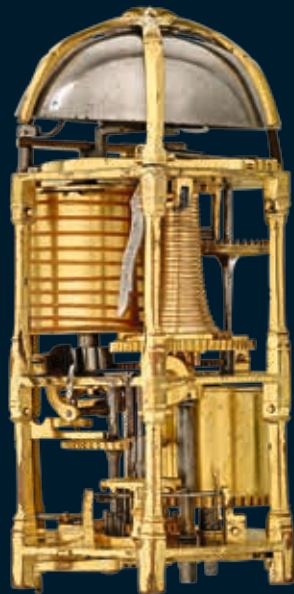


PATEK PHILIPPE MUSEUM

Treasures from The Antique Collection
The Emergence of the Watch



1500

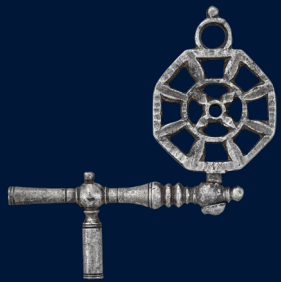
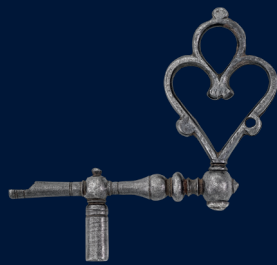
1600

1700

1800

1900





1500

1550

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1650

1700

1750

1800

1850

1900



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1800 1839 1900 2000



Precision and Beauty

This volume together with its companion volume provides new images and information on priceless treasures from the collections of the Patek Philippe Museum. Included are the company's own watches dating back to 1839, "The Patek Philippe Collection," which formed the core of the collection I started in the 1960s, and "The Antique Collection" with historic items that go back to the dawn of the portable timekeeper around 1500. Combined they represent a unique homage to Europe's horological heritage, for which I have long felt a passionate affinity. These books are intended for anyone, from generalists to experts, who is drawn to historic machines of unparalleled precision and beauty.

Each book might be compared to a play in twenty acts in chronological and thematic sequence. Each act is introduced by a concise historical account setting the scene. The stars of our drama are timepieces that have made history. All have been carefully auditioned (indeed chiming sonneries sing to you) by our expert curatorial team for their precision performance, dramatic presence, and beauty—a special beauty that not only resides on an enamel painted surface, but grows directly from choreographed motions of wheels and springs hidden within. These watches are masterpieces of form and function. Therefore, unlike most books of this type, we emphasize their inner mechanisms.

Representative artifacts document a confluence of aesthetics and technical genius in the mechanical watch. This complex history involves a constant dialog between innovation and tradition, which I regard as an essential tension. Nothing speaks more eloquently to this tension than the Calibre 89, introduced by Patek Philippe in 1989 in commemoration of the company's 150th anniversary. With its unprecedented 33 complications and revolutionary technologies, it is the superstar of the latter acts of our drama. But it also converses with the past, defying time itself and evoking time-honored traditions of the master watchmakers of the Vallée de Joux. Calibre 89 represented a major turning point in watchmaking that secured the success of the luxury mechanical watch in the face of ubiquitous, highly accurate, and inexpensive quartz watches, which ironically Patek Philippe had a hand in inventing.

Our books are dedicated to the creative spirits who have worked at our company over the past 183 years to realize the visions of our founders, Messieurs Patek and Philippe, to build the most precise and beautiful watches in the world.

Philippe Stern
Honorary President, Patek Philippe SA

"If you want to know the future,
you have only to reach into the past."



Philippe Stern in the Patek Philippe Archives, holding the Star Calibre 2000. Behind him are volumes documenting every watch produced by the company from 1839 onwards.

The watch shown on the left is the Calibre 89, which was in its day the most complicated watch ever built.

Patek, Philippe S.A.
Geneva, 1989
Calibre 32", Prototype
Ø 88 mm; P-1989

1500 1600 1700 1800 1900



A Huguenot Legacy

In 1601, Geneva's watchmakers drafted their own "Orders and Rules" for their craft. Unlike other European watchmakers, they had been associated with goldsmiths' rather than locksmiths' guilds before splitting into separate organizations of master craftsmen. The introduction in 1560 of the Sumptuary Laws prohibiting the wearing of jewelry, influenced by the reformer John Calvin (1509–1564), had compelled many Geneva goldsmiths to turn to a new trade, namely watchmaking. It is doubtless for this reason that Geneva's watchmakers excelled in the production of richly decorated gilded watches (page 16, S-270).

But other unique social factors came into play in Geneva's rise as a center for the luxury watch industry. Among the most important was the city's reputation for tolerance at a time of political and religious strife throughout the rest of Europe. Around 1540, French Protestants began to flee for safe haven in Geneva. Oppressed in France by the 1551 Edict of Châteaubriant and persecuted after the Saint Barthélemy massacre in 1572, they came in great numbers during the 16th century, eventually making up a third of Geneva's population.

Known as Huguenots, they brought innovative methods and techniques to their adopted home. Among the most important of these were enamel painting and creating watches with such complications as the moon phases and other calendar indications. The Edict of Nantes—a law of tolerance—issued in 1598 afforded French Protestants temporary relief. But the law's revocation in 1685 refueled the exodus to Geneva, making the Calvinist stronghold the world capital of watchmaking (page 16, S-942).

But the Geneva market was not able to absorb all of its own prolific production. Other outlets were urgently needed, and the local craftsmen began to export their timepieces to the Ottoman Empire and Persia, carefully adapting them to the taste of their new clientele. A small colony of watchmakers even settled in Constantinople: Isaac Rousseau (1672–1747), father of the philosopher Jean-Jacques Rousseau (1712–1778), was among those who set out to conquer the Ottoman market.

Ice from the Gods



Rock crystal was frequently used in watch cases made between 1630 and 1675. Magic powers had long been attributed to rock crystals. In antiquity, this semi-precious stone was believed to be ice from the gods, which the sun could never melt.

Attributed to Jacques Sermand
Geneva, circa 1635
W. 24 mm; S-276

1500 1600 1675 1700 1800 1900

Love Scene

The scene on the dial shows the romance of Theagenes and Chariclea from Heliodorus of Emesa's "Aethiopica," a novel from the third century CE.

Henri and Jean Toutin (enamel painters)
Blois, circa 1645
Grégoire Gamot (movement)
Paris, circa 1645
Ø 51 mm; S-1045



200 %



Peak Artistry

Combining the work of watchmaker, goldsmith, jeweler, and enameler, this pendant watch is a triumph of craftsmanship. The thin gold case is entirely covered in blue enamel. The outer layer of gold is chased in high relief and then enameled in the technique called "émailage sur ronde-bosse d'or." The feminine figures are taken from Abraham Bosse's (1604–1676) series of engravings entitled "The Cardinal Virtues."

Jehan Cremsdorff
Paris, circa 1650
Ø 59 mm; S-1054



200 %



1500

1600

1675

1700

1900

Cain and Abel

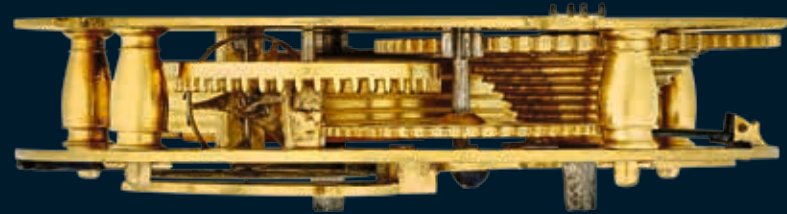
Biblical themes were common in early enamel-painted watches. The enamel painting on this watch's dial appears to tell the story of Cain and Abel, sons of Adam and Eve. The two brothers are depicted in a wood crossed by a river. Abel hides behind a bush while Cain aims his javelin at him, although the Bible does not specify how Cain killed his brother.

The case band of this pocket watch unscrolls with Biblical tales, including Jonah and the Whale, Samson slaying the Lion, and Belam with his donkey.

Jehan Augier
Paris, circa 1640
Ø 66 mm; S-1062



200 %



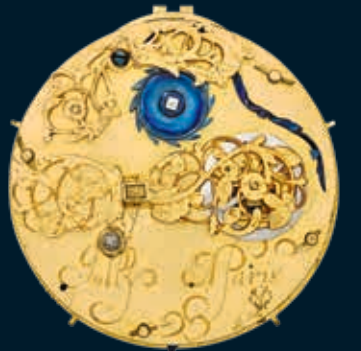
Illumination

The dial of this pendant watch bears one of the first enameled paintings ever made. This style is reminiscent of manuscript illuminations, which suggests a line of influence on the enamel painting of watches.

Josias Jolly (watchmaker)
Paris, circa 1635
Ø 53 mm; S-1066



200 %



1500 1600 1630 1730 1800 1900



The School of Huaud

Many Huguenot artisans fleeing France settled in Geneva. The city's thriving watchmaking trade gave them sufficient work, as enameling skills were in great demand. A typically French technique rapidly became a Genevan specialty.

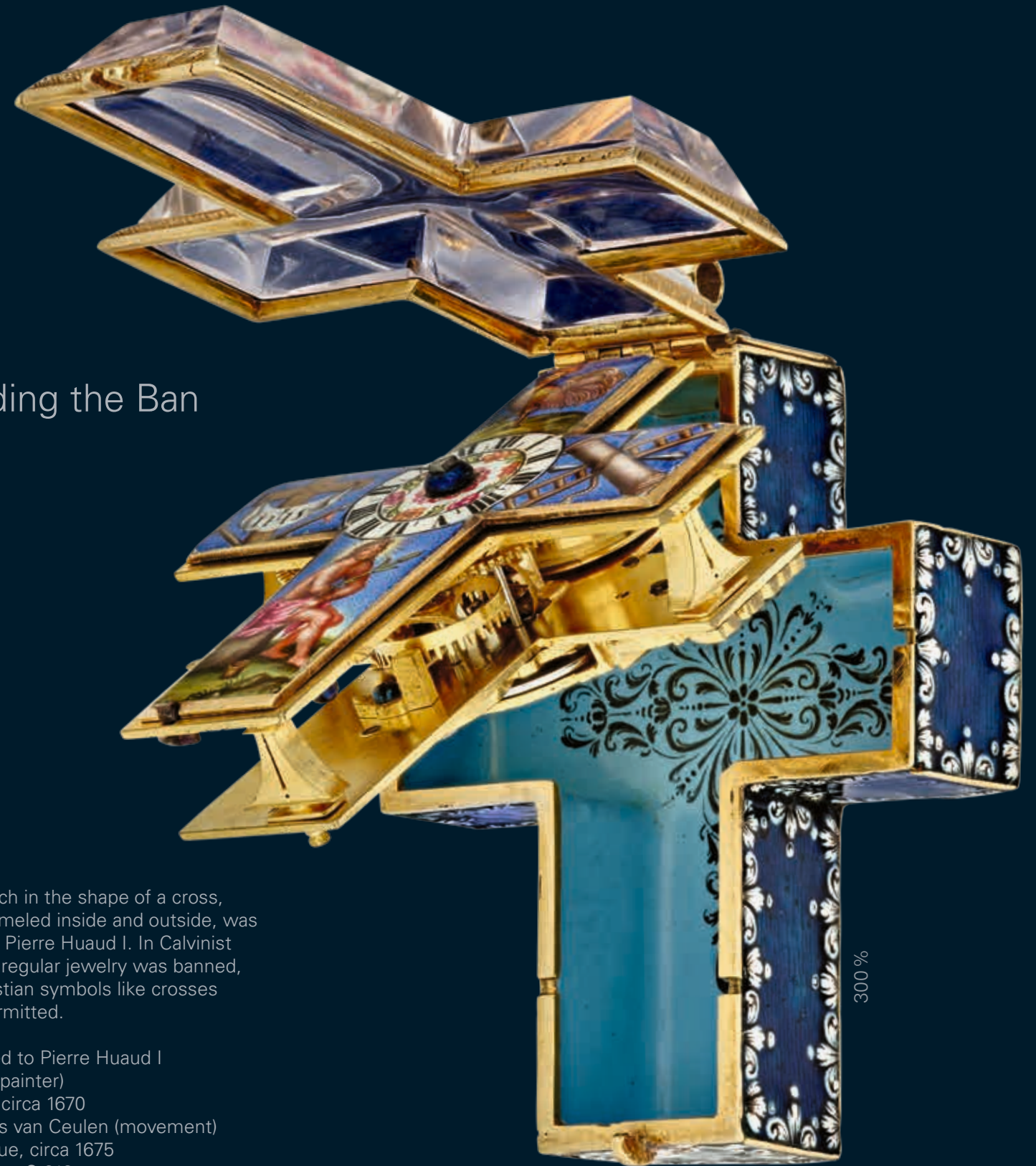
Pierre Huaud I (1612–1680), who fled his native France at the age of eighteen, is believed to have introduced enamel watch painting in Geneva. He favored the so-called pointillé technique, in which miniscule dots of colored enamel are superimposed to create subtle transitions from one hue to another. There are no known paintings signed by Pierre Huaud I, but several watch cases can be attributed to him based on stylistic criteria.

The most talented of his sons was Pierre Huaud II (1647–1698), who specialized in mythological and historical scenes. Later in life he moved to Berlin, where he remained. His brothers Jean-Pierre Huaud (1655–1723) and Ami Huaud (1657–1724), also trained as miniaturists, entered into partnership. Summoned by the Prince-Elector of Brandenburg, the later Frederick I of Prussia (1657–1713), they, too, practiced their art in the Prussian capital. Around 1700, Jean-Pierre Huaud and Ami Huaud returned to Geneva.

With their distinctive style, the Huauds may be considered the founders of the Geneva school of enamel painting. The extraordinary quality of their work made this art form popular throughout Europe. Other enamel painters, such as Jean André I (1646–1714), Jean Mussard V (1681–1754), and Germain Colladon (1698–1747), perpetuated a tradition they had learned from illustrious predecessors. Colorful and exquisite miniatures by these talented enamellers contributed decisively to the success of Genevan watchmaking.

Meanwhile, the way timepieces were worn on the body changed. After more than a century in fashion, the pendant watch worn around the neck was abandoned in favor of a pocket watch or one housed in a protective case worn at the waist.

Evading the Ban



This watch in the shape of a cross, fully enameled inside and outside, was made by Pierre Huaud I. In Calvinist Geneva, regular jewelry was banned, but Christian symbols like crosses were permitted.

Attributed to Pierre Huaud I
(enamel painter)
Geneva, circa 1670
Johannes van Ceulen (movement)
The Hague, circa 1675
W. 42 mm; S-318

1500 1575 1675 1700 1800 1900



Jost Bürgi and Christiaan Huygens

Precision clockmaking did not evolve from craft to science all at once. The Swiss clockmaker and scientific instrument maker Jost Bürgi (1552–1632) was a transition figure who mediated between clockmakers and scientists. He worked closely with the great astronomer Johannes Kepler (1571–1630). Before pendulum clocks became the scientific standard, Bürgi pushed horological precision to incredible heights with ingenious clocks that were accurate enough even to indicate seconds. His clocks, however, could not be reduced to the size of a watch.

Until 1657, the beauty of early timepieces easily surpassed their accuracy. They were primarily status objects. This changed abruptly when in 1673 the Dutch astronomer and mathematician Christiaan Huygens (1629–1695) published his epochal treatise, “Horologium Oscillatorium.” Based on an observation by Galileo Galilei (1564–1642), Huygens explained the phenomenon of swinging pendulums, and he proposed that they could be used for time regulation in clocks.

The new clocks regulated by a pendulum deviated from perfection by less than one minute per day. Their accuracy is due to a natural law which states that the time of oscillation depends only on the length of the pendulum. Applying this principle to clocks was a true revolution in measuring time (page 32, S-474).

Huygens also invented an oscillating system for watches. He combined the balance with a spiral-shaped hairspring, so that the period of oscillation depended only on the mass of the balance and the elasticity of the hairspring. His invention transformed the watch into a precision instrument. In 1675 Huygens commissioned French watchmaker Isaac Thuret (1630–1706) to make a pocket watch with a balance and hairspring. At nearly the same time, the English scientist Robert Hooke (1635–1703) developed a similar oscillating system with a blade spring. His countryman Thomas Tompion (1639–1713) was among the first to apply on a large scale Huygen’s notion of combining balances and hairsprings in watches (page 33, S-701).

The oscillation laws and the invention of both regulators—the pendulum and the balance with hairspring—instantly conquered the world of horology. Hands for minutes and seconds now joined the hour hand on dials of large and small timekeepers.

These timekeepers enabled researchers to observe natural phenomena with the greatest accuracy. Henceforth, watchmaking and science were bound to each other. Precise clocks led to more scientific knowledge, which in turn led to still more accurate clocks—an interaction that continues today.



40 %

Supreme Accuracy

Jost Bürgi reduced the friction of the gears to a minimum. This clock has only one wheel, an oversized escapement wheel, driven by two small weights. The so-called cross-beat escapement moves very slowly, with an oscillation period of 12 seconds.

Attributed to Jost Bürgi
Prague, circa 1610
H. 555 mm; S-1100

Jost Bürgi by Anton Eisenhoit from the title page of Benjamin Bramer’s report, Marburg, 1648 and 1684

1500 1600 1700 1730 1840 1900

Symbol of Luck

The most beautiful “Chinese” watches were made in Geneva, Switzerland, whose craftsmen found a lucrative market in the Far East in the 18th and 19th centuries. Pearls were considered by the Chinese to be symbols of luck, and almost always, the cases and dials of watches produced for the China trade were heavily decorated with pearls.

Piguet & Meylan (watchmaker)
Frères Oltramare (casemaker)
Geneva, circa 1825
Ø 55 mm; S-154



Collaborations

This extraordinary movement, crafted in the London workshop of William Ilbery (1772–1852), demonstrates the power of collaboration between Swiss and English craftsmen. The movement is completely enameled by a Genevan craftsman and follows the case’s teardrop shape.

Ilbery (watchmaker)
Jean-Louis Richter (enamel painter)
Geneva, circa 1805
W. 59 mm; S-125



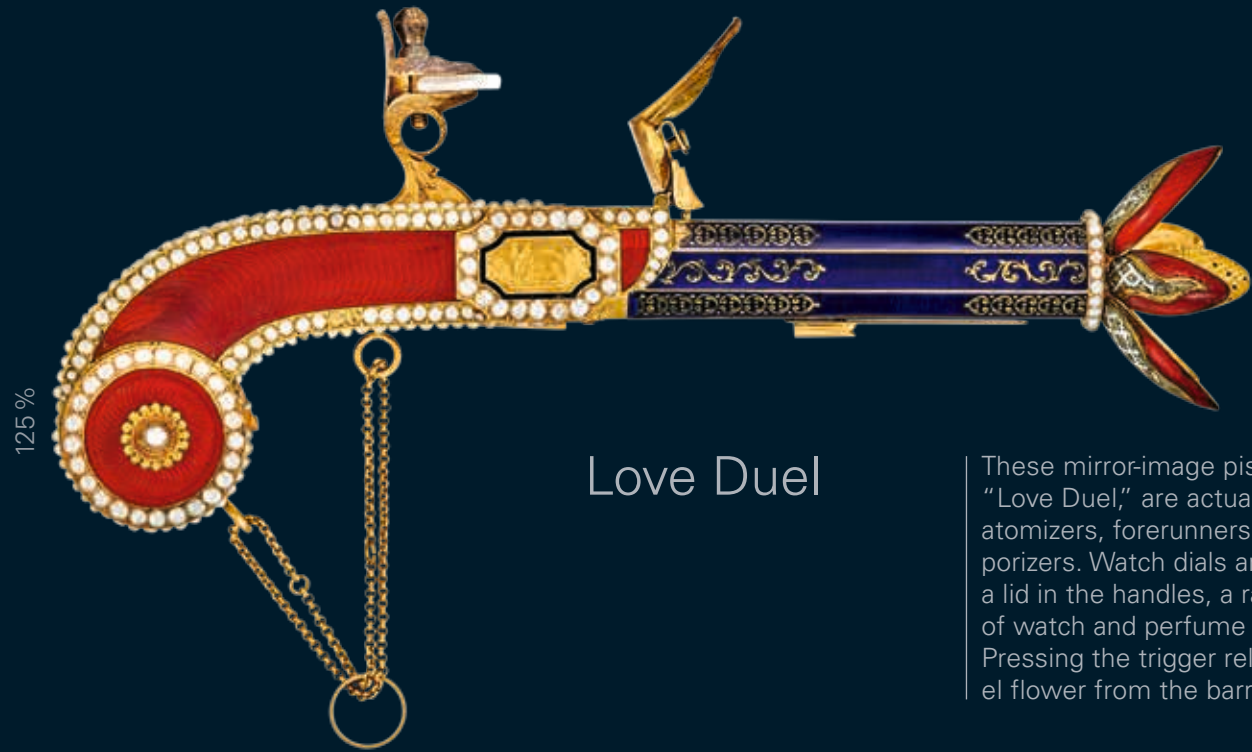
Songbirds

In the 1770s, Swiss-born Pierre Jaquet-Droz (1721–1790) created singing mechanical birds and barking dogs. Even more astounding, he miniaturized and incorporated his automata into pocket watch cases, a feat for which he was popularly celebrated as a magician and genius. The Chinese were known to be captivated by automata and, by the late 18th century, became a major outlet for European-made watches equipped with these life-like contrivances.

Jaquet-Droz
Geneva, circa 1785
Ø 62 mm; S-410



1500 1600 1700 1770 1840 1900



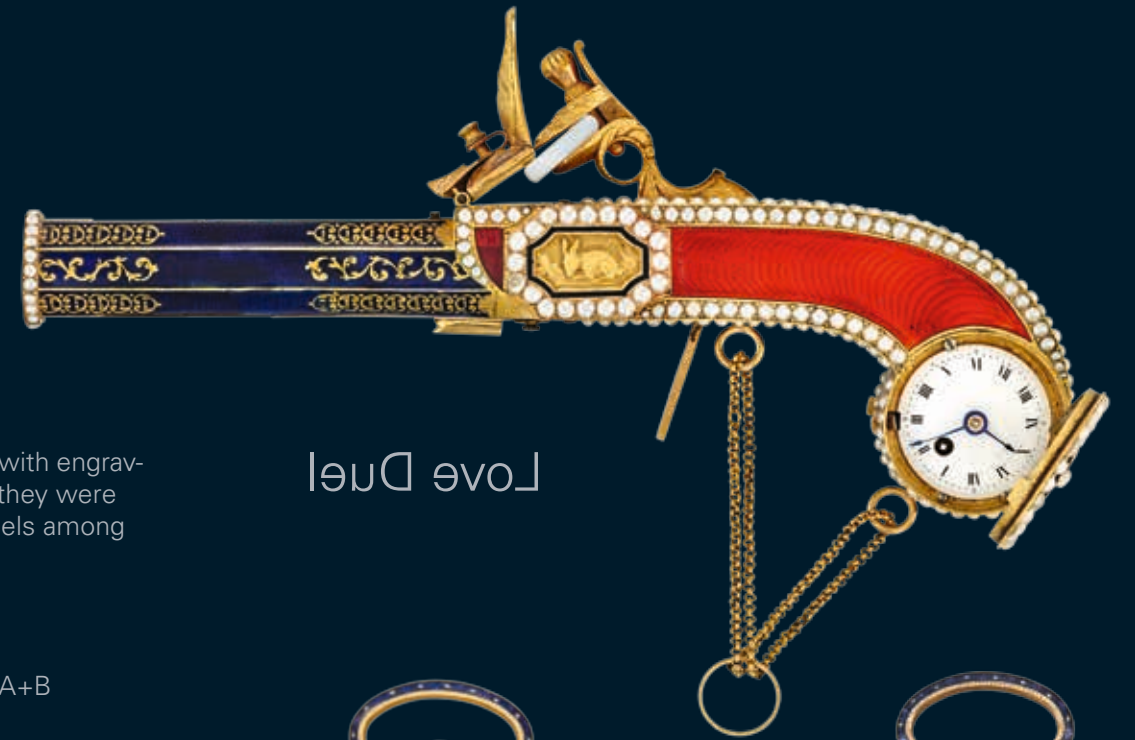
125 %

Love Duel

These mirror-image pistols, named "Love Duel," are actually perfume atomizers, forerunners of today's vaporizers. Watch dials are hidden under a lid in the handles, a rare combination of watch and perfume sprayer. Pressing the trigger released an enamel flower from the barrel, giving off

a special scent. Decorated with engravings, enamels, and pearls, they were beautiful toys for playful duels among the nobility.

Moulinié, Bautre & Cie
Geneva, circa 1805
L. 127 mm with flower; S-1 A+B



Love Duel



Virgin without Halo

This watch made for the Chinese market features a musical automaton. The back has a twinned enamel painting based on Raphael's (1483–1520) "Madonna della Sedia," presenting the Virgin Mary with the infants Jesus and John the Baptist. But watches destined for China removed Christian references, in this

case leaving only the Madonna as an anonymous mother with her child.

Piguet & Meylan (watchmaker)
Jean-Abraham Lissignol (enamel painter)
Frères Oltramare (casemaker)
Geneva, circa 1815
Ø 44 mm; S-489 A+B



Mirrored Motions



75 %



The mirrored images on these paired watches were painted by Genevan enameler Jean-Louis Richter (1769–1840) after an oil painting by Claude-Joseph Vernet (1714–1789). The movements of this pair were built by Englishman John Rich in his Geneva workshop. Rich also doubled the automaton. This is the only mirrored

automaton known to exist, an extraordinary expression of Yin-Yang symmetry.

John Rich (watchmaker)
London, circa 1790
Jean-Louis Richter (enamel painter)
Geneva, circa 1790
Ø 63 mm; S-428 + S-988

1500

1600

1700

1750

1850



Abraham-Louis Breguet's Horological Genius

In watchmaking, a few individuals stand apart for their extraordinary virtuosity, but none more than Abraham-Louis Breguet (1747–1823), unanimously acknowledged as the absolute master of the craft.

Born in 1747 in Neuchâtel in Switzerland, Breguet was first trained by his stepfather as a watchmaker. At the age of fifteen, he was sent to Versailles and Paris to complete his training—beginning one of the most remarkable careers of his generation. In 1775, Breguet opened his own workshop on the Quai de l'Horloge and quickly became famous for his technical skills and creativity. It was there that he developed the most complicated watch of his day, the Grand Complication No. 160, commissioned for Queen Marie-Antoinette.

In 1793, the political and social instability of the French Revolution forced Breguet to leave France and return to Switzerland, where he stayed until the nightmare in Paris was over. Two years later, he returned to Paris brimming with new ideas and a zest for action.

A virtuoso watchmaker, Breguet transformed many of his ideas into reality. His innovations included the constant-force escapement; the tourbillon, which compensates for imbalances in the escapement; and the "pare-chute" system, a kind of shock absorber. Breguet also profoundly influenced the aesthetics of timepieces. Elegance and

simplicity characterized his movements, cases, and dials. By shunning unnecessary decoration and prioritizing the creation of purely practical devices, he became the godfather of the simple watch, an exemplar of "form follows function" (page 69, S-1026).

Breguet was in contact with other talented horologists, including Jean-Antoine Lépine (1720–1814) and Antide Janvier (1751–1835). Lépine constructed thinner watches by redesigning the movement. Janvier and Breguet both experimented with double pendulums to increase clock accuracy. Eventually, Breguet built a pocket watch that communicated overnight with a table clock, which automatically wound the pocket watch, synchronized its hands, and adjusted the frequency of the balance—a seamless mechanical combination that worked without human hands.

In Harmony

Abraham-Louis Breguet (1747–1823) was very excited about his invention of the "Sympathique," a paired clock-watch device designed to wind and set the watch automatically. When the watch is put into the special cradle of the master clock at three o'clock a.m., two rods enter the watch movement to complete the robotic operation. This was a technical feat that no other watchmaker in the world could match.

Abraham-Louis Breguet (pocket watch)
Paris, before 1823
Ø 49 mm; S-970 B

Breguet Neveu & Cie (table clock)
Paris, 1836
H. 625 mm; S-970 A



32%

1500 1600 1700 1790 1825 1900

Perpetual Calendar

This calendar watch with the first perpetual calendar ever built has a window with a rotating disc that scrolls the name of each month with its number of days. A still smaller disc under February rotates once every four years, with four adjustment positions for a full turn: three for 28 days and one for 29, accounting for leap years.

Thomas Mudge
London, 1762
Ø 50 mm; S-1033



Geocentric

This geocentric planetarium has black lines radiating from Earth to the signs of the zodiac and steel hands to the sun and moon. The dial revolves once per year. The horizontal steel bar is the horizon. The sun is moving toward sunset, and the moon has set and is already below the horizon. It is calculated to the latitude of Stuttgart, the watchmaker's location.

Jacob Auch
Stuttgart, circa 1790
Ø 68 mm; S-1057



Sky Map

The dial of this pocket watch represents a sky map of the Northern Hemisphere for January 17. There are a moon hand and a sun hand, which shows the date. The tail of the dragon-shaped hand points to the signs of the zodiac. The overlapping of the three hands indicates a solar or lunar eclipse.

George Margetts
London, 1778
Ø 58 mm; S-1055

Sundial

In this watch, the sun reigns supreme at the center of the dial, with all four hands pointing toward it. Pushing the pendant causes the hands to jump instantly to subsidiary dials, indicating the current hour, minute, day of the week, and day of the month.

Dubois & Fils
Le Locle, circa 1790
Ø 58 mm; S-333



150 %

1500 1600 1700 1750 1850 1900

Shrinking the Chronometer



The escapement with the swinging balance determines a watch's accuracy. In the 18th century, European watchmakers focused on improving this regulating device. Increasing the frequency of the balance also increases precision by virtue of shorter time intervals: fifths of a second now became standard.

The most accurate pocket watches, using new types of escapements, came out of the workshop of John Arnold (1736–1799) in London. One of his timepieces was used on a ship of the British East India Company en route to India in 1777. Its navigational applications were emphasized in a 1779 pamphlet, "Some notes useful to those who have Chronometers at Sea." This publication marked the first appearance of the term "chronometer," the standard term for high-precision timepieces. Eventually, timepieces had to undergo special, independent tests before they could be called chronometers (page 93, S-1034).

Various escapements were developed in Switzerland by Antoine Tavan (1749–1836) and others. Inspired by Englishman Thomas Mudge's lever escapement, the Genevan watchmaker Jean-Moïse Pouzait (1753–1793) developed an early version of the "Swiss lever escapement," still found today in most mechanical watches.

Around 1776, Pouzait also designed a way to stop and start the seconds hand on a movement with a very slow, swinging balance of one tick per second (page 94, S-378).

Indication of seconds became increasingly common, and not only for timekeepers designed for navigators. In the industrial age, faster production times required more precise time measurement, which became equally useful in scientific research.

Watches were produced in increasing quantities and improved quality not only in England and Switzerland, but also in the U.S.A. and elsewhere.

By the middle of the 19th century, Switzerland became the leading watchmaking country in world.



250%



Splendid Accuracy

This movement showcases the technical beauty of John Arnold's (1736–1799) patented balances, considered the most accurate in the world. Temperature compensation is achieved through two bimetallic loops, resembling shoelace bows, which is called the "S-Type."

Note the filigree on the piece securing the circular balance to the top plate.

John Arnold
London, 1781
Ø 74 mm; S-1034