POST WAR WATCH DESIGN

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POST WAR WATCH DESIGN

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INTRODUCTION:

The wrist watch is a comparative newcomer to the market with a history of little more than half a century. Within this time a radical transformation of the technology of time measurement occured which resulted in the creation of something that looked like a watch but was in reality a new product.

This was the quartz revolution, and to begin to understand this one must examine the state of the watch industry just after the Second World War.

The interruption of the war simply enhanced the Swiss domination of world markets. This was mainly due to the military demand for watches. But unlike the years after the First World War, there was no depression when the military demand ceased as civilian demand for watches increased. In the late 1940's merchants were ready to pay a premium for a Swiss watch just as dealers would pay "under the table" for scarce cars. However, as the crippled industries of Japan, France and Germany returned to production the Swiss share of the world production fell back rapidly. Even so, the early fifties still found the Swiss with over half the world market.

Their watches had a strong reputation of being 'chic'. They were elegant thin, and reliable. The Swiss poured enormous efforts into attaining standards of accuracy comparable to those achieved earlier by the larger pocket watches. Market penetration depended on product rather than process innovation. No one could match the Swiss with their small production units, shorter runs, large pools of draftsmen and designers and their excellent schools of horology. Such companies as Rolex, or Omega played a major role in creating watches of extreme accuracy winning prizes for their efforts in the chronometric competitions and stressing the special virtue of "Swiss Made".

The Rolex Oyster:

The Rolex Oyster is a good example of a watch created in the traditional "Swiss Made" sense and promoted as a product which was far superior to any other watch in its precision, ruggedness and fine craftsmanship.

The first Rolex Oyster came on the market in 1926 and with it came a full page advertisement published in the "Daily Mail". It promoted the idea of a "wonder watch that defies the elements". The Rolex Oyster was taken by Jacques Piccard and attached to the outside of his bathyscaph "Trieste". Submerged to

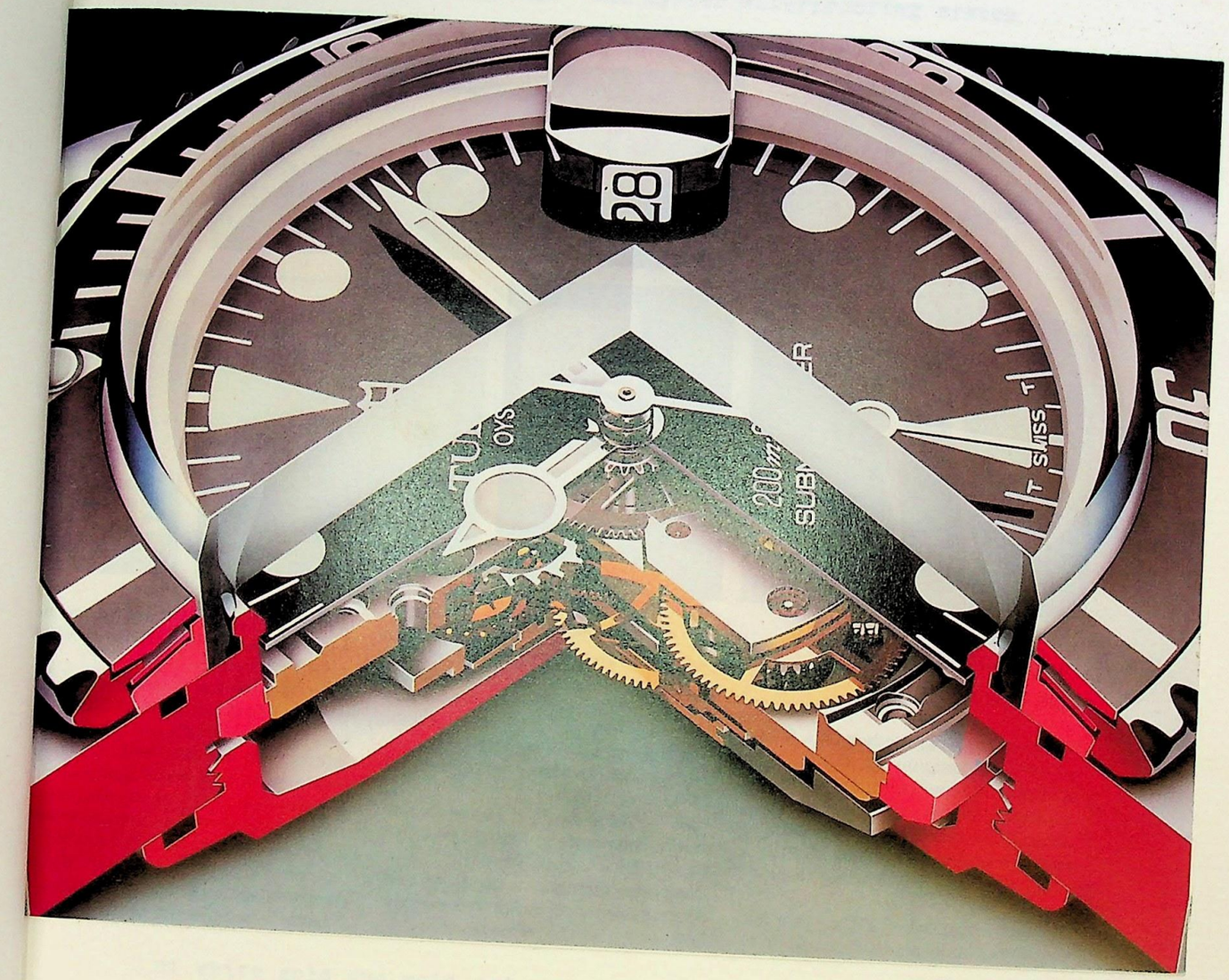


Fig. 1 Rolex Oyster Interior.

a depth of nearly seven miles and subjected to a pressure of over 6 tons per square inch, the watch returned to the surface working perfectly. The Oyster waterproofing system had been proved to the public in a successfully dramatic way, though it was doubtful that many of the watches would undergo this type of testing often during its life.

Rolex promoted the high quality of the watch by emphasising the careful, individual steps that went into the making of the watch. Rolex emphasised the many parts and steps that became the Oyster and took a complete turn later on with the quartz watches and more recently - the Swatch watch.

The emphasise then was on fast, high technology mass production, and elimination of as many steps and parts as possible without jeopradising the agreed image of the watch.

The Rolex Oyster had "a harmony of more than 220 separate pieces, some of them incredibly tiny".[1] It was manufactured in gold or platinum, though now it can be obtained in a combination of white gold and gold and stainless steel also.

The Rolex Company was highly successful in their marketing campaign. So much so that the watch has become somewhat of a cult object. It was for a class that liked to wear their

1. Of Time and Men, Rolex Brochure 1975.

"bank balance on their wrist". It is for those who believe that while a "Rolls Royce spells new money, a Mercedes means style". Deyan Sudjic has identified the Rolex Oyster watch followers quite well in his book "Cult Objects". He describes the watch's looks as "butch" and it's image as "snobbery with violence".

Though the technical superiority and craftsmanship were promoted as an essential part of the watch, the important message was the type of user entitled to wear an Oyster. The watch, as in any watches made are as much about sending out carefully judged identity signals as they are about telling the time.[2].

..... "Today, so much care is out of fashion yet, the simple truth is that each Rolex will have just one owner and he will not care about any Rolex we have ever made ..... except one; his Rolex. That is why we still make Rolex chronometers the old way. One at a time".

- Of Time and Men

Rolex brochure, 1975.

2. Cult Objects, Deyan Sudjic.

Fig 2. The Rolex Oyster Watch.

Timex - a new approach:

The first intimations of trouble for the Swiss came from the U.S.A. The Waterbury Clock Company, soon to be renamed the U.S. Time Corporation, needed a new line of watches after the War. The immortal Mickey Mouse line in 1933 had been priced too low to bring in much money, though they made record sales in Berlin from 1945 - 1947. The answer was Timex - a superior clock-watch - that is an unjeweled clock-type watch with pin-lever escapement. Instead of steel, armalloy was used, which was developed during the war and gave good service. The movements were packaged in plain, clean cases and the first, simple models cost $6.95 to $7.95. More complications were added as the watches became a success: shockproofing, waterproofing and sweep seconds.

The United States Time Corporation were not selling elegance or prestige but cheap time. People could afford two or three or more watches with faces and straps to match a variety of outfits.

Elements of this watch can be seen in the recent Swatch watch whose aims are similar, and will be discussed later.

Timex was not joining the Swiss aim of accuracy and precision in a watch yet, it was accurate enough for the world of radio time announcements and telephone time.

The marketing promotions were similarly dramatic in their approach to the Rolex Oyster. Television advertisements featured Timex undergoing "torture tests": watches fastened to a galloping horse's hooves. But this was to create an image of solidity and ruggedness. Parts were standardized and made interchangeable. Machines were automated as much as possible to reduce human input to a minimum. The design was simplified as much as possible, the cases riveted so they had to be thrown away if they stopped. "We set out to fill the vacuum in the lower price watch market and convice buyers that good watches do not have to be expensive". [3.]

The makers of conventional jeweled watches were horrified at this 'upstart' attempt at a watch. Timex was crushing all the ideas of tradition and craftsmanship held by these people for years, and they proved successful selling in 1960 8 million of them which was more than the total output of the Japanese watch industry and more than three times the entire United States production of jeweled watches. They were forcing the Swiss to take their ideas seriously and reluctantly

3. "How Timex Hit Germany with Top Quality, Durability and the Hard Sell", Business Abroad, 5th February 1968.

to start changing their policies of watch design and production if they were to remain on top of the market.

The New Industry:

About the same time as the Timex watch was producing 3 million pieces around the World and had sales of $200 million, a new challenge to the Swiss Watch industry came about.

This challenge changed the technology of watchmaking and a new industry was born. This was the quartz revolution.

The quartz crystal was discovered a long time before the revolution by Pierre Currie. This crystal actually vibrates mechanically when an alternating current of electricity passes through it. It was found that the problems of compensation and circular error were eliminated. The crystal showed little response to temperature or pressure change which was a big advantage. Clocks were developed using the quartz crystal, but it took approximately 30 years to miniaturize it enough for watches.

The first development that made this miniaturisation possible was the manufacture of a small power source - a button-sized battery was produced for hearing aids in the 1950's and these

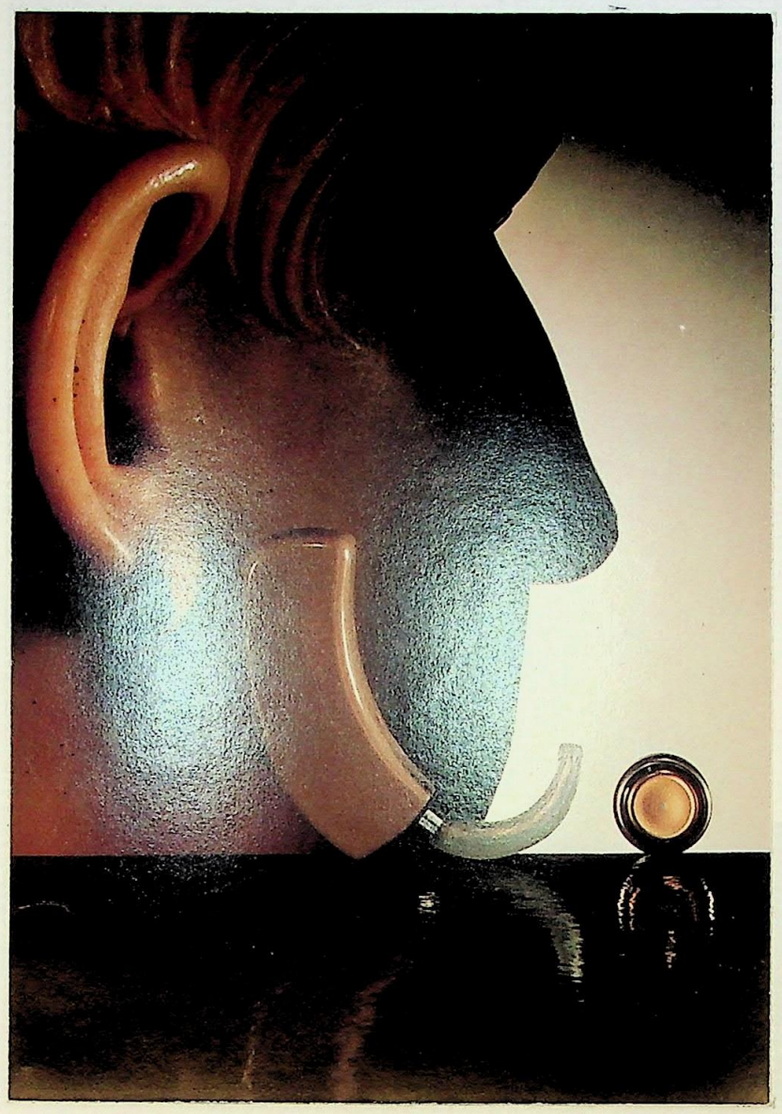


Fig 3. Button Batteries
for Hearing Aids.

Fig. 4. Ray-o-Vac button battery used in Quartz Watches.

were used to power an electro-mechanical watch in 1957 as a result of a joint research project carried out by the French Company Lip and Hamilton Watch Company in America. The battery replaced the mainspring and the balance wheel was electrically activated by a magnetic system. It was not particularly reliable and was not a commercial success.

Bulova's Accutron:

A more successful use of the battery was in the Bulova Accutron which posed a direct challenge in the marketplace.

This watch uses a tuning fork replacing the balance wheel and drives the hands by a remarkable miniature pawl and ratchet wheel turning 38 million times a year. The watch hums quietly the note E instead of ticking. The battery operates a miniature oscillating circuit which keeps the fork vibrating.

The technique was invented by a Swiss engineer Max Hetzel, who went to America with his idea since the Swiss were not interested. The first space programme was underway there and they required a small accurate time switch that could operate sequences in artificial satellites. The tuning fork technique was developed for this programme.

Fig. 5. Bulova's Accutron.

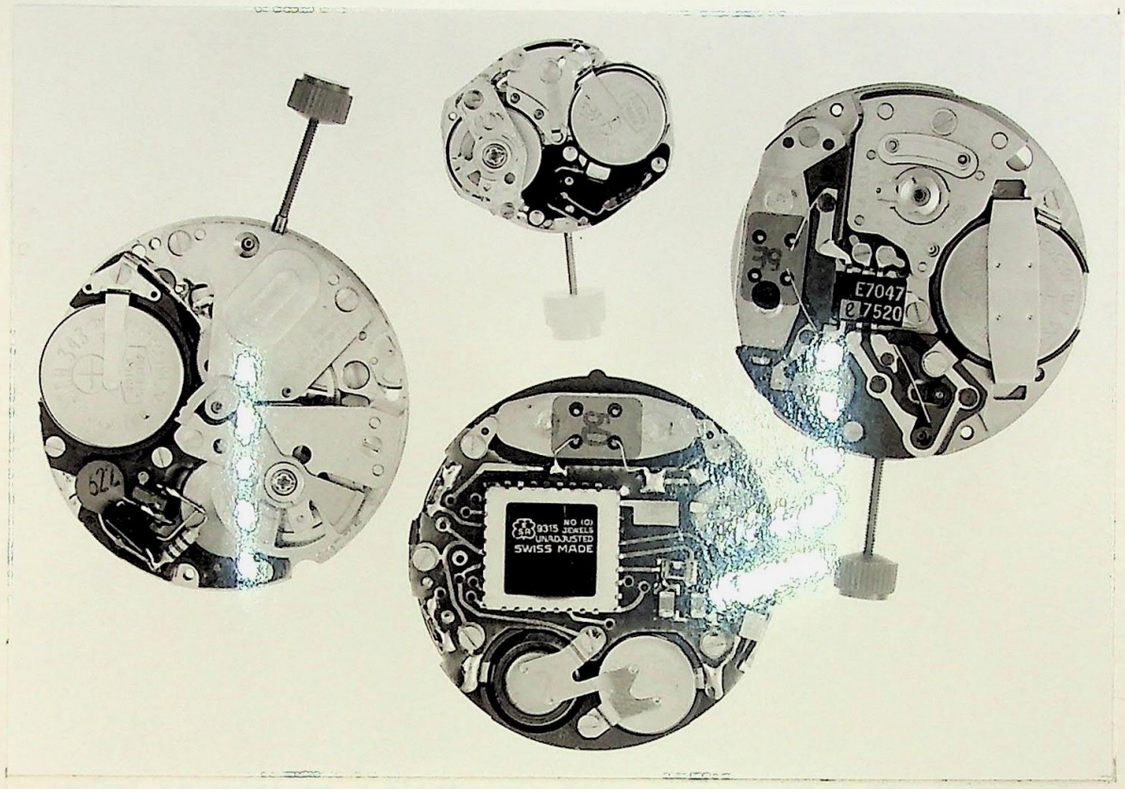


Fig. 6. Two electric balance wheel watch movements and two quartz crystal watch movements (analogue and digital) by Ebauches S.A.

Bulova was so proud of its high-tech quartz watch that it dissected the face to reveal its green and orange interior. They wished to show the world the new technology of the watch and anyone who wore it was to be considered very "with-it". When Bulova marketed the Accutron, it issued an unprecedented guarantee that the watch would not vary by more than a minute a month, which few people required. However, they were accenting the Swiss feature of precision in a watch and more than this - they were offering a watch that was better than the mechanical watches of the Swiss.

The next major breakthrough was the development of miniaturised circuits under the impetus of the U.S. space programme and the developing computer industry. Small printed circuit boards were produced with transistors and resistors replacing the bulky valves used before. These were manufactured in their millions and were sold to the public in their raw state in pocket calculators. Electronic firms were looking for a vehicle to extend the range of outlets for their component output. Therefore, many of them began to manufacture quartz watches.

They moved into the watch industry with the same price slashing tactics adopted in the calculator field. As soon as the latest miraculous calculator appeared at an attractive price, an even more miraculous calculator would appear at an even lower price. The new entrants had been reared in a world of fast

product change and adventurous marketing. Therefore they handled the watch market in the same way.

Experience in distribution and marketing were more important than skill in manufacture. Anyone at all could now buy the new circuits, have them cased by cheap unskilled labour in the Far East, and sell them to any outlet that would take them.

Gillette moved into the watch industry believing it could sell watches like razors and blades.

The very rapidity of technical change made last years model obsolete and producers had to dispose of stock fast to justify the long runs required. Durability seemed a secondary consideration to them.

It was considered cheaper to let the public screen the product and send back any pieces that failed rather than organize strict quality control. The public did this at an enormous rate and there were returns of up to 40%. The early models were full of problems.

- They were bulky and crude compared to the slim elegant mechanical watches.
- They were inconvenient because the battery life was short - approximately eighteen months at the beginning.
- Energy could not be wasted on a permanent display.

This type of display was called an L.E.D. or Light Emitting Diode and came directly from calculator displays. A button had to be pressed on the watch for the display to light up, which was considered awkward in the design, and it was difficult to use in direct sunlight. The stability of the quartz crystal tended to break down after approximately 1 year and the time readings would drift.

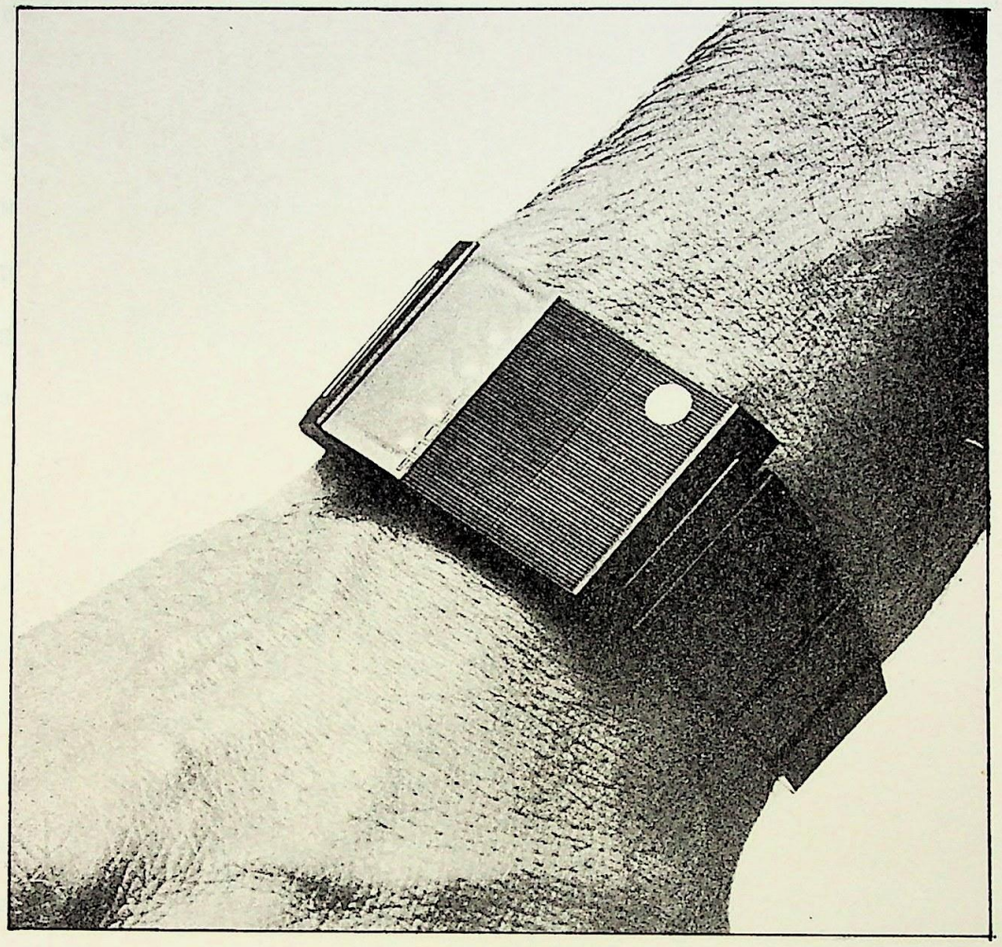


Fig. 7. Sinclair's "breakfast cereal giveaway".

Sinclair's Black Watch:

Sir Clive Sinclair ran into difficulties like the ones mentioned previously with his Black Watch design.

His watch undercut many expensive digital quartz watches and cost less than £20 compared to the usual price of approximately £60. The breakfast cereal giveaway quality of the Black Watch hides its technological advance.

The overall design was by John Pemberton, with push buttons and battery cover by Victor Thomas and electronics by Chris Wilding. The Watch consisted of a couple of ribbed rectangular keys which was operated by firm finger pressure. The L.E.D. display showed hours, minutes and seconds depending on which side you pressed. This was considered quite dangerous as pressing a button while driving a car could be distracting for the driver. Other answers to this problem were considered for example: An L.E.D. display which remains visible without pressing any buttons or shaking or twisting the wrist to get the time. The display had a clear, wide viewing angle and deep purple cover flush with the top. This

stayed alight for one second after the switch area was depressed. This was long enough for the hours and minutes but not for the minutes and seconds. This was a result of the power of the L.E.D. display -

> "frequent demonstration of the watch as well as normal timekeeping usage during the first few months of ownership may well result in the intial set of batteries providing a shorter life than expected" read the instructions.

The watch had a lightweight (30g) simple case. The lack of mass was disconcerting at first compared to conventional watches but it proved that the conventional watches were unnecessarily heavy.

The battery compartment was well laid out but the setting of the Watch was quite frustrating: a button at the back was pressed at the same time as the switch area allowing hours and minutes to count on, and it was fairly easy to overshoot.

The overall matt black appearance of the watch was much more discreet than, for example, the Bulova Accutron which revealed its workings in orange and green glory. It looked so much more anonymous than

the Accutron or Oyster. Its "silence" clearly stated the image of the watch compared to the mechanical tick of the Rolex Oyster, or the hum in note E of the Accutron. It became a timekeeper once the button was pressed which illuminated the display. It remained 'dead' on the wrist otherwise. The appearance of the watch was much too anonymous. The Rolex Oyster was the opposite - it shouts at the public and has plenty of character. The Black Watch could have been more positive in its form and not so much a "black box" design. It should have reflected the excitement of the new technology of microchips. Although it did reflect the new high volume mass production methods and low-costs.

The Black Watch was more successful in its design and marketing than its technology.

Sinclair had to get state financial aid due to faulty microchips which meant most of the watches were being sent back and discouraged people from buying them.

The Swiss Reaction:

The Swiss reaction initially to the quartz invasion was one of cynicism about how long the digitals would remain in public favour. They believed that it was a passing craze and were not prepared to go in to mass production on a fad. They did not believe the electronics Companies could make a success of an industry they knew nothing about. They also could not afford the investment in the new technology as they had too much money invested in the mechanical watch industry and the Swiss franc was continually soaring against the dollar. They were forced into the industry due to the price-slashing techniques of the quartz Companies, and the large amount of advertisement campaigns that went with this. They did this very timidly and manufactured a small amount of modules and components which were sold to foreign Companies to produce watches.

"Switzerland continued to make a series of wrong turns", says industry analysts. They followed traditional signposts meant for a slow-moving durable product where the diversion had been clearly marked to a new market, dominated by rapid turnover and fast-moving trends more normally associated with the mass market for cheaper non-durables.

Mr. Andre Heiniger, Managing Director of Rolex maintained that the Company had established its reputation on quality and liked to give the impression that Rolex considered itself to be something apart from the watch industry and more of a Company making a high quality precision product which happens to be a watch. He argues that, had digital watches (with their need for batteries) been the standard model for about the past fifty years and it had been mechanical automatic watches which were now coming into the market, "that would have been progress". Mr. Heiniger was sceptical about the reliability of electronic digital watches having seen plenty of them sent back for a replacement and the initial bulky, crude appearance.

It was understandable that the Swiss were sceptical of the initial digital watches since so many of them were sent back faulty compared to the reliable mechanical watches, however, what they did not take into account, though, was the future prospects of the new technology. The large and growing market for interesting and specialised pieces were being missed by the Swiss. The market composed of Scientists, drivers, sports fans, people who wanted to be awakened in the morning, people who forgot appointments, people who wanted a calculator that could tell the time, young people, fashion conscious people, people who love gadgets.

The Swiss performance had been weakest precisely in the area of most rapid growth: quartz complicateds: that is watches with multiple indications and functions. This called for digital displays which handle additional information at negligible marginal cost. The conventional analog dial watches required alot more time, specialization and money to produce extra functions. They also could not meet the fast-moving demands of the market.

Fig. 8. Avia digital watch with LCD by Société des Gardés Temps, 1972.

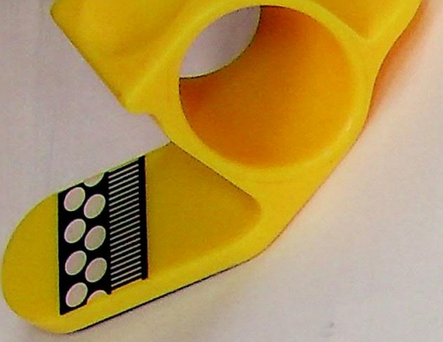
Japan and America:

The question is why were the Japanese and Americans so quick to take up the new technology? The answer seems to lie in the importance already attained in both economies by the manufacture of electronic devices (calculators, computer hardware etc.) and their components, in particular the chips. The leading Japanese watch makers Seiko and Citizen had already had some experience in this area, and they were soon joined from the other side by such electronic firms as Sharp, Ricoh and Casio. A similar pattern emerged in the United States. The first solid state watch was brought out by the Hamilton Watch Company in 1969 - the Pulsar.

The Pulsar had a display made up of early hand-made L.E.D.'s. They cost up to $10 a digit each digit being made of 20 or more diodes. Eventually monlithic L.E.D. displays were developed which reduced the cost considerably.

One of the best things Japanese consumer goods manufactuers had going for them was their "chameleon characteristics". Western firms tended to become identified with one particular market and one particular type of customer. By contrast, Japanese take markets and customers wherever they see the chance.

Fig. 9. Seiko analogue watch
(stainless steel case) 1969.



Japan's policy has in some ways been determined by history. The West was industrialised first and therefore left the Japanese to scour what was left and make the most of what they found.

Japan's Watch industry exemplified its quickfootedness and informed opportunism. Take Citizen which was regarded as a down-market concern capable of manufacturing cheap imitations of its rivals' (Seiko) wares. But this changed. Having helped create a world demand for semiconductor-based digital watches "redolent with technocratic values",[4] the Company started to cash in on a different market-plain, dignified, analogue timepieces. Citizen 'Exceed' model was launched into this market at a retail price of between £250 - £400. Despite the price it did very well. It is square, spare and has a meticulously impassive look. It displays no day or date which reinforces its classical qualities. Citizen sold it with the slogan 'Beauty that lasts!'

The morals of the story for Switzerland were firstly to seek out the gaps instead of plugging old lines. Secondly not to be boxed in by concepts and thirdly - new forms of worker participation.

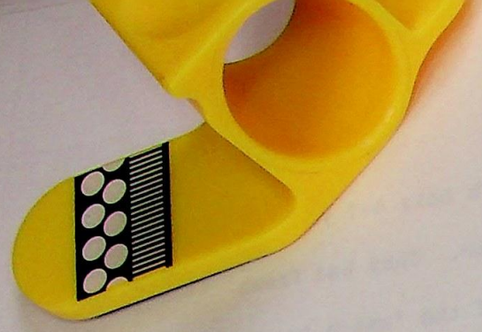
4. "Time Waits for No Man" - Design Magazine - May 1982.

Fig. 10. Lip Range of Watches.

Seiko's research team were young men with only 4-7 years experience and their supervisors were not much older. They had fresh ideas and were not stuck in the bands of the 'watch tradition'. Radical technological innovations and technical refinements were possible due to the fact that the workers communicated properly with each other and worked together as a unit., In the words of one Japanese commentator "the researchers' desks are lined up side by side with those of the production technicians".

Another example of worker participation was seen in the French firm Lip. They pioneered another form of worker participation in 1975 - 1976. Roger Tallon let the watch design with a team composed of Marc Held (furniture), Michel Bayer (architecture and interiors) and Rudi Meyer (graphics and corporate identity).

None of these people had experience with watches or the manufacture of watches which was an advantage. They could design the watch in a fresh way with new imagery and appeal. The quality of the design was rather mixed and the work of each designer could not be distinguished. The Mach 2000 stopwatch was a witty response to the trend towards heavy duty even muscle-bound styling. It was bristling with stop/start buttons in bright primary colours or black. the watch had a shock-proof stainless steel casing, and a slotted plastic strap. It was



nicely proportioned in design - for example the round strap-end and the curve of the watch. It was vaguely reminiscent of motor racing and the 'pits'. There was also an electronic version with calendar, second hand and black leather strap. The only difference in the ladies watches was that they were smaller. The whole Lip range came either in black or gun metal grey with coloured straps and big winding buttons let into a 'bite' in the top corner. These cost £18 - £50 on the retail market. It was a good attempt at examining the watch in a new 'light' and realising the importance of a fresh approach to the market, aiming for a more desirable product.

In Switzerland the researchers were trapped by their own system. Most watchmakers procured parts from outside firms, concentrating on product assembly. It would not occur to either watchmaker or the partsmaker to change the mechanism of the watch. There was not the same unity of design which occured with Lip or Japanese firms. Therefore miniaturisation was a failure for many years in Switzerland.

Progress of Quartz:

The main advantage of a quartz watch is probably not so much its accuracy but the fact that the wearer knows his watch is accurate, nor does he have to always adjust it or make allowances for its errors. The new technology also made the addition of extra functions possible with little extra expense. For example in 1981 an American merchant house, Embassy Marketing of Northbrook, Illinois, advertised a "talking wristwatch" - a timpiece that combined the functions of a minute repeater, alarm timer, and clock-watch. Instead of announcing the time by buzzer or chimes, the watch would speak to its owner in pleasant tones. For the alarm it might say, "It's seven-forty-five a.m.", followed by fifteen seconds of Boccherini's "Minuet", and if that doesn't work a polite reminder comes five minutes later: "It's seven-fifty. Please hurry". This is repeated by music, and if this is not enough the sequence is repeated every five minutes. This watch is the invention of Sharp, a Japanese manufacturer of pocket and desk calculators. When Sharp introduced it in the latter half of 1980 it was uncomfortably large and cumbersone. One year sufficed to get it down to wristwatch size. The logic was licensed to a manufacturer in Hong Kong, where labor is cheaper and the watch was sold with Union Carbide batteries. It was thus the product of a characteristic international combination of materials and factors.

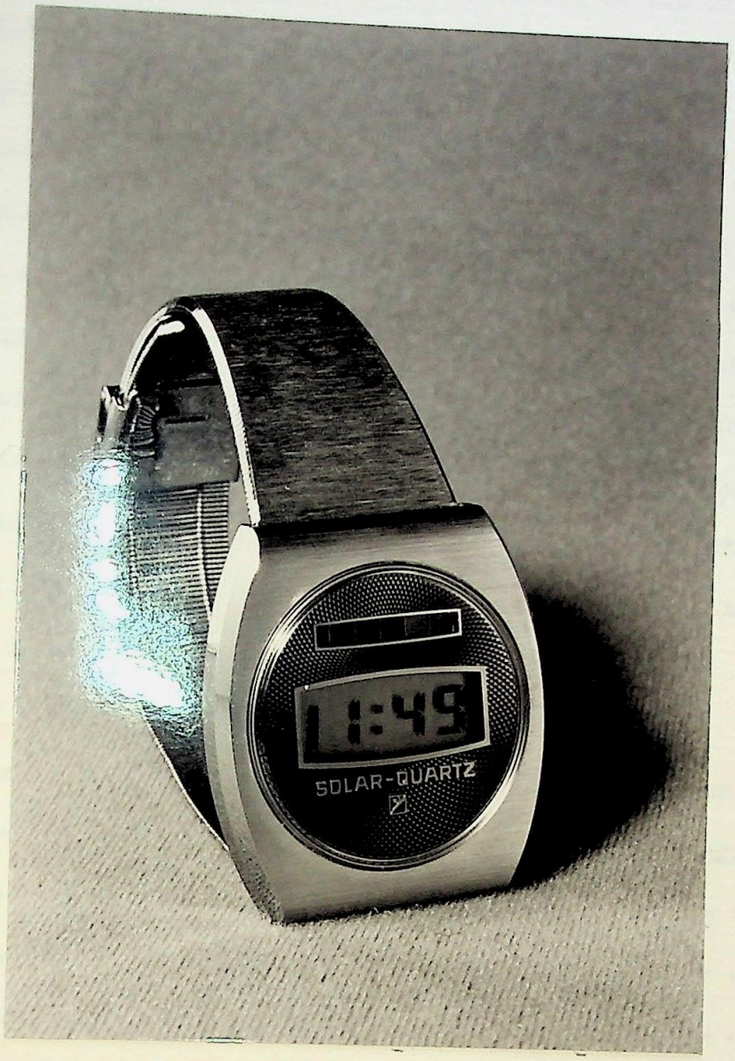


Fig. 11. Cristalonics "solar quartz time computer" digital watch.

The major criticism of the digital watch from a design point-of view was the display took no account of why we want to tell the time. One is not usually interested in the present time alone, but in a time difference e.g. "How long before the train leaves?" Analog faces give an immediate spatial representation of time difference. That is the reason watch manufacturers have found that many preferred the analog face and the demand will remain strong. This gave an advantage to the watch designers since it gave scope for face design and ensured higher sales. Many attempts were made to combine both the analogical readability and solid state technology in a watch. Most of these do not work sufficiently. The combination does not mix smoothly. It lacks aesthetic appeal and the watch lacks quality in its appearance.

In September 1979, horological professionals and amateurs world wide met in Geneva for the 10th International Congress of Chronometry. The Japanese technicians, representing Seiko and Citizen watch Companies, brought with them an array of charts showing the extraordinary progress of one decade of research and production answering the early criticisms of the Swiss.

The quartz watch used too much energy to allow permanent display? From 1973 to 1979, Seiko's digital quartz watches reduced

Fig. 12. Omega Megaquartz 2400
Marine Chronometer, 1974.

current consumption Crystal display segments almost tripled. The liquid, imprisioned between very thin sheets of glass was either transparent or opaque according to whether and electric charge was or was not applied to it. When it was transparent, a mirrored surface behind it became visible by reflection. It used so little current that it could be used continuously but the display depended on the light that was falling on it to be seen. It had the opposite characteristics from the L.E.D., it was good in a bright light but no good in darkness. This prompted some manufacturers to incorporate a miniature light for use in the dark.

One model, with analog dial and day/date display, used only one-tenth the current of their first quartz watch and was equipped with batteries that would last five years instead of one.

The quartz was too thick? By 1978 the five-plus millimeters of the first Seiko model was down to less than one millimeter, and volume from four cm3 to less than half cm3 [5]. All this had been achieved without sacrificing economy, precision, or reliability.

The quartz watch was too expensive? Over the same decade, retail prices fell to perhaps 2 or 3% of what they had been

5. "Multifunctional Digital Quartz Watches" in 10th Internatioal Congress of Chronometry, 1979.

Fig. 13. Seiko's Lasale Watch.

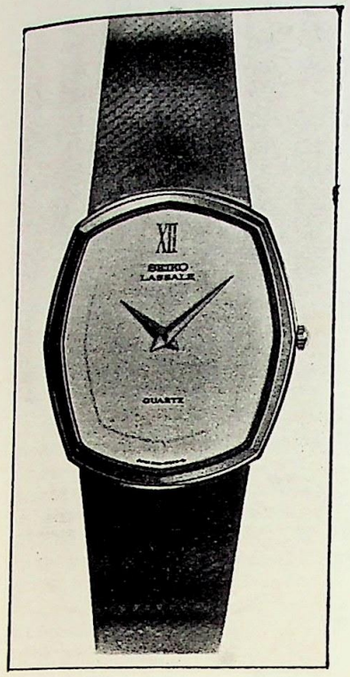
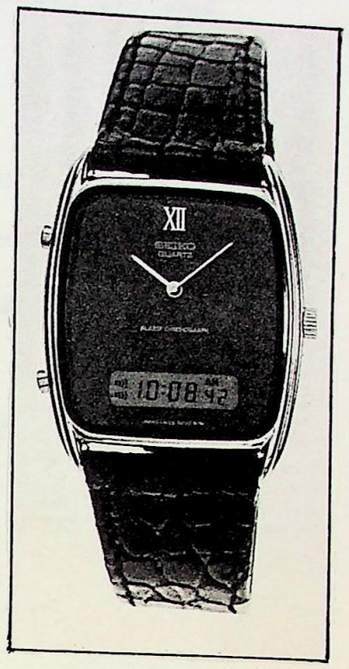


Fig. 14. duo-display women's watch

Fig. 15 duo-display model for men.



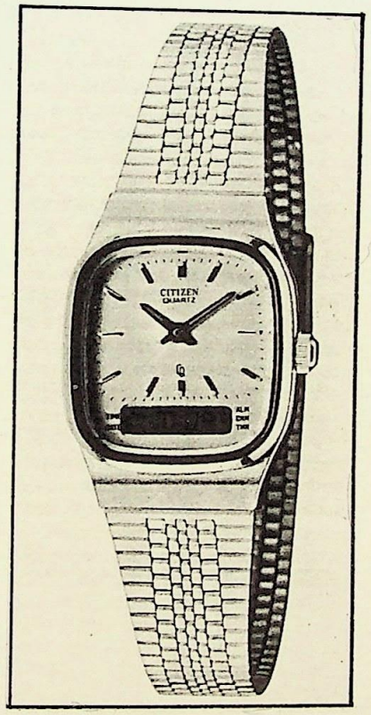


Fig. 17. One of the more sensible models in the Citizen 'combination' range.

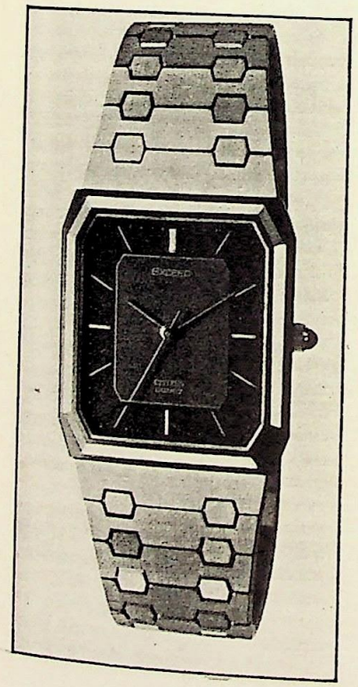


Fig. 16. Citizen "Exceed" watch. This is for the luxury market.

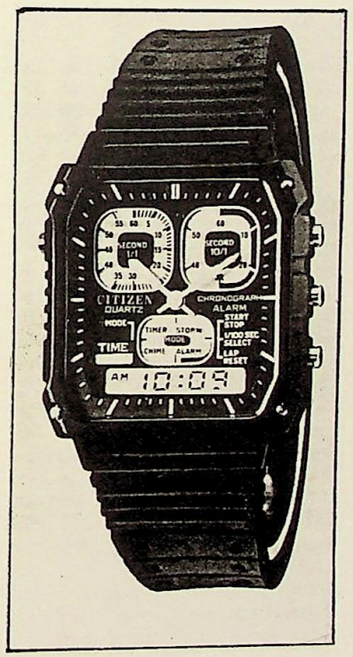


Fig. 18. "Ana-Digi Como" known as 'Jet Boy' in Japan. Similar to Concord's dashboard.

at the start, for better timepieces and with growing inflation. Watches could be given free at garages with petrol and used as cheap advertizements for a brand.

The quartz watch continued to progress with synthetic quartz movements being made smaller and thinner, more functions were added as the computer market expanded and progressed.

The Swiss continued to pour a disproportionate share of their research efforts into the improvement of their mechanical watches. They also continued down the same traditional path - improving the technical side of the quartz watch and reducing the size. In the course of a few years the 80,000 jobs of former days had shrunk to less than 40,000. Similarly, the share of the market had dwindled from a former 50% to barely 10%. The Swiss watch industry had reached the height of its crisis.

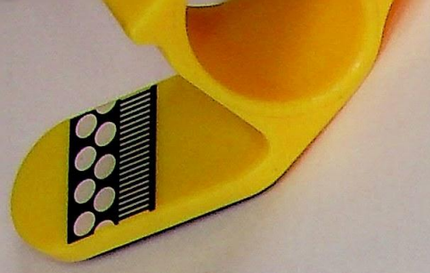
THE PATIENTS' RECOVERY:

The Swatch Design Phenomenon.

At this point, 1982, a new team took over the leadership of Ebauches SA, by far the largest watch manufacturing and parts supplier of the entire Swiss watch industry. The patient, at that point, was far too sick to try out gentle therapeutic methods. The sole hope for recovery lay in reaching for the scalpel, and quickly - and thereby liberating the innovative energies which were lying dormant in the Company. The action had to go hand in hand with the manufacturing of new products and the working out of urgently needed restructuring and cost-reducing measurements. A search for innovative products was to be priority number one. Procedures to attain these objectives were organised into four different stages:

Constructive Criticism:

As a first step, former business policies were submitted to a critical analysis. So far as a market for cheap watches was concerned the Swiss watch industry had pronounced an unequivocal death sentence. The first innovative step was the decision



to focus precisely on that very segment of a steadily expanding market. This meant that, in contrast to their former policies they would control 50% rather than 10% of their productions total growth.

Freedom for Innovation:

To achieve this the proper conditions had to be created from an organisational point-of-view. What they needed were genuine innovators - people combining creativity with interdisciplinary knowledge, market experience with an intuition for market opportunities, intelligence with flexibility, the ability to be enthusiastic, highly motivated and strongly determined. The realisation of the Swatch design concept was carried out by a team of leading fashion designers and experts in the field, led by Dr. Ernst Thomke, the father of Swatch. Ruth Kimche acted as the fashion consultant. Kaethi Durrer and Jean Robert were the graphic designers.

The engineers Jacques Muller and Elmar Mock contributed their ideas and tested the product together with the product designers and technicians at Chezard/Neuchatel.

Similar to the Lip watch, designers from other fields were brought in to contribute to a new watch concept.

Discontinuity: A Must:

It was decided that in order to promote innovative procedures the hierarchical system had to go. Thereby achieving a perfect working interdisciplinary cooperation between inventors, product and process development specialists, financial analysts, marketing and finance specialists, as well as external innovators unhampered by preconceived notions. This reflected the Japanese production process that had been successful for many years.

An Ideal becomes a Product:

When Swatch was introduced in 1982 it was primarily the technological innovative aspects that started everyone talking. For the first time ever the Swiss watchmaking industry had been able to manufacture a quartz-analog watch with a retail price under SFr.50 - and which still met the demanding quality standards of prized "brand name" watches: quartz exactness of +/-1 second per day, watertight up to a depth of 30m, shock resistant and long life expectancy.

March 1980 - Marketing gives the initial spark. E.T.A. Management start development on the watch concept.

April 1980 - Technology concept.

March 1981 - Two engineers Jacques Muller and Elmar Mock hammer out the basic product concept based on three factors:

- a limited number of simple components
- modular construction
- minimum number of construction steps

Development of the technical aspects and simplification of the construction methods continued. Marketing samples and design tests then made sure the market was really there. First prototypes were produced.

April 1981 - Large scale production

July 1982 - Quality to Quantity
The tooling and production details were sorted out. Definitive prototypes were produced. Modifications were made and large scale industrial production began.

Two years development time went into this watch concept.

March	1983 -	Swatch "conquers" the market in short order
March	1983 -	Introduction in Switzerland
Autumn	1983 -	Introduction in West Germany, Great Britain and the United States
20th Jan.	1984 -	The 1,000,000th Swatch left the factory
Spring	1984 -	Introduction in France and Finland
Autumn	1984 -	Introduction in Sweden, Norway, Australia, South Africa, Canada.
End	1984 -	Establishment of Swatch SA.
September	1984 -	The 10,000,000th Swatch leaves the factory
Autumn	1985 -	Introduction in Spain, New Zealand and Japan.
Spring	1986 -	Introduction in Italy.

The Basic Concept:

The design and production of Swatch rests on different principles to the conventional methods of construction.

The inside of the injection moulded case also acts as the base plate, containing all the means of component attachment. Usually there is a separate base plate. First the electronic module (the grid) is placed in the case. The grid is riveted to the base of the case. The coil and the motor module, which also carries the gear assembly, is mounted on top. The motor's rotor drives the second hand directly. The motor also blocks the gears when the time is adjusted.

The motor module is riveted ultrasonically which replaces traditional fastening methods (bolts, screws) and is more precise. After torque and power tests another gear and the date disk are fastened with a riveted steel disk. This means that only a day calendar disk (if required on the model), the dial, and the hands have to be added. Lastly the plastic crystal is welded to the case, making the watch waterproof.

The watch straps new type of hinge is integrated in the case. To reduce the tension created by pulling and twisting motions, the number of attachment points was doubled and the attachment pins forced into the strap rather than into the hinge part of the case. All parts of the watch exposed to great mechanical

THE REVOLUTIONARY NEW

swatch®

SWATCH. THE NEW WAVE IN SWISS WATCHES.

REVOLUTIONARY. AT A GLANCE.

A HIGH FASHION ACCESSORY:
- Fresh and original
- Modern design
- Constantly new collections to match the latest trends

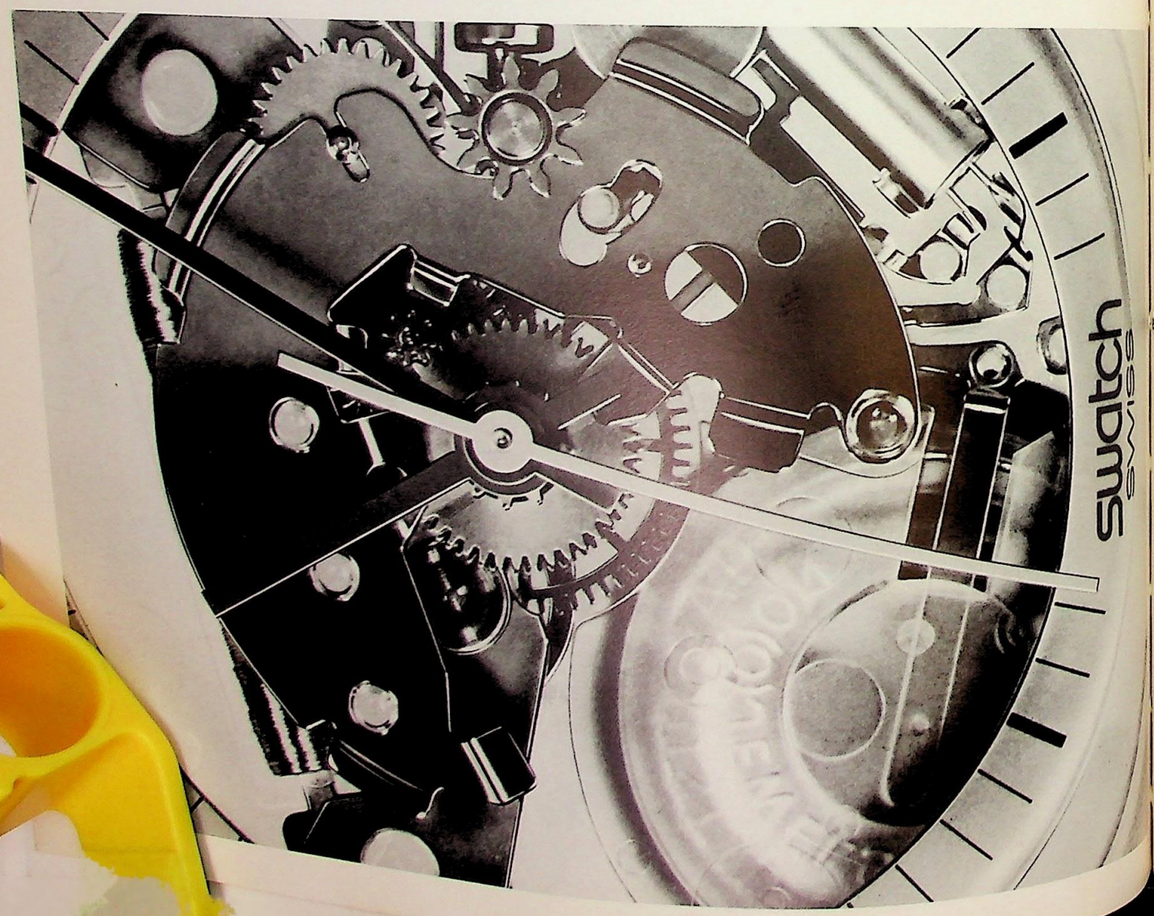
IT HAS PLENTY OF FEATURES:
- Latest technology
- Guaranteed operation
- No service needed
- Shock-resistant
- Quartz-precise
- Swiss quality
- Water-resistant to 100 feet / 30 metres
- One-year guarantee
- Attractive price

IT'S RIGHT FOR EVERY SITUATION:
- Work or play
- Vacation and sport
- Dinners and dances

IT HAS MANY BUYERS:
- Trendsetters from 8 to 80
- Fashion fans or retro
- Super sportsmen or Sunday joggers

swatch®

SWATCH AG CH–2504 Biel



swatch®

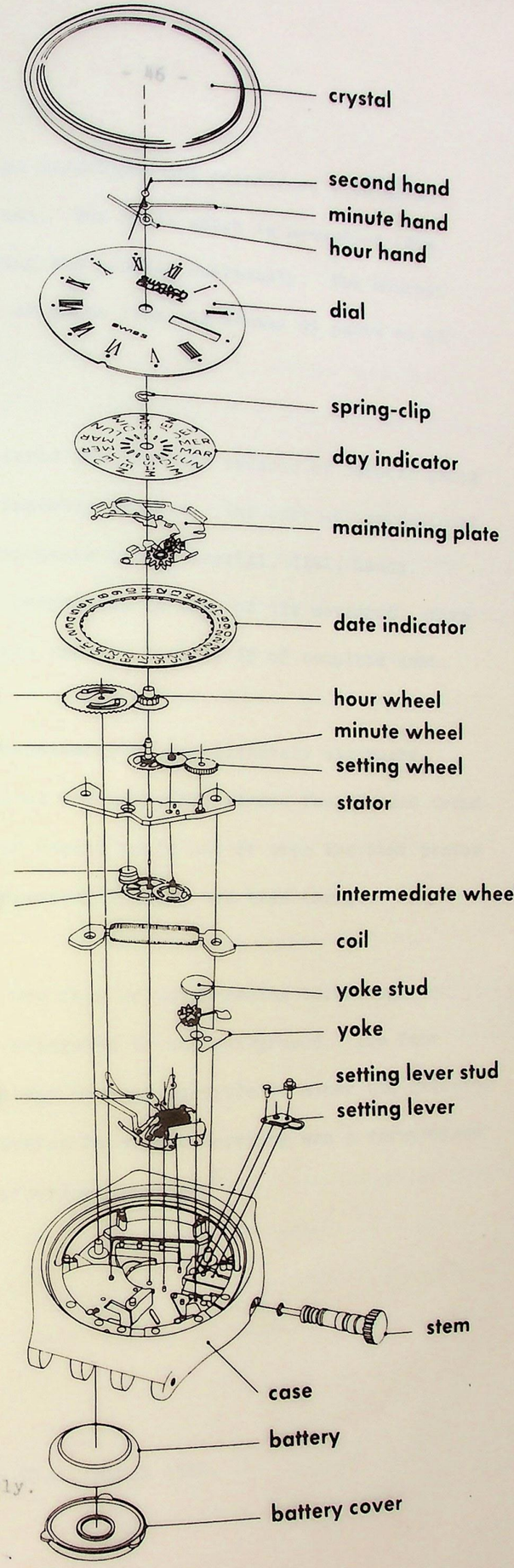


Fig. 20. Swatch Assembly.

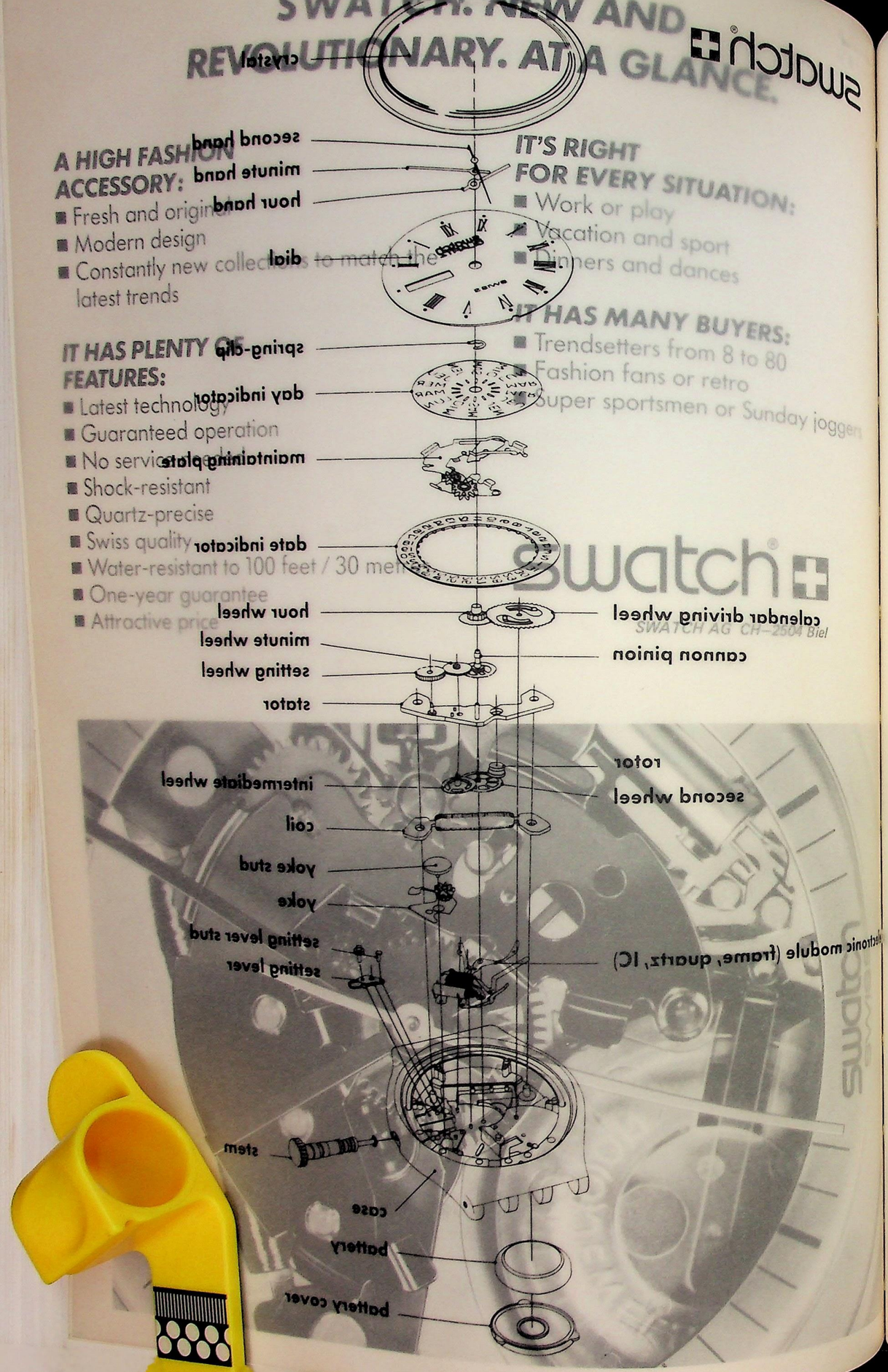


Fig. 20. Swatch Assembly.

stress, such as time adjustment are reinforced with metal parts inside the case. The whole watch is assembled from one side, simplifying the process enormously. The concept reduces the number of parts from the normal 91 parts to 51 parts.

Costs have been lowered considerably because of reduced parts and the effective assembly process. The cost of conventional watches exterior components (case, crystal, dial, hands, case base etc.) is comparable to that of its movement. With Swatch this cost item amounts to only 8% of complete cost.

Swatch has a life expectancy of approximately six years. Since Swatch is geared for up-to-the-minute fashion and trend-setters, most of the models would not be worn for that period but worn for approximately 3 years and then change.

The effect of this new form of watch-making technology on product design was relegated to the background. The fact that the new technology made it possible to alter the exterior appearance of the Swatch to almost anything was a cornerstone of the Company's marketing strategy.[6.]

6. Swatch Manual - Biel, March 1986.

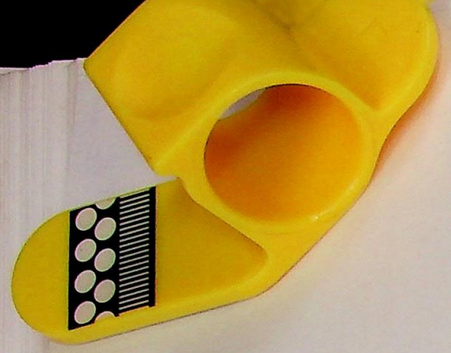
A Farewell to Traditional Ideas:

Working with the slogan "different and more cost efficient than all the others", it was up to the marketing experts to devise an innovative marketing strategy. A new team whose main experience lay with marketing and consumer goods, developed a marketing concept that was to "blaze entirely new trails for the watch industry". The idea was to stop emphasizing the products' immediate usefulness and instead to highlight the "emotions" associated with ownership of the watch. Swatch was conceived as an up-to-date, fashionable "accessory". Whoever owns a Swatch not only possesses a solid, perfectly accurate watch, but also a vacation or Leisure time watch. "It helps to express the owners individuality", the brochure says. Swatch was intended for the ever-changing fashion and leisure market. The notions of value and prestige, traditionally connected with the watch industry were deliberately thrown overboard. Therefore Swatch's target public were: fun people who enjoy diversity and whatever is "in". Swatch's distribution and media message - publicity, promotions, public relations - new paths had to be discovered. Opposition to newly opened sales channels (boutiques, fashion houses and department stores) was gradually removed due to attractive margins and special activities at key sales locations. Unconventional promotions and happenings involving artists, muscians, athletes and fashion

trend-setters turned the attention onto Swatch. For example in March 1984 a Swatch talking robot moved around the International Spring Fair in Birmingham. This was decorated with watches and generated an interest in Swatch. Swatch sponsored various events, but chose them carefully, for example - the World Breakdance Championship at the Roxy, New York, in September 1984. This was a well-choosen event since it was definetly "in" and breakdancing appealed to the type of user Swatch wanted to influence. Posters were carefully designed to portray the users emotions of happiness fun and fashion. For example in the poster illustrated on page 50 the fun and happy image is shown in the expression and pose of the girl and the words written above here "I've Got a Swatch". She is excited at the fact that she has a Swatch. The persuasive piece written below her is to encourage more users around to the idea of the watch as an "accessory". "And everyone so wild it makes your head spin".

Fig. 21.


'VE GOT A SWATCH
Watch design ©
been thinking about it for ages. Now at last it's on your wrist. The new SWATCH. In fantastic colours and totally wayout styles. But still the same
CH quality. Shock-resistant. Water-resistant. Quartz precise. Choose your SWATCH today from 22 differ-
odels, all at Sfr. 50.–. And every one so wild, it'll m



Product Philosophy:

The Swatch product philosophy is evident from its design. Every six months an entirely new Swatch collection with approximately 20 newly designed watches is created. Each collection is divided into four model lines with varying images: classical, sophisticated/elegant, sporty/leisure time, and fashionable/trendy. The designers must interpret these four stylistic areas and, using graphic talents, infuse them into Swatch. For this they must be able to sense future fashion trends and new ways of expressing new life styles. The band and the case of the Swatch are the only parts that must remain constant otherwise, anything goes. Colours, forms, materials, designs and special effects are used to create the models. Thus the "accessory" side of the Swatch is emphasized.

Examining the first Swatch collection 84/85 the attempt to convey the four model lines is apparent. As the brochure is opened up into three sections, the fourth on the back page the models are separated onto each section. They interlink to draw the customer across the whole range. A small photograph representing each line is superimposed on each page. The first page shows the fashion/trendy image. Since it is the autumn/winter collection the colours are not very bright. Since black and red are two favourite fashion colours this

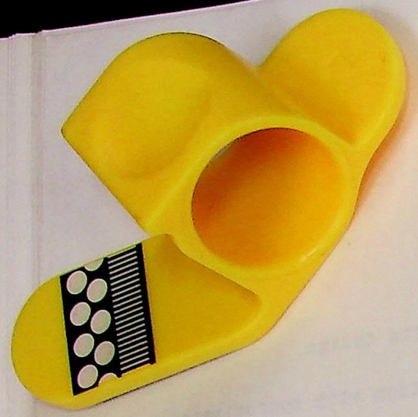


Fig. 22. Collection '84/'85.
Brochure No. 1.

is used throughout the collection. Quite alot of black is used through all the lines as this is quite a cult designer colour representing taste and sophistication.

The second collection is the sporty/leisure time line. The red LR104 Swatch is particularly energetic and conveys the "accessory" image strongly. The face reflects the move towards more bold and 'mad' patterns in fashion. It has a slightly African touch in its face design. Even the "granite-type" background of the watches helps create the fashion/trendy image. This was used in much of the Memphis furniture. Memphis had begun in 1980-1981 when the concept of Swatch had begun. The influence of the radical designs and strong decoration coming from Africa, South America, India, Polynesia, Java etc., of the Memphis group, was beginning to penetrate other fields of design - particularly textiles and graphics. Swatch were quite conservative in their first collection of designs using mainly conventional numbers or indications and sticking to subdued colours even in the fashion/leisure line. The classical line needed to be a little more conservative since it was aimed at a slightly older, more sophisticated user. One of the most successful of this line is the black Swatch with the gold hands. This watch in its simplicity, has conveyed sophisticated, classy appeal and this is particularly due

Fig. 23. Brochure No. 2.

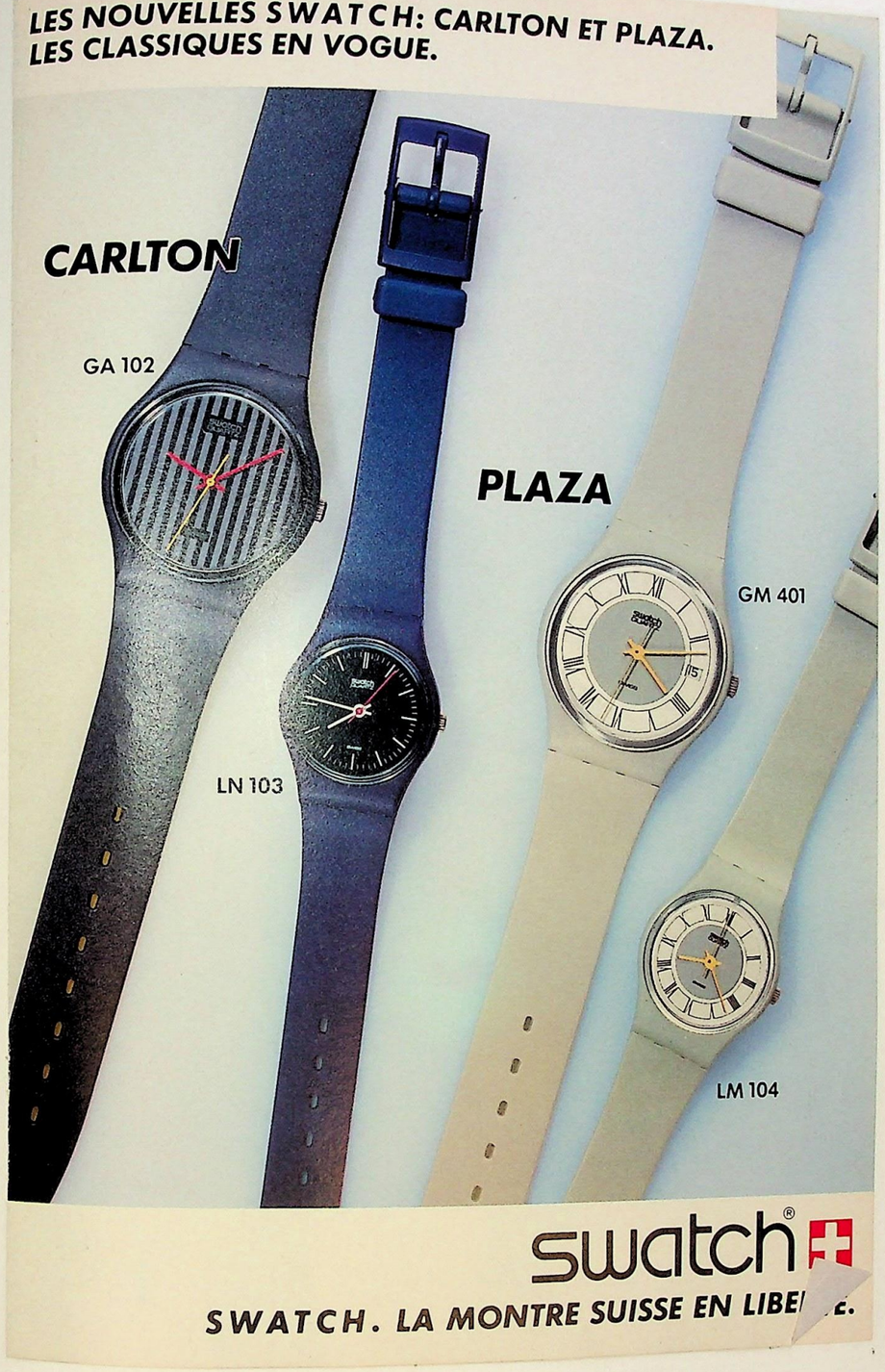


Fig. 24. Brochure No. 3.

to the choice of colour - black and material-gold.

Looking at the fourth brochure the Swatch watches have become more adventurous as they had asserted a strong place in the market. There are brighter colours, primaries mixed in one watch. As the demand for sports analogs and chronograph-style watches had increased, there was more of this type of styling in the Swatch watches. For example: the "Chronotech" and also the "Nicholson 85" and "Nicolette" for ladies in the classic section. The macho, fast image was conveyed in the styling of the "Yamaha". The face suggests a motorbike dial as does the name. The "BC/BG" face pattern suggests a more expensive material - perhaps lizard skin, and also touches on a Memphis pattern.

The colours and styles of Swatch reflect the seasons and fashions of the moment. For example, in brochure five the range is designed for the summer and is directed to female users. The front cover shows the Swatch users in trendy fashions, with watches to match. The watches are in ice-cream colours with fruit-smelling straps as a novelty. These reflect the fun and energy of the summer. The "jellyfish" watches were also a big success due to their transparency. They are alot more appealing than the Bulova Accutron which revealed its interior.

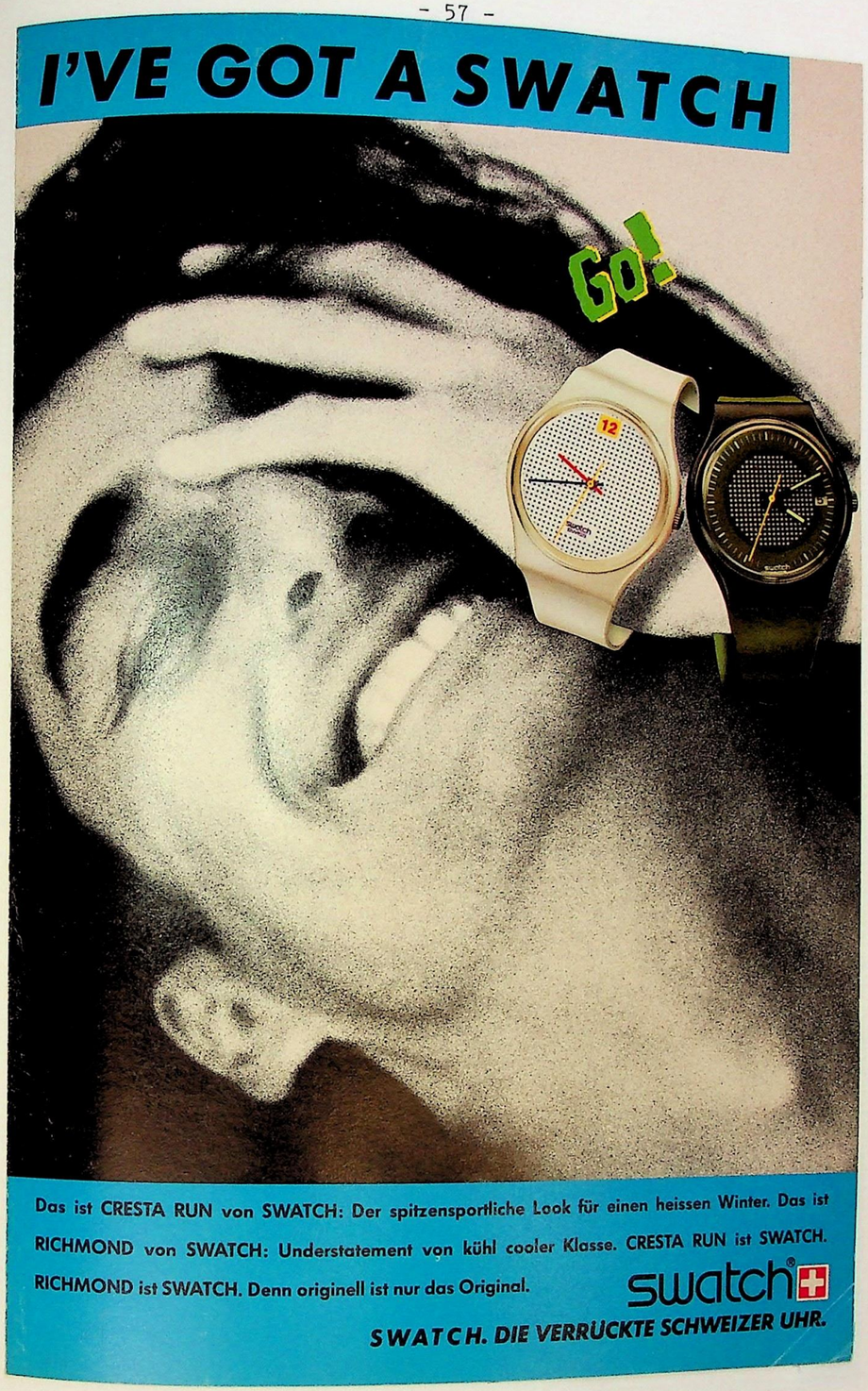


Fig. 25. Brochure No. 4.

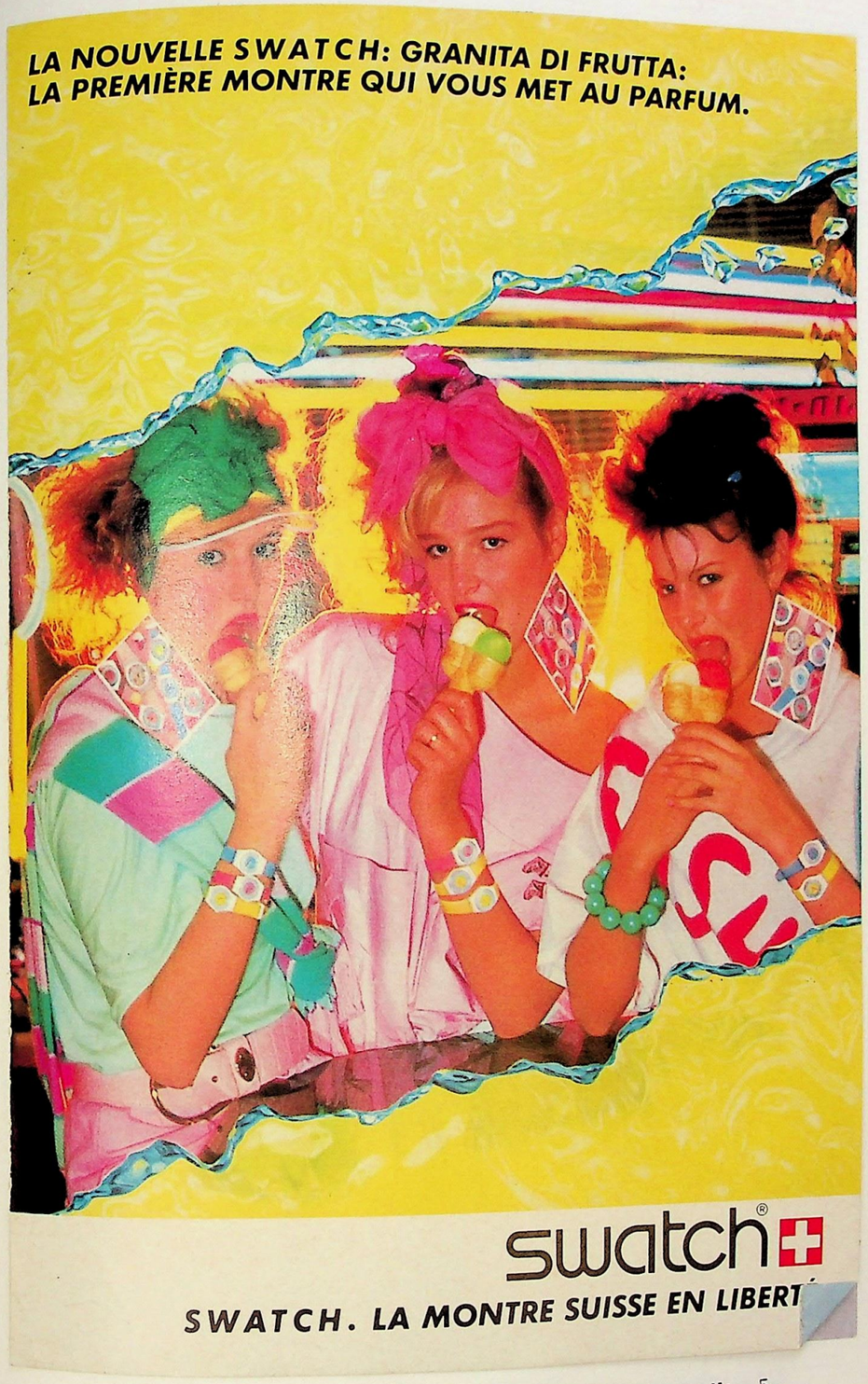


Fig. 26. Brochure No. 5.

The strap was not as successful since it tended to discolour and turn yellow. Therefore it was re-launched in Autumn 1986 with a white strap. The user definition goes beside it saying: "for personalities with insight. That's clearly what it takes"!

In the sixth and seventh brochures an even more adventurous approach was taken. The "Blackout" watch face has black numbers on a black blackground which are hardly visible. It is this point that attracts the buyer - the novelty appeal - something slightly "crazy". The "pinstripe" watch is clearly geared towards young "yuppies" in trendy suits. This line is called "Fleet Street" which conjours up the young businessman or woman, very cosmopolitan in attitudes.

The seventh brochure is geared to the fashion-trends. The "sheherazade" reflects the popularity for paisley patterns and Indian-style trousers and waistcoats in 1985. The "McSwatch" and "McGregor" reflects the popularity towards tartan clothes e.g. - trousers, skirts jackets. The "Velvet Underground" watch reflects the "Madonna image" of lace, short mini-skirts, fish-net tights and a daring bold attitude.

The 1986 collection spring/summer shows the influence of costume jewellery and costume clothes e.g. the Egyptian look or the African look. The watches have become much more colourful

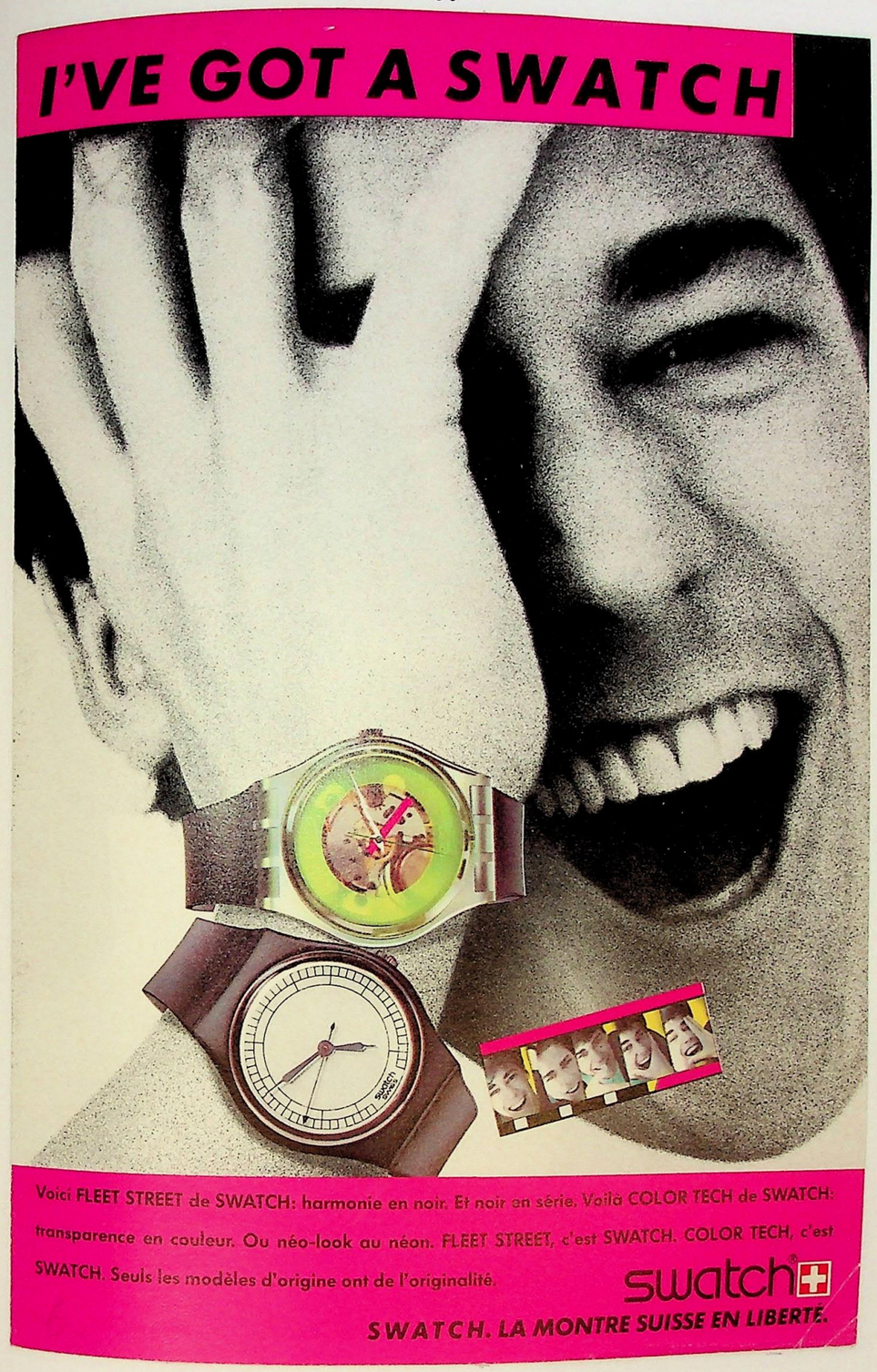


Fig. 27. Brochure No. 6.

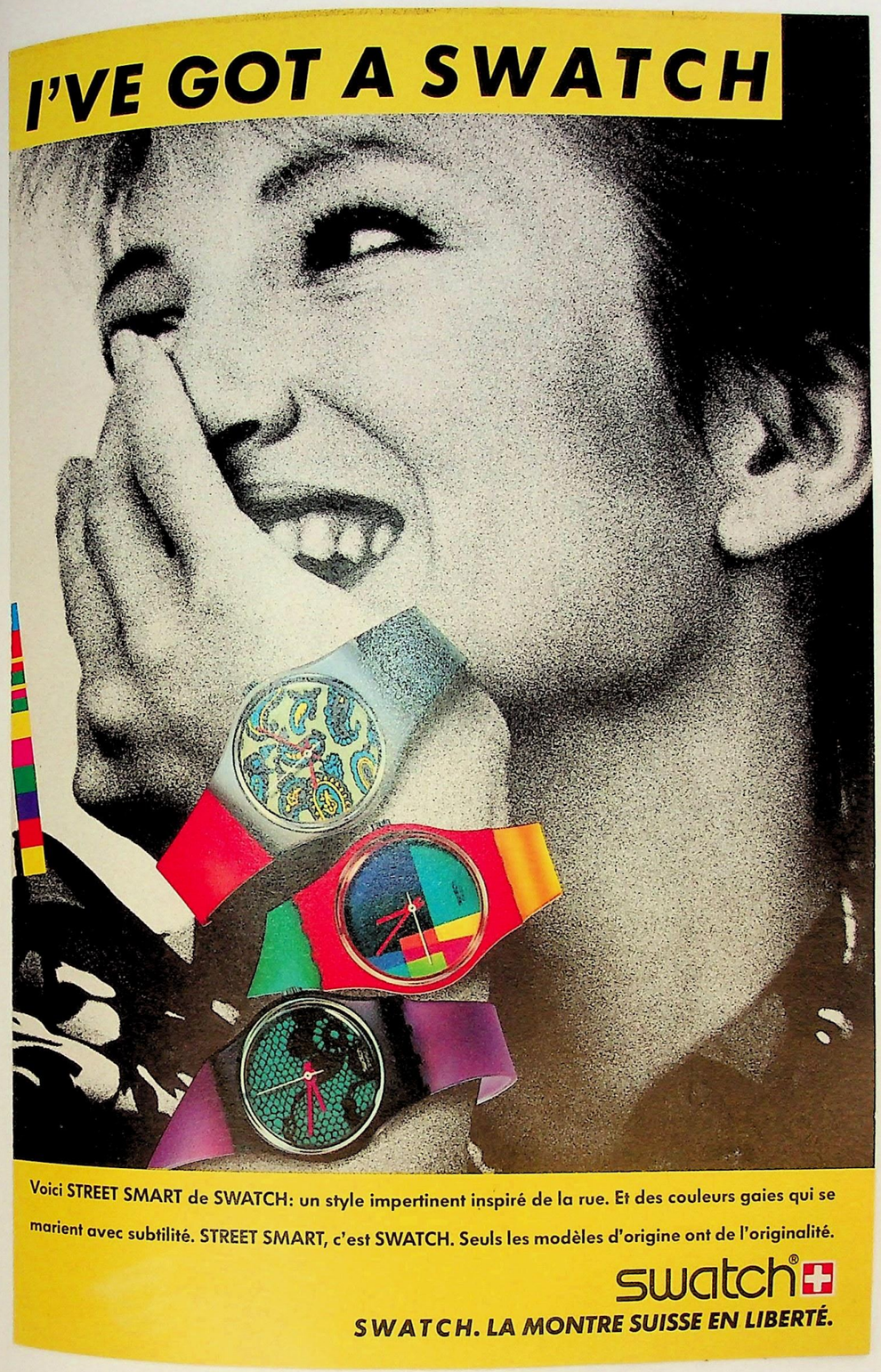


Fig. 28. Brochure No. 7.

bold and energetic, e.g. "Tonga". There is much more interchanging between case, straps, buckle and face. The bright colours of fashion, e.g. blue and green are prominent, as opposed to the pastel colours of the summer before.

The main introduction in the Autumn '86 collection was the heraldic line which particularly suits the "yuppie" who has plenty of excitement and fun in his/her life. It is part of the "Next" look, a chain of up-market clothes shops which promoted the "horse-riding, skiing", and generally sophisticated - trendy look. The "cowboy" look is currently fashionable - for example boots with "Indian-style tassles or jackets with tassles made from suede or leather. Therefore there is a Swatch to match this look - "Running Water" or "Ruffled Feathers" in earthen colours and suitable graphics to convey the Western image.

Finally, the most recent Swatch developed aims at the ski market - but only those who are primarily interested in skiing as an "in" "fashionable" sport and have the money to carry this out. The Pop watch emits an ultrasonic homing signal to enable mountain rescuers to track you down should you have the misfortune to find yourself trapped under a snow drift while skiing. This is more a novelty item than acturally useful. It comes with a choice of straps - a big butch one

They're new.

SWATCH in spring. Right on target for this season's fashion themes: **AQUA LOVE,** nimble fish in the cool waters. **NEFERTITI,** Egypt new after 4000 years. **BLUE NILE,** voodoo magic in demonic design. **COSMIC ENCOUNTER,** the comet knows the way. **PINK FLAMINGO,** tender-graceful charm in pastel. SWATCH comes in many other variations. Get to know the whole wide world of SWATCH.

Fig. 29. Brochure No. 8.
Collection '86.

Fig. 30. Collection Autumn '86.

to wrap around the sleeve of your bulky ski jacket, and a more domesticated version for aprés ski. You pop it out of one and skip it into the other, the point being that the face is still clearly recognisable so that passers-by are left in no doubt as to how sporty you are.

CONCLUSIONS:

Success of Swatch:

The success of Swatch is quite evident from firstly the production figures and secondly the change in attitude of other Companies. In November 1982, 235 Swatch watches were produced. Two years later, in October 1984, monthly production had already passed the 500,000 mark and by the end of 1985, the monthly production capacity was approximately 1 million.

The 10 millionth Swatch left the production line almost three years from the beginning of mass production. This shows the demand which was developed for the watches, while keeping the retail price at £25. If the price had been reduced any lower the watches would not have kept the same quality and demand levels. They would have melted into the now vast quantity of cheap fashion watches.

Following the Swatch concept:

From a survey of the United Kingdom watch industry in 1976 it was predicted that what was needed was - firstly - to identify a desirable product at the market level. Secondly, to have the flexibility to push the idea back for manufacture before launching it into high volume production with heavy marketing support. This is exactly what Swatch has attempted to do. In the wake of this attempt have come many new watch ideas. Dr. Konstantin Theile had worked with ETA on the developing and marketing concept of Swatch and when he left he contacted Martyn Goldsmith a marketing consultant, with the idea of bringing out a range of fashionable watches which were of good quality and reasonably priced, but not plastic. The result was a range with patterned dials, brass cases and waterproof leather straps. Martyn Goldsmith claimed the plastic watch was destroying its own market, and believes that it is important for the retailer to feel he is offering something a little different to his customers compared with what his competitor in the high street is selling. Therefore the watch is only available in selected stockists.

Another brand which has steered clear of plastic watches, leaving the market to Swatch and the Swatch look alikes is the Smash range by Stelux-Clewley. They launched their watches

at a time when the demand for innovative designs was at its peak, a demand fostered by the emergence of Swatch. Most Smash designs have anodized aluminium cases which looks well but wears off after a while. Smash is marketed as a fun accessory for a young market, as illustrated by the fact that advertising is carried out in the teen-magazines and early twenties. The ideas for these watches have more "novelty" value than the Swatch range e.g. one of the Smash range uses a holographic technique to create an unusual pattern on the dial, or, another has a small heart instead of a second hand which rotates around the dial on a clear plastic disc.

Another idea for the new "accessory" watch was by Alfex. They produced mix 'n match sets in presentation cases. They teamed colourful bangle watches with matching hoop earings, necklace or scarf. This was very much in line with the trend towards colour and fashion.

So, Swatch have blown fresh air into the stodgy management moulds of the industry. Even Citizen are looking for a new cosmopolitan look. Oasmu Tsuda, Managing Director of Citizen Watches U.K. was quoted as saying "A watch is not just a timepiece but a reflection of the character of the owner"/. Exactly the type of words used by the Swatch management.

However, Dr. Ernst Thomke, Head of ETA remains a controversial figure within the watch industry despite the success of Swatch. Some watchmakers are still not reconciled to the way in which he is changing the image of the Swiss watch - they see it as lowering the standards of the Swiss watch. The more generous of the Swiss watchmakers give Dr. Thomke and the Swatch credit for renewing the image of the Swiss watch within the world trade. One of these is Mr. Erwin Bernheim, owner of the Mondaine Company and producer of the Mondaine watch, which had a lower scale success. "We could feel the effect of the Swatchs' success immediately within the trade. The buyers who did not want to be wholly dependant on Japan Incorporated, started to turn to us. We needed to let people to know that Switzerland was still the country of origin for quality watches". Mr. Bernhieim however, doubts that the Swiss drive into the low-price market could be any good for Companies producing medium-priced watches. Within ASUAG-SSIH itself there are managers who blame Dr. Thomke for pulling the carpet from under the feet of subsidiaries producing watches in the middle-price range.

When quartz accuracy similar to that of the more expensive watches can be obtained for less than SwFr50 and consumers are buying watches two or three at a time as fashion accessories, where is the market for watches costing say SwFr150 - SwFr500?

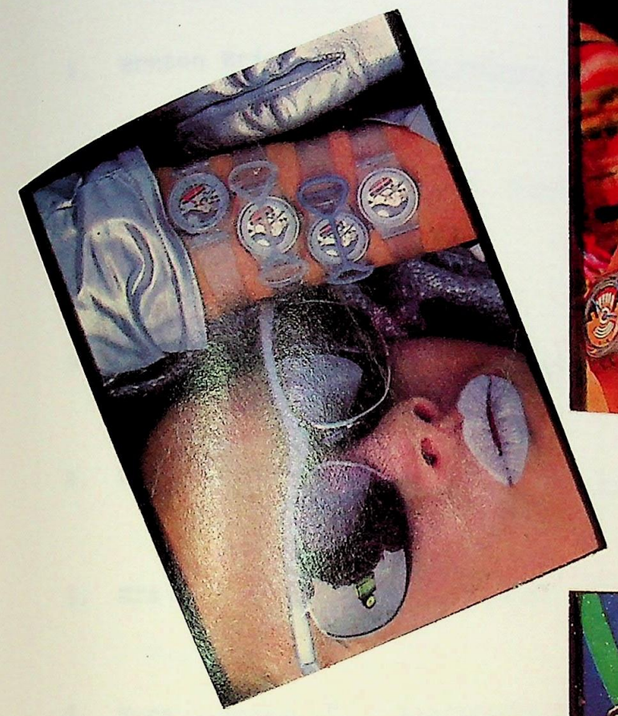
Comparable predictions have been discussed before when the American semi-conductor manufacturers swept into the watch business during the quartz revolution, when the Japanese took over and production of cheap digital watches in Hong Kong soared to unprecedented heights. Switzerland supplied 80% of the world's demands in the 1950's, it now supplies 10% of the total and has suffered the humiliation of being called "the Switzerland of the 1980's" by Hong Kong.

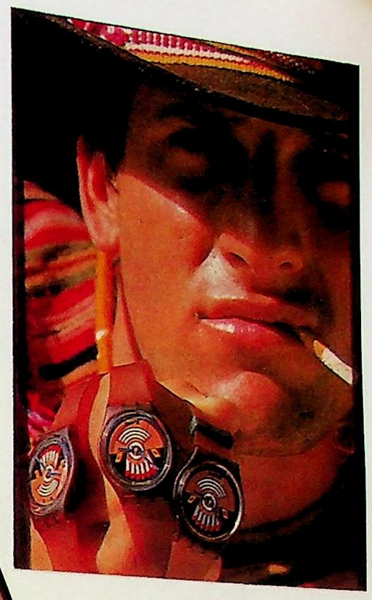
Swiss watchmakers argue hotly about the issue. Some contend that the success of Swatch will bring more change to the structure of the industry and a further fall-out of Companies.

Two-thirds of the Swiss output is now electronic. Mr. Daniel Kellerhals, the Director General of the Federation of the Swiss Watch Industry makes the point "within 10 years embracing two oil crises and two economic slowdowns the industry has totally converted to what the market wants".

On the world market, the Swiss still have the greatest respect for the Japanese but fear them less now that Japanese production costs are closer to their own and the Swatch has demonstrated that they can match the Japanese in technology production techniques and marketing.

The watch industry has been so volatile over the last 10 years that it is difficult to predict anything for the future as the industry has become more innovative and more open to new concepts in an age of conveniance. However, one thing is certain, the Swiss survived the attacks on its industry and once again believe in its resources. Faces are being mobilized and new projects taking shape - not least with the "innovations" of Swatch themselves.





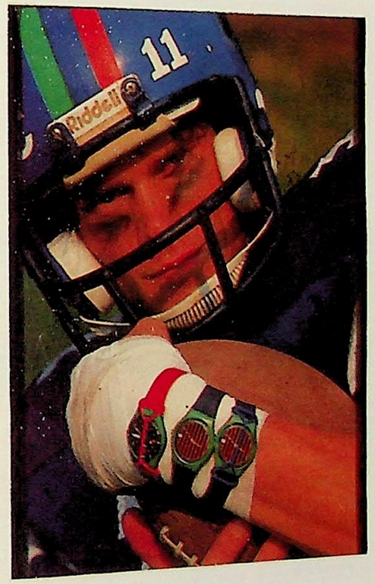


Fig. 31. "Swatch Image-Making".

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