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Comtoise Clocks

Overview and Technical Considerations

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Thirty years ago, I stumbled across a movement: a skeleton without doors, dial or hands. After cleaning it with soap and water and adding a little TLC, I hung it on the wall, made a pendulum and a weight, and it worked. Without me knowing, this was my first Comtoise clock. I was sold, and over the years I bought many more. I even wrote a book about them.[1]

In this article I discuss Comtoise clocks made in the Jura. Sometimes they are called Morbier or Morez clocks, but they were made in many other towns in the Franche Comté, the region which gave the style of clocks its name. Very interesting Comtoises were made in other regions such as the Haute-Saône and Haute-Marne, but these are not discussed here.

Comtoise clocks were made for two centuries — they are true survivors! Of course, they were developed over time, but their features were largely unchanged. After 250 years of service and collecting dirt and a little rust, cleaning is often all that is needed to make them go again. They were built well and Guy Gibbons recently said about one: 'It was a beautifully engineered wall clock, part of which seemed to be eighteenth-century and part of which seemed to be twentieth-century'. He would not be alone in drawing such a conclusion, but this particular clock was almost completely original and dated to the second half of the eighteenth century. In our later correspondence, he and I agreed that French engineering at the time was superior to English.

What makes these clocks so reliable is that they were made sturdily. With movement bars that are four to five millimeters thick, re-bushing is rarely required as the long pivots will cause little wear in the pivot holes. Separate sets of movement bars for the going and strike trains make them easy to disassemble and that also helped the clocks to survive. Dials, hands and frets did not always survive. The outside is easier to damage and subject to changes in fashion. Moreover, 30 years ago, Comtoise clocks were expensive and many have been 'doctored' to increase their value.

The clocks are interesting and collectable because of their wide range of technical variations. Standard Comtoise clocks had eight-day movements, but month-going clocks (actually, 20-something days) were quite common too, **Figure 1**. On the other hand, 30-hour Comtoise movements are almost non-existent. Many Comtoise clocks were originally furnished with alarm work, but this was often considered a nuisance and removed. The alarm disc at the dial centre was, however, usually kept as a decorative feature.

Similarly, quite a few Comtoise clocks are quarter-striking, with two trains as well as three. There is more ingenuity in the two-train movements, but the three train ones are beautifully built and can have surprises. I have a Comtoise that strikes *grande sonnerie* during the day, but switches to *petite sonnerie* during the night, **Figure 2**. Comtoise alarm clocks are rare compared with the great number of lantern alarm clocks. Regulator Comtoise clocks had only a going train with a pinwheel escapement and usually sweep seconds. Finally, there are many more special examples, such as turret clocks, **Figure 3**, so-called lantern Comtoise clocks on feet and with finials and other clocks that are quite different.

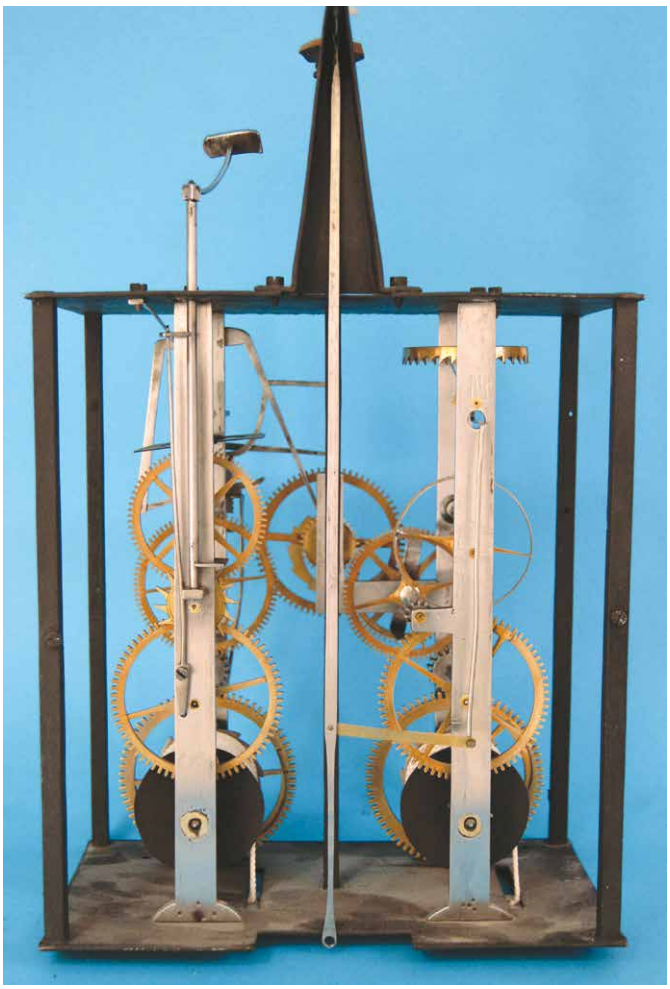

Figure 1. Back of a month-going Comtoise movement.

Most other clocks adopted anchor escapements well before the end of the eighteenth century but Comtoise clocks continued to use verge escapements until around 1850. The teeth of the escape wheels of these normally pointed down, whereas in lantern clocks they point up. Some clocks had a top and a bottom potence between which the escape wheel was mounted and, in some early clocks, the bottom potence had a single foot at the rear, while the top extended round to also support the verge arbor. In this way the escape wheel and verge arbor were all secured to the rear movement bar only, **Figure 4**.

In the eighteenth century, other escapements were also used

Figure 2. Quarter-striking Comtoise clock with grande and petite sonnerie.

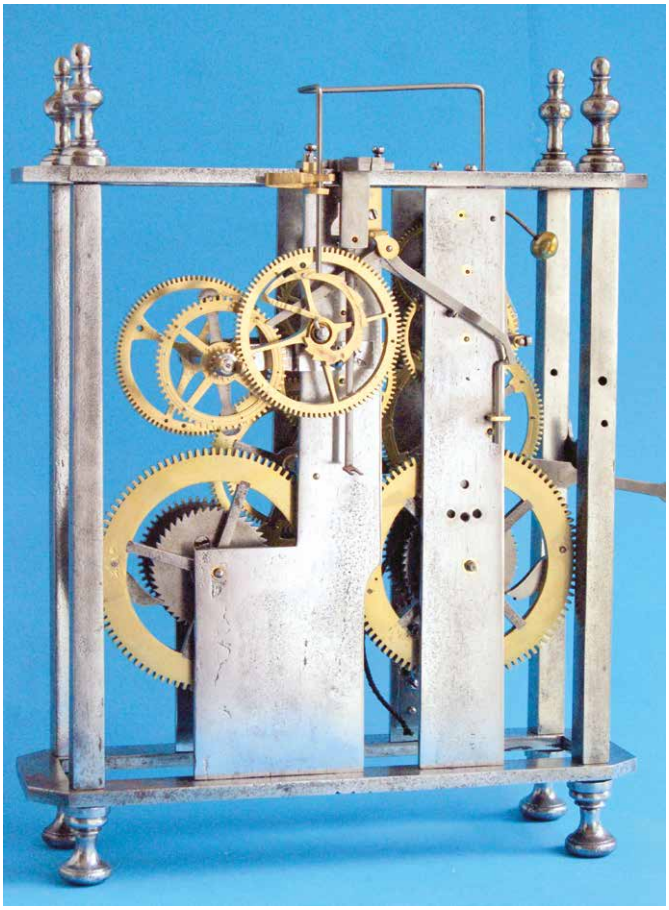

Figure 3. Small Comtoise turret clock.

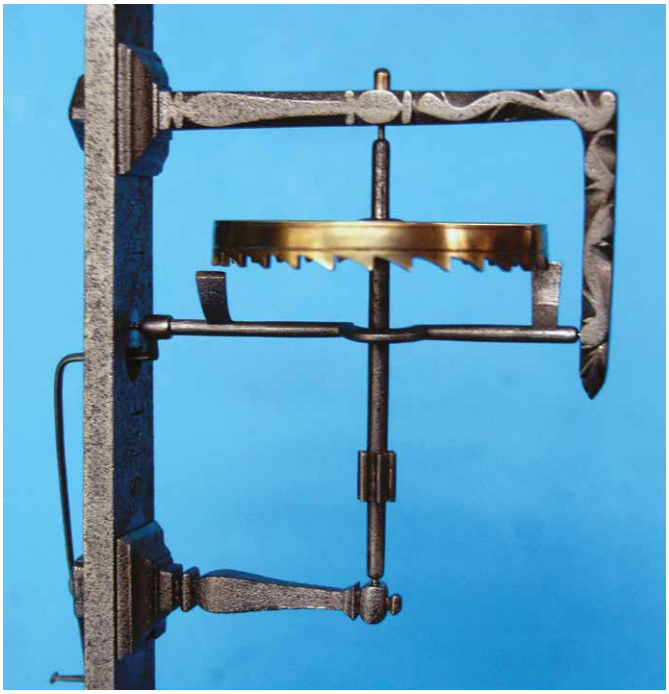

Figure 4. Comtoise escapement between potences.

such as the rare *Chevalier de Béthune*, Mayet, and the accurate pin wheel **Figures 5–7**. Use of the Graham escapement was uncommon.

Comtoise striking is interesting. The hours are repeated two minutes after the hour and, unless there is passing strike, the half hour is also struck by the strike train. A straight rack is used which falls between two guides, **Figure 8**. The rack has a sensor, seen to the left in the figure, that drops onto the hour snail. The Comtoise clock does not use 'warned striking', the strike work instead being flirted into action. For a full description of the unusual strike work of these clocks, see **Figures 17–20** on page 471.

Not only the design, but also the craftsmanship, is noteworthy. The parts for the exterior, such as the fret (pressed, cast or sawn), a *cartouche* dial, chapter ring or enamel dial were probably made by specialists. The quality of the ironwork is high. It shows that many of the clockmakers originally were blacksmiths. Edges of movement bars and other parts are crisp, even after 200 years, **Figure 9**. Bridges are dovetailed almost invisibly into the movement bars. The springs for the hammer arbors have notches where they engage the hammer arbors, preventing the arbors from riding up, **Figure 10**. The tops of the movement bars have tenons that slide into grooves in the top plate and hold them in place, **Figure 11**.

The preceding figure also demonstrates the remarkable way that many early Comtoises have decoration inside the movement that is not visible from the outside, here seen on this cock. This was also seen in the verge potence in **Figure 4**.

Figure 5. Comtoise Chevalier de Béthune escapement.

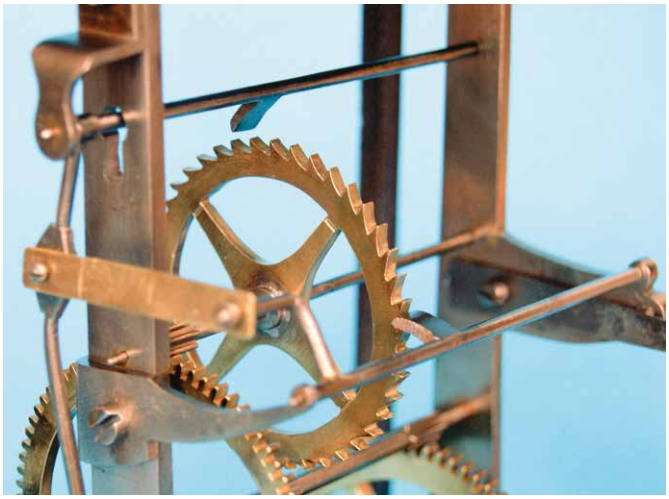

Figure 6. Comtoise Mayet escapement.

Figure 7. Comtoise pin wheel escapement.

Figure 8. Comtoise rack.

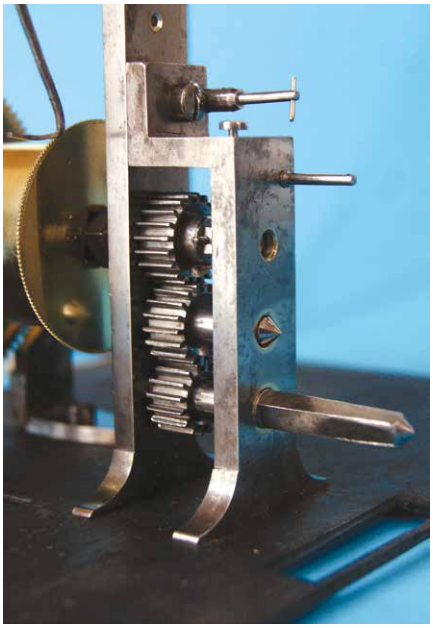

Figure 9. Crisp ironwork in a 200-year-old Comtoise.

Parts of the detents also may have patterns filed into them, **Figure 12**. Attractive balloon-shaped screws were regularly used, **Figure 13**. The fly often had pierced-out hearts, **Figure 14**, or other decoration along with similarly decorative piercing in the movement bars. Bell standards are visible and often shaped in an attractive way, **Figure 15**. Finally, on some clocks the wheels are true works of art, **Figure 16**.

In summary, Comtoise clocks are a worthwhile subject for collectors. They are affordable and easy to work on. For the amateur they are ideal because they rarely need repairs and the variety is enormous. The risk is that once you have bought one and studied it, you will want more!

Note on Author's Book:

Chris has written a book in combined Dutch and English *Special Comtoise Clocks and Lantern Clocks* that is richly decorated with over 2200 photographs. It is A4 size, hardcover with 336 pages and can be ordered for €49 (£44) + €10 (£9) for shipping at chris@hooijkaas.net which can if unavoidable be paid in sterling or by PayPal. Information requests and general emails are always welcome.

The book is being reviewed for the *HJ*.

ENDNOTE

1. Chris Hooijkaas, *Special Comtoise Clocks and Lantern Clocks* (Wassenaar: Hooijkaas Books, 2016).

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Figure 10. Notches on springs to hold hammer arbors in place.

Figure 11. Clock frame post secured by a tenon in a groove. Also illustrates a decorated cock.

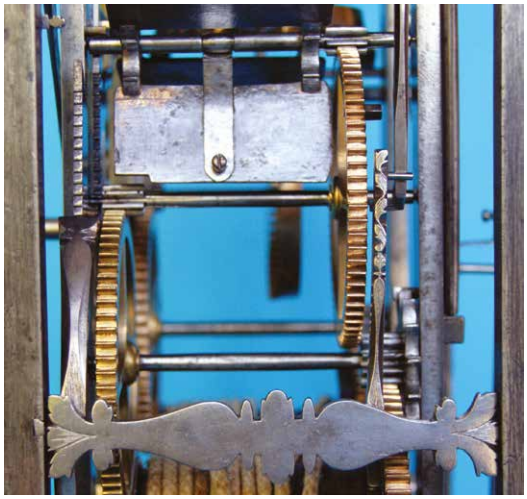

Figure 12. Decorated detent.

Figure 15. Finely decorated steelwork.

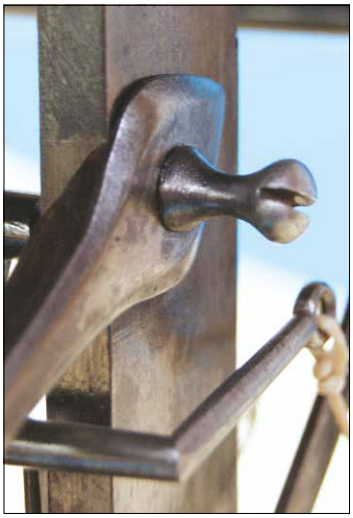

Figure 13. Balloon-shaped screw.

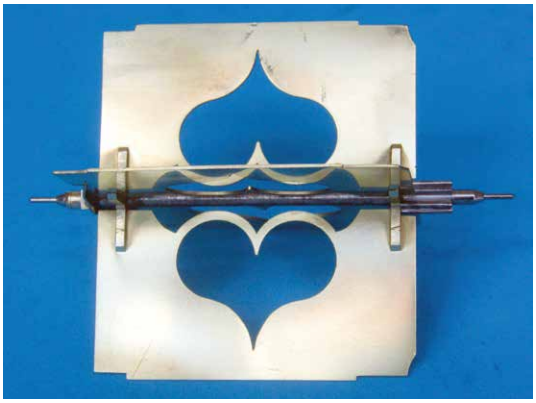

Figure 14. Decorative piercing on the strike fly.

Figure 16. The beauty of wheels.

Author Bio

Chris Hooijkaas was born in the 1950s. He worked for an oil company until 2010, sometimes in the Netherlands, but mostly abroad.

He has always been a collector. When he acquired a Comtoise clock in Egypt without a dial, doors or rear cover, he was sold on the simple, robust and ingenious techniques used in the clock even though he did not know what kind of clock it was. A few hundred clocks later, he is still learning with almost every clock he works on. Chris has written a book in Dutch and English about Comtoise clocks and lantern clocks with over 2,000 pictures showing all kinds of details. A new book on a broader range of clocks is underway.

Typical Comtoise Strike-Work

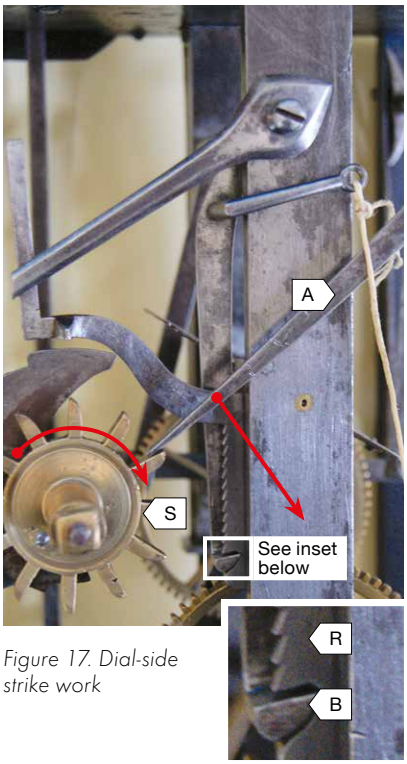

Figure 17. Dial-side strike work

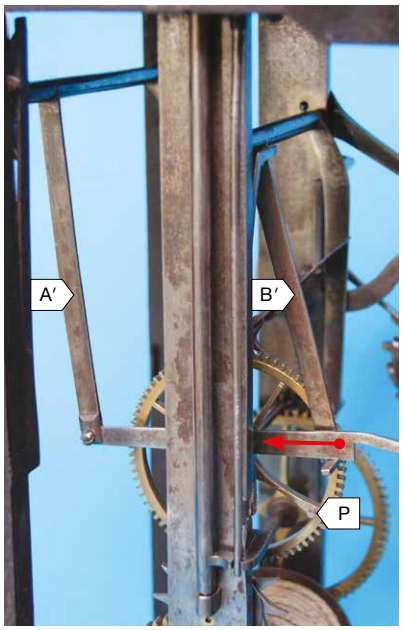

Figure 18. View from rear of the clock.

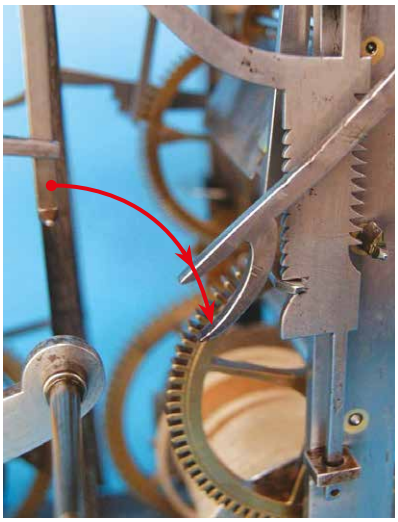

Figure 20. Forked detent.

At left, the strike work from the front (behind the dial), **Figure 17**. At right, the view from the rear, **Figure 18**. The strike is activated using two detents. The large detent pivots between the corner posts of the clock frame, just about visible in the top left of **Figure 18**. The detent has a long limb at the front, and at the rear a jointed bar with two shorter limbs.

A Front limb of large detent
A′ Rear, jointed limb of large detent; terminates in a notch.

The small detent is also pivoted to span the depth of the clock. Its front limb terminates in a latch, or 'click', that does the same job as the rack hook in normal rack-striking: locking the rack at normal times and helping to gather it up one tooth at a time during the strike. The rear limb of the small detent terminates in the release lever, which engages with the notch in the jointed limb of the large detent.

B Front limb of the small detent, terminated in a click that latches the rack (**R**)
B′ Rear limb of small detent; this is the release lever, flirted out by notch in **A′**. This also locks the strike train on the third wheel locking pin (**P**).

The front limb of the large detent is gradually pushed aside as shown by arrows in **Figure 17** by a star (**S**) on the hour wheel, in this case for a single-handed clock, or by a pin (or a cam) on the minute wheel in other clocks. This causes the rear limb (**A′**) to move aside gradually (arrow in **Figure 18**). Eventually the notch falls on to the tip of the release lever of the small detent. When the tip of the star passes the front limb, this is released back under spring action, and flirts or 'kicks' away the release lever on the small detent.

This also kicks away the rack latch (**B**), allowing the rack to fall. Striking then proceeds until the bottom of the rack is raised again sufficiently high to allow the latch to fall back into its deepest position. This also returns the small detent to lock the strike train by engaging a pin (**P**) on the third wheel, see also **Figure 19**.

Figure 19 is a view from the rear of the small detent's release lever, showing the block against which the third wheel locking pin stops. Another pin (not shown) elsewhere on the third wheel lifts the notched arm of the large detent clear of the small detent at every revolution as the clock strikes. This allows the small detent to fall back freely to its locked position at the end of the strike, otherwise the strong spring action of the large detent would prevent it from doing so.

The rack is gathered up by a special pinion on the third wheel, which has one leaf longer than the others, or alternatively has an extended arbor with a classical gathering pallet. This latter arrangement is shown in **Figure 20**, which is from a *different clock* to the previous figures. For clocks with half-hour strike, the release lever is pushed away less far than on the hour, so the locking pin is released but the rack does not drop and the clock only strikes once. The hammer tail is raised by engagement with a star fitted to the arbor of the second wheel. This can just be seen in the bottom of **Figure 18**. The hammer arbor is vertical, and the star arbor horizontal, an unusual arrangement compared with other clocks.

Automatic Repeating

How do some Comtoise clocks automatically repeat the strike a few minutes after the hour? **Figure 20** illustrates such a clock, showing the special forked tip of the large detent's front limb. In this illustration the star or minute-wheel pins are not shown, but the path of their acting tips is indicated by the arrow heads.

As the clock runs, the forked detent is slowly moved aside by the star first impinging its upper tine. Exactly on the hour, this top tine falls off the pin and releases the strike work, but by now the bottom, longer, tine is still in the pin's path. This double action is indicated by the arrows. The star thus moves this bottom tine aside as it did the upper, and two minutes or so later, the bottom tine also falls off the star, re-activating the strike.

Figure 19. Strike locking block on release lever.