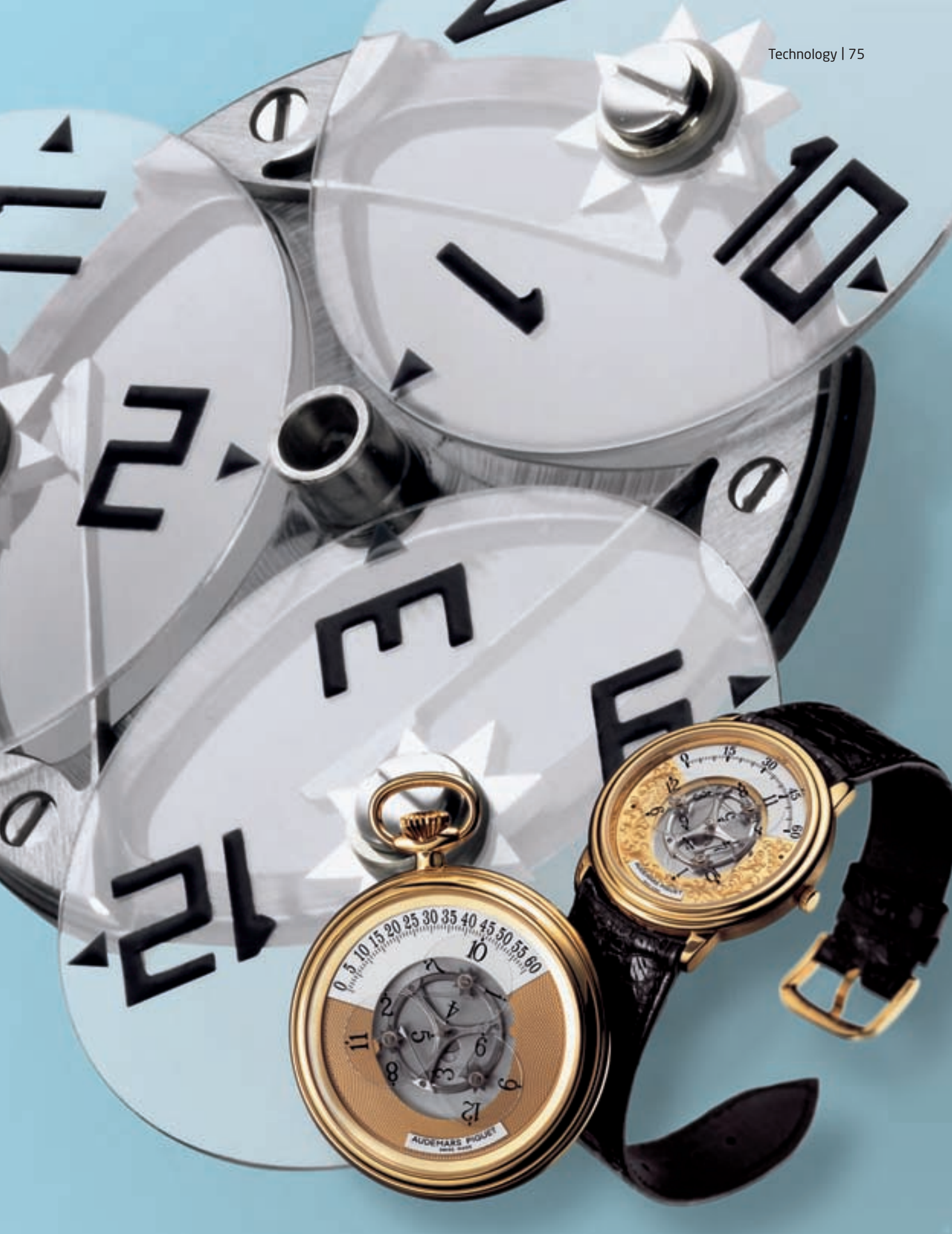
Look! No Hands

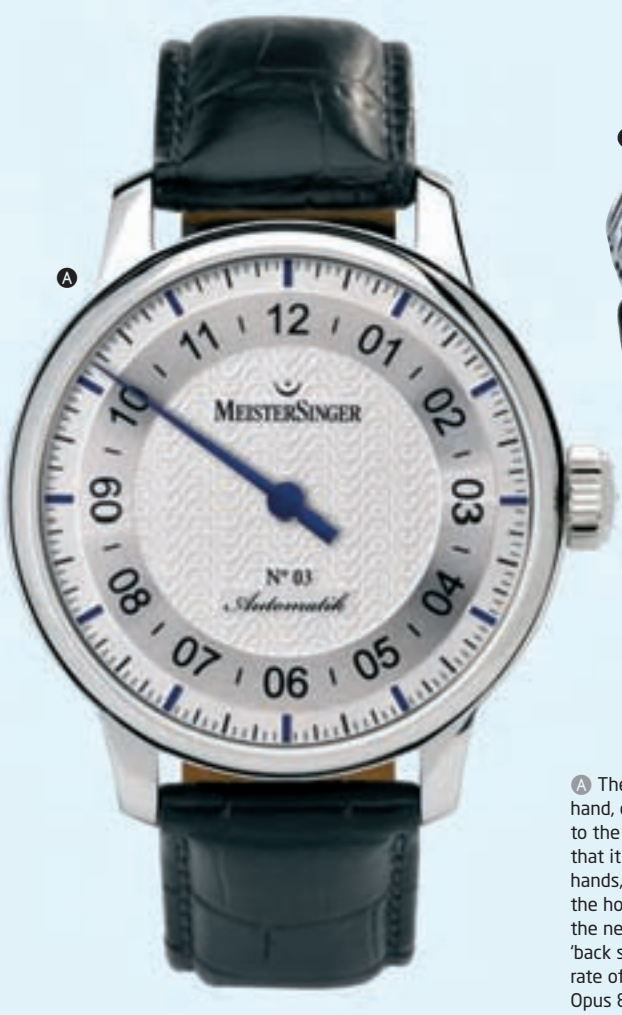
Imagine you are asked to explain what a watch looks like. The simplest and most concise description would be a circular dial with two, maybe three, thin hands turning about its centre. This convention was not around at the earliest stages of timekeeping, nor is it likely to be the final word on the subject. QP discovers how watchmakers can go hands free.

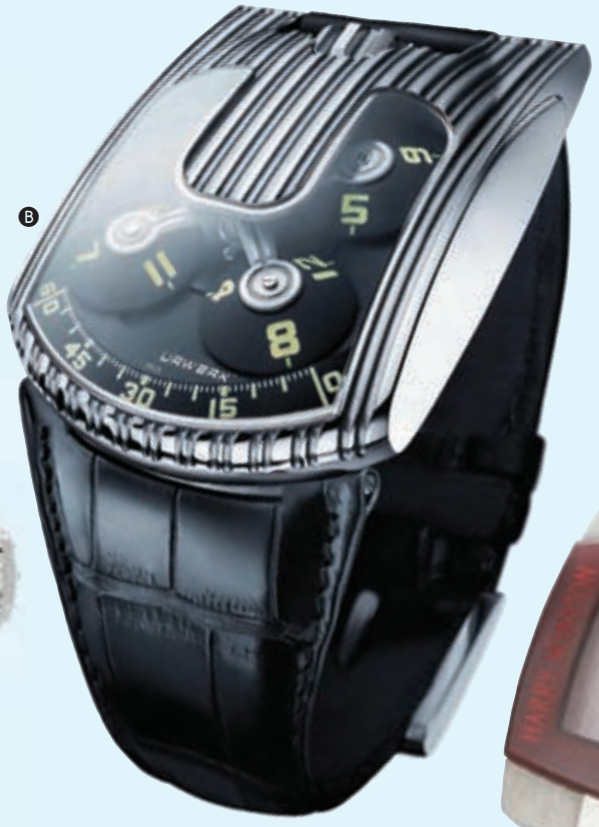
Timothy Treffry

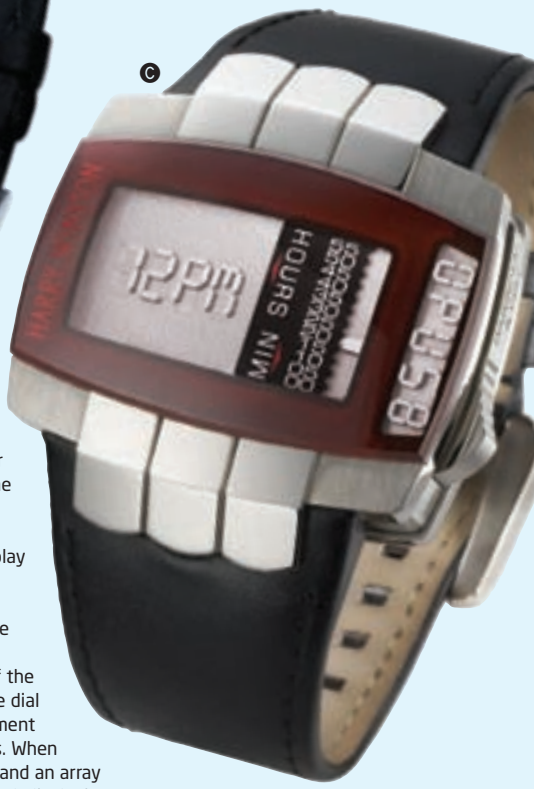
The earliest clocks had neither hands nor a dial; they simply struck the hour on a bell to tell monks when it was time to pray[1]. Early dial clocks only had an hour hand; examples can still be seen on many church towers in European cities. The German company, MeisterSinger, introduced a single-handed wristwatch in 2001. With 5-minute markers around the dial it is surprisingly easy to read the time, more or less to the minute, using the hour hand. The makers believe that this more relaxed attitude to time quickly transfers to the owner. The watch soon acquired a following and a chronograph version was released last year. This model has a centre seconds hand and the usual hour and minute recorders, but there is no minute hand or continuous seconds.

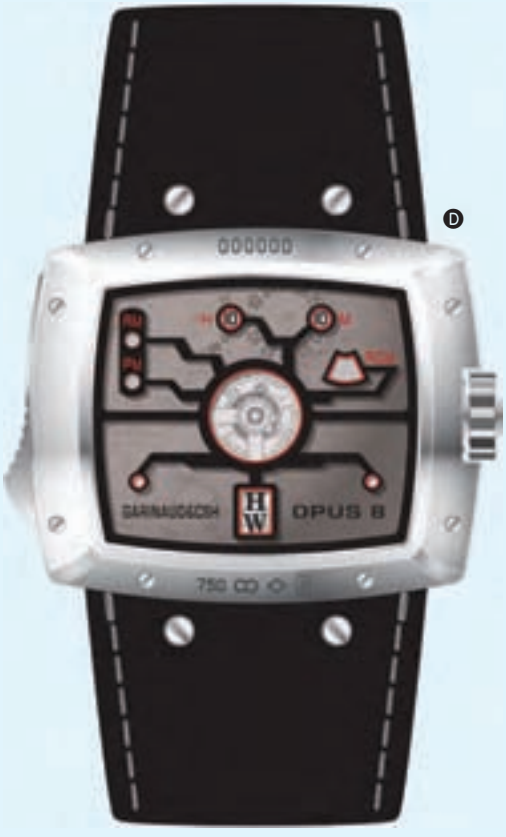
A 'wandering hour' pocket watch made by Audemars Piguet in 1929 and a similar wristwatch from the 1990s, which is still available. The hour numerals are inscribed on three sapphire discs that move across the minute sector. In the pocket watch, note that as the 10 reaches the 60, the 11 will be at 0, and the third disc, formerly showing 9, will itself turn by 90° to present the 12 when required.


AUDEMARS PIGUET





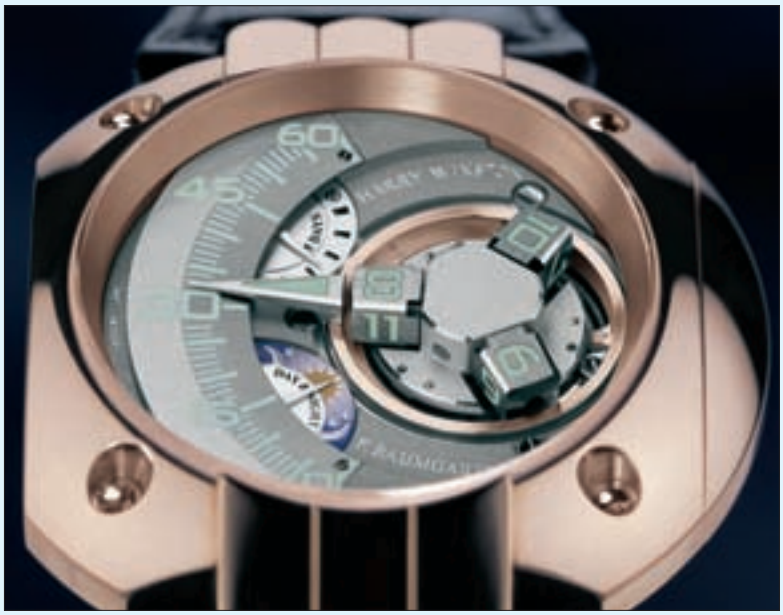


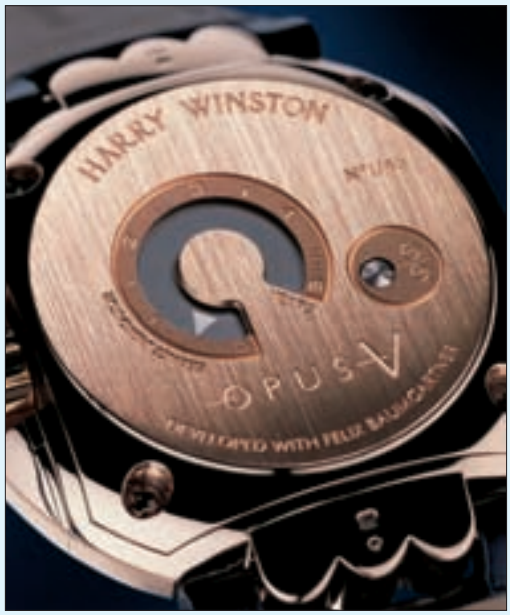


A The Meistersinger single handed watch. With the single hour hand, on a relatively large watch, it is quite easy to read the time to the minute. Introduced in 2001, the watch proved so popular that it was followed by a chronograph version, with a few more hands, in 2007. B Urwerk 103 has four, 3-number discs to display the hour. At 8:03 the disc displaying the 7 has exited left while the next disc is 'waiting in the wings' with 9 and the 4th disc is 'back stage' turning to produce the 10. The owner can adjust the rate of the watch, without recourse to a watchmaker. C D The Opus 8 by Harry Winston is designed as a mechanical version of the early LED quartz watches; it only tells the time when asked. The dial plate carries an array of metal bars to produce the classic 7-element digital display. Normally the dial is inscrutable; a flat array of 8's. When the lateral button is pushed, the dial plate is depressed slightly and an array of pins below the dial causes some of the bars to remain elevated, displaying the hour, am or pm, and the minute (to the nearest five). After 5 seconds the dial plate rises again and the display vanishes. Pins on the side on the left controls the presence or absence of the '1'. The outer disc has arrays of pins forming the hour and the central disc puts the tail on the 'P' of 'PM', converting it to an 'A' as required. The single pin on the right moves up and down to control the minute display.

Window display

Clocks and watches that tell the time by displaying numbers, rather than pointing at them, have been around for many years. An intriguing version was revived by Audemars Piguet, as a pocket watch in the 1920s and as a minute-repeating wristwatch in 1992. The system involves 3 discs that successively display the hour numerals. Each hour disc moves in turn across a segment of dial to indicate the minutes. As one number disappears on the right, another, on the next disc, appears on the left. Before its re-appearance, each disc rotates a quarter of a turn to position the next number in the sequence. The idea originated in the latter part of the 17th century, also a period when makers strove to tempt wealthy buyers with new things, and this technique was used particularly in night clocks. The metal number discs had cut-out numerals at their periphery so that the light of on oil lamp or candle, built in to the clock case, produced glowing numerals which could be easily seen in the dark. The markers on the minute crescent were also pierced so that the light shone through and the minutes could be counted.





In 2005 Felix Baumgarten produced Opus 5 for Harry Winston. In this watch, the three discs were replaced by three cubes; a clever bit of lateral thinking. Using the four lateral faces of three cubes is a good way to display 12 numbers. It is simply a matter of rotating the cubes rather than turning the discs. Such a mechanism requires a thicker watch, but chunky watches were already very much in fashion. Urwerk has used this system in its current 201 model. This is a self-winding watch and again in deference to the owner's life-style, a device on the case back can be used to vary the efficiency of winding according to activity.

Below: The hour digit on this watch by Vincent Calabrese travels around the dial to indicate the minutes. At 60, the display jumps instantly to the next hour.

When watchmakers Felix and Thomas Baumgartner, and designer Martin Frei, formed Urwerk in 1996, they produced a more contemporary variant of a 'wandering hour' watch. Felix recalled having seen the Audemars Piguet pocket watch in his father's workshop, and as a young watchmaker he had worked on the Audemars Piguet 'wandering hour' wristwatch. But the first Urwerk watch had two-hour discs, rather than three, one with the odd numbers and the other with the even[2]. This was followed in 2003 by the Urwerk 103, which has 4 discs, each with every 3rd number in the 12-hour series. The 103 incorporates an extraordinary innovation. It is well known that the timekeeping of a mechanical watch can vary with the life style of the owner. In this watch the owner can adjust the rate using a screw in the case back. There is also a rear dial to indicate when five years have passed and the watch needs servicing.

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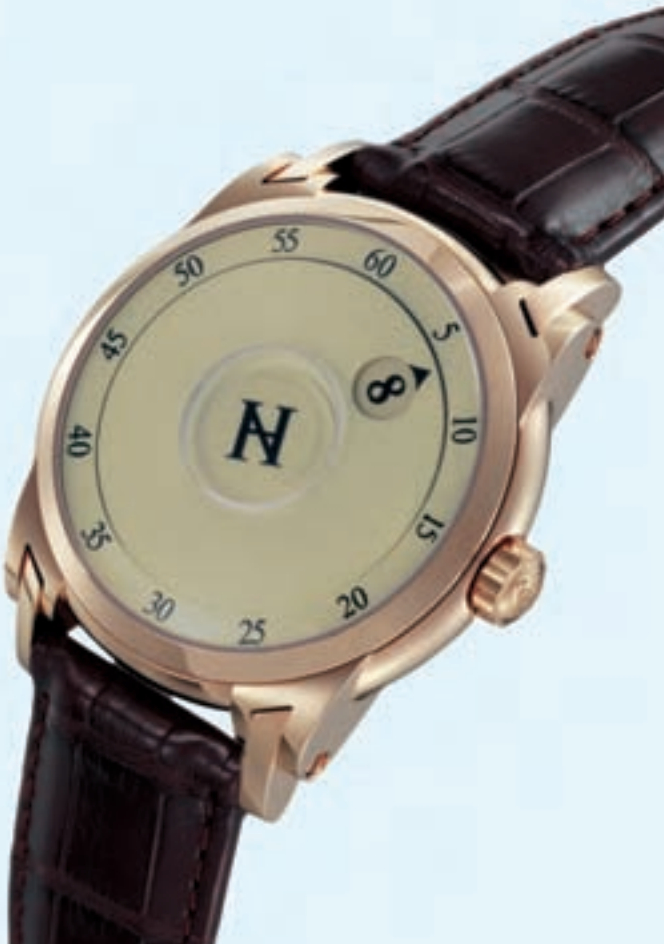
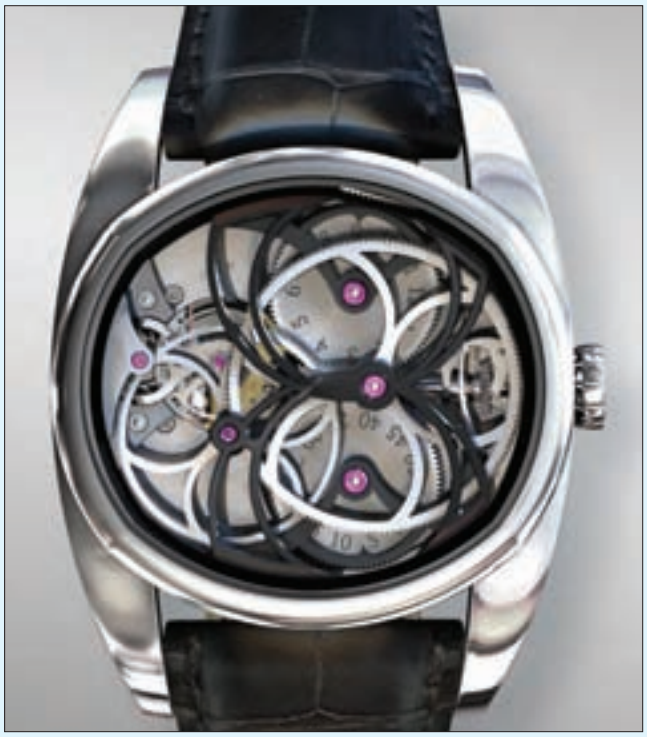
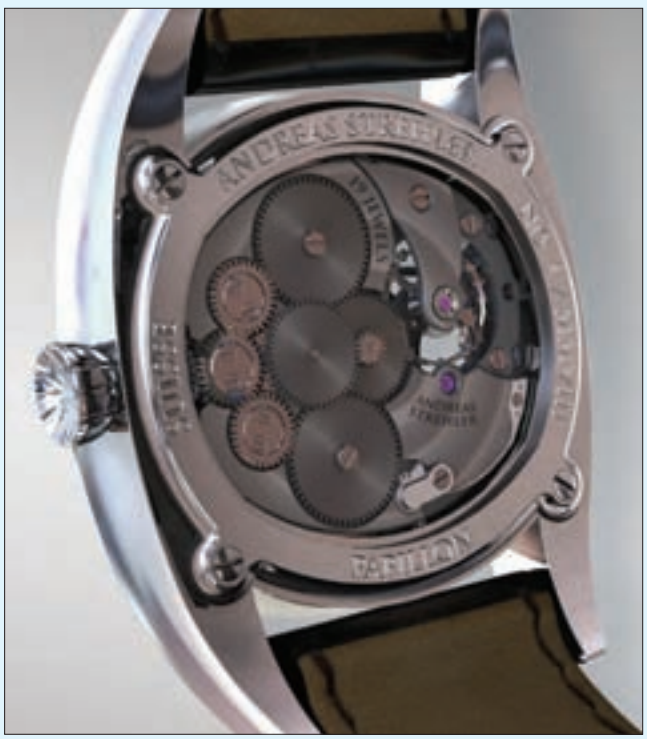
An elegant version of the wandering hour was produced by Vincent Calabrese.[3] In this watch the hour numeral rotates the full 360° around the dial to indicate the minutes. The hour disc advances instantly each time the aperture passes the 60-minute marker.

Talking digital

Digital watches swept the world 30 years ago at the height of the quartz revolution. They were typified by a 7-element display with 2 pairs of sloping vertical and 3 horizontal bars forming the iconic numerals. As Alex Doak pointed out in QP 30, a mechanical version of this has been achieved in the extraordinary Meccanico by De Grisogono. This watch however has both analogue and digital displays, so it does not







Papillon by Andreas Strehler is a skeleton watch with many features less obvious than the butterfly motif of the frame. The time, hours and minutes, appears to be displayed on the spring barrels, but they both turn at the same speed. The numerals are actually on thin sapphire discs geared to the movement. The unusually large train wheels mean that there is one less than usual. The centre wheel (in the centre of the butterfly rather than the watch) drives the pinion of the second (pivoted at the edge of a wing) and this drives the escape wheel. The rear view shows the winding wheels, the motion work (which is normally under the dial) and the balance.

qualify as a watch with no hands. The mechanical watch which is an homage to the electronic digital display, LED rather than LCD, is the latest in Harry Winston's Opus series – the Opus 8.

The design of Opus 8 was produced by Frédéric Garinaud, a former mechanic in the French Navy, who, by way of being Technical Office Manager of specialist movement maker Renaud & Papi, went on to found *La Cellule des Spécialités Horlogères*; forming a bridge between leading edge technology and watchmaking.

The dial plate of Opus 8 is based on the popular 80s pinscreen toy, which has a two dimensional array of pins that can be pressed onto a surface to mimic it. Instead of pins, the dial plate carriers an array of rectangular bars that can reproduce the classic 7-element LED display.

It will be recalled that, in the original LED watches, the power required for the display was such that it only lit up at the press of a button and went off after a few seconds. Opus 8 follows this tradition. The time is only displayed after a button on the side of the case is pressed. Below the dial plate, the watch movement rotates a disc with an array of pins, rather like the drum in a musical box, but encoding the time. When the lateral button is pressed the dial plate is lowered onto the disc and the appropriate bars remain raised a little to display the hour, plus 'am' or 'pm'. Five-minute intervals are displayed by a column of bars on the right of the dial. The time display vanishes after 5 seconds, when the dial plate rises to its original level.

The rear of Opus 8 is designed to represent an electronic circuit board, but it usefully has small apertures to indicate 'am' or 'pm' and give a continuous digital display to allow the watch to be set to time.

Fresh start

Last year's Opus 7, by Andreas Strehler (QP25), also displayed the time digitally on demand. Working on his own account, Strehler introduced his 'Papillon' this year. Technically it is very clever. Strehler is one of the most genuinely innovative watchmakers around today. He really seems to design each movement on a clean sheet of paper. Many will see Papillon primarily as a work of art; but there is much more to it than that. The fully exposed movement rewards careful study. If you look closely enough, you can see discs showing the time in hours and minutes superimposed on the spring barrels. It is yet another watch without hands.

[1] The word 'clock' derives from the old German for bell, *Glocke*, and should only be used for devices which strike the hour. Otherwise it's not a clock, it's a timepiece.

[2] David Thompson, Curator of Horology at The British Museum, says that a number of 'wandering hour' pocket watches using this two-disc system were made in the late 17th century; including one made by Windmills for William III.

[3] The brand has recently been purchased by Swatch Group. Vincent Calabrese will work on the development of new models for Blancpain, under the direction of Marc Hayek, and also have a seat on the Board. It is not known if his watches will still be available.