

Revolution on Your Wrist

by Carlene Stephens, Amanda Dillon, and Margaret Dennis

Less than thirty years ago, while Sly and the Family Stone were topping the pop music charts and President Richard Nixon was covertly scheming to win reelection, the wristwatch was being transformed - from a mechanism of moving parts powered by an unwinding spring, into a battery-driven electronic computer.



A Timex magazine ad sports faddish new electronic athletic watches clearly aimed at the male market.

There is evidence that, in the 1880s, women in England and Europe wore small watches set in leather bands around their wrists, especially for outdoor activities such as hunting, horseback riding and, later, bicycling.

Challenging centuries of analog timekeeping, battery-driven quartz wristwatches hit the American marketplace in the early 1970s, though it seemed unlikely the expensive, new-fangled timekeepers would sell. Marketed as the "Next Big Thing" in cutting-edge technology, electronic watches, which were capable of far more precise timekeeping than mechanical ones, sold surprisingly well. They soon won over the buying public. Today, with electronic watches capable of determining a runners' heart rate and body temperature, or the time and place of your next business meeting, the mechanical watch is nearly extinct.



Dollie, Alice, Margaret and Ella Van Horn. Lindsborg, Kansas, about 1910: This photograph reveals not only womens' clothing fashions of the day, but two watches, one worn as a pendant, the other as a brooch.



The Japanese Seiko 35SQ Astron was the first analog (featuring the traditional round dial with twelve numerals) quartz watch to reach the marketplace - going on sale Christmas Day, 1969, in Tokyo.

The wristwatch is a relative newcomer among timekeepers. The mechanical clock was invented around A.D. 1300, somewhere in Western Europe, though no one knows precisely where or by whom. Portable cousin to the clock, the spring-driven watch made its debut in the first half of the 15th century with equally obscured origins. But not until a little more than 100 years ago did the wristwatch come into fashion. Like that of its ancestors, its earliest history is largely unrecorded. There is evidence that, in the 1880s, women in England and Europe wore small watches set in leather bands around their wrists, especially for outdoor activities such as hunting, horseback riding and, later, bicycling. Turn-of-the-century men did not wear these new timekeepers; they considered them effeminate baubles. Men did not begin wearing wristwatches until World War I. Even during the war they served a specific purpose: they were invaluable tools on the fighting front.

The details of the history of the wristwatch are beginning to emerge as researchers at the National Museum of American History develop a new exhibition called "On Time." Opening in about two years, "On Time" will explore the changing ways Americans have measured, used, and thought about time over the past 300 years. Featuring timekeeping devices and a surprising array of everyday objects, the exhibit will examine how we have come to rely on mechanical timekeepers more than environmental cues or our internal body rhythms.

The history of Americans and their watches is complex. Watches aren't just functional everyday objects that provide the correct time. They are personal expressions of fashion and status. They are sometimes significant gifts - treasured family heirlooms that link generations or keepsakes that mark important life moments such as weddings, anniversaries or graduations. They are indicators of the way we think about ourselves. And they are deeply meaningful symbols of the ways we think about and use time.

Through most of the nineteenth century, pocket watches were often among Americans' most prized possessions. Men's watches, and the way men wore them, remained relatively constant during that period. A 19th-century American man might wear a watch in the side pocket of his vest, with a watch chain draped across the vest front from the pocket to a button hole. A decorative fob might be visible, but the watch was not. Checking the time called for an elaborate ritual: a man reached into his pocket, withdrew the watch, opened the case, read the time, then replaced the watch by repeating all this in reverse. A man engaged in vigorous work or play, or a man going without a vest, might wear his watch in his trousers pocket or in the breast pocket of his jacket. In contrast to the relatively constant style for men, fashion magazines in the last two decades of the 19th century advocated a variety of changing watch styles for women who could afford timepieces. For decades before, women had worn pendant watches. These were pocket watches, sometimes the same size as a man's and other times slightly smaller, that hung from long chains around the neck. A woman usually tucked the watch at the end of the chain into her waist band or into a tiny pocket sewn along the seam of her dress where skirt joined bodice. At the end of the century, watches might also dangle from short chains at the waist, pin-like brooches on the blouse front or at the waist, or adorning rings or earrings.

Appearing amidst this array was the forerunner of the modern wristwatch. Precisely when and where it originated is still unknown. But one of England's trade magazines for watch- and clockmakers noted in 1887 that women there had been wearing pocket watches strapped to their wrists for hunting and riding "for some time past," and currently watches set in gold bracelets were "a pretty and, at the same time, useful ornament." A Paris account of about the same time reported: "Now another change in the fashions of portable time-pieces has set in, and the last command of modish caprice is to carry a small watch embedded in a bracelet of morocco leather, which is worn around the wrist." But just a few months later, as the brooch watch became fashionable, wristwatches were, according to another observer, already "out."

The wristwatch provided portable time at a glance for people on the move, a much speedier read than pocket or pendant watches. This fact wasn't lost on the soldiers of World War I, who engaged in combat with new rapid-fire weapons at a speed and ferocity unprecedented in human history. For men in the trenches, at least, the wristwatch replaced the pocket watch as the symbol of competence and efficiency. European manufacturers reportedly worked overtime to convert existing women's watches into military timepieces to meet the demand.



A portion of a 1913 French advertisement for Omega wristwatches.

Postwar manufacturers of wristwatches tried to negate its enduring feminine image by advertising in ways to reassure men of the sturdy masculinity of the wristwatch.

Postwar manufacturers of wristwatches tried to negate its enduring feminine image by advertising in ways to reassure men of the sturdy masculinity of the wristwatch. A Benrus ad, for example, promoted "the strap watch of Sportsmen" as the perfect accessory for "a brawny, wind-tanned wrist." But even as late as 1943, wristwatches were still sometimes called "bracelet watches" or "wristlets," recalling feminine jewelry.

Any lingering stigma the watch may have had after the World Wars was dismissed when, in 1970, the wristwatch was completely reinvented with electronic components. In marked contrast to the earliest wristwatches, electronic wristwatches were made for men from the very beginning. Appealing to those who craved high-tech gadgetry and precision time rather than to the fashion-conscious, the first quartz watches were bulky and oversized. They were designed to accommodate the new technologies they contained - miniature batteries, integrated circuits, oscillating quartz crystal movements, and electronic time displays. Manufacturers eventually provided both men's and women's models of quartz watches in smaller sizes; but fitting the early electronic components into a thin, modish, and more feminine case was an engineering challenge that took time to solve.

In the international race to market an electronic wristwatch, the Swiss were the first to make a quartz watch prototype in 1967. The Japanese Seiko 35SQ Astron was the first analog - featuring the traditional round dial with twelve numerals - quartz watch to reach the market. The Astron went on sale in Tokyo on Christmas Day, 1969. The United States then took the technological lead in developing the new quartz watches by borrowing from microelectronics research already underway for military and space programs.



The Hamilton Pulsar: the first LED (light-emitting diode) digital wristwatch. The time was displayed at the touch of a button.

The Hamilton Pulsar, the first LED (light-emitting diode) digital wristwatch, is a case in point. Late in 1972, HMW (previously the Hamilton Watch Company) of Lancaster, Pennsylvania, began to sell the Pulsar. Its most striking feature was its time display: gone were the traditional hands and dial. Instead, at the touch of a button, the time of day flashed on a display screen in red digits. Advertised as a "Time Computer," the Pulsar initially sold in fine jewelry stores for \$2100 (roughly the same price as a Chevrolet Vega in those years).

The Pulsar project began in 1966 in Hamilton's military products division, where research and development manager John Bergey and engineer Dick Walton had been developing an electronically timed fuse. To explore the feasibility of applying their work to a watch, Walton transferred to Hamilton's watch division, where others were attempting to develop an analog-dial quartz watch.

Independently, at Electro/Data, Inc. of Garland, Texas, George Thiess and Willie Crabtree were at work on a quartz watch with a light-emitting diode digital display, a relatively new display technology that had grown out of semiconductor research. With Bergey now research and development head of the watch division, Hamilton proposed a collaboration with Electro/Data. The joint enterprise had their first prototypes by April 1970.

The first Pulsars were marketed to men as examples of "space-age technology" (women's Pulsars did not appear until 1975). The very name was borrowed from astronomy: Pulsars - stars that emit radio waves at precisely spaced intervals - recently had been discovered. The digital time display implied an unprecedented level of precision - 8:15, not "quarter past 8." The popular press of the time took great pains to explain the technical intricacies of the new electronic circuitry, both inside and on the innovative digital display.

Digital displays fell from favor in the mid 1980s; and the U.S. lost its lead in the worldwide watch business to Asian competitors. But electronic quartz watches with analog dials grew in popularity. More recently, electronic watches with myriad extra functions - calculators, alarms, stopwatches, even TVs - have appealed to all sorts of

precision-loving men and women: scientists working in the field, athletes in training, business people on the move, and travelers of all kinds. Whether digital or analog, electronic watches and the precision they offer are here to stay.

What kind of watch do you wear and why? What does it mean to you? The "On Time" exhibit team would like to hear your watch stories. Please email us at quartzwatch@nmah.si.edu.

This article originally appeared in *increase & diffusion*, a Smithsonian online publication.