SAMUEL STRETCH'S original balances

by **John Rob**

Part **2** of **2**

While the Samuel Stretch clock with an original balance that was discussed in Part 1 has been known for many years, by coincidence another completely original example (apart from the doors and possibly the rear cover) by the same clockmaker appeared in the Alan Wagstaff Collection, sold at Christies, London, in December 2005. It had previously turned up in a local auction in north-east England and had been described by the auctioneer, who clearly knew little about early clocks. as 'missing its pendulum'.

It is of a standard size, being 15in (38cm) tall and made about 1690, **figure 7**. The dial is engraved with tulips: one in the centre, another at the top and two others with large stylised exposed seed pods, at either side, **figure 8**.

In the second half of the seventeenth century the maker's name was usually placed above the centre, and only very occasionally, as here, in the lower half. The placename is in the Latinised form of 'de Leeke' instead of just 'Leek'. This style of placename had been abandoned in London by this date, but was still used by some provincial makers.

Figure 7. Samuel Stretch's second lantern clock with an original balance.

The so-called 'twin dolphin' frets were popular after about 1650 and were still popular at the end of the century. The engraving on the front one is of exceptional quality, being much more realistic than usual, **figure 9**. I had long email discussions about the dial with Brian Loomes who did not think that it was from London, while my opinion was that it did.

Later when looking through my notes of a discussion about this clock with the late John Hooper, I found that he had seen an identical dial signed for the well-known London clock retailer Charles Gretton. Both the dial and frets would have been obtained from a London dialmaker and engraver. It is likely that the brass frame castings also came from specialist suppliers in the capital. The iron hand is original, **figure 10**.

The top plate is unaltered, **figure 11**, with no empty or filled holes for later verge cocks, nor has the hoop been moved or altered. The aperture necessary to insert the hammer head has not been enlarged to accommodate a later anchor escapement. There is a single banking pin, its main

Figure 8 (left). Dial signed below the centre 'Samuel Stretch de Leeke Fecit'.

Figure 9 (below left). The very high quality twin-dolphin front fret.

purpose being to prevent excessive swing of the balance that would cause disengagement of the pallets and a 'runaway' of the going train.

The teeth of the crownwheel, **figure 12**, are undercut by 15 degrees so that only the tips of the teeth remain in contact with the pallets during recoil to produce as large a swing of the balance as possible. This undercut is a feature often overlooked when clocks are re-converted back to a balance. Like all the other train wheels the crownwheel is mounted directly on a tapered arbor without the use of a collet.

The balance, **figure 13**, has been filed on its lower inner edge to assist poise. F**igure 14** shows the escapement and going train assembled in the frame. The balance sits above the top plate with the lower end of the verge pivoting in a potence and supported on an inserted steel pad. The crownwheel pivots in the front movement bar and an L-shaped potence riveted to the central bar, rather than a the more usual U-shaped bridge. This arrangement is necessary so that the verge can sit centrally behind the crownwheel and the pallets can contact the crownwheel teeth.

Despite the pallets having been filed to remove wear pits, probably more than once in their life, considerable wear has subsequently taken place since this was last done, **figure 15**, and the crownwheel has been 'dished' to compensate. In practice the beat of the balance is very uneven, sometimes slowing down, other times speeding up in an almost random manner. This is caused by wear on the pallets, crownwheel teeth and pivots that produce a variable impulse to the balance. This wear has deliberately not been rectified as it is an additional piece of evidence that helps to confirm the originality of the escapement. It is a good example where authenticity takes preference over improved timekeeping.

As the bob on a pendulum clock swings it is lifted until the inertia of the bob is counteracted by the force of gravity. This reverses the swing and the pallet now impulses the pendulum to keep it swinging with a very constant beat. With a balance escapement gravity plays no part in its oscillations and the restoring force is mainly the inertia of the balance being counteracted by

WHEEL COUNTS

Going train

crownwheel	**21**	**6**
2nd wheel	**54**	**7**
greatwheel	**56**	**5**
hour wheel	**48**	

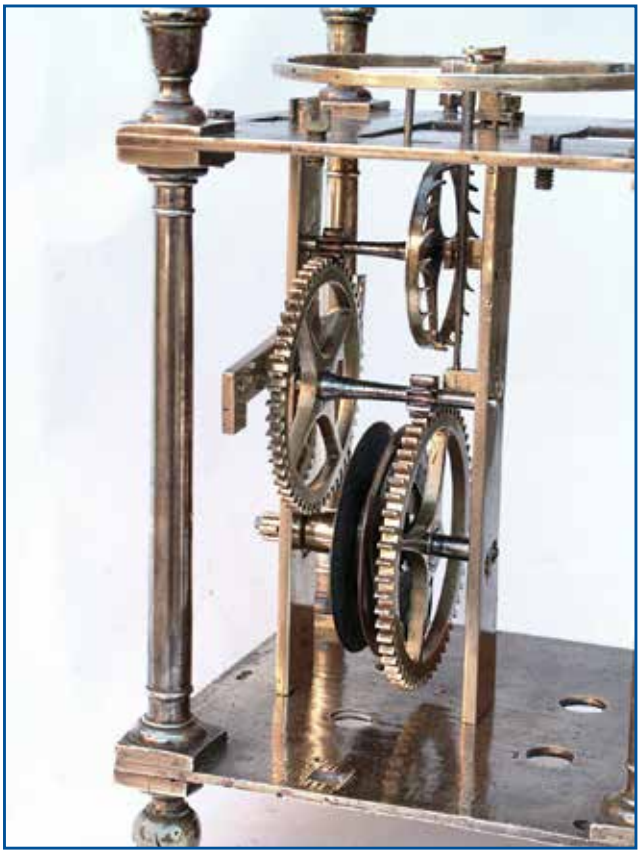
Beat = 1.5 seconds

Striking train

fly		**6**
warn wheel	**48**	**6**
hoop wheel	**54**	**7**
greatwheel	**56**	**4**
countweel	**39**	
hammmer pins		**8**

Duration = 12 hours

Overall dimensions
15in tall x 6in wide x 6in deep (38cm x 15.3cm x 15.3cm)
frame (excluding finials and feet): 6¼n tall x 5¾in wide x 5¼in deep (16cm x 14.6cm x 13.3cm)



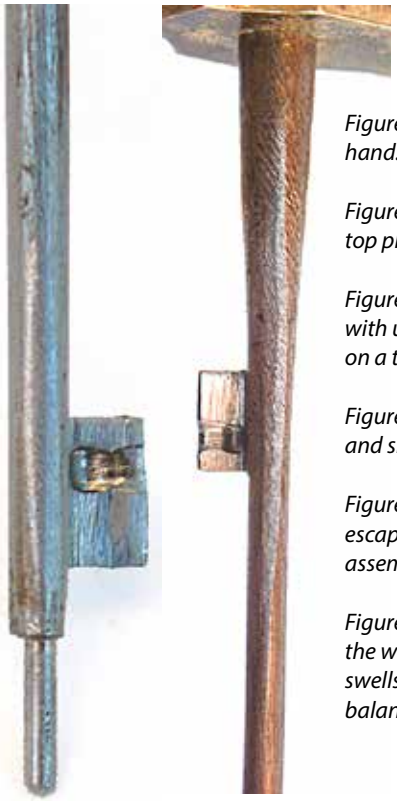


Figure 10 (top left). The original hour hand.

Figure 11 (centre left). The unaltered top plate and original balance.

Figure 12 (top right). The crownwheel with undercut teeth mounted directly on a tapered arbor.

Figure 13 (above). The brass balance and slim pallet verge.

Figure 14 (far left). The balance escapement and going train assembled in the frame.

Figure 15a and 15b (left). Close-ups of the worn pallets. Note how the verge swells out at the top to support the balance.

Figure 16. File marks on the sides of the balance.

Figure 17. The going train.

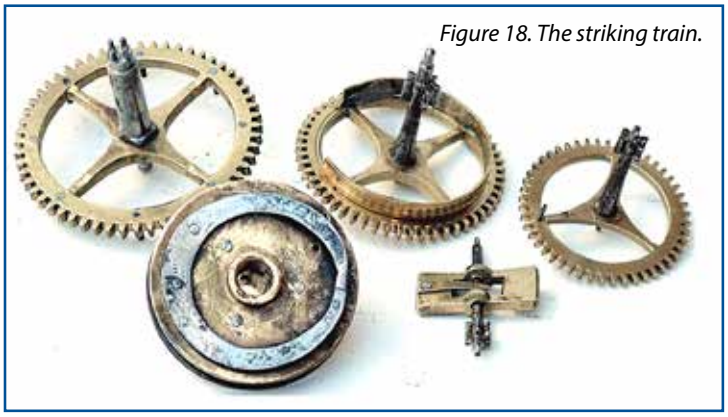


Figure 18. The striking train.

Figure 19. The motionwork, with a solid starwheel and an iron hour wheel.

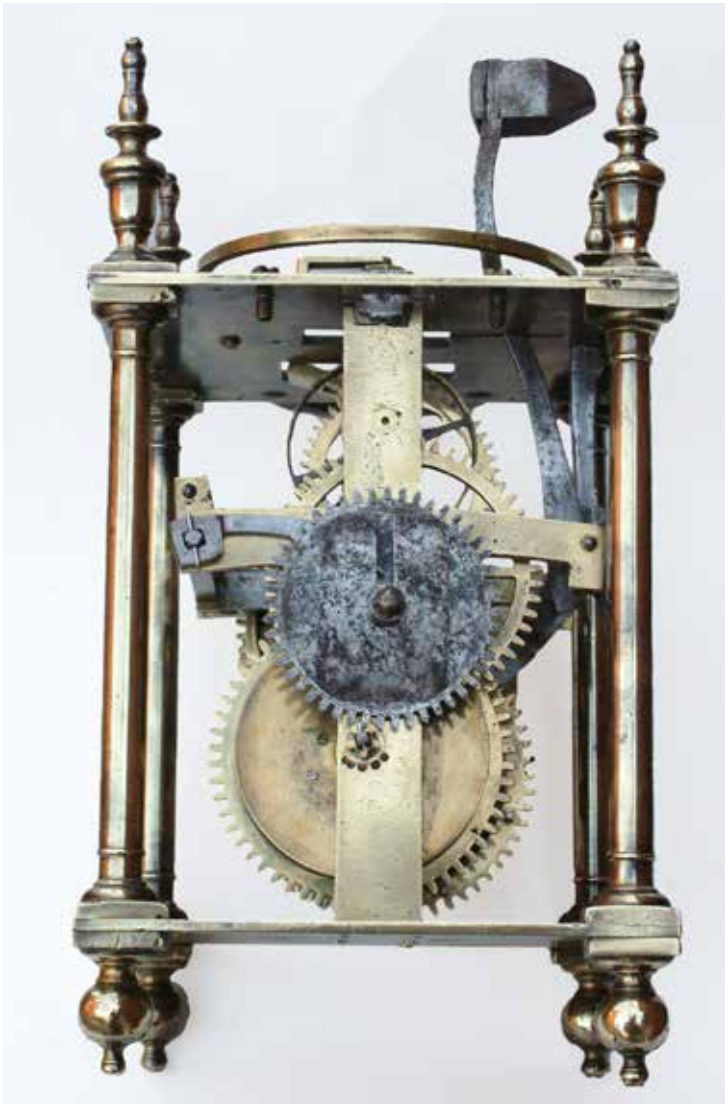
Figure 20. The hammer, spring, stop and strikework.

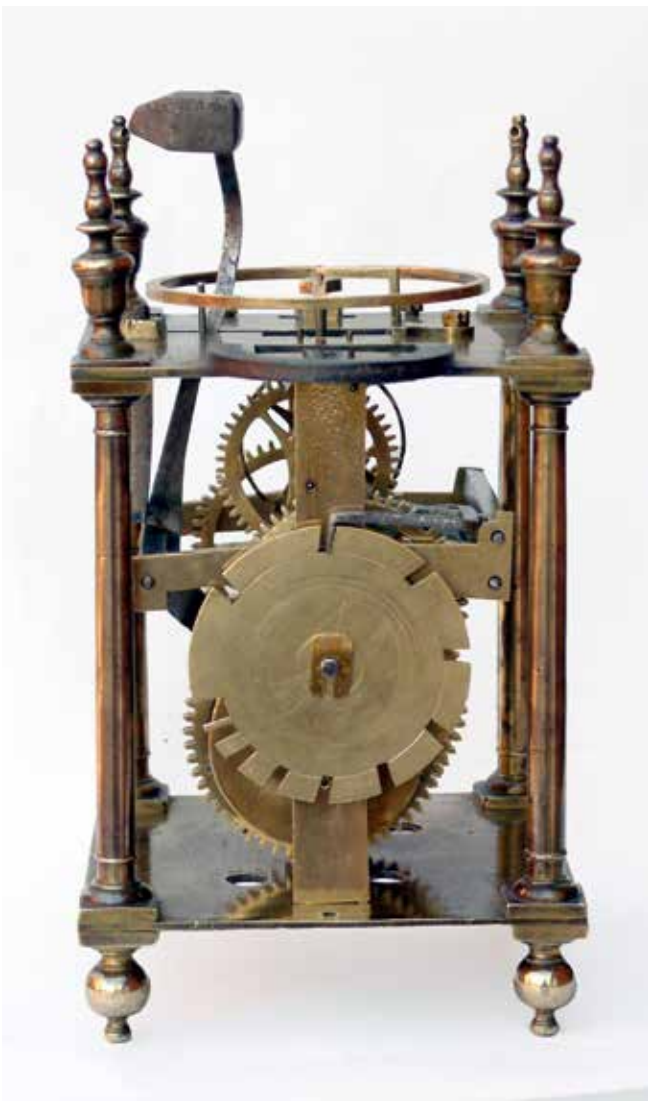
Figure 21. Detail of the hammer stop filed to form a stylised serpent's head.

the recoil of the crownwheel teeth on the pallets. The only way to regulate a balance lantern clock is by adjusting the driving weight, so any impediment to the force of the weight reaching the pallets, due to friction from wear or deteriorating lubrication will affect timekeeping.

German Gothic and other iron clocks with a balance escapement have a deep and heavy rim that requires a relatively heavy driving weight. The English approach was to use a lighter balance and driving weight to keep wear to a minimum.

When wear eventually took place and removing the wear pits on the pallet faces did not cure the problem, there was another solution. A small lantern clock by Andrew Prime of London is known with an original balance escapement and with an original Civil War musket





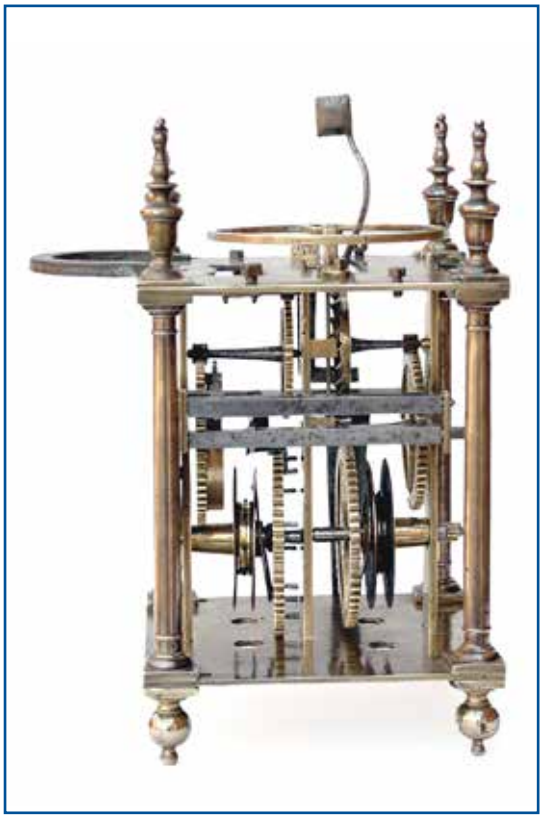
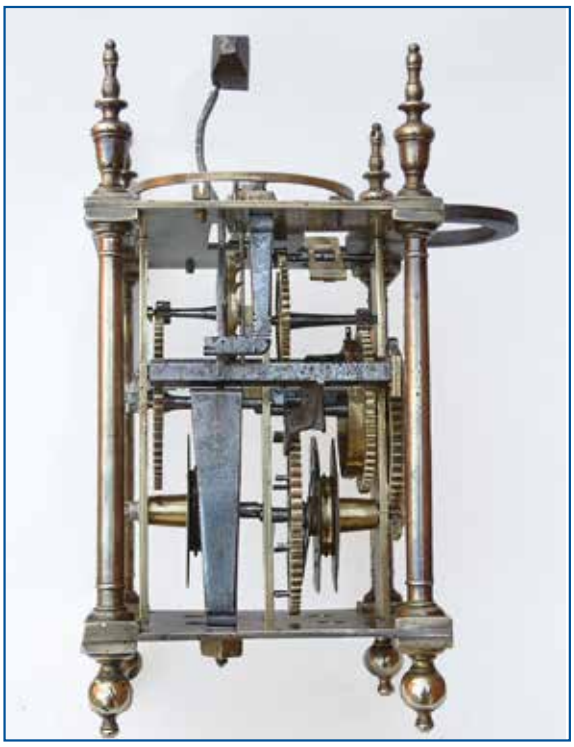


Figure 22 (above left). Front of the movement with an iron hour wheel and a five-leaf pinion-of-report.

Figure 23 (above right). Rear of the movement.

Figure 24 (left). Left-hand side of the movement.

Figure 25 (right). Right-hand side of the movement.



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ball fixed to the rim. A slot had been cut in the lead ball so it sits firmly on the rim of the balance and a restored one has been added on the opposite side. The owner reports that this considerably improves the constancy of timekeeping. Though this is the only example known to date, there is evidence that the later Samuel Stretch clock once had similar lead weights added to the balance. Diametrically opposed file marks on the rim, **figure 16**, were most likely to indicate the position of former subsidiary lead balls to improve timekeeping.

While it is the balance escapement on this clock that is of most interest and importance, the rest of the movement should not be neglected. The brass wheels have four crossings, **figures 17** and **18**, apart from the warn wheel and the countwheel gear, which have three crossings. This, together with the solid starwheel and the iron hour wheel, **figure 19**, confirms the movement's provincial origin. While the arbor of the striking greatwheel has a four-pronged pinion-of-report, as usual on balance lantern clocks, the going one is a separate five-leaf brass pinion.

A few very early lantern clocks have a similar brass pinion to drive the hour wheel. Apart from this the wheel counts shown on page 41 are identical to those on other standard size balance clocks.

The three-wheel going train, has a beat of 1.5 seconds. The strikework, **figure 20**, is typical of English posted-frame clocks. Though the hammer spring is plain, the stop has been filed to form a stylised serpent's head, **figure 21**. The assembled movement is shown in **figures 22** to **25**.

Not only can Samuel Stretch now be celebrated as been the maker of a lantern clock with an original balance that has been known for a long time, but he is also in the unique position of having been the maker of two such very rare clocks. The more recently discovered clock not only has a very fine dial and front fret, it is also the only balance clock that has been so thoroughly researched and photographed.

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