DUJARDIN O

Brass dial, brass whee

French lantern clocks, especially those made in Normandy in the eighteenth century, often have an iron frame. Since these clocks are usually fitted into a tall case, the lack of the decorative brass pillars, finials and feet found on English lantern clocks is of little consequence. Though they are usually referred to as lantern clocks, they should really be considered as 30-hour posted-frame longcase movements. They usually have square or rectangular corner pillars, the examples from Normandy having very tall feet, and the bell is held on a single stand screwed to the top plate, rather than a four-armed cross-shaped bell frame. However, the clock shown in **figure 1** is very unusual in having a Gothic frame, and we need to decide if it is a re-used old movement or one that is contemporary with the dial and fret.

The dial centre is engraved with acanthus leaves and the name 'Dujardin A'Versailles', **figure 2**. The recently silvered 183mm (7¼in) diameter brass chapter ring has a large overlap at the sides of the dial plate. There is an alarm

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Figure 1. Dujardin clock with a Gothic iron frame.

disc, **figure 3**, in the centre, but the alarm mechanism is missing and has not been restored. The original iron hand has a typical fleur-de-lis design. The thin brass fret with twin wingless cherubs, an oval in the centre and acanthus leaves below, is naïvely engraved, **figure 4**. There should be two small leaves in the centre at the top, but as they are quite delicate they are often, as here, broken off. It is not uncommon to find this fret used on French lantern clocks made from about 1720 to 1750. The dial of this clock was probably made about 1740 to 1750.

Figure 5 shows the frame and **figure 6** the three movement bars. In France a posted frame is known as the cage, which is a very appropriate word as the arbors and wheels are prevented from escaping by the bars. The rectangular-section corner pillars are set at 45 degrees to the edges of the plates, being riveted firmly at the top and to a step to form feet at the bottom. There are decoratively-shaped sections at the top and where the pillars swell out to form the feet, but there are no 'noses' as found on early Gothic clocks, nor any finials. This construction is a transitional stage between the early Gothic clocks and the later posted-frame movements and was in vogue from the late sixteenth century to the late seventeenth century. The pivot holes in the movement bars have brass bushes which are probably original, not later repairs.

The movement itself, **figures 7** to **10**, is a fairly typical weight-driven mechanism with the hourly striking controlled by a countwheel, a passing half-hour strike and a crownwheel-and-verge escapement. Like most English and French posted-frame movements having

F VERSAILLES

ls, but a Gothic frame

Figure 2. Detail of the dial.

a duration of 30-hours or less, the going train is at the front and the striking train is at the rear. The hammer spring is quite plain and there is just a small amount of decoration on the hammer stop. There were once side frets, now missing, but there were never side doors or a rear cover plate, so it was probably housed in a wooden case.

All the wheels, **figures 11** and **12**, are of brass, apart from the inner shrouds of the rope pulleys, which are made of iron. Since this clock has a verge escapement there are four wheels compared to three wheels for a clock with an anchor escapement. This additional wheel, the contrate wheel, like the crownwheel, is not easy to make, so the chance to replace both of them by a single flat escapewheel was eagerly adopted by many clockmakers.

Despite this, the verge escapement persisted in France until the middle of the eighteenth century, while in Germany it was widely used on country clocks right to the end of the century. In Britain the anchor escapement soon ousted the verge, apart from a continued use in bracket clocks where its tolerance to being moved was an advantage, and within 10 years of its invention, about 1670, the anchor escapement reigned supreme. As well as the four wheels, the alarm let-off spring, which sits over the arbor of the hour hand, and the hour wheel are also shown.

Both the hour wheel and the starwheel to let off the hour strike have a series of holes drilled in them, **figure 13**. They are, of course, held together with a friction spring so that the hand can be set to time. The hour wheel has 12 holes just beyond the tips of the teeth of the starwheel, with punched dots between the holes on the front side. The starwheel has a hole drilled through each of its three crossings and 25 holes round its inner rim. These have not been seen before and their purpose is not known.

The counts of the going train are shown in a panel on the next page. This gives 134.2 beats / minute and a theoretical pendulum length of 7.8in (198mm).

The main thing to note about the striking train is that there are two locking gaps in the hoop wheel instead of a single one. This doubles the number of hammer pins on the greatwheel and doubles the running time of the striking train. Also the countwheel has a very narrow land between the locking slot after the 12 o'clock strike and the locking slot for 1 o'clock. Usually there is just a double-width slot. The striking train wheel counts are also shown in the panel on the next page.

The count of the pinion of report that engages with the gear fixed to the countwheel is shown in brackets as it was missing.

This small brass pinion, often called a nut, is usually fitted on to a square on the outer end of the greatwheel arbor. It should be a firm fit but sometimes it can be loose; since it is only retained by the countwheel it is easily lost if the latter is removed. Someone

Figure 3. The alarm disc.

Figure 4. The brass fret.

unaware of this, such as an inquisitive owner, might remove the countwheel, turn the movement over and see a very small pinion roll on to the floor into an inaccessible corner, never to be found again. As a result, making a replacement is a not infrequent task for the clock restorer.

To determine the count of a missing pinion is quite straightforward. The countwheel makes a complete rotation after 78 strikes (the usual 1 + 2 + 3 … + 12) and the greatwheel must rotate so that this number of pins trips the hammer tail. Hence the pinion needs to be the countwheel teeth times the hammer pins divided by 78. For this clock (39 x 14) / 78 = 7. For this type of pinion it is best cut in the end of a piece of brass bar using the nearest size of cutter available—it will usually be your largest one. Drill a hole the same diameter as the across-flats of the square, part off, enlarge the hole to be a close fit on the square, then round up the leaves until they turn the countwheel smoothly. Since great precision is not essential those without facilities for cutting pinions could do the whole job by hand.

The iron components of the strikework, **figure 14**, are similar to those found on English posted-frame 30-hour clocks, apart from the hammer for a passing half hour. However, there are clicks on both greatwheels, which rotate in opposite directions, like a balance lantern clock. This means that the hammer is on the right-hand side and the two arbors of the strikework are on the left—the opposite way round to a clock with a single weight and a Huygens' loop. The detents and the hammer all pivot in the corner pillars with screw-in pivots at one end, a typical French method of construction. However,

WHEEL COUNTS

Going train

Crownwheel	15	6
Contrate wheel	46	6
Second wheel	60	8
Greatwheel	58	8
Hour wheel	48	

Strike train

Fly	6		
Warn wheel	64	6	
Hoop wheel	60	8	(2 locking gaps)
Greatwheel	56	[7]	(14 hammer pins)
Countwheel	39		

Figure 5. The frame has rectangular Gothic pillars set at 45 degrees to the edges of the plates.

Figure 6. The iron movement bars. The spring for the passing half hours is on the front bar (right).

since the pillars are set at 45 degrees to the plates, it would have been difficult to drill holes for the pivots in the sloping sides, so the regions where the pivots fit in the pillars have been filed parallel to the edges of the plates.

The screw holding the verge backcock to the top plate must have come loose, resulting in the loss of the backcock, verge and pendulum. English verge escapements made in the late seventeenth and early eighteenth centuries have a normal pivot at the front and a knife-edge suspension at the rear of the verge, with the pendulum fixed firmly to the verge itself.

By the middle of the eighteenth century the pendulum was often suspended by a thin spring and connected to the verge via a crutch, just like a longcase clock. This spring suspension was often used in bracket clocks as it allowed the pendulum to be adjusted from the front of the dial. French lantern clocks often use a similar pendulum suspension, except it is hung from a thread rather than a thin flat spring, Replacement parts, **figure 15**, were made based on designs found on clocks with iron frames and can be seen in position in **figures 7** to **10**.

After describing the dial, fret, frame and movement we come back to the question: when was this clock made? All the components of the movement, and taking into account the relatively small amount of wear, indicate a date of about 1740 to 1750. This is consistent with the dial and fret, so we can be confident that the clock was assembled at that date. But the Gothic style of frame is a type that went out of use before the end of the seventeenth century. Are we to believe that Monsieur Dujardin set about making a frame that was up to a century, or even more, out of date?

In any event the clockmaker—the craftsman who cut the wheel teeth and made a working clock movement out of numerous parts—was unlikely to have made the 'heavy' ironwork such as the frame, and probably many of the smaller iron components as well. The iron frame would be the work of specialist ironsmiths or framesmiths. This was the situation in Normandy, which had a thriving clock industry since the early eighteenth century. Here the small town of Pont-Farcy has a long history of iron smelting and iron working, eventually specialising in making clock frames with their characteristic tall iron feet.

Was this a reused old frame from a worn out discarded clock that was brought back to life by adding new wheels and striking work? The frame shows no signs of any previous use and there are no unexplained empty or filled holes. It was emphasised by George White in his book *The English Lantern Clock* that previous generations of clock repairers had no compunction about leaving clear evidence of the modifications they made, such as the updating of escapements. Since it is hardly credible that a new Gothic frame would have been made as late as the middle of the eighteenth century, the obvious conclusion is that an old, but previously unused, Gothic frame was employed to make a new clock.

Presumably the clockmaker found the frame among his stock of old parts and he may have decided that since owners are not particularly concerned about

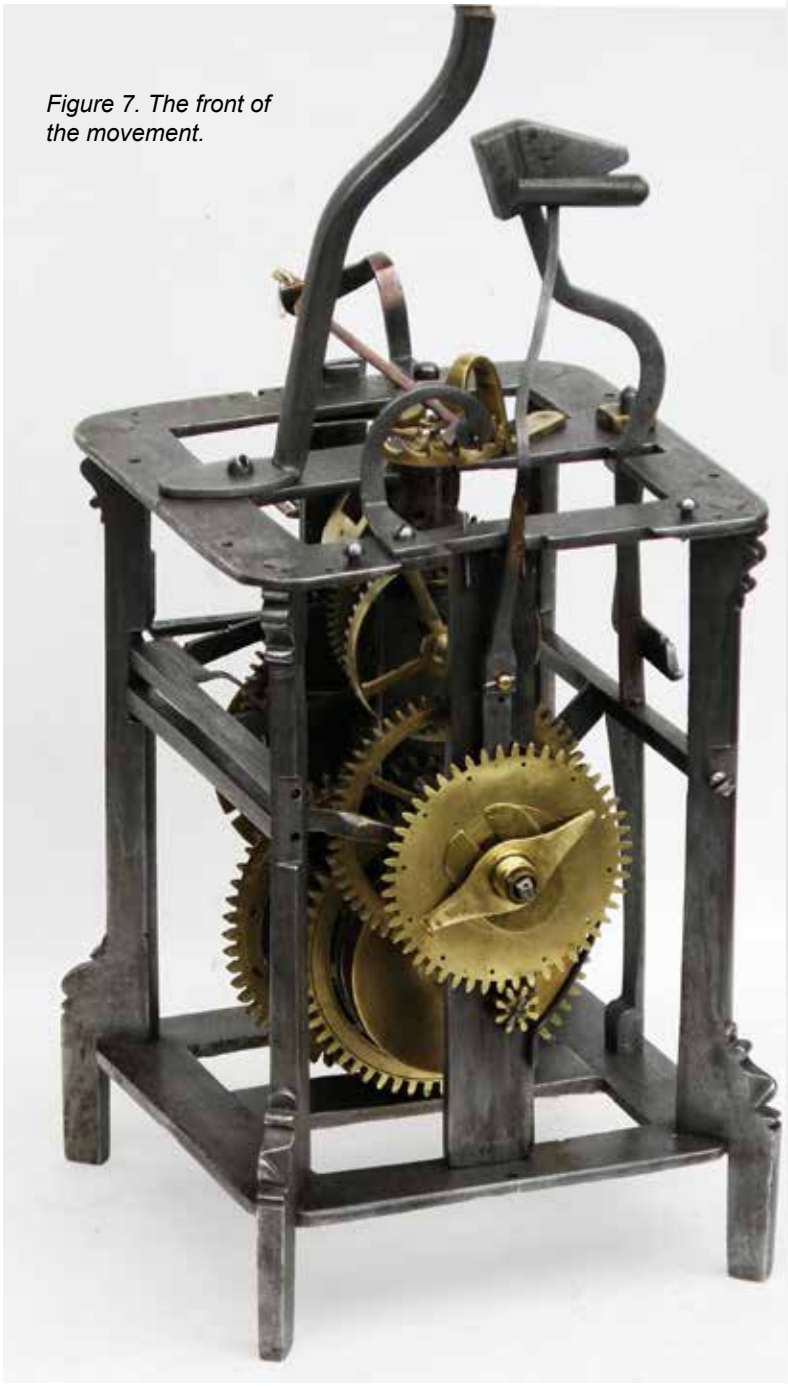

Figure 7. The front of the movement.

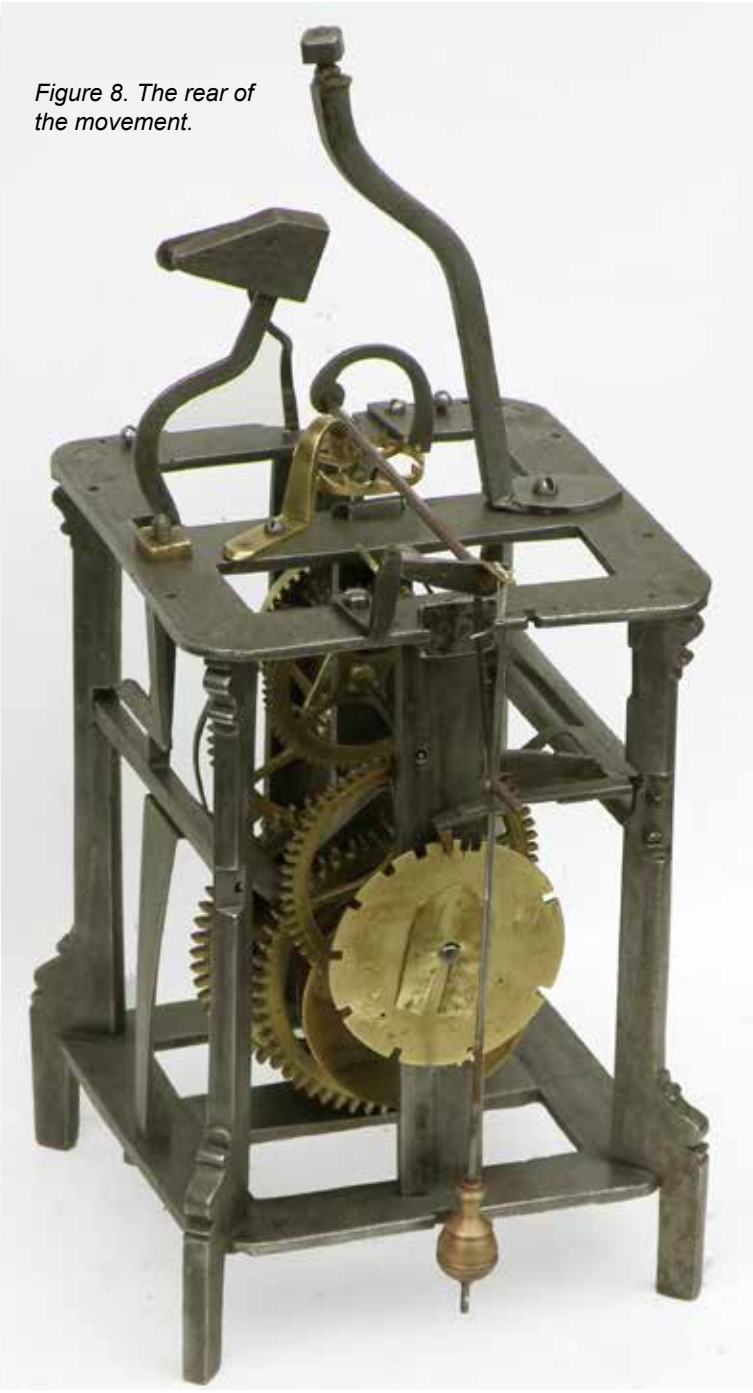

Figure 8. The rear of the movement.

Figure 11. The going train.

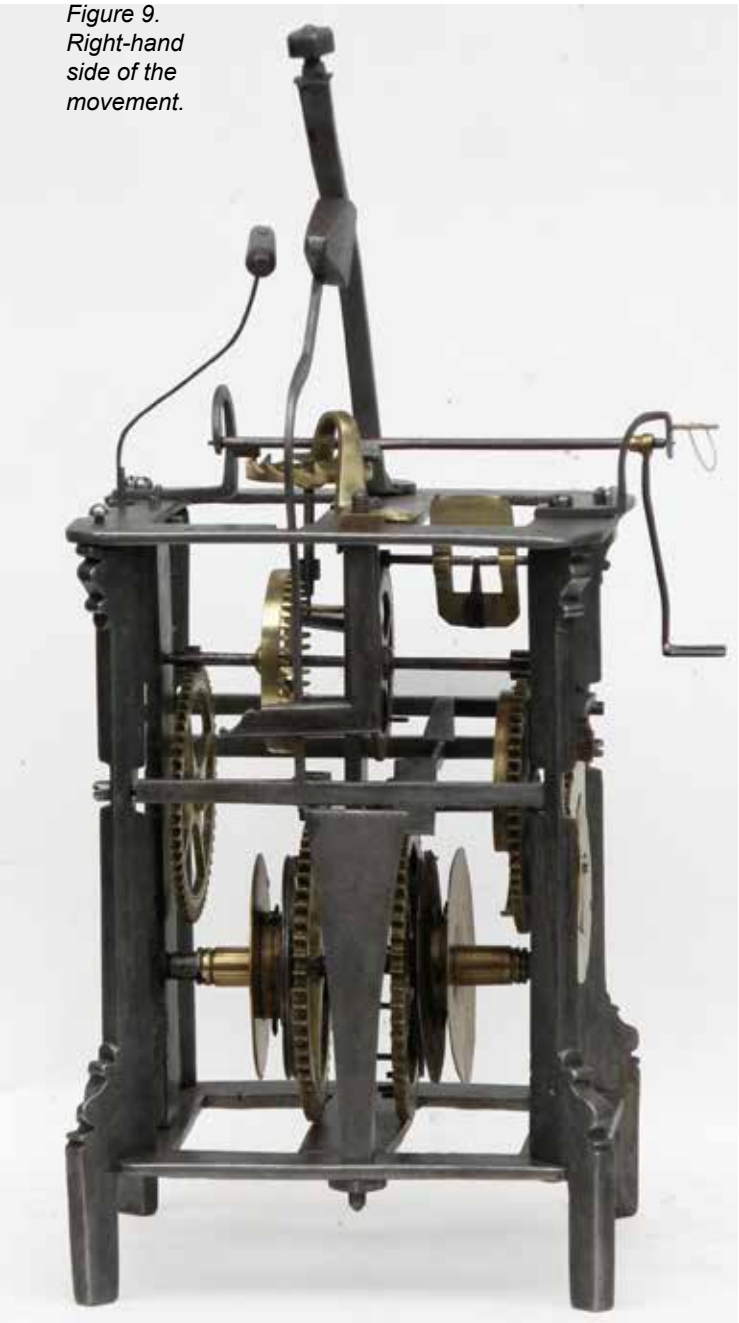

Figure 9. Right-hand side of the movement.

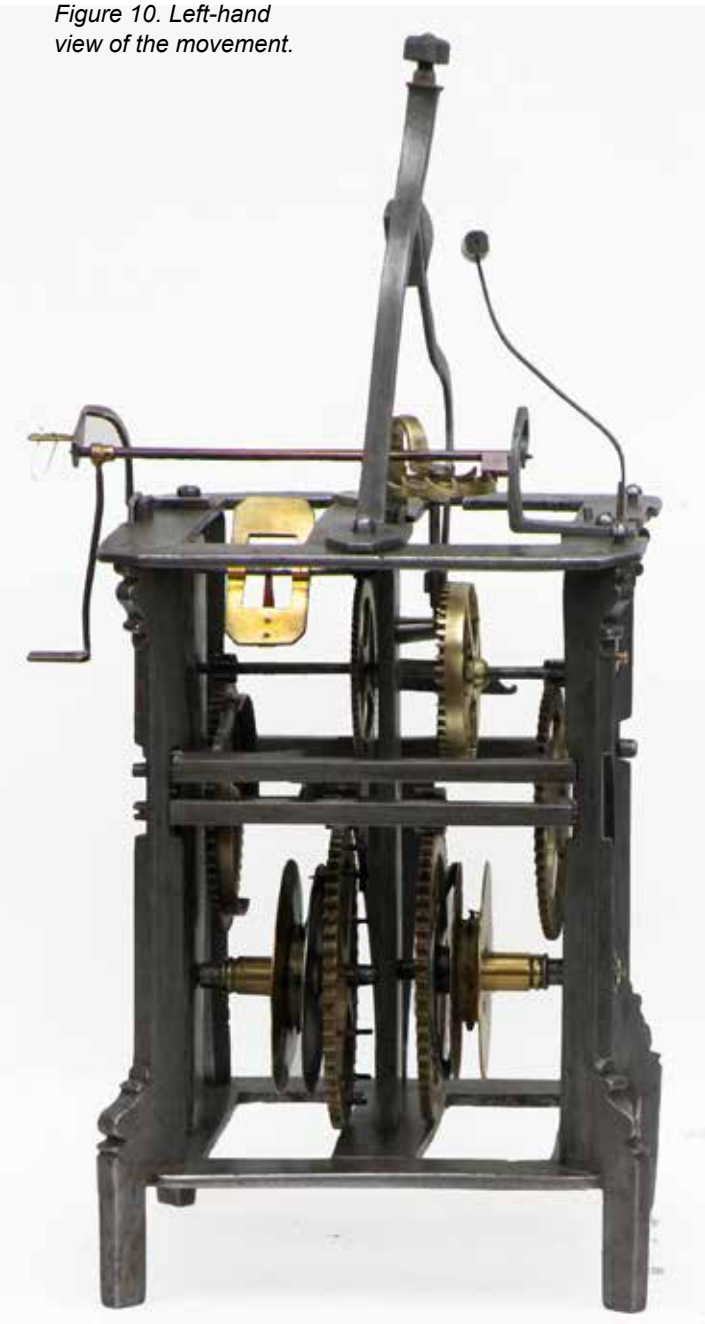

Figure 10. Left-hand view of the movement.

what goes on behind the dial, especially since the movement would be hidden in a case, he could pass it off without any objections. Alternatively, if we take a more charitable view, a customer with limited resources may have requested a clock and the clockmaker may have offered one at a discounted price if this old-fashioned frame was acceptable. The customer was still getting a new clock that would work just as reliably as one with a modern style of frame and it would cost him less.

And what do we know about the clockmaker and where he worked? Versailles is now an affluent suburb of Paris, located about ten miles south-west of the city centre. It was originally a small village until a royal hunting lodge was built nearby in 1624 and enlarged ten years later to become a small château. In 1678 King Louis XIV decreed that the court and government should move

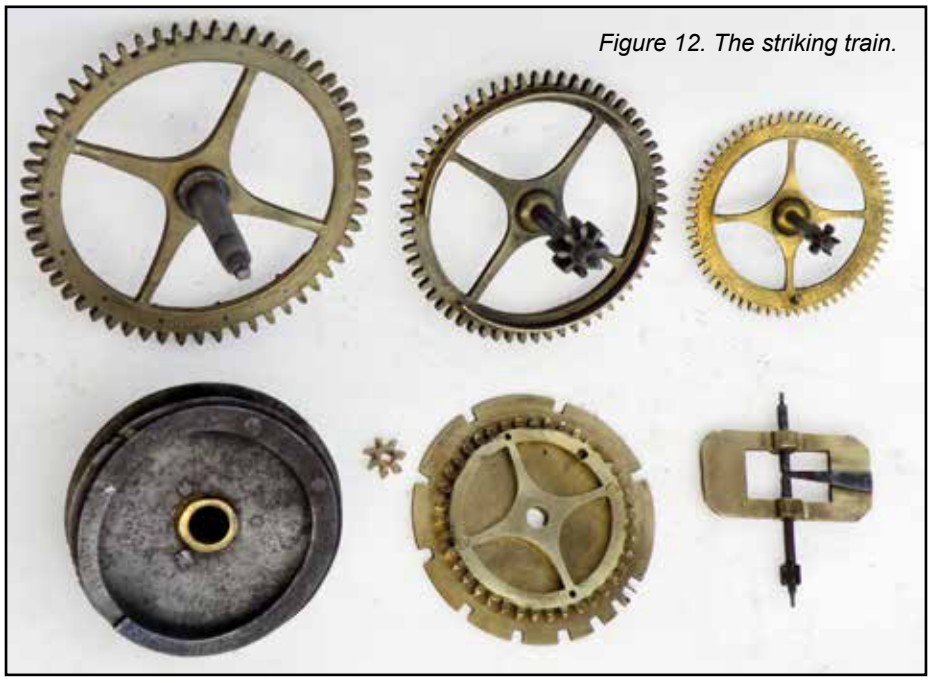

Figure 12. The striking train.

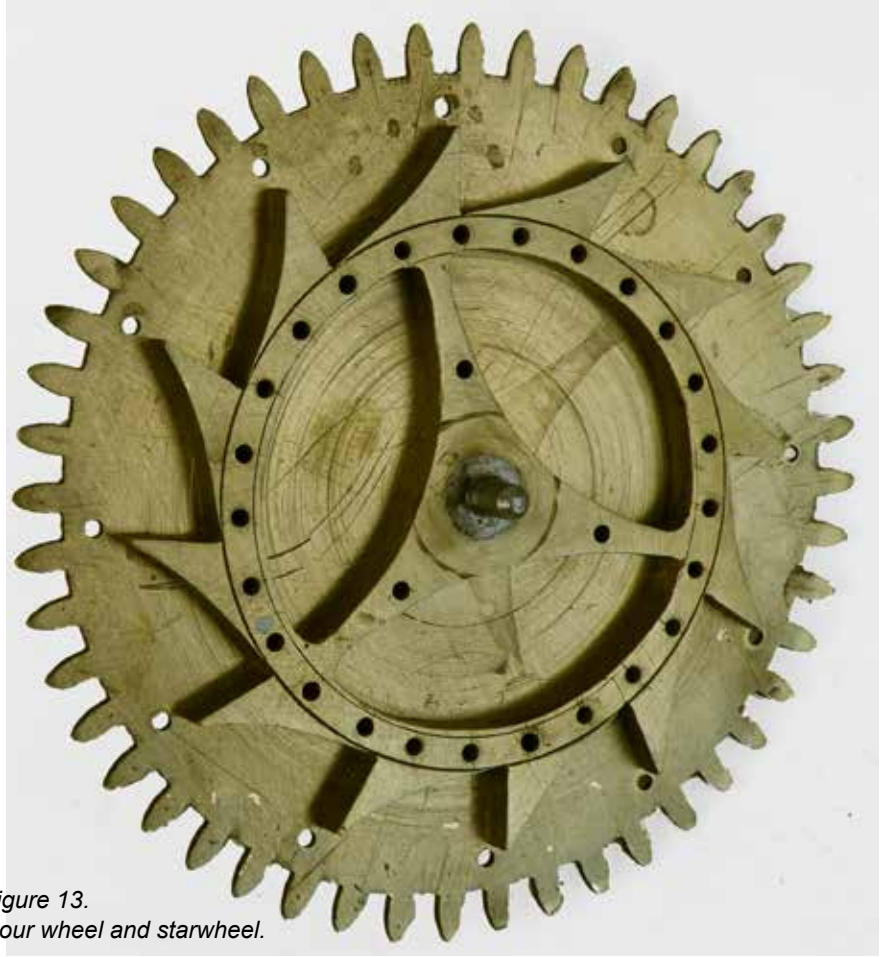

Figure 13.
Hour wheel and starwheel.

Figure 14. The components of the striking work.

Figure 15. Replacement backcock, verge and pendulum.

to Versailles and the enlargement of the château into the vast palace we know today was begun. It was on the site of the old village, which was replaced by a new city at a convenient distance. This housed those who served the needs of the king and the numerous courtiers and officials in the palace, as well as the many hundreds employed in keeping the whole enterprise running smoothly.

The royal family and the nobility, who were effectively imprisoned in the palace so they could be under the watchful eye and control of the king, purchased only the finest quality furniture, paintings, jewellery, silver and, of course, clocks and watches. These would be supplied by the most prodigious artists and craftsmen who usually, though not invariably, came from Paris. If a Parisian maker had a royal appointment to look after clocks in a given palace, he often had a small apartment there that went with the job. So even if a clockmaker was based in Paris (or elsewhere) he could still have signed a piece from Versailles.

A François Dujardin of Versailles is recorded as working for the king in 1638 and for the queen in 1618-57, probably supplying and servicing clocks and watches. A tortoiseshell clock signed 'Dujardin Versailes' and dated 1720, was sold in Monaco in 2011. This, and the clock described here, are most likely to have been made by a descendant of Françoise Dujardin, perhaps a son or a grandson. What is probably an early nineteenth century inventory lists three clocks by Dujardin in three different rooms of the Palace of Versailles, without indication of date, nor that Dujardin was resident in that city. As they are described as being of '*ebenisterie*', they are perhaps more likely to be eighteenth century than earlier.

It is extremely unlikely that the clock discussed here would have been supplied to the royal palace. It would have been made by a local clockmaker for one of the townsfolk of Versailles, which indicates that Dujardin worked locally and was not a Parisian clockmaker with just temporary accommodation in the royal palace.

This clock is an interesting example of an old, but unused, iron clock frame being pressed into service long after it would have been regarded as old fashioned and out of date. Perhaps we can all use this as an excuse to justify keeping stuff 'just in case it is needed', instead of throwing things out.

Acknowledgement

Grateful thanks are due to Anthony Turner of Paris for information about clockmakers working for the king at the Palace of Versailles and the Dujardin clocks there.