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ROGER DUBUIS'

# DOUBLE TAKE

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**A**ndreas Strehler's website and publicity material describes him as, "engineer for the brands, watchmaker for the few". That sums up his career rather neatly. His company in Sirmach, Uhr Teil AG, has developed movements for Chronoswiss, Moser, Maurice Lacroix and Vogard and makes components for these and other clients, often using machines he has 'designed' himself. In his early 'own-brand' watches (see QP25) he focused on watches that would give separate indications on demand, either time and date, or hour, minute or power reserve, making novel use of differential gearing to 'remember' one value while another was being displayed. This approach reached its zenith with Opus 7 for Harry Winston and his own 'Papillon'. In these watches and the remarkably understated perpetual calendar designed for Moser the magic was hidden from view, in his current watches he has become much less coy.

In 2008 Strehler registered the names 'Papillon' (Butterfly), 'Sauterelle' (Grasshopper) and any other attractive insect he could think of. While working with Chronoswiss on another project he learned that the company had another watchmaker creating, or attempting to create, a 'Sauterelle'. When Strehler pointed out that he had registered this name, proprietor Gerd-Rüdiger Lang explained that 'Sauterelle' had been the nickname of his recently deceased wife and that the watch was to be a tribute to her. Strehler gave Lang permission to use the name for a limited period. He was later to help

Top left: Describing himself as 'a mere watchmaker', Andreas Strehler has worked at Renaud et Papi, as well as making movements for H.Moser & Cie, Harry Winston, Maurice Lacroix and Maitres du Temps.

Opposite page: Strehler's Sauterelle provides a beautifully packaged solution to the age-old problem of delivering regulated energy from the mainspring.

UP FRONT AND

# VISIBLE

Andreas Strehler's previous watches have hidden their remarkable mechanisms. QP finds that in his latest Sauterelle he is 'letting it all hang out'. *Timothy Treffry*







Below: The sectional drawing (left) shows that the 3rd wheel (lower right) does not drive the 4th wheel directly but only its arbor to which the blued jump seconds hand and the locking mechanism are connected. This assembly is linked to the 4th wheel via the remontoire spring.



overcome the problems in getting the watch into production. His own Sauterelle, a rather different concept, was launched at Baselworld 2013.

#### ONE STEP BEYOND

In 1969, when the first analogue quartz watch, the Seiko Astron, appeared, people were fascinated by the seconds hand moving in one-second steps. It gave an illusion of great precision. Perhaps perversely, while Seiko has moved on to the Springdrive, displaying time as a smooth progression, devotees of mechanical watches find a special appeal in a jump second. Strehler's Sauterelle provides a jump second with the addition of a remontoire to ensure a smooth supply of energy to the escapement.

A mechanical watch is a sequence of gears delivering power from the mainspring at one end of the chain to the escapement and balance at the other. For the watch to keep good time, the supply of energy to the balance, as reflected in the balance amplitude, should be kept constant and this is no easy task. In the

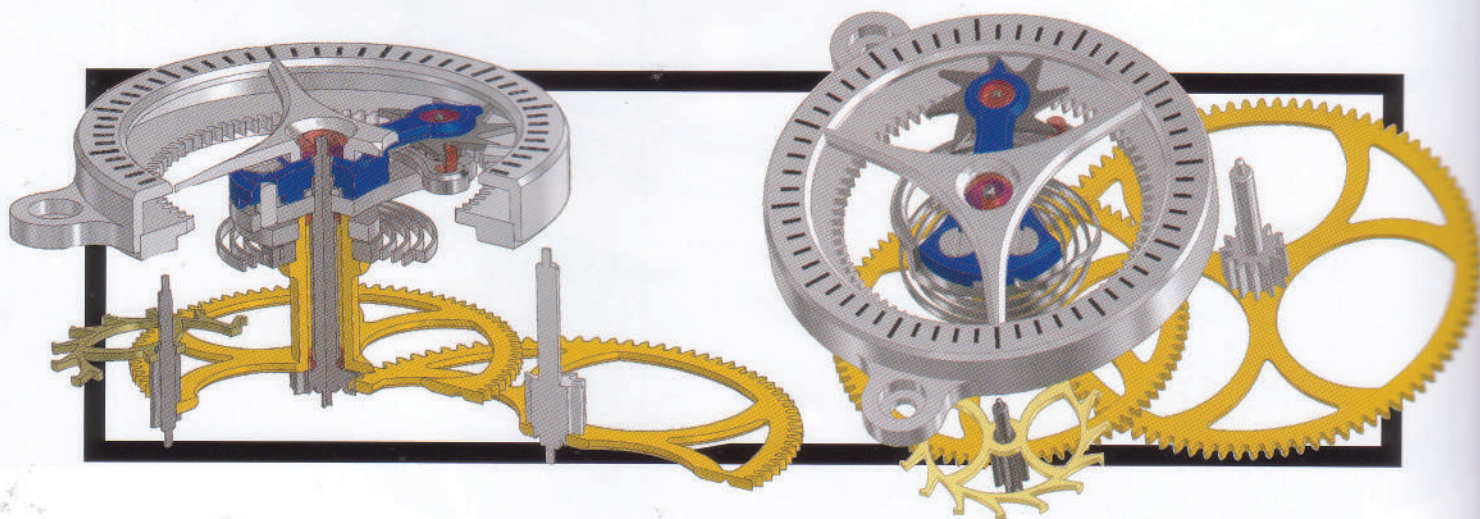
remontoire (or *remontoir d'egalité*, to use the French term) the power of the mainspring is used to regularly rewind a weaker spring closer to the escapement and it is the more constant power of this spring which impulses the balance.

Before we consider the intricacies of the Sauterelle, let's look at the watch itself. The shape is quite unusual and appealing with a horizontal tonneau-shaped dial reminiscent of a 1950s TV screen. The massive horns pull the case back into a more rounded shape. The solid silver dial is part engine-turned and part frosted,

with applied gold numerals and indices. It is a work of art. As in its predecessor, the 'Cocon', this eccentric dial is pierced at 9 o'clock to provide a clear view of the balance wheel. A subsidiary seconds dial at 10 o'clock has the blued jumping seconds hand, (the Sauterelle function) supported by a Mercedes Benz-type bridge. Looking through the apertures in this dial we glimpse the spiral remontoire spring. Unfortunately, in the images provided the locking jewel is hidden below one of those three arms.

#### ON THE WING

The rear view of the watch is really something to linger over. The movement components are supported on the skeletonised, butterfly-shaped bridge that has become Strehler's trademark. It could serve to illustrate a horology lecture. We see the twin mainspring barrels driving the centre wheel, that's the one that turns once an hour and carries the minute hand. It's not in the centre of this watch, but displaced towards the crown. So is the





dial. The spokes of the centre, and the subsequent wheels, repeat the butterfly motive. The centre wheel is also called the 2nd wheel, and using this terminology we arrive at the 4th wheel which turns once a minute and is also called the 'seconds wheel'. It carries the remontoire and the jumping seconds hand. There can be no doubt that Strehler merited the 2013 Gaïa Prize for creative horology.

The drawing of the remontoire mechanism (opposite page, bottom) represents a view from the dial side, with the 3rd wheel on the right and the 4th wheel underneath. Looking at that 3rd wheel (the large gear), we can catch up on some terminology, it is attached to a steel arbor (the vertical shaft) below a pinion (the smaller gear). Normally the 3rd wheel would drive the 4th pinion, which in turn would drive the escape wheel, but not with a remontoire. In this drawing we can't really see what's happening but for the benefit of QP readers Andreas Strehler has kindly provided a representation of a vertical section through the remontoire.

Here we see the secrets of the remontoire. The 3rd wheel is engaging the pinion of the 4th arbor, but the 4th wheel is not connected to it. It is attached to a tube surrounding the lower portion of the arbor and rotating freely on it. The top of the tube is fixed to one collar attached to the inner end of a spiral spring (a component that is similar to a balance spring), and above it an arm that curves up around behind the arbor (it's helpful to look at both drawings) and ends in a vertical locking stone. Fixed to the arbor there is an arm carrying the blue jump seconds hand, as well as an eight-toothed star wheel.



Opposite page, top: The caseback of the Sauterelle reveals the intricate work of the movement including the butterfly-shaped bridge.

Left: A sequence showing the locking, unlocking, and instantaneous re-winding and re-locking of the remontoire. Note that when unlocked the jump second hand 'jumps'. The power driving the escapement is always that of the remontoire spring.

#### STEP-BY-STEP

When the star wheel is locked, tension in the remontoire spring drives the escape wheel, impulsing the balance and keeping the watch ticking. As it does so, rotation of the arm holding the locking stone moves the stone to the right (see the series of drawings to the left) until the stone releases the tooth and the seconds hand jumps forward 6 degrees (one second on the dial). As it does so a pinion on the star wheel is driven around the fixed ring of teeth inside the seconds dial, rotating the star wheel. The 3rd wheel turns (driven by the mainspring) turning the arbor of the 4th wheel and rewinding the remontoire spring. This moves the locking stone in to catch the next star wheel tooth, locking the gear train.

After six swings of the balance, in a 3Hz movement (21,600 vph), a second will have passed and the seconds hand jumps again, like a grasshopper. The point is that for each and every second, the balance will be impulsed by the force accumulated in the remontoire spring. This remains the same until the mainspring can no longer rewind the remontoire and the watch eventually comes to a stop.

So what does all this achieve? On the performance side, the balance amplitude remains constant (for a given position) as long as the watch runs. And there is the novelty feature of a jump-seconds (or 'dead second') hand with its remontoire visible below. But the main thing of importance about the Sauterelle is that it is a very attractive, superbly finished example of truly high-end artisanal watchmaking.

Further information: [www.astrehler.ch](http://www.astrehler.ch)