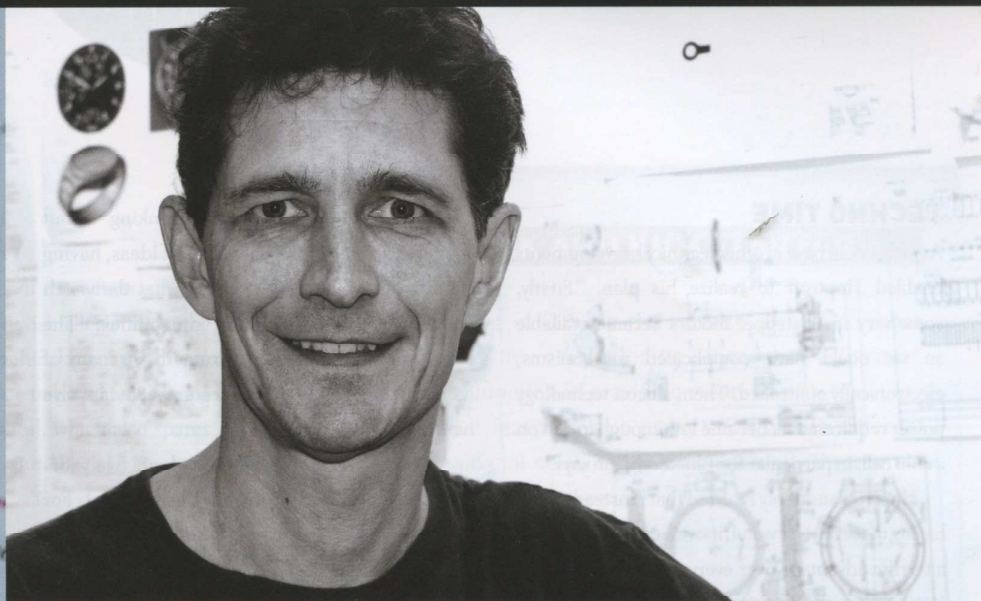




HOPTROFF

A PhD PHYSICIST, AN OBSESSION WITH TIME AND ONE EUREKA MOMENT THAT LED TO A NEW BRITISH WATCH COMPANY.

BY KEN KESSLER



LEFT: The No. 10 pocket watch. ABOVE: Richard Hoptroff.

The best word to describe a visit to Hoptroff is "disarming", not least because it is based in a decommissioned prison. To infer immediately that the company will never have a problem protecting its stock, judging by the heft of the doors, is a given. But it also suggests a different take on the industry that is refreshing.

Richard Hoptroff, the eponymous founder, and Hoptroff's software expert Mike Plevy both occupy a design area, offices and library that do not give up their horological purpose as easily as the building shouts of its built-in security. Both are "jeans and T-shirt" kind of guys, and one would be forgiven for thinking the premises housed a super-hip ad agency or a design center for cutting-edge furniture. Then you look around and note a profusion of odd bits of high-tech – a clock here, batteries there, drawings and tools that wouldn't seem out of place in an audiophile's play space. It's geeky without the *Star Wars/Star Trek/Playstation* creepiness.

Hoptroff, with a PhD in physics, explains that he started designing forecasting software in Plevy's and his first company. "We kept in contact after I sold it," Hoptroff says, which is a good thing, as Plevy became Hoptroff's "enabler." "Around 10 years ago, I started designing watches that were impossible to produce at that time, such as one that kept you up-to-date with the stock market and one that forecasted the weather. I was designing them just for fun. I never believed I could actually make one," he says.

TOP TEN

The gestation of what would become the now famous No. 10 began, appropriately, at the epicenter of the watch universe: Greenwich. Hoptroff recalls, "I

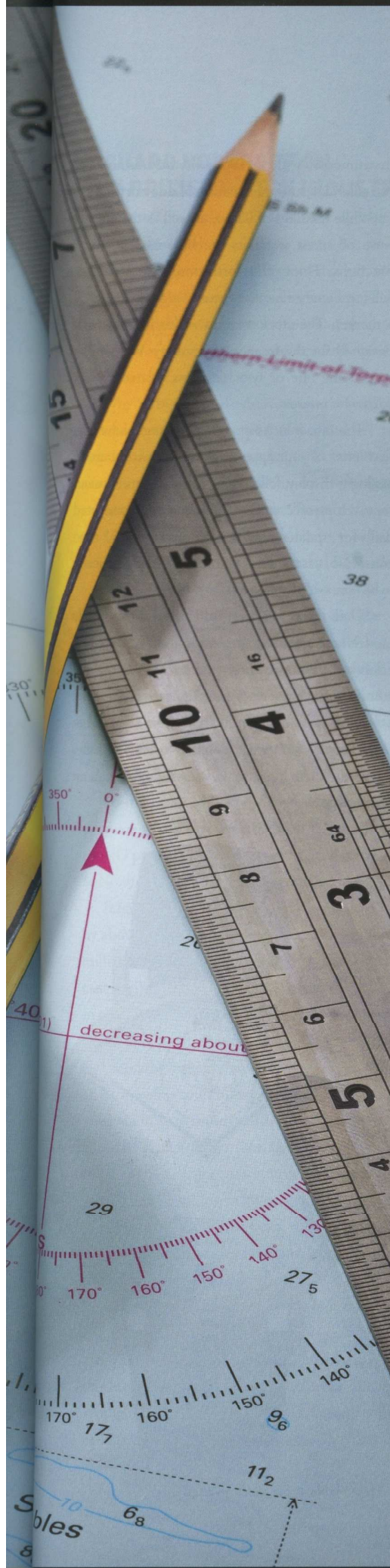
was showing a visitor around London, and I asked if he had ever been to Greenwich. He hadn't, so we went. On display, there was a rack-mounted atomic clock. At the time I was having a problem calibrating our early watches; all of our timepieces are temperature compensated individually. What we do is put them in a fridge/heater unit and every one is tested from 0–50 degrees.

"The problem was, my time source wasn't that accurate. It was only accurate to one part in 10,000,000, which wasn't good enough to eliminate all sources of inaccuracy," Hoptroff says. "So I wondered, why not build a calibration unit using an atomic clock?"

Hoptroff looked on eBay "to find one these rack-mounted atomic clocks but couldn't trace one anywhere. But I did find out about a chip-sized, freestanding unit that fits inside the fridge. I'm a physicist by trade, so I created a timekeeper using a Chip Scale Atomic Clock (CSAC) made by a division of Hewlett-Packard, used in cruise missiles," – but adapted by Hoptroff.

"I had this for about a week before I had the idea of actually putting it inside a pocket watch. It needed the size that ultimately became the No. 10's dimensions because of the battery requirements. I want to do a wrist-mounted version, but it would probably need a re-charge every six months.

"I remember the day very well because I was sitting in a restaurant waiting for my wife," Hoptroff recalls, "and I shouted out the 'f-word' at a moment when it seemed as if everyone else had stopped talking – it just came out so loud. And within two weeks, I actually had it ticking for the first time. It was over the weekend and I had nobody else to tell, so I phoned Norfolk-based watchmaker Simon Michlmayr – he was overjoyed!"



TECHNO TIME

As luck would have it, other technical developments enabled Hoptroff to realize his plan. “Firstly, some very small stepper motors became available so we could have complicated mechanisms, electronically controlled. Then, silicon technology power requirements became low enough to run on a coin cell, in particular for Bluetooth,” he says.

Hoptroff suddenly realized that “instead of just having these fantasy watch movements, I could have a terrific advantage over every other watchmaker.” His watches would provide functions that could only be enabled by Bluetooth and apps, using Plevy’s expertise. However, this ultra-modern



Hoptroff No. 8, which shows the wearer’s diary entries.

technology would be housed in a watch that could have been styled in the 18th century. “It’s our nod to Breguet and Daniels. It’s simply the look I like,” Hoptroff says.

Working closely with Michlmayr, Hoptroff says of the process: “He [Michlmayr] has been very helpful. George Daniels was also very helpful – I never met him, but we exchanged letters. And I went to Simon for guidance, as I don’t have any training as a watchmaker at all. Soprod, too, solved a lot of problems for us because they supply our stepper motors.”

After spending 10 years thinking about watches, Hoptroff had a head full of ideas, having spent a decade “thinking about what the watch should do if we had these capabilities.” The No. 10 is a navigational instrument, so many of its complications – and there are 28 – involve nautical matters.

“I was crossing the Atlantic about five years ago, in a big gale that took out the autopilot. For two weeks somebody had to be at the helm, each of us for six hours every day,” Hoptroff recalls. “A massive wave came down the hatch, and fried the electrics. We did fix them but they kept cutting out and the GPS got a lot of water on it, so we were not sure if it was going to carry on working. We actually got a sextant out and learned how to take sightings and calculate latitude and longitude. As it happened, the GPS did kick back in, but our sextant readings were within a couple of minutes!”

“Without iPhone or apps or Bluetooth, this [the No. 10] wouldn’t work,” Plevy states. “Basically, this a navigational instrument and though it has Bluetooth built in, it’s not really meant to be connected to anything; it’s really just for calibration.”

HIGH DESIGN

Among the design features and complications of the No. 10 are time-telling for the current 12-hour time (local and UTC selectable), as measured by the atomic clock, as well as sidereal time. Longitude and longitude are set with a sextant using the noon sight method, in order to compare local noon with a chronometer reference time, exactly as would have been performed by Harrison, but with an atomic clock and without the need to refer to admiralty tables.

Other displays include: power reserve in the form of “Battery power remaining, 100% – 0%”; Time Error to measure the maximum degree to which timekeeping could have drifted; traditional moon age indication, in days since the new moon; the local time when the moon will be highest in the sky; transit time; local tide height with eight tidal harmonics that are stored for three thousand ports worldwide; relative humidity; temperature, –40°C – 50°C, as measured by on-board instrumentation, with 24-hour historic animation; atmospheric pressure, 955mbar – 1045mbar, as measured by on-board

instruments, with 24-hour historic animation; full calendar; and the location of due north.

While the likes of Casio, as well as the coming wave of smart watches, are bursting with such functions, Hoptroff’s forthcoming wristwatches will have a more narrow focus. “We try to identify a market. The stock-market watch is very much designed for the finance community. We confine it to doing one or two functions related to that particular interest.

“The No. 8 looks at your diary and shows the first letter of your appointment with a mechanical analogue display, followed by the next appointment time,” Hoptroff continues. “Bluetooth is connected daily for updates, and it also displays dual time zones. No. 9 is the stock market watch, which needs to be connected at all times to provide the data.

“Then there is No. 11, effectively a time-only model that shows just the time and date, perpetual calendar, temperature compensation, and automatic daylight savings, and it needs connecting only once every six months,” Hoptroff says. “That said, people don’t wear watches to tell the time. They wear them because they say something about themselves.” ★



Hoptroff No. 9, the “stock market watch”.

RICHARD HOPTROFF ON THE BRITISH WATCH INDUSTRY

Because Hoptroff – unlike the other elements of the new wave – is not “of” the watch industry *per se*, he has no slavish allegiance to the tenets that determine credibility in modern watchmaking: he is driven by physics. Most importantly, his freedom is due to his watches being unapologetically electronic rather than mechanical, which also spares him comparison with other new British brands. But “British” Hoptroff watches most certainly are.

Why? “Because of where you’re sitting,” he says. “We make our watches *here*. I’m not a purist about where we source the parts. It’s impossible to get hands made in this country, at least in the volumes I want to make. The hands we fit are Swiss, the straps are Austrian, the presentation boxes are French... so we’re not purist about it.

“But the watches are designed here, they’re assembled here. The dial is UK-made, the entire movement is UK-made, apart from the stepper motors, and the case is UK-made,” he says.

Because Hoptroff isn’t bound by the traditions that define mechanical watchmaking, he has no qualms about lateral thinking. It is an approach and a methodology which have led him to make a watch that can be called “nuclear-powered,” to use Kickstarter crowdfunding, to devise a watch that tells football scores. Whatever the future holds for his watches, he has also pioneered a radical manufacturing technique, using British talents.

To the best of his knowledge, Hoptroff is the first watch brand to produce gold watch cases through 3D printing. Many watch companies use 3D printing to create prototypes, but the gold cases of the new No. 8, No. 9 and No. 11 will be 3D-printed in Birmingham.

It has been an adventure. “3D printing set back sales of our watches by about a year,” Hoptroff explains. “Essentially, I have not invested in milling equipment. I don’t need to know [how to machine] watches. We cast in silver, we 3D print – I was happy to have a play with 3D printing in gold. We went up to Cookson in Birmingham, and asked, ‘How about it?’ At the time they were only doing rings. After about ten attempts, we had something that I thought was of commercial quality.”

Hoptroff is quick to dispel myths about the new technology, especially any belief that it is inexpensive. The financial gains involve cash flow of working capital rather than better margins. “3D printing isn’t cheap, but it has two distinct advantages for us. The first is the design freedom you could not achieve with milling. The second is, in working with 3D printing using precious metals, an optimum batch size of four units. If we were to order gold cases from a traditional supplier, it would mean a minimum order of 50 pieces, with £1000 worth of gold in each case.”

After the flurry of publicity following the massive, complex and costly No. 10. pocket watch, Hoptroff is delivering wristwatches that add innovation to the British revival rather than pursuing the continuation of older disciplines. When asked what future historians might say of Hoptroff’s contribution, the man himself says, “If Tompion, Graham or Harrison were alive today, this is what they’d be doing.”

HOTBLACK AND KICKSTARTER

Hoptroff’s big news in 2014 is the release of an affordable model, financed by crowdfunding through Kickstarter. *Hotblack*’s novel function is providing wearers with real-time football scores. It features four dials, each with a different function, the main dial showing the time normally throughout the day. The roles of the three sub-dials, positioned on the top, left, and bottom, vary depending on whether or not there is a match in progress.

When a match is in progress, the top and left subdials present the score of the match, while the bottom dial shows the time remaining in the match. In the time between matches, the top and left dials display the date while the bottom dial counts seconds. This is achieved through Bluetooth technology.

Owners of a *Hotblack* watch will receive access to the *Hotblack* app, compatible with both iPhone and Android devices. This app enables users to choose their favorite teams. A receiver housed in the watch receives a signal from the wearer’s mobile phone whenever a match is about to start.

Hotblack, costing £990, will appeal for its looks as well as its functions, particularly at a time when all-black, stealthy watches are in vogue. The watch has a clean, minimalistic look, the dial possessing a white-on-black color scheme. The bracelet and case are constructed from 316L brushed stainless steel, fitted with sapphire glass.

