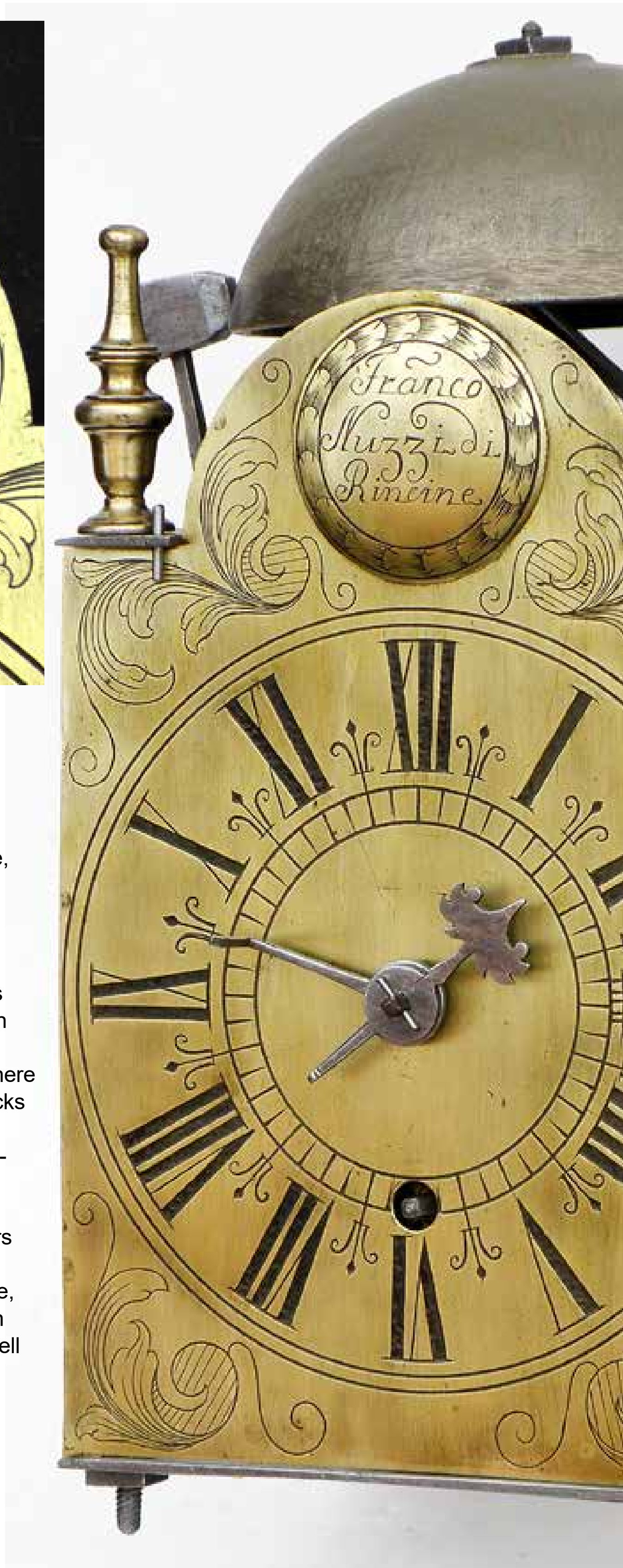
DOUBLE-SI
Nuzzi of

by **John F**

Figure 3 (above). Detail of arch and name boss with a wheatear border.



The clock discussed last month was by an unknown clockmaker, while that shown in **figure 1** is by a well-known country clockmaker. It is an Italian example of a clock made in a small rural community, rather than a major clockmaking centre. A good English example is Samuel Deacon and his descendants, who worked in the small north Leicestershire village of Barton-in-the-Beans. There they made 30-hour, eight-day and musical longcase clocks, all of high quality.

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

European clockmakers often worked in small villages or towns, either by themselves or with an apprentice, supplying just the local demand, while others worked on a larger scale and with a considerable output. The Nuzzi family is one such enterprise that made clocks in the village of Rincine located in a secluded valley about 25 miles (40km) northeast of Florence, where family members made many clocks similar to this one.

The clocks are usually of short-duration with iron posted frames and range from simple timepiece alarms to clocks striking the hours and quarters on two bells. They are of the basic lantern clock type, with some having brass finials on all four pillars as well as on the bell and also brass feet. Some only

X STRIKING

Rincine

Robey, UK

Figure 1 (centre left). Brass dial signed 'Franco Nuzzi di Rincine' on a name boss in the arch.

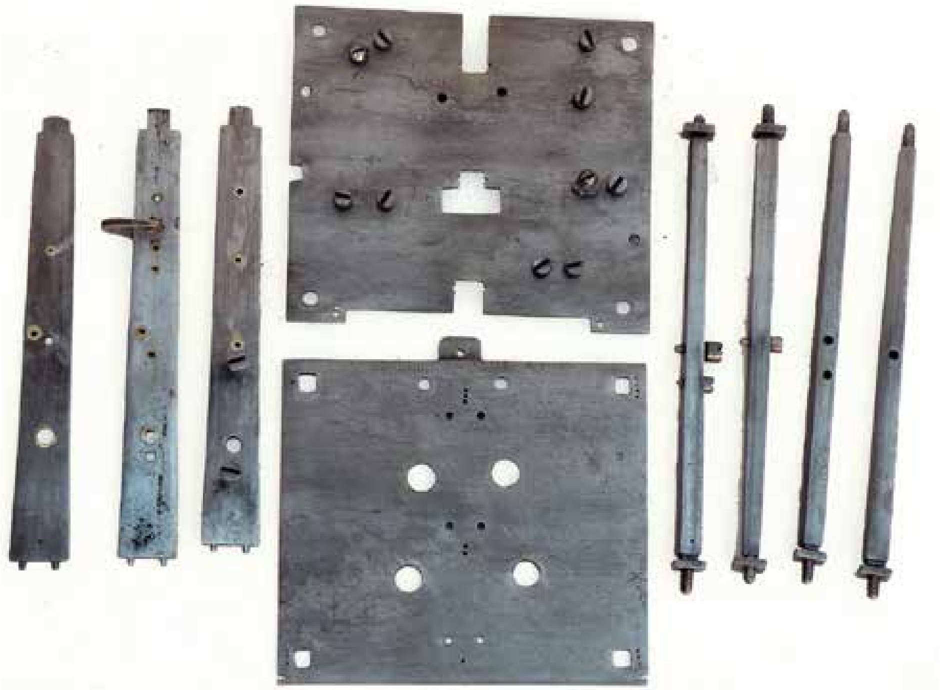
Figure 2 (centre right). Painted case 8ft 4in (2.5m) tall housing a timepiece alarm by Giovanni Battista Nuzzi. (Photograph: Cambi, Genoa)

Figure 4 (above). Alarm hand (top) and hour hand (bottom).

have finials at the front, while others have none at all, depending on how much the customer was prepared to pay. The dials are very similar and signed by Francesco Nuzzi, Vincenzio Nuzzi, Giovanni Battista Nuzzi, Giuseppe Nuzzi and Giovanni Chrisostoma Nuzzi.

These clocks would have been housed in very tall and narrow painted pine cases about 10in (250mm) wide and a towering 8ft 4in (2.5m) tall. Known as a *guardia corda* (rope guard) they were primarily to protect the rope and weights, but they rarely survive, **figure 2**. The clocks themselves are not uncommon, but have a number of technical features that are distinctly different from posted-frame clocks made in England, France or any of the Germanic countries, and they can be instantly identify as being Italian.

This clock, which is very original, was made about 1780 and is signed for Francesco Nuzzi on a domed boss in the arch. His name appears on more clocks than any of his relatives. The single-sheet brass dial is not silvered, as is usual for Italian (and French) clocks, and while a silvered name boss at least would enhance the dial, the temptation for 'improvement' has been resisted. The dial is quite small, being only $7^1/_2$in (196mm) tall by 5in (127mm) wide, and when seen by a Dutch clock collector friend, he instantly remarked 'what a cute little clock'. Two small lugs on the thin dial fit into tiny slots at the front corners of the bottom plate and two taper pins hold



it at the top, as typical of English lantern clocks.

It is decorated with simple acanthus leaves and fleur-de-lys half-hour markers, while the circular domed name boss has a wheatear border. There is an hour hand and what appears to be a minute hand, **figure 4**, but it is actually a subsidiary hand with a bent-over end to facilitate setting the alarm. Instead of an alarm disc indicating the time the alarm rings, the alarm hand is set to the unnumbered quarter-hour band to indicate the time before the sleeper is woken. A hand to set the alarm is often found on Italian clocks. Despite this being a weight-driven clock there seems to be a square appearing through a hole in the dial, but this is for setting the hour hand, *not* key winding—more on this later.

The movement has an iron frame, **figures 5** and **6**, brass wheels, verge escapement, alarm and double-six striking with repeat after the hour (*ribotta*). The slender square-section pillars are topped by tall brass finials at the front, but with just square nuts at the rear, with the screwed lower extensions acting as feet, and there is no finial on the bell. There are no side doors or rear cover.

The iron cocks, **figure 7**, for the verge, crownwheel and alarm hammer and the bell stand are fixed to the top plate by two screws rather than one screw and a steady pin, while the potence for the lower crownwheel pivot is held on the rear of the central movement bar by a screw and curves round to the front, **figure 8**. The use of a screw to hold the potence is unusual. The movement bars are fixed to the plates by the usual English and French method, while the iron rope pulleys have the circular spring clicks also used in these countries.

All the train wheels are brass and have three crossings; the brass hour wheel has four. While the going train has the usual great, second, contrate, crown and hour wheels, **figure 9**, with the wheel counts

Figure 10 (above right). The components of the going greatwheel.

Figure 5 (far left, top). The frame components.

Figure 6 (centre left). The frame held together by screwed nuts, with brass finials only at the front, and the movement bars.

Figure 7 (above). Iron cocks fixed to the top plate by two screws. Top left: alarm verge cock. Centre: crownwheel top cock. Bottom: front verge cock. Right: rear verge cock.

Figure 8. (left) Potence for the bottom crownwheel pivot.

Figure 9 (far left, bottom). The going train and motionwork.

in the panel on page 31, the greatwheel has the same special and typically Italian method of attaching it to its arbor as discussed in Part 1, **figure 10**. Many, though not all, Italian clocks repeat the hour a few minutes after the main strike on the hour, a system known as *ribotta*. This is also a feature of French Comtoise clocks, which have two hands and rack strike.

On a two-handed clock it is quite easy to add another lifting pin, but not on a single-handed clock where the strike is let off by a 12-pointed starwheel. Each tip would need to have a another point close to it, but then there would not be enough room for the lifting piece to drop and re-lock ready for the repeated strike.

The double lifting pins are on a spring strip, or sometimes a disc, squared on to the arbor, allowing the going greatwheel to rotate on its arbor. The strip with the lifting pins acts as a hand-setting friction spring and is held against the greatwheel with a taper pin. But that is not the end of the matter, because the force needed to adjust the hand is now multiplied by the ratio of the hour wheel and the pinion counts. It is like using a crowbar in reverse and what engineers call a mechanical advantage becomes a mechanical disadvantage.

The solution on the heavy iron clock in Part 1 was to move the friction bar (and hence the hand) manually. On this clock the front of the arbor is extended and filed to a square to take a key, accessed through a hole in the dial. Now using a small force to turn the arbor a large amount rotates the hand by a small amount.

Clocks where the going greatwheel rotates once an hour are mostly balance clocks and only run for about half a day, so to double the duration the greatwheel rotates once in two hours, hence the friction bar has two sets of double pins. It all seems a bit complicated, but if a single-handed clock is required to repeat the hour, this is the best way of doing it.

Figure 11. The striking train.

Figure 12 (top left). Hammer, bell stand and strikework.

Figure 13 (above left). The locking tab on fly arbor.

Figure 14 (far left). The going greatwheel showing the dished inner shroud of the rope pulley, the two sets of ribbota *pins and the hand-setting square.*

Figure 15 (top right). Components of the alarm.

Figure 16 (above). The alarm crown-wheel with the locking pin and the pulley.

Figure 17 (left). An Italian copper coin used as a replacement pendulum bob.

The striking train has the usual three wheels and a fly, **figure 11**. Instead of warning, the lifting piece has a spring-loaded pivoted tip known as the nag's head. While the nag's head was the usual method of letting off the strike in Germany and Italy since medieval times, this clock has another feature that is, as far as I know, exclusive to Italian clocks. Instead of the lifting / warning detents and the locking / warning detents being pivoted separately as on clocks with warning, the nag's head system has four detents that perform similar, though not identical functions, all on a single arbor, **figure 12**. The nag's head is towards the front and lifted by the double pins on the going greatwheel friction bar, while a single arm is forged into separate overlift, locking and countwheel detents. Both the hammer arbor and the strikework arbor pivot in the front pillars, with separate pivots that screw into the rear pillars and fit into holes in the rear of the arbors. This method is also used on French lantern clocks and is quite different to English posted-frame clocks that have cruciform movement bars.

The special feature found on some Italian clocks is the locking of the train. Instead of a locking pin on the third wheel the locking detent blocks a brass tab on the fly arbor, **figure 13**, once the overlift detent falls into a notch in the overlift cam. Not only is less force needed to release the train, but it makes assembly much

WHEEL COUNTS

Going train

crownwheel	17	6
contrate wheel	36	6
2nd wheel	56	6
greatwheel	60	10
hour wheel	60	

beat: 0.38 seconds
duration: one day

Striking train

fly		6
third wheel	42	5
second wheel	56	6
greatwheel	60	10
countwheel	42	
hammer pins	10	

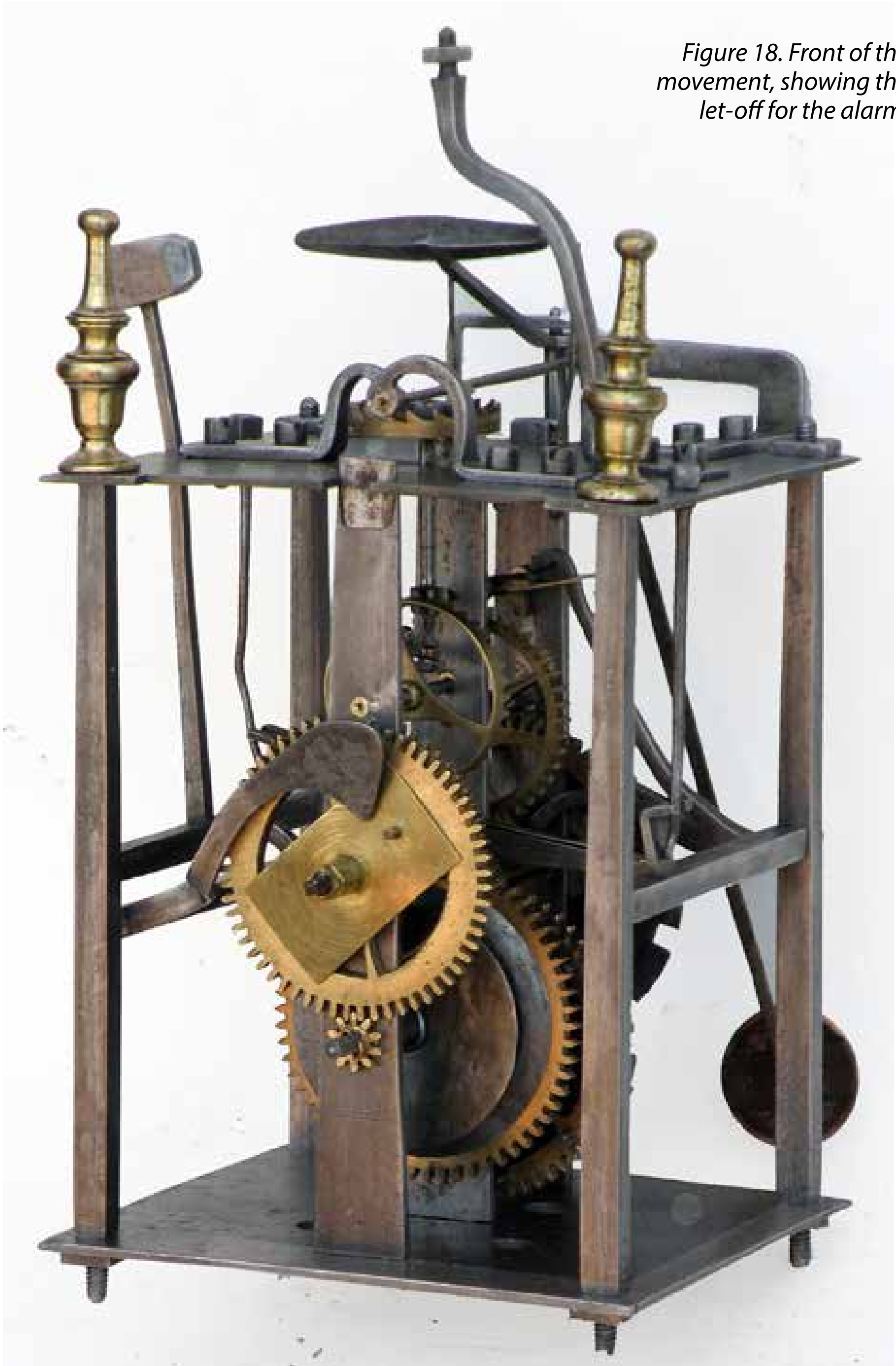


Figure 18. Front of the movement, showing the let-off for the alarm.

easier. Provided the hammer tail is not being lifted when the overlift detent is in the notch, there is no need to get the second and third wheels in correct mesh with their pinions.

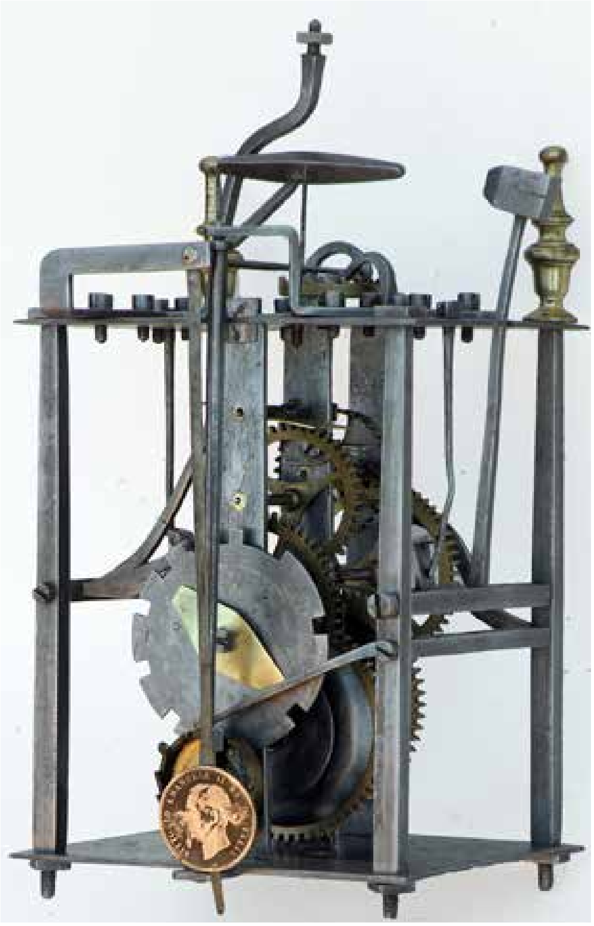
The most readily identifiable Italian feature is the double-six strike. Since the hours are struck twice, the train would soon run down, so the 1-12 strikes are divided into two lots of 1-6 and the countwheel is divided into 1, 1, 2, 2, 3, 3, 4, 4, 5, 5, 6, 6, 6. The first slot is, as usual, twice the normal width, in this case being four slots wide. In 12 hours there are 42 repeated strikes, only six more than the 78 of the more conventional system.

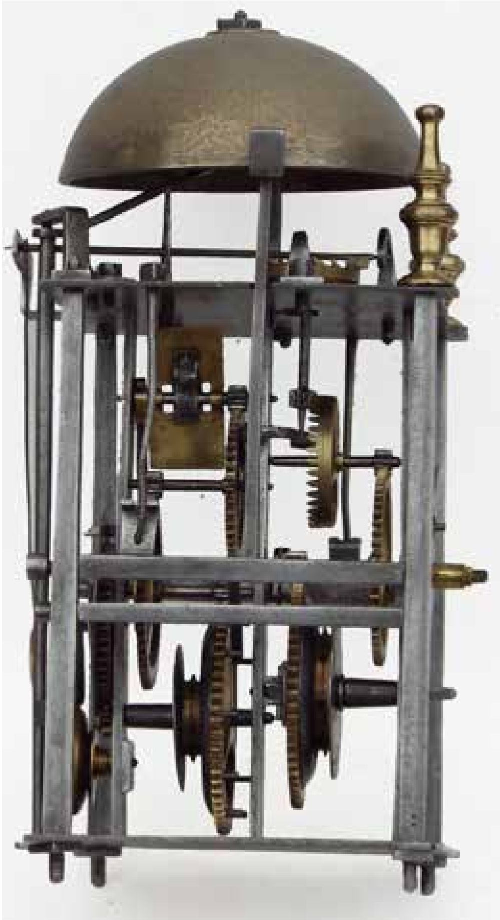
The rope pulleys also merit mentioning. The going greatwheel rotates six times in 12 hours, giving a one-day duration, while the striking greatwheel makes 8.4 turns. So that both weights fall at the same rate the striking rope pulley is only two-thirds the diameter of the going one. Both pulleys have dish-shaped iron inner

> This clock has introduced some typically Italian features.

shrouds that enclose the circular spring clicks—another specifically Italian feature that helps to keep out dirt and rope fibres. **Figure 14** shows this on the going greatwheel, as well as the two sets of pins for *ribotta* and the square extension that takes the pinion-of-report and also allows a key to be used to adjust the hand.

The alarm is comprised of the usual four components: a crownwheel with a locking pin on its edge, a rope pulley, a two-armed lever with a let-off arm at the front and a locking detent at the rear, and the verge with a hammer at the top. The alarm is situated on the back of the rear movement bar and the crownwheel, with a C-shaped click spring rather than a full circle, and





overlaps the lower edge of the countwheel. The alarm verge pivots in a small extension to the bottom plate and a separate top cock. The alarm is let off by a pin on a large square brass friction spring, riveted to a pipe that has the alarm hand squared on to the front.

The whole clock is original, apart from the pendulum bob, which became lost some time in the late nineteenth century. It was replaced by a copper 10 *centisimi* coin of King Vittorio Emanuele II, in circulation 1861-67, **figure 17**. It is fairly worn, so it was probably used to replace the lost original bob after it was no longer legal tender. The complete movement is shown in **figures 18** to **22**.

This little clock has introduced some typically Italian features, which make interesting comparisons with English posted-frame clocks.

Figure 19 (above left). Rear of the movement, showing the countwheel for repeated six-hour striking.

Figure 20 (above). Left-hand side of the movement.

Figure 21 (left). Right-hand side of the movement.

Figure 22 (below). Top of the movement, showing the verge escapement, hammers and cocks.