bracket (see 'Evidence for an original balance').

Clock 4. Andrew Prime Londini, 1650
A small three-quarter size lantern clock with an alarm. Though the frets are of an earlier style than the dial, the top plate, on which the hammer pivots and its spring is fixed, has not been altered and the crownwheel has undercut teeth. The unexplained empty hole near the hoop does not appear to be part of an escapement conversion. A slotted sixteenth-century lead musket ball and a replica sit on the original balance (Figs 14–16). These were probably added to increase the balance's inertia and hence recoil. This results in a larger restoring force, analogous to the gravitational force on a pendulum bob, at the expense of increased friction and wear, to improve performance. Two diametrically opposite punch marks on the balance indicate the position of the balls (see also Clock 7). The owner reports that the balls significantly reduce variations in timekeeping. Prior to its current owner it had been with the same family for many generations and unlikely to have been modified recently.

Clock 5. John Quelch Oxon [Oxford], 1665–70
A London-made clock. Said to have been discovered relatively recently in a remote area of America, probably taken there shortly after it was made and then abandoned. Sold at Bonhams, London, July 2010. See Brian Loomes, 'John Quelch of Oxford, An original balance-wheel lantern', *Clocks*, October 2010, pp. 11–14. Though it is in a distressed condition with the rear cover and alarm lost, from the photographic evidence, there is a good chance that the balance and escapement are original (Figs 17–19).

Clock 6. Samuel Stretch [Leek], 1685
This clock, which has been illustrated in several publications, has for a long time been accepted as having an original balance escapement (Figs 20–25). It has been regarded as likely to be original by John Hooper, Jeff Darken and George White. Recent images are included in Jeff Darken & Michael Hurst (eds), *Time & Place* (2007), pp. 52–3, and *Antiquarian Horology*, December 2003, pp. 608–11, Picture Gallery. The latter describes and illustrates the escapement in detail. The verge has been lowered to enable the crownwheel teeth to contact unworn areas of the pallets, and the crownwheel has been moved on its arbor, as well as being dished to compensate for wear.

Clock 7. Samuel Stretch de Leeke [Leek] Fecit, 1690
While Clock 6 has been known for many years, by coincidence another completely original clock (apart from the doors and rear cover) by the same maker appeared in the Alan Wagstaff Collection, sold at Christie's, London, December 2005 (Figs 26–34). See also Brian Loomes, *Lantern Clocks & Their Makers* (2008), pp. 284, 420–3. The top plate is unaltered and the crownwheel teeth are undercut by 15 degrees. Despite the pallets having been filed to remove wear pits, considerable wear has subsequently taken place, and the crownwheel has been dished to compensate. Filed marks on the balance probably indicate the position of former subsidiary lead balls to improve timekeeping.

Fig. 20. Clock 6, Samuel Stretch. (Photo: J. Darken)

Fig. 21. Unaltered top plate and balance of the Stretch clock. Hanging hoop missing. (Photo: J. Darken)

Fig. 22 (above). Stretch balance.

Fig. 23 (right). Lower pallet of Stretch clock, with two wear pits.

Fig. 25 (below) . Balance top-cock of the Stretch clock, with an integral cast steady pin, and an original fixing screw. (Photos: J. Darken)

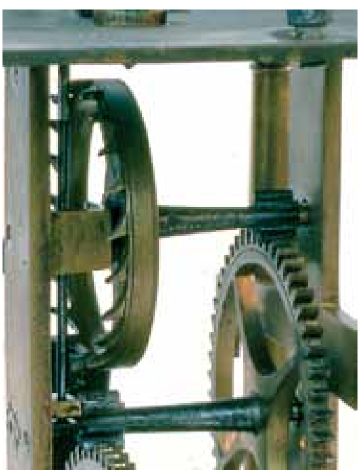

Fig. 24. Crownwheel with undercut teeth. (Photo: J. Darken)

Fig. 26. Clock 7, Samuel Stretch de Leeke. (Photo: private collection)

Figs 29-30. File marks on the Stretch de Leeke balance indicate the former position of lead weights. What appears to be a punch mark is a small casting fault. (Photo: private collection)

Fig. 27. Samuel Stretch de Leeke with unaltered top plate and balance. The shape of the central boss indicates that the balance was probably cast with four arms to avoid distortion, three of them removed during finishing. (Photo: private collection)

Fig. 28 Underside of the original Stretch de Leeke balance with the inner edge partly chamfered for poise. The arrows indicate the position of the marks shown in Figs 29-30. (Photo: private collection)

Figs 31-32. Wear on the Stretch de Leeke pallets. Note the shape of the top of the verge. (Photo: private collection)

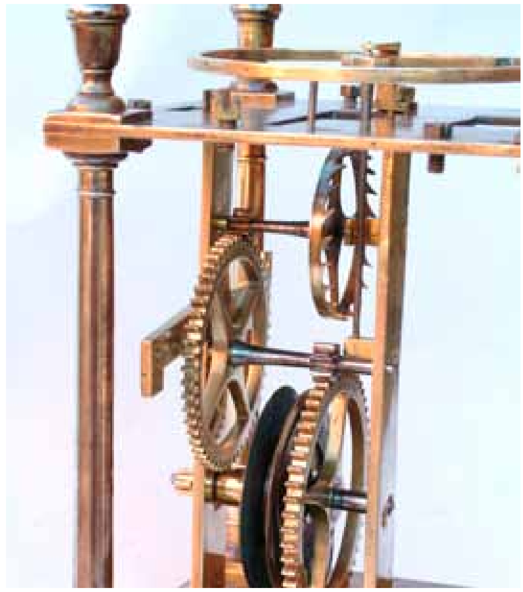

Fig. 33. Going train of the Stretch de Leeke clock, verge escapement and balance. (Photo: private collection)

Fig. 34. Stretch de Leeke crownwheel with undercut teeth. and original steeply tapered arbor (Photo: private collection)

B. Balance clocks with some replaced parts

These clocks have never been converted to pendulum control, but some parts, such as the crownwheel and/or the verge, have been replaced or modified due to wear or loss.

Clock 8. Anonymous, 1620?

An English iron-framed lantern clock with brass wheels and an atypical iron balance with eight cast-brass quatrefoil attachments.[7] Though an iron clock is known with a new

7. John A. Robey, 'English Lantern Clocks With Iron Frames', *Antiquarian Horology*, March 2011, 690–1.

Fig. 35. Clock 8, anonymous English lantern clocks with an iron frame and balance. (Photo: J. Hooper)

Fig. 36. Detail of the balance of Clock 8 with cast-brass quatrefoil attachments. (Photo: J. Hooper)

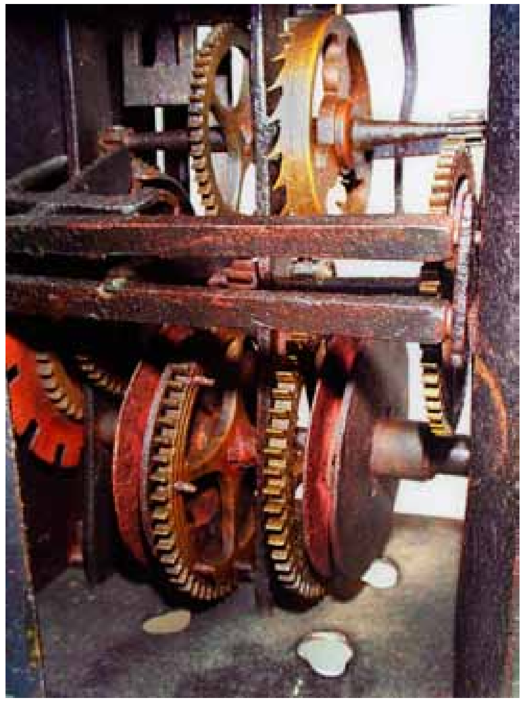

Fig. 37. The movement of Clock 8. The crownwheel has undercut teeth and baluster-shaped crossings. (Photo: J. Hooper)

movement, including top and bottom plates, inserted into a Continental iron frame by William Holloway of Stroud in 1687,[8] there is no evidence that the clock in Figs 35–37 was a similarly modified Continental clock. The author has made a detailed study of an identical clock (even with the same recesses in the front pillars for the chapter ring), redialed and converted to anchor escapement about 1710 by James Wright of Knowle, Warwickshire.[9] While the frames might have been imported from France or Flanders, all the wheels, apart from the replaced escape-wheel, have the same counts as English balance lantern clocks, and the strike-work is identical to English practice. A series of unsigned mid-seventeenth century lantern clocks with similar iron frames has English dials and frets. There is no evidence that any of them are reused Continental clocks.[10]

The crownwheel of Clock 9 is probably from an eighteenth-century Dutch *stoelklok*, rather than the English-style movement having been made in The Netherlands, several decades before before the Dutch began to copy English features. Continental clocks usually have a twin-armed balance, with the strike-work and hammer pivoting in the corner pillars, not in the specifically English cruciform movement bars of this clock.

Clock 9. Anonymous, [London?], 1660–70

A miniature timepiece alarm (Figs 38–41), only 9in (23cm) tall and 4in (10cm) wide. Unaltered top plate with an integral cast hoop and three holes for a banking pin, but no evidence of plugged holes.[11] The balance has six plugged holes that were probably for attaching small weights for either regulation or for increasing the inertia and reducing variations in rate. There are similar plugged holes in the side of the rim. Since the balance is so small, being only 2½in (62mm) diameter, like Clock 10 additional mass may have been needed to achieve a reasonable rate when the oil thickened, then the weights removed when no longer necessary once lubricants improved. Alternatively different sizes and numbers of weights may have been used to adjust the rate rather than only altering the driving weight.

8. White, *English Lantern Clocks*, pp. 250–1.

9. Robey, 'English Lantern Clocks With Iron Frames', 692–6.

10. Robey, 'English Lantern Clocks With Iron Frames', 698–700.

11. What appears to be plugged hole is actually a natural flaw in the brass.

Fig. 38. Clock 9, anonymous miniature lantern alarm. (Photo: Nigel Raffety)

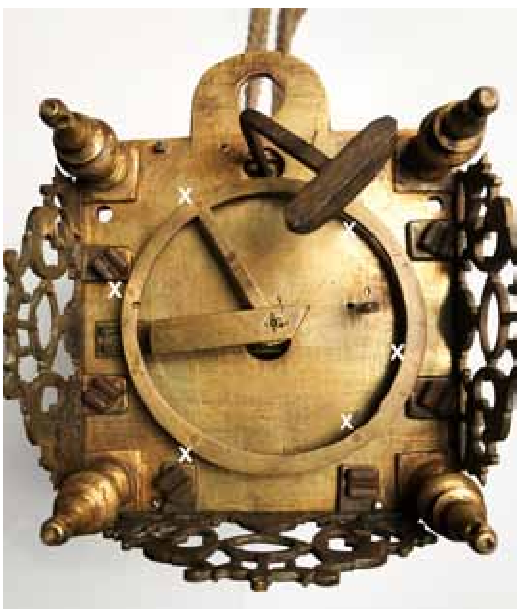

Fig. 40. The balance of Clock 9 with one of the plugged holes in the side of the rim marked by X. (Photo: Nigel Raffety)

Fig. 41. The escapement of Clock 9. (Photo: Nigel Raffety)

Fig. 39 (left). The top plate of Clock 9 with six plugged holes in the rim of the balance, marked by X. (Photo: Nigel Raffety)

The crownwheel is fitted to its arbor with a brass collet, rather than the usual method of fitting it directly onto a steeply tapered arbor, and is probably an eighteenth-century replacement. Subsequently the rim has had a new ring of teeth added without any undercut. There is good wear to the pallets.[12]

12. Information from Nigel Raffety.

Fig. 42. Clock 10, anonymous miniature lantern alarm. (Photo: Martyn Pettifer)

Fig. 45. The balance, pallet staff and top cock of Clock 10. (Photo: Dreweatts)

Fig. 43. The unaltered top plate of Clock 10. (Photo: Martyn Pettifer)

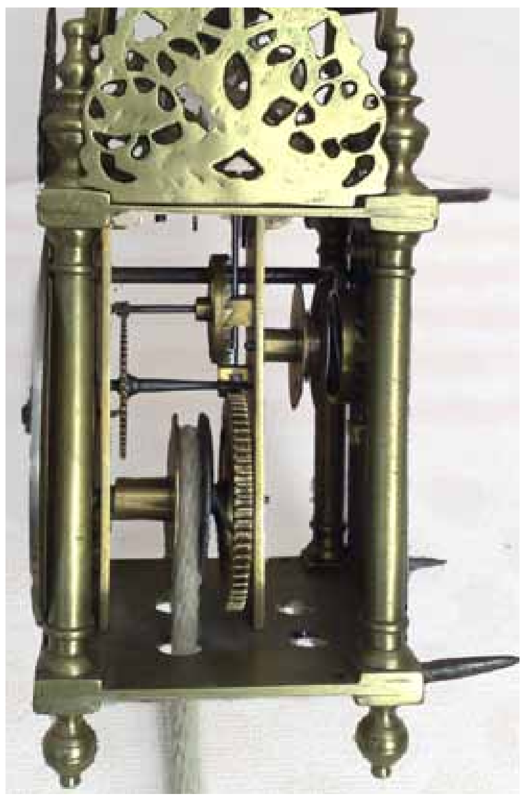

Fig. 44. The escapement of Clock 10. (Photo: Martyn Pettifer)

Fig. 46. Clock 11, timepiece alarm by Peter Closon. (Photo: private collection)

Clock 10. Anonymous, [London?], 1680

A miniature timepiece alarm (Figs 42–45), 9½in (24cm) tall and 4in (10cm) wide. Similar to Clock 9, but with a larger balance, $3\frac{3}{8}$in (86mm) diameter. Unaltered top plate, but the later crownwheel has no undercut to the 21 teeth, there is an integral collet and a parallel arbor. The top of the balance staff has uncharacteristic decorative turning where the balance is attached, so the pallets have also probably been replaced due to wear. Sold at Dreweatts, Newbury, September 2012.

Clock 11. Peter Closon of London fecit, 1640

Small timepiece alarm with a balance $2\frac{13}{16}$in (71mm) diameter and plates $3\frac{7}{32}$ (82mm) wide, $2\frac{15}{16}$in (75mm) deep and $4\frac{11}{16}$ (119mm) top to bottom (Figs 46–47). The balance has the remains of iron pins, probably for attaching washers of different thicknesses for rating, see also Clock 9. They are unlikely to have been for fixing musket balls of the type found on Clock 5, as they would foul the rear of the dial. While the illustrations of this clock in W. F. J. Hana, *English Lantern Clocks* (1979), p. 128, show no undercut to the crownwheel teeth and he states that the verge has ‘book’ pallets, which were used in the eighteenth century, the current owner reports that they are of the conventional type. Either Hana had been misinformed, or they have been replaced again. Though there are a couple of blocked holes to the left of the rear

Fig. 47. Unaltered top plate of the Closon timepiece 11, the only holes are for the sturdy banking pins. Note the cut-off pins on the balance. (Photo: private collection)

Fig 48. Clock 12, unrestored lantern clock with alarm by Peter Closon. (Photo: private collection courtesy of Brian Loomes)

Fig 49. Unaltered top plate and alarm of the Closon clock, though the iron balance is probably later. (Photo: private collection courtesy of Brian Loomes)

Fig. 51. Clock 13, lantern clock with alarm by A Fromanteel. (Photo: private collection courtesy of Brian Loomes)

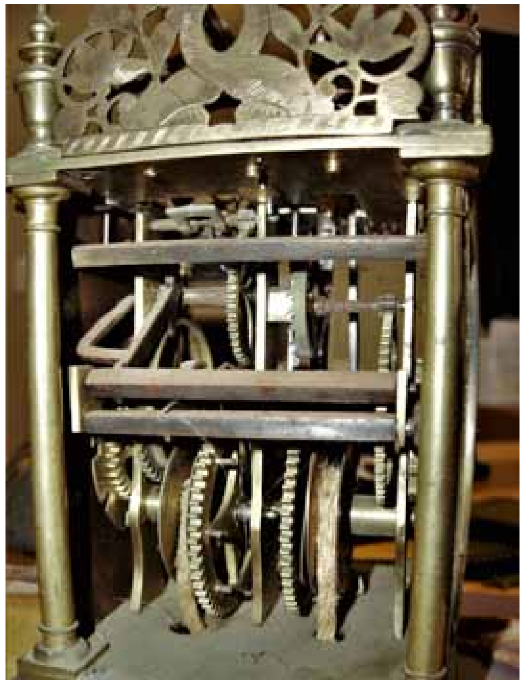

Fig. 50. Movement of the Closon clock. (Photo: private collection courtesy of Brian Loomes)

banking pin holes, they are not where a later pallet cock would be positioned, but are suitably placed to have been previous banking pin holes. Never converted to a pendulum, but worn parts have been replaced.

Clock 12. Peter Closon Neere Holburn Bridge Londini Fecit, 1650

Based on photographic evidence, and bearing in mind that dust obscures any signs of possible blocked holes, this clock may not have been converted to pendulum, but the crownwheel and the iron balance do not appear to be original (Figs 48–50). Personal inspection may revise these conclusions. Until recently in New Zealand.

Clock 13. A Fromanteel Londini, 1650s

Lantern clock with an alarm. See Hana, *English Lantern Clocks*, p. 61; Brian Loomes. 'Our Famous Fromanteel', *Clocks*, August 2018, pp. 9–11. Instead of the hammer sharing the same aperture in the top plate as the balance staff, it is set further back than usual in its own gap, and the plate has not been adapted to accommodate anchor pallets. Though the balance has atypical rounded edges, from the photographic evidence it appears to be original,

Fig. 52. Unaltered top plate and alarm of the Fromanteel clock. (Photo private collection courtesy of Brian Loomes)

Fig. 53. The Fromanteel balance with rounded edges appears to be original, but the verge is overly sturdy with little pallet wear. (Photo: private collection courtesy of Brian Loomes)

but the crownwheel and the untypical verge (whose pallets show little wear) have probably been replaced (Figs 51–54). Personal inspection may revise these conclusions.

Clock 14. 'John Wawne' [Kirby Moorside], 17C/1750?

On the photographic evidence the top plate appears to be unaltered, though the verge, balance, top cock and hoop are less convincing. The crownwheel does not have undercut teeth, the parallel arbors have collets and the fly is of a later type. (Figs 55–58). Probably an unconverted movement that

Fig. 54. The Fromanteel crownwheel appears to be a replacement. (Photo: private collection courtesy of Brian Loomes)

had lost its dial and balance, and later fitted with a cut-down eighteenth-century longcase or wall clock dial with the spurious name John Wawne, who was not born until 1733.[13] Advertised in *Antiquarian Horology* June 1987, p. 647, and Summer 1988, p. 344. Sold by Sotheby's, London, March 1995.

C. Unconfirmed original balance clocks

These clocks are said to have an original balance escapement, but this has not been confirmed by recent examination or by photographic evidence.

Clock 15. William Bowyer in London fecit, 1620–30

Ex-Iden collection. Said by Ullyett, *In Quest of Clocks* (1950), p. 18, to have an original balance, but this is not confirmed. See also Dawson, *The Iden Clock Collection*, pp. 198–9. Not Clock 21 in the British Museum. Present location not known.

13. Brian Loomes, *Clockmakers of Britain 1286-1700* (Mayfield, 2014), p. 511.

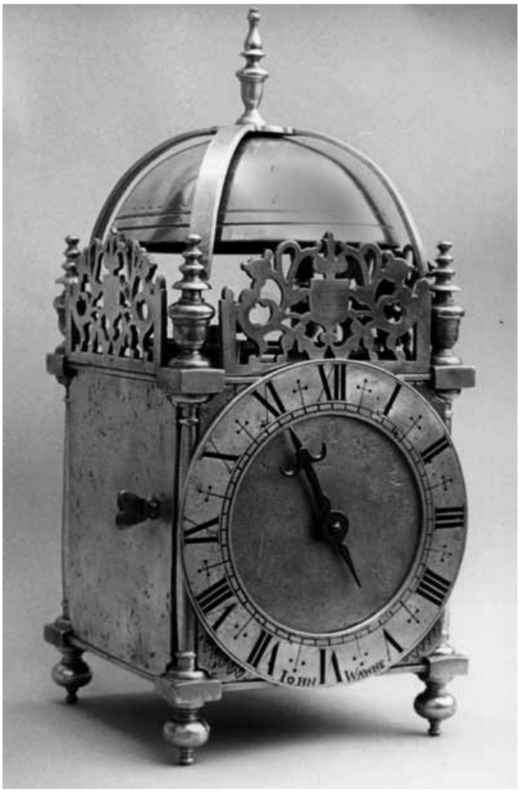

Fig. 55. Clock 14, lantern clock with a later dial signed 'John Wawne'. The pillars have integral finials and feet. (Photo: Martyn Pettifer)

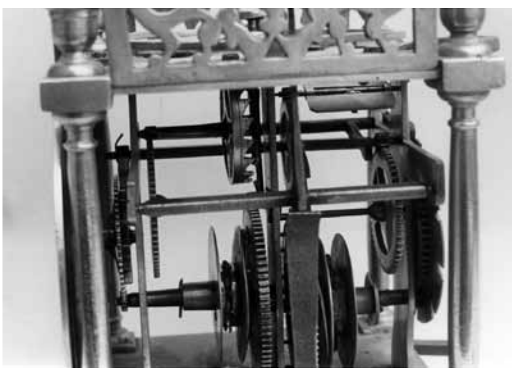

Fig. 57. Movement of the Wawne clock. (Photo: Martyn Pettifer)

Clock 16. Thomas Knifton at Ye Cross Keys in Lothbury, 1650

Formerly in the Ullyett collection, but present location unknown. *In Quest of Clocks*, p. 18, says it has an original balance, but this is not confirmed.

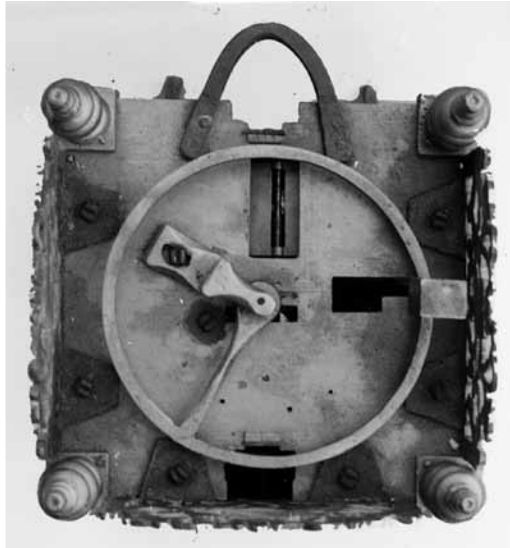

Fig. 56. Top plate of the Wawne clock. (Photo: Martyn Pettifer)

Fig. 58. Balance of the Wawne clock. (Photo: Martyn Pettifer)

Clock 17. Thomas Knifton at the Cross Keys Lothbury, 1645–55

Science Museum, Inventory 1951–30. It is not included among those clocks considered to have an original balance in White's *English Lantern Clocks*. Not confirmed, possibly a reconversion.

Clock 18. William Selwood Ye Maremade, Lothbury, 1640

Ex-Alan Lloyd collection. Said by Ullyett, *In Quest of Clocks*, p. 18, to have an original balance. H. Alan Lloyd, *The Collector's Dictionary of Clocks* (1964), pp. 125–6, and

Old Clocks (4th edition, 1970), p. 58 and plate 9c, says that its copper-sheathed weight with a cup for additional lead shot is original.This clock possibly has its original balance escapement, but this has not been independently verified, and its present location is not known.

D. Clocks said to be original, but unlikely

These clocks are said to have an original balance, but on the available evidence they appear to be reconversions from a pendulum.

Clock 19. Anonymous

Formerly in the collection of Kenneth Ullyett. His book *In Quest of Clocks*, p. 50 and plate XV, states that it has an original balance, but as there is a single weight and a Huygens' loop chain, this claim is very unlikely. Present location unknown.

Clock 20. Richard Ames, Neere St. Andrews Church in Holburn fecit, 1660

Lantern clock with alarm, sold at Christie's, London, September 2010. The catalogue states: 'with original (?) brass verge balance, wheel, countwheel, re-instated alarm mounted to replaced steel back plate', but the replacement of the alarm would not be necessary if the escapement had not been altered.

Clock 21. William Bowyer fecit, 1630

Lantern clock with an alarm. British Museum, Reg. No. CAI2094, ex-Iden, Drummond Robertson and Ilbert collections. See Percy G. Dawson, *The Iden Clock Collection* (1987), pp. 200–1; J. Drummond Robertson, *The Evolution of Clockwork* (1931), p. 135; and especially David Thompson, *Clocks* (2004), pp. 62–3, with an illustration showing no undercut to the teeth of the crownwheel. Despite seven of the most prominent horologists of the 1950s stating that it was 'one of the few English lantern clocks with unimpeachable original balances',[14] its originality is now doubted. It is not included among those clocks considered to have an original balance in White's *English Lantern Clocks*, and its complete originality was thought to be doubtful by John Hooper and others.

Conclusions

Of the many lantern clocks that were made in the seventeenth century with a balance escapement, probably numbering several thousand, less than twenty are known to have survived without being converted to a pendulum. And only seven of these are regarded as being completely unaltered, apart from the expected routine repairs. Another seven clocks have never been converted to a pendulum and have always had a balance, but parts, such as the verge and/or the crownwheel, have been replaced due to excessive wear. A possible four further examples may also have original balances, but their claimed originality cannot at present be confirmed. Three clocks said to have an original balance are likely to be reconversions. The status of some of the clocks in this survey may have to be revised when detailed and independent examination becomes possible. Further examples that may be included are likely to be discovered, particularly as several of the clocks discussed here have emerged only quite recently.

Acknowledgements

One day spent with the late John Hooper taught me more about early clocks than many hours reading numerous books and articles. With his untimely death (obituary *Antiquarian Horology* September 2007) English horology lost a clockmaker with an unrivalled knowledge and practical experience of lantern clocks, and this article is dedicated to his memory. Numerous discussions with Brian Loomes have provided much useful information and his encouragement during this research is appreciated. An anonymous reviewer provided useful comments which have been incorporated in the text. Information and illustrations from owners, including some who prefer to remain anonymous, is also gratefully acknowledged.

14. Percy D. Dawson, C. B. Drover, Humphrey Quill, R. K. Foulkes, Michael Hurst, Lawrance Hurst and F. H. Knowles-Brown, 'The Ilbert Collection of Clocks and Watches', *Antiquarian Horology*, December 1958, p. 163.