

# Restoring a Month Going Comtoise

*An Affair to Remember*

John Reynolds FBHI



with Robert Ovens MBHI



Clockmakers in the UK do not often get the opportunity to work on French Comtoise clocks. Indeed, it is safe to say that they are the acquired taste of just a handful of enthusiasts who, having got them in their blood, have several of them – as have the authors.

The subject of this article is an early example with a verge escapement and rear pendulum. I acquired it via French eBay with the help of a collector in France who has attended several of my Antique Clocks courses at Upton Hall. The minimal eBay details described it as ‘an ancient movement for a French Comtoise clock – untested and sold for restoration or parts’. It had a contemporary winding key and pendulum, but no weights. However, there were 12 photographs with the details which showed that it was a rare month-going clock.

The clue to this is that the winding holes just clip the lower edge of the enamel dial, **Figure 1**. This is a normal feature of month-going Comtoise clocks and is due to an extra wheel in the trains to achieve the longer running. I am sure that the seller was not aware of this, otherwise it would have been mentioned in the details. I could also see that the clock appeared to be in reasonable condition and that the dial seemed to be undamaged. There was no signature, but this is not uncommon for a clock of this age with this type of domed dial.

On delivery, an initial inspection of the clock revealed that although it needed a good clean, it appeared to be an honest clock.

The finely made steel hands, **Figure 1**, were in excellent condition. The small tail on the hour hand suggested that there should be an alarm-setting disc behind the hands and on looking inside, I could see the holes for an alarm mechanism that had been removed. It would be easy to work out what is missing and replace it, but this will be left for another day. There were no filled-in screw holes and the only unused holes were three in the base plate and one in the top plate due to the lost alarm work. All the other screws were marked up for correct refitting after removal. I could also see that the dial was in remarkably good condition for its age. It had a few minor chips in the enamel round its edge and some customary hairline cracks across the face. All were hardly noticeable and all it needed was a clean.

It is difficult to date these clocks accurately. This one almost certainly originates from around the period of the French Revolution, a period of social and political upheaval which began in 1789. The monarchy was overthrown, Louis XVI was executed, and a republic established, finally culminating in a dictatorship under Napoleon Bonaparte. Close inspection of the fronton (the brass casting above the dial), which appears to be original to the clock, revealed that



Figure 1. The dial and fronton after cleaning.



Figure 2. Some of the detail had been removed from the fronton shield.



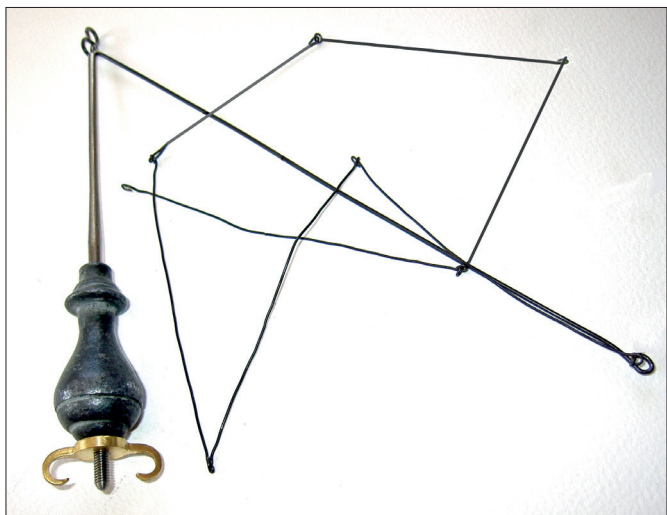


Figure 3. The wire pendulum and bob with a new rating nut.

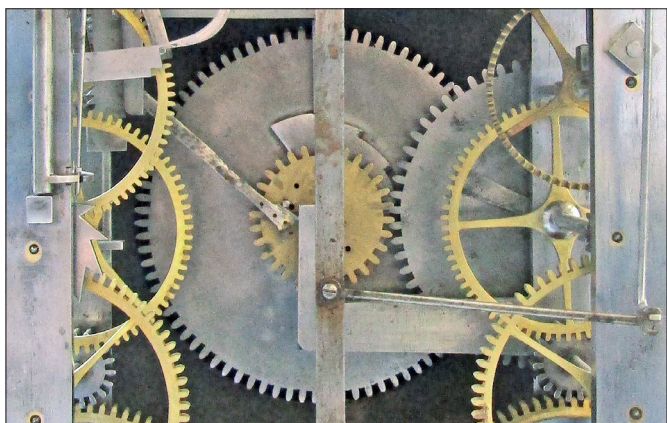


Figure 5. The iron intermediate and hour wheels without crossings.

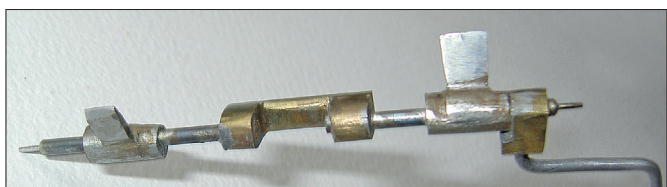


Figure 6. The pallet arbor with short pallets that came with the clock.

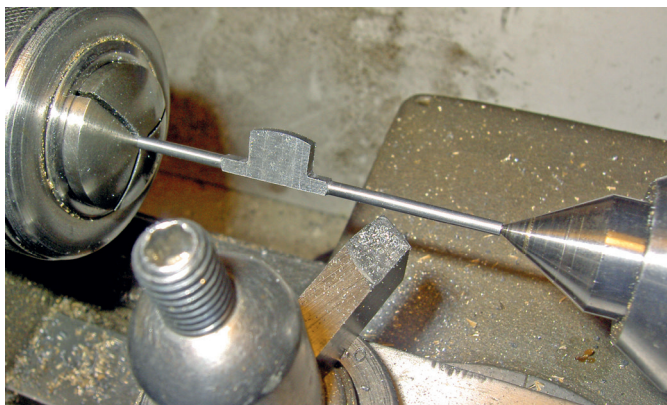


Figure 7. Turning the tapered pallet arbor on the lathe. The central gap was cut out after this operation.



Figure 4. The tall suspension post for the rear pendulum. The rear cover, removed in this photo, is held in place with one long pin through the two holes.

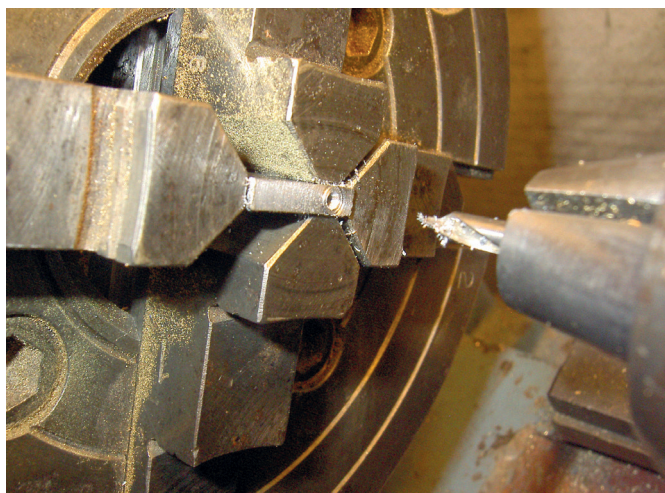


Figure 8. Drilling one of the verge pallets in the lathe.



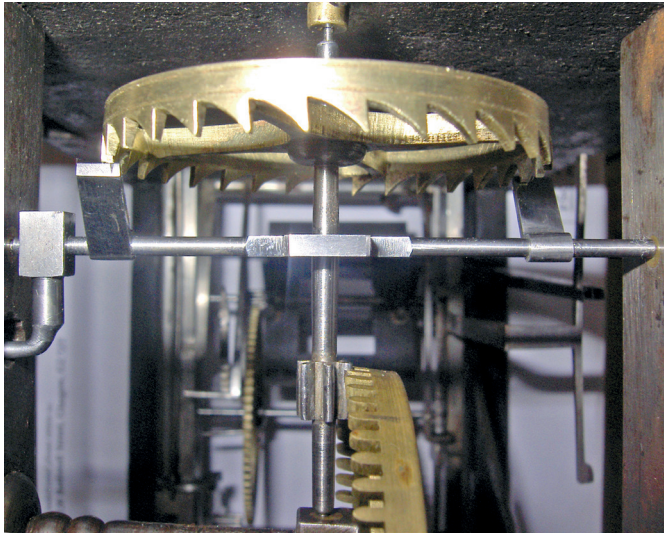


Figure 9. The finished pallet arbor in the clock.



Figure 11. The detent with the added doe's foot.

some of the details on the central shield had been removed, **Figure 2**. They probably depicted the *fleur-de-lis*: the emblem of the kings of France and something which was frowned upon by the revolutionists.

An excellent reference for those interested in these clocks is *Comtoise Clocks; The Morbier; The Morez* by Francis Maitzner and Jean Moreau (English edition published by Stampa, Dombasle, France. 1991).<sup>\*</sup> This has a guide to dating Comtoise clocks and several features are helpful in confirming a late eighteenth century date for this clock. As well as the cast brass fronton, they include the style of the hands, the thin wire foldable or collapsible pendulum rod, the tall rear suspension support with a thread suspension, and the iron intermediate and hour wheels without crossings, **Figures 3–5**.

Inside the movement, it was clear that an attempt had been made to replace the lost or broken verge pallet arbor, but there was little chance of it working, **Figure 6**. The pallets were too short and the potence had been bent down more than I would expect to try to bring the verge escape wheel into deeper engagement with the pallets, but this had not been successful. It was obvious that a new pallet arbor would have to be made and I decided this would be my first task.

<sup>\*</sup> Another very useful book is by Chris Hooijkaas, *Special Comtoise Clocks and Lantern Clocks* (Wassenaar: Hooijkaas Books, 2016), although this was not available to the authors of this article. – *Tech. Ed.*



Figure 10. The traditional Comtoise weights which were acquired for the clock.

This sort of repair is not run-of-the-mill work, at least for me, but having made a few lantern clock verges I felt reasonably confident to carry out this task.

I decided to make the pallets separately and to be a friction fit on a tapered pallet arbor. This would allow adjustment to achieve the correct angles. I reasoned that once I had got all the angles and sizes right, I could recreate the whole verge from the solid if necessary by twisting the arbor each side of the central gap to achieve the correct angles. This is probably how they were originally made.

The pallet arbor was made in one piece from 2 mm gauge plate. This was cut to shape to create the block for the central gap before turning on the lathe, **Figure 7**. The separate pallets were also made from gauge plate and for accuracy each was drilled on the lathe using a four-jaw chuck, **Figure 8**, before being hand-filed to shape.

After straightening the potence, I placed the crown wheel and the new pallet arbor in the movement. Leaving the pallets not too tight on the tapered arbor, it was possible to bring them to the correct included angle of about 70° and to check their length as well as to examine the action. This was not an easy task. The pallet tips were then hardened in the usual way, leaving them glass hard, before being polished. The arbor was then returned to the movement and the pallets set to the correct angle, **Figure 9**. Outside the movement, with a support in the gap, the pallets were tapped on tight using a hollow brass punch.

On completion of this task, the wheels and other components were cleaned and the going train assembled ready for a test. It ticked quite well on one of the 5 kg (11 lb) Comtoise weights, **Figure 10**, which my French contact acquired for me, but a little heavier would be better. This was an excellent result for a month-going movement.<sup>†</sup>

The next task was to investigate the strike train. Traditional



Figure 12. The canon wheel had multiple holes for let-off pins.

eight-day Comtoise clocks usually have double hour and single half-hour striking, and I needed to establish if this clock had these features. Double striking is when the strike is repeated a couple of minutes after the hour and is probably one of the most characteristic features of Comtoise clocks. Just turning the train by hand was not conclusive, so a wheel count and some calculations were required. As a result, I decided it was single striking, as otherwise the barrel of this train would have about twice the number of turns compared with the going train barrel if the train was to perform both functions. Single striking is not exceptional for month going Comtoise clocks of this age. Although there were three notches filed in the set off bar in an attempt to achieve double striking, this was an obvious later modification.

I could also see that there was a second pin on the cannon wheel which might cause the clock to strike the half-hours, although its location was suspect. Some month-going Comtoise clocks have a passing strike with a separate bell hammer for this function, but there was no evidence of this on the clock. Judging from the poor state of the 'doe's foot', **Figure 11**, grafted to the end of the detent and the number of holes for let-off pins in the cannon wheel, **Figure 12**, it seemed that several attempts had been made to convert the clock to half-hour striking. In the event, I decided that half-hour striking was not an original feature of this clock because, again, the additional drop of the weight would be unacceptable.<sup>‡</sup> The tip of the detent should therefore be straight without a doe's foot, **Figure 13**.

These decisions proved to be correct as under test with just single striking, both driving weights drop at the same rate.

The barrels are of close-grained wood, perhaps pear or apple, and are in good condition with no splits or cracks. There are the remains of a weight line at the ratchet end of

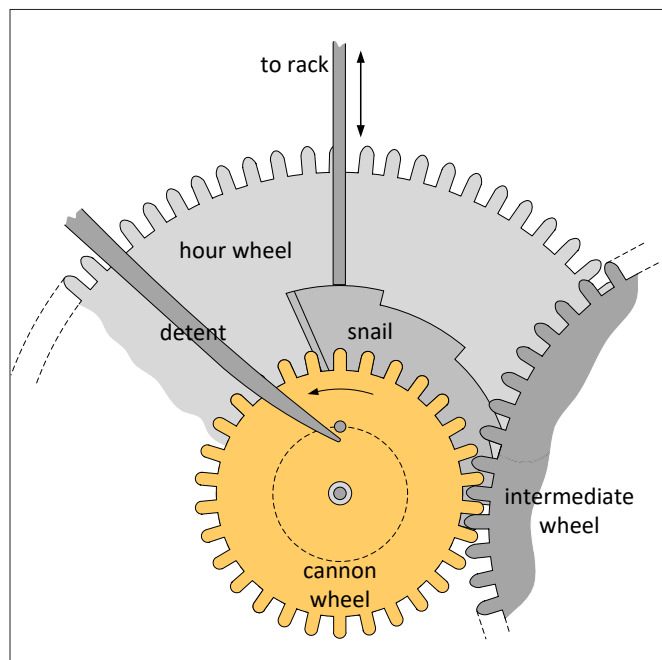


Figure 13. A rear-view drawing of the motion work showing the arrangement for hour striking only.

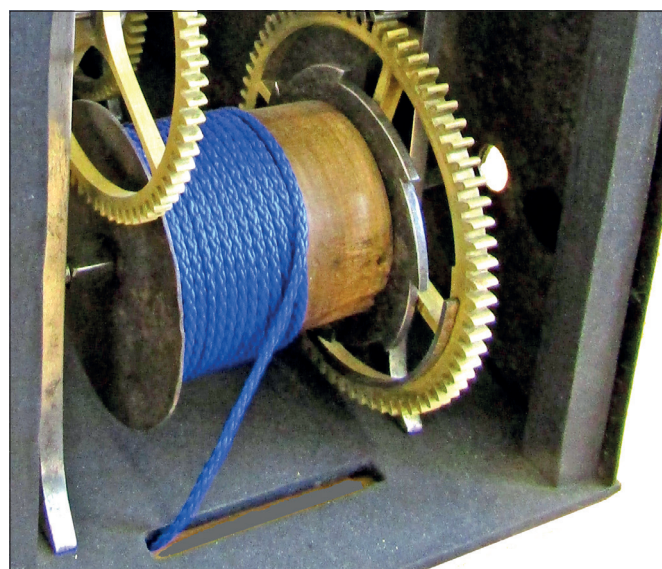


Figure 14. The barrels had been converted to fill from back to front.

both barrels, indicating that they originally filled from front to back. When I first inspected the clock, I noticed that the line fills the barrels back to front, **Figure 14**.

With this arrangement, fitting a new cord is easier as the back flanges can be removed without dismantling the movement. Restoring to original would mean having to move the wooden barrels away from the ratchet wheels, but they appear to be extremely tight on their squared arbors. I decided to leave them as they are to avoid any damage. This revised fill direction also means that the weights now start their fall as far away from the pendulum as possible.

Cleaning a Comtoise is much the same as any other clock except that there is more steel involved. In this clock, the iron cage needed wire brushing to remove the flaked paint and rust. The bottom plate was particularly rusty, and to remove it I soaked it in a shallow tray of vinegar. This was remarkably successful.

<sup>†</sup> The reviewer indicated that this is indeed an excellent result, as the drive weights for month-going Comtoise are normally about 8 kg each. – *Tech. Ed.*

<sup>‡</sup> The reviewer was not aware of any Comtoise clock without half-hour strike, or of any Comtoise that has the doors opening from the rear as in this example.



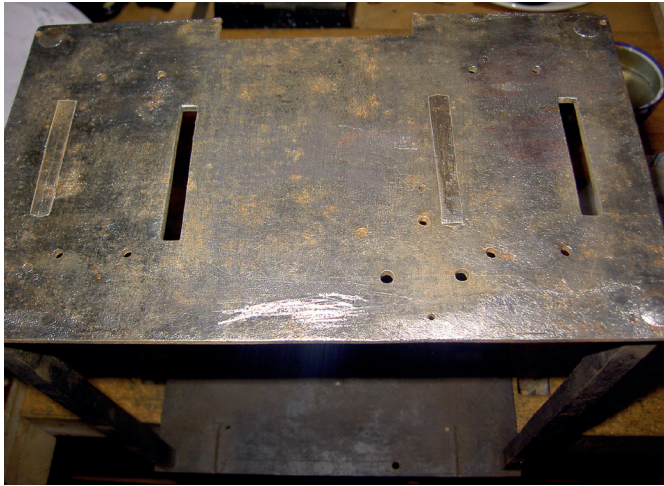


Figure 15. The bottom plate before painting, showing the filled weight line slots and the vacant alarm work holes.



Figure 16. The thread on the nose of the steel hour pipe.

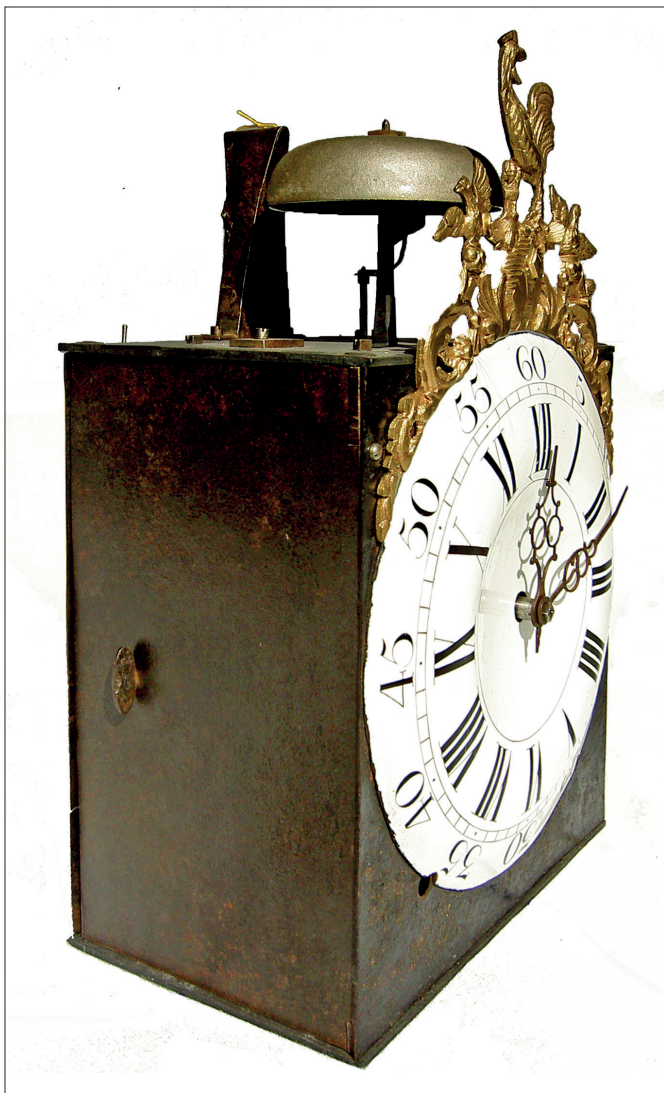


Figure 17. The front and rear plates and the doors were cleaned but otherwise left in their original state.

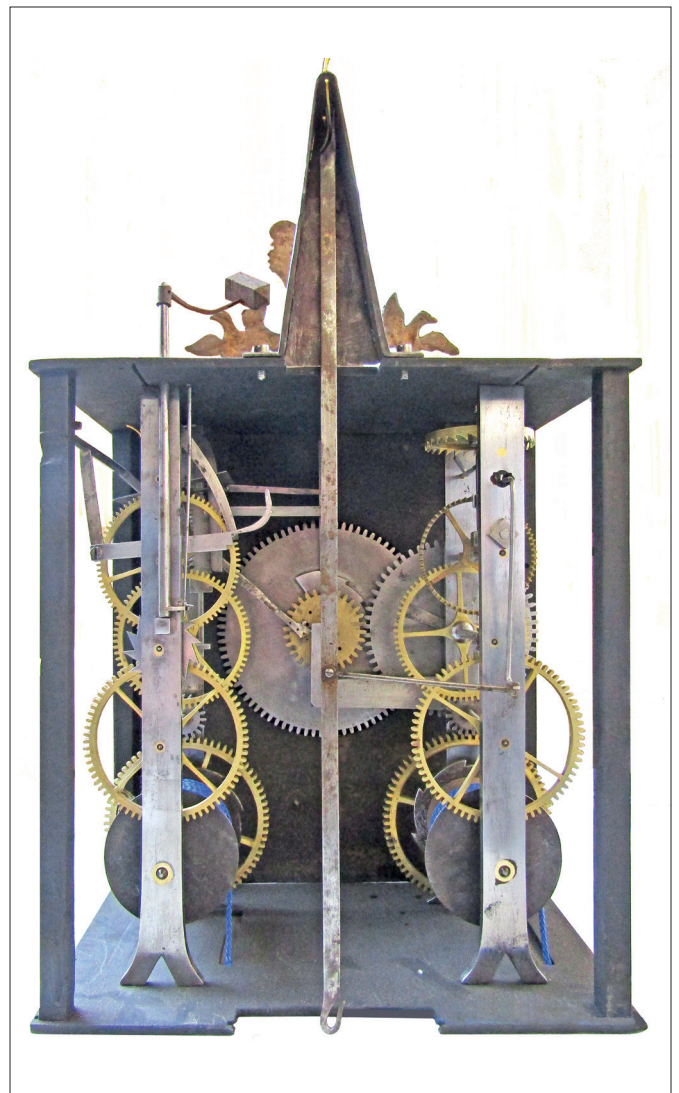


Figure 18. The rear view with the doors, plates and bell removed, showing the side-by-side trains, the extra wheel in the trains to achieve 30-day running, the link between the crutch and the suspension leader, and the tall suspension support.



This process revealed that two weight line slots had been quite skilfully filled, **Figure 15**, suggesting that the cage was originally intended for an eight-day clock which would have had winding in the opposite direction. The cage doors, which are a matched pair and look original, have catches like those on a lantern clock. However, on the time side the catch is in the way of the intermediate wheel and cannot possibly fasten on the front post. Turning the door upside down so that it latches on the back post solved this problem.

After removing the flaking paint, rust, and congealed oil from the cage, I finished it with matt black paint which seems to be the standard for all Comtoise clocks. The front and rear plates and the doors were cleaned but otherwise left in their original state, **Figure 17**.

The thin wire pendulum, **Figure 3**, is rather like a surveyor's chain. It is made up of short lengths of iron wire with a loop at each end for joining to the next length, making it suitable for transportation. It will need re-making, but for now I have replaced the lower threaded section and made a new rating nut as shown in **Figure 3**. It is actually 62 in (1.52 m) from the thread suspension to the centre of the lead bob, confirming that it is a one and a quarter seconds pendulum. With this pendulum length and a weight drop of approximately eight feet (2.44 m) to achieve 30-day running, the clock will have to hang quite high on the wall. Perhaps I will have to settle for 20-day running. They were called month-going clocks, but 20-day clocks would probably be more accurate.

On test, the pendulum swings far enough to give a pleasing recoil to the crown wheel and the strike seems to be reliable and runs at a reasonable speed. A replacement second-hand Comtoise bell of the right size would be good as I doubt whether the small, badly rusted one which came with the clock is the original.

Interestingly, there is a remarkable single turn thread on the nose of the steel hour pipe, **Figure 16**, on to which the hour hand screws. This thread continues right up to the shoulder and I cannot envisage how this was made. The hour pipe itself is also interesting as it appears to have been forged into a pipe from a flat sheet. What looks to be a crack along its length is actually a joint line. It seems to be threaded or riveted into the snail at its rear end, but I did not remove it; if it failed to go back correctly the hour hand would probably not line up with the chapters.

In conclusion, I believe this clock to be a genuine and well-made month going Comtoise of the French Revolution period. It was made up using standard parts available at the time. Later inappropriate attempts to convert it to double and half-hour striking as well as a failed attempt to repair the escapement have all been identified and ignored or corrected. All this history adds an enigmatic charm to a clock which is now running, and looking, almost as well as it did the day it left its French maker's workshop over 200 years ago.