POCKET GENIUS

The Watch Collection of Alex Ku

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The Watch Collection of Alex Ku

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FOREWORD

Today, the ease of finding the time is often taken for granted. Most of us have a smartphone in our pocket that tells the time at a level of precision that was unheard of even a century ago. However, a century ago many people carried another type of high-tech device in their pocket — the pocket watch. “Pocket Genius: The Watch Collection of Alex Ku” tells the story of the development of the mechanical watch in four parts: Historical Makers, Escapements, Complications and Aesthetics. The watches in this exhibit represent the pinnacle of watchmaking craftsmanship and are a testament to the ingenuity of the human mind.

As you peruse this exhibit, I encourage you to put yourself in the shoes of the represented makers. They all had one thing in common, which happens to be the mission of the Horological Society of New York — to advance the art and science of horology. I extend my sincere thanks to Alex Ku for his vision in collecting important pocket watches and for his enthusiasm in making this exhibit happen.

Nicholas Manousos
Executive Director
Horological Society of New York

PREFACE

The 1980s are notable for the revival of mechanical wristwatches. However, as a collector born in the 1980s, why did I choose to collect pocket watches that date back to the 1680s? Why choose to swim upstream? I've heard reasons for investing in pocket watches, but I'd love to express my own thoughts for guests of this exhibit who may seek the beauty of horology in different ways.

My grandfather designed machine tools, such as lathes, and I grew up among his blueprints. This led me to pursue degrees in physics and to appreciate mechanical watchmaking as a science. The brilliant ideas within, like in any other science, never ceased to attract me. Inspired by Sir David Salomons' quote "to carry a fine Breguet watch is to feel that you have the brains of a genius in your pocket," I desired to collect some "Invenit et Fecit" pieces made in the last 300 years. This "Pocket Genius" exhibit showcases the works of many of the greatest watchmakers, such as Graham, Mudge, Berthoud, Lepine, Breguet, Arnold, Philippe, Audemars, and Fasoldt. I collected many pieces to construct a network of these important names, which helps to reveal how English and European horologists interacted and spread technologies during the golden era of watch development. My collector's notes in the catalog describe this in detail.

At first I only acquired a few movements as a small dip in the ocean of antique watches, until I started reading horological books. Reading delivered the answers to my core question — which watches resonate with me the most? My decision was to collect examples crafted by eminent **historical watchmakers**; the rarest **escapements** which show the evolution towards precise timekeeping; the most intricate **complications**; and unique **aesthetics**. This catalog and the exhibit displays are divided in accordance with these four parts.

Over time, I became fascinated by a certain aspect of pocket watch collecting — the provenance and stories behind the watches. I remember feeling goosebumps when I

realized that my Haas-branded watch was the personal watch of Arthur Haas, the heroic physicist who kicked off the "Quantum Genesis." It was a magical link established between a physics major and a piece of scientific history. I am fortunate to be a pocket watch collector, as the previous owners left a tremendous treasure trove of details to be discovered. Through my collection, I tried to interpret the lives and stories of the pioneering immigrants, scientists, doctors, entrepreneurs, and philanthropists. For me, the mission has only just begun with each pocket watch purchase.

Pocket watch collecting brings me excitement like treasure hunting. What's more, it brings joy through communication with other horological enthusiasts. To receive a unique escapement from Professor Emeritus Michael Edidin at Johns Hopkins; to learn about pocket watches with Mr. Arnaud Tellier (horological historian and former Patek Philippe Museum Director); to discuss the past and future of antique watches with Mr. John Reardon and Ms. Daryn Schnipper (two renowned experts in the watch collecting world), have all become wonderful memories in my collecting journey.

Achieving a great collection of pocket watches requires endurance. After all, it is a competition of collectors' knowledge in the long run, rather than a competition of the depth of your wallet. While my collecting journey began just seven years ago, I appreciate this opportunity with the Horological Society of New York to create an exhibit and to express my gratitude to those who helped and encouraged me.

HSNY provides us with a great community to seek similarities and exchange opinions. You could embark on a unique journey of pocket watch collecting, perhaps soon after visiting HSNY and reading the exhibit catalog. For questions on the exhibit, I may be able to share some thoughts via alexku.horology@gmail.com, and you can follow me on Instagram (@alexku.horology).

Sincerely,
Alex Ku

And many thanks to my family for their unwavering support.

INTRODUCTION

Collectors collect for many reasons and in many ways. While horological organizations have long celebrated historical collectors, this new exhibit highlights the collection of one enthusiastic and generous watch collector of the 21st century, Alex Ku.

Some watch collectors love the aesthetics, others the mechanical features, and others the historical and cultural significance of their prized objects. Clearly drawn to the marriage of art and science in every ticking timekeeper, Alex wisely collects for all three reasons.

I encourage visitors and readers to closely examine the watches, the top-quality photography, the descriptive text, and especially Alex's collector's notes which further explain why each piece was carefully studied and selected to join his collection. His commitment to sharing his knowledge and passion for historically and technologically important watches is a model for all HSNY members and for collectors of everything everywhere.

Bob Frishman
HSNY Exhibit Curator

HISTORICAL MAKERS

1. DANIEL QUARE, London, No. 107, c. 1690, silver champlevé dial with engraved gilt edge, silver and tortoiseshell case, key-wind movement with fusee and verge escapement, 54mm. The case is hallmarked WI for William Jacques, a known casemaker to Quare.

Quare (1649-1724) was a contemporary of Thomas Tompion (1639–1713), the "Father of English Clockmaking," and one of England's finest watchmakers. Quare produced watches for British monarchs and later in partnership with Stephen Horseman. **Collector Notes:** Both Quare and Edward Barlow applied for a patent on repeating pocket watches. King James II favored Quare's design that triggered striking with a single push for the hours and the quarters.

A similar decorated tortoiseshell Quare watch was in the collection of J.P. Morgan that he gifted to the Metropolitan Museum of Art, New York.

2. GEORGE GRAHAM, London, c. 1740, No. 6091, key-wind movement with brass-wheel cylinder escapement and fusee, engraved pierced dial with rotating hour disk and single stationary hand, 45mm.

Graham (1673-1751) was the equally famous pupil and successor of Thomas Tompion (1639–1713), and the two men were partners until Tompion's death. Graham was a Fellow of the Royal Society and a Master of the Clockmakers' Company. The 'Honest George Graham' was a supporter of John Harrison's pioneering work on marine chronometers. Graham developed and nearly perfected the cylinder escapement after Tompion and used it in nearly all of his watches afterward.

Collector Notes: The watch is unusual for its single hand fixed at 12 o'clock and a central hour disk rotating every 12 hours. Single-hand watches were standard on pre-hairspring timepieces since poor precision made a minute hand unnecessary and required additional gearing. However, this watch had the most advanced cylinder escapement and superior precision for the time. Graham may have made this piece at a customer's request. Another such watch has a Cupid on the rotating hour disk with the point of Cupid's arrow as the hour indicator.[1]

[1] *The John C. Taylor Collection, Part II,* (Winchester, UK: Carter Marsh & Co., 2021), Item 10.


XI XII I
X II
IX III
VIII IIII
VII V VI

3. MUDGE & DUTTON, London, c. 1760, No. 1350, 18K gold case with enamel scene, key-wind movement with cylinder brass-wheel escapement and fusee, 49mm.

Both Thomas Mudge (1751-1794) and William Dutton (1720-1794) were at the top of their trade, as partners making watches with very fine workmanship. Dutton apprenticed with George Graham and was also a Master of the Clockmakers' Company. Mudge was also a Graham apprentice and is credited as the inventor of the lever escapement, and the first maker of the perpetual calendar pocket watch, both in the 1760s. Inspired by John Harrison (1693 –1776), Mudge tackled the longitude problem with his own marvelous marine chronometers, which were awarded 500 guinea coins by the Board of Longitude after trials in 1774.

Collector Notes: The polychrome enamel portrait shows Hygieia, the Greek goddess of health and hygiene, standing with her hands holding a medicine bowl and a snake. The seated figure may be Demeter, goddess of the harvest, who holds a cornucopia. In the Graham/Mudge era, English pocket watches began having varied case decorations using precious metals, repoussé, and chasing as well as enameling by talented craftsmen like George Michael Moser (1706–1783).

4. JOHN ARNOLD, London, No. 212, c. 1770, doctor's watch with center seconds and hacking function actuated by slide on case side, key-wind movement with verge escapement and fusee, 57mm.

Hacking watches have a balance that can be stopped to allow synchronization with another timepiece. A doctor's watch has a relatively small dial for the minutes and hours, and a large easily-visible seconds indicator for timing a patient's pulse.

Collector Notes: The eminent watchmaker John Arnold (1736-1799) was a pioneer of marine and pocket chronometers and the inventor of a spring-detent escapement. His son and apprentice, John Roger Arnold, further developed the concept, as noted in the other Arnold watch in the exhibit (No. 26). John Roger was sent to apprentice with Abraham-Louis Breguet, bringing a pocket chronometer as a gift. The watch was later returned to John Roger as a homage to his father, having been transformed into the first tourbillon timepiece in the history of horology.

This verge watch may be one from John Arnold's early years with serial numbers in the 100s and 200s, before Arnold became fully focused on solving the longitude problem. Scientist Joseph Priestley recorded time on this watch to prove that a rat under a glass dome survives longer when breathing oxygen.[2]

[2] *The Mystery of Matter: Out of Thin Air* (Arlington, VA: Public Broadcasting Service, 2015, San Francisco: Kanopy Streaming, 2016).

5. JULIEN LE ROY, Paris, No. 1448, c. 1740, chased and engraved case, key-wind movement with verge escapement and dumb repeating via two gold hammers, enamel dial, 47mm.

Julien Le Roy (1686-1759) elevated French watchmaking to match English craftsmanship standards of the time. He was appointed clockmaker to King Louis XV in 1739. After Le Roy passed away, his son Pierre Le Roy (1717–1785), one of the greatest marine chronometer pioneers, kept making pocket watches under the name of his father.

Collector Notes: Le Roy introduced the "montre a toc" that strikes the watch case rather than a bell to make a quieter "toc, toc" sound. This watch is inscribed *"Jul Le Roy In[venté] 1740"* on the dial edge, referring to this new repeating method. Such "toc" watches became popular by avoiding a loud chime that would disturb the festivities of French royalty.

6. FERDINAND BERTHOUD, Paris, No. 8926, c. 1790, white enamel dial signed Ferdinand Berthoud, with a verge escapement movement signed Ferd Berthoud, 45mm.

Berthoud (1727-1807) was one of France's preeminent horological practitioners, scholars, and authors. Berthoud worked for Julien Le Roy and later became a rival to Julien's son Pierre Le Roy in the field of marine chronometer development. Berthoud was appointed Horloger de la Marine in 1762 as a designer and maker of many marine timekeepers.

Collector Notes: The high serial number 8926 suggests that the watch was made in Berthoud's later years.[3] In the book "Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time," author Dava Sobel writes that Berthoud reportedly made visits to England seeking the secrets of John Harrison's marine timekeepers. Disappointed by Harrison not permitting him a look at his latest H4, Berthoud nonetheless gained useful information through conversations with Thomas Mudge.

[3] Watches with serial numbers 7688 and 8362 are found in Catherine Cardinal, *Ferdinand Berthoud 1727-1807: Horloger Mécanicien du Roi et de la Marine* (La Chaux-de-Fonds, Switzerland: Musée International d'Horlogerie, 1984), 285-286.

7. LOUIS (PIERRE-LOUIS) BERTHOUD, Paris, c. 1810, No. 4410, key-wind movement with verge escapement and dumb quarter-repeating, enamel dial signed Ls. Berthoud, 44mm.

The nephew of Ferdinand, Louis Berthoud (1754-1813) made as many as 150 pocket watches and marine chronometers using his famous uncle's innovations and working at the highest levels of craftsmanship and elegance.

Collector Notes: Ferdinand Berthoud had no son and engaged the talented Louis to work with him. This watch possibly was made with materials from his uncle's workshop. Louis Berthoud later worked for himself and pioneered the use of pierced jewels in watches.

HISTORICAL MAKERS

8. JEAN-ANTOINE LÉPINE, No. 5418, c. 1780, 18K gold case, quarter-dumb-repeating Lépine-caliber movement with wolf tooth wheel train and a lateral lever escapement, enamel dial with unusual numeral systems combining Roman and Arabic, 55mm.

Lépine (1720-1814) was best known for his novel movement design. Lépine's movements used individual bridges for wheels, not large upper plates, and abandoned the fusee mechanism. He also popularized the use of the virgule escapement.

Collector Notes: *"LÉPINE, Invenit Et Fecit"* is on this watch's dial. Lépine designed a mechanism for striking hours and quarters with a single hammer. The inscription may also apply to the wolf-tooth wheels. George Washington purchased Lépine watch number 5378 on the advice of Gouverneur Morris who visited Paris. This watch with *"J C Pearsall"* engraved on the back of the case, is numbered 5418, 40 higher than Washington's. Pearsall may have been from the Virginia Pearsall family whose stockade was provisioned in 1775 as a fort for the Virginia Regiment by George Washington.[4]

[4] Clarence Eugene Pearsall, *History and Genealogy of the Pearsall Family in England and America* (H. S. Crocker Company, Incorporated, 1928).


T. C. Pearsall
A PARIS

9. ABRAHAM-LOUIS BREGUET, Paris, No. 1006, c. 1800, later gold case, key-wind dumb quarter-repeating, jump-hour movement with ruby-cylinder escapement, enamel dial, 54mm.

A.-L. Breguet (1747-1823) worked with the masters Ferdinand Berthoud and Jean-Antoine Lépine in his early years. He died in 1823 and the company lived on under descendants and successors.

Collector Notes: The Breguet archives note that this movement was originally housed in a gold case by Amy Gros (case No. 4395). It went to Monsieur Castagueda on 24 Vendemiaire, Year 11 (October 16, 1802) with a white enamel dial supplied by "Droz." Abraham-Louis Breguet made numerous technical contributions to horology as a successful watchmaker and businessman. One was greatly reducing wear and friction in the cylinder escapement by making his cylinders from ruby.

10. CHARLES OUDIN, Paris, No. 8731, c. 1830, 18K gold original case with its cuvette signed *"Chs Oudin, E[le]ve de Breguet, Palais Royal No 52,"* key-wind quarter-repeating movement with parachute and cylinder escapement, silver dial, 43 mm.

The parachute was an early form of balance-pivot shock protection invented by Breguet. The end stones are supported by flexible springs instead of being rigidly mounted so that the stone can move slightly if the watch is subjected to a shock.

Collector Notes: Charles Oudin (1768-1840) commenced his Paris career working for Abraham-Louis Breguet. He began making watches under his own name in 1797 in his workshop in Palais-Royal. This "Eleve de Breguet" watch features a Breguet-style parachute system, pull-twist-push repeating, and a key attached to the bow with a gold chain.

11. FRANÇOIS-JUSTIN VULLIAMY, London, c. 1780, 22K gold case, key-wind repeating movement with ruby-cylinder escapement and fusee, 47mm.

Vulliamy (1712-1797) was born in pays de Vaud, Switzerland. He came to England via Paris c.1730 and went into partnership with the Royal Watchmaker Benjamin Gray in 1743. He married Gray's daughter and established his business in London.

Collector Notes: While most English watch dials of the late 18th century still used Roman numerals (including Vulliamy's), this example is unusual with Arabic numbers. Vulliamy may have imported this dial, signed Borel on its back, from continental Europe where Arabic numbers had become more popular. A Swiss native, Vulliamy quickly reacted to changing watch styles in Paris, and his son and grandson followed Breguet's adoption of metal guilloché dials. This influenced English watchmakers such as James Ferguson Cole who was often called "the English Breguet."

12. BARRAUD & LUND, No. 3/117, c. 1860, gold case, key-wind fuse-chain movement now with English lever escapement, both enamel dial and movement numbered 3/117, 50mm.

This firm was formed by the sons of Paul Philip Barraud. He worked with Thomas Mudge and was a Clockmakers' Company Master before he died in 1820.

Collector Notes: The bridge and wheel arrangement in this movement were likely influenced by Breguet's highest-grade "Montre Garde Temps" series of pocket chronometers.

13. JOSEPH THADDEUX WINNERL/ BERNARD CALLIER, c. 1880, 50mm silvered dial with subsidiary seconds and wind indicator, blued steel Breguet hands, signed Callier No. 760, fronting a fusee movement with maintaining power, Earnshaw spring-detent escapement and patented balance by Winnerl/Callier.

Collector Notes: Winnerl (1799-1886) studied watchmaking in Prussia before completing his training with Urban Jürgensen (1776-1830), a Danish watchmaker and son-in-law of Jacques Frédéric Houriet. Winnerl joined Breguet et Fils in Paris in the 1820s. To address middle-temperature errors, Winnerl invented a bi-metallic balance as in this example based upon a Hartnup-type balance, which can be seen in *Dictionnaire Des Horlogers Français.*[5] In 1870, Callier took over the business from Winnerl who was elected a municipal councilor of Paris under Napoleon III. The great horologists Théodore-Marie Leroy and Ferdinand Adolph Lange both worked for Winnerl.

[5] Tardy, Paul Brateau, and Robert Ardignac, *Dictionnaire des horlogers français* (Tardy, 1971), 653.

14. THEODORE MARIE LEROY, Paris, c. 1880, engine-turned case, stem-wind movement with experimental balance and counterpoised lever escapement, enamel dial, 50mm.

Collector Notes: Theodore Leroy (1827-1899) was "Constructeur de Chronometres" and father of Louis Leroy and Leon Leroy. He studied under Vissiere and worked for Winnerl and Breguet before being appointed "Horloger de la Marine" in 1859.

This is possibly a unique and experimental balance design. Auction house watch experts at Schmitt Horan & Co stated: "It is interesting to note the similarity between the balance in this watch, and the patent balance of Charles Vander Woerd. While the Woerd balance patent specifies that the prismatic laminae are to be approximately one-sixth of the circumference of the balance diameter, with the bimetallic portion located at the fixed ends of the rim, the Leroy balance used the prismatic laminae for the full length of the rim."[6]

[6] "Experimental Pocket Watch by Theodore Leroy," *Schmitt Horan & Co Auction: 0519* (May 18, 2019).

15. LOUIS LEROY, L. Leroy & Cie. Paris, No. 57196, c. 1890, gold case, stem-wind pin-set gilt movement with lever escapement, snail micro-regulator and unusual white helical hairspring (possibly in precious metal such as palladium), enamel dial, 50mm.

Collector Notes: Louis Leroy (1860-1935) was the eldest son of Theodore Marie Leroy. The Leroy dynasty of famous watchmakers was founded in the second half of the 18th century. Basile-Charles Leroy was watchmaker to the King and a renowned chronometer maker. The firm Leroy et Fils was based at Paris' prestigious Palais Royal. Louis Leroy, Horloger de la Marine, took over the business in 1889, changing the firm's name to L. Leroy et Cie. Both company names are engraved on the cuvette of this watch. In the collection of Leon Leroy, a horologist and younger brother of Louis Leroy, there was an identical movement, but its case sadly was scrapped for gold. A note from Leon Leroy claimed it as the finest quality production of the company in the final decade of the 19th century.

16. PAUL DITISHEIM, Swiss, No. 749943, silver case, stem wound 16-jewel movement with experimental balance and lever escapement, silver dial, 46mm.

Ditisheim created this Solvil movement around 1920 and incorporated his affix balance with bimetallic blades and tiny screws to allow fine adjustments for temperature compensation.

Collector Notes: Ditisheim possibly used Invar, an alloy discovered by Swiss physicist Charles Édouard Guillaume, for the unusual cut-arm, bi-metallic balance and silver-colored hairspring in this movement. Guillaume won the 1920 Nobel Prize in Physics for his contribution to precision measurements. He discovered properties of nickel steel alloys which were used in precision Guillaume balances.

17. ANTIDE JANVIER, France, c. 1770, unnumbered key-wind movement (no case) with verge escapement, fusee, alarm, and mock pendulum, 63mm.

Collector Notes: Janvier (1751-1835) likely made this watch as a teenager working with his father, who was a watchmaker and farmer. Janvier was known as an ingenious maker of precise and complicated clocks.

18. BREGUET ET FILS, c. 1820, later gold case, engine-turned silver dial, key-wind push hour-repeating movement with ruby-cylinder escapement and steel hammers striking gongs, 51mm.

This became the famous firm's name in 1807 when Abraham-Louis Breguet partnered with his son Antoine-Louis.

Collector Notes: In 1783 Breguet invented an innovative repeating method by fitting steel wire gongs around the periphery of the movement. During the French Revolution, "toc" repetition became less popular. The new gongs enabled thinner watch designs and cleaner sounds. Earlier Breguet movements may have toc repeating, but later ones used this gong system.

19. AUG. FRUCHET, Angouleme, France, c. 1830, silver case, key-wind gilt movement with double-wheel duplex escapement, 70mm.

This is a rare and unusual variant of a duplex escapement that has an escape wheel with two sets of teeth; one locks the wheel by resting on the balance staff, and the other, standing up from the face of the wheel, gives impulse to the balance. This single-beat escapement proved unreliable.

Collector Notes: Little is known about Fruchet and whether he independently developed the escapement in this example. Danish watchmaker Urban Jürgensen (1776-1830) was known for creating similar double-wheel duplex escapements.

20. UNSIGNED, Swiss for Chinese market, c. 1870, silver hunting case, key-wind engraved 11-jewel movement with crab-tooth duplex escapement, enamel dial, 55mm.

A Chinese duplex escapement has each wheel tooth resting on a C-shaped ruby that has a two-pronged end. The aim is to use a train with a center-seconds hand indicating whole seconds.

Collector Notes: The center-seconds pocket watch appealed to Chinese customers. Most watches for the Chinese market had this feature, regardless of escapement type.

21. PETER LITHERLAND (1756-1804), Liverpool, c. 1810, sterling silver case with Chester hallmark, key-wind movement with rack-lever escapement and fusee, enamel dial, 45mm.

The rack-lever escapement was patented by Peter Litherland in 1791 and 1792, although it was invented decades earlier. There is no impulse pin; instead the lever carried a toothed segment which engaged with a pinion mounted on the balance staff. This escapement exhibited higher friction. The balance was never detached and no safety action was required.

22. LOUIS-BENJAMIN AUDEMARS, Swiss, c. 1840, key-wind movement with Robin straight-line escapement, 47mm, enamel dial and gold case, cuvette signed "Echappement Libre A DOUBLE REPOS."

The Robin escapement was developed in 1791 by Robert Robin in Paris and is sometimes called a "half-chronometer" escapement. A lever is used for locking but the escape wheel impulses the balance only once per oscillation. Audemars founded Louis Audemars & Cie in 1811.

Collector Notes: This important escapement was discussed in Watches by Cecil Clutton and George Daniels.[7] The authors considered Robin's straight-line layout in this watch as unusual.

[7] Cecil Clutton and George Daniels, *Watches* (Viking Press, 1965), 121, photos 59, 60, 523, 524.

23. UNSIGNED, Swiss or French, c. 1850, key-wind Lépine-caliber 16-jewel gilt movement with Robin escapement, 53mm.

The Lépine caliber was named after Jean-Antonine Lépine who, around 1770, introduced his new design of movements with bars (or bridges) rather than upper plates.

Collector Notes: This is another form of the Robin escapement.

24. THOMAS EARNSHAW JR., English, c. 1860, center-seconds movement with Robin or union escapement, marked "Earnshaw, Holborn, London, Chronometer," and No. 42860, 53mm.

Collector Notes: The union escapement appeared in the mid-19th century as a form of "half-chronometer" escapement. It combined the benefits of a lever with those of the duplex and detent escapements. This movement utilizes a half-second Robin-type lever escapement. Thomas Earnshaw Jr. kept the family workshop and business on Holborn Street in London after the death of Thomas Earnshaw (1749-1829), one of the developers of the spring-detent escapement and the mass production of marine chronometers.

25. CHARLES FASOLDT, Albany, c. 1860, No. 114, movement engraved "Joseph Davis, 1879," later cased, key-wind 16-jewel movement with co-axial escapement invented by Fasoldt, 57mm.

Collector Notes: This is clearly a numbered watch by Fasoldt (1818-1898). Joseph Davis altered the engraved movement number 114 (hidden below the dial side) into DA4. However, the serial number 114 also appeared twice under the bridges and they were not altered. Davis possibly intended to claim the watch as his own work.

26. JOHN ROGER ARNOLD (1783-1843), London, pocket chronometer, c. 1800, No. 693, silver case, key-wind 17-jewel movement with spring-detent escapement and helical balance spring, enamel dial, 58mm.

John Roger was the equally-skilled son of famous horologist John Arnold. A helical spring, unlike flat balance springs or ones with a terminal overcoil, is found in most chronometers and is fashioned by winding the hairspring material many times around a cylinder.

Collector Notes: John Roger Arnold was in conflict for several years with Thomas Earnshaw over the invention of the spring-detent escapement. He published "Explanation of time-keepers, constructed by Mr. Arnold" to claim that his father was the earlier inventor. Both Earnshaw and Arnold were granted awards in 1805 by the Board of Longitude for their improvements to chronometers.
In John Roger's later years, he formed a 10-year partnership with Edward Dent (1790–1853). After John Roger Arnold's death, the business was acquired by Charles Frodsham (1810-1871) and marketed as Arnold & Frodsham until 1858.

27. BARRAUDS & LUND, London, 2/828, c. 1840, pocket chronometer, 18K gold case, gilt free-sprung movement with Earnshaw spring-detent escapement and helical hairspring, both enamel dial and movement numbered 2/828, 50mm.

The Earnshaw escapement, standard in most marine chronometers, is like Arnold's with an escape wheel, spring-detent, impulse and discharging rollers. It differs from Arnold's in the shape of the teeth, the direction of rotation, and the compression, rather than stretching, of the detent when locking.

Collector Notes: This watch was discussed and highly praised in Paul Philip Barraud: A study of a fine Chronometer Maker: "The most interesting discovery of this past decade…is the sudden appearance of an entirely new design…having even a hint of Breguet's style about it. This is based upon a very opened-up half-plate framework, with Earnshaw's escapement and a modern-looking compensation balance. The only complete example of this style so far recorded is 2/828 …."[8]

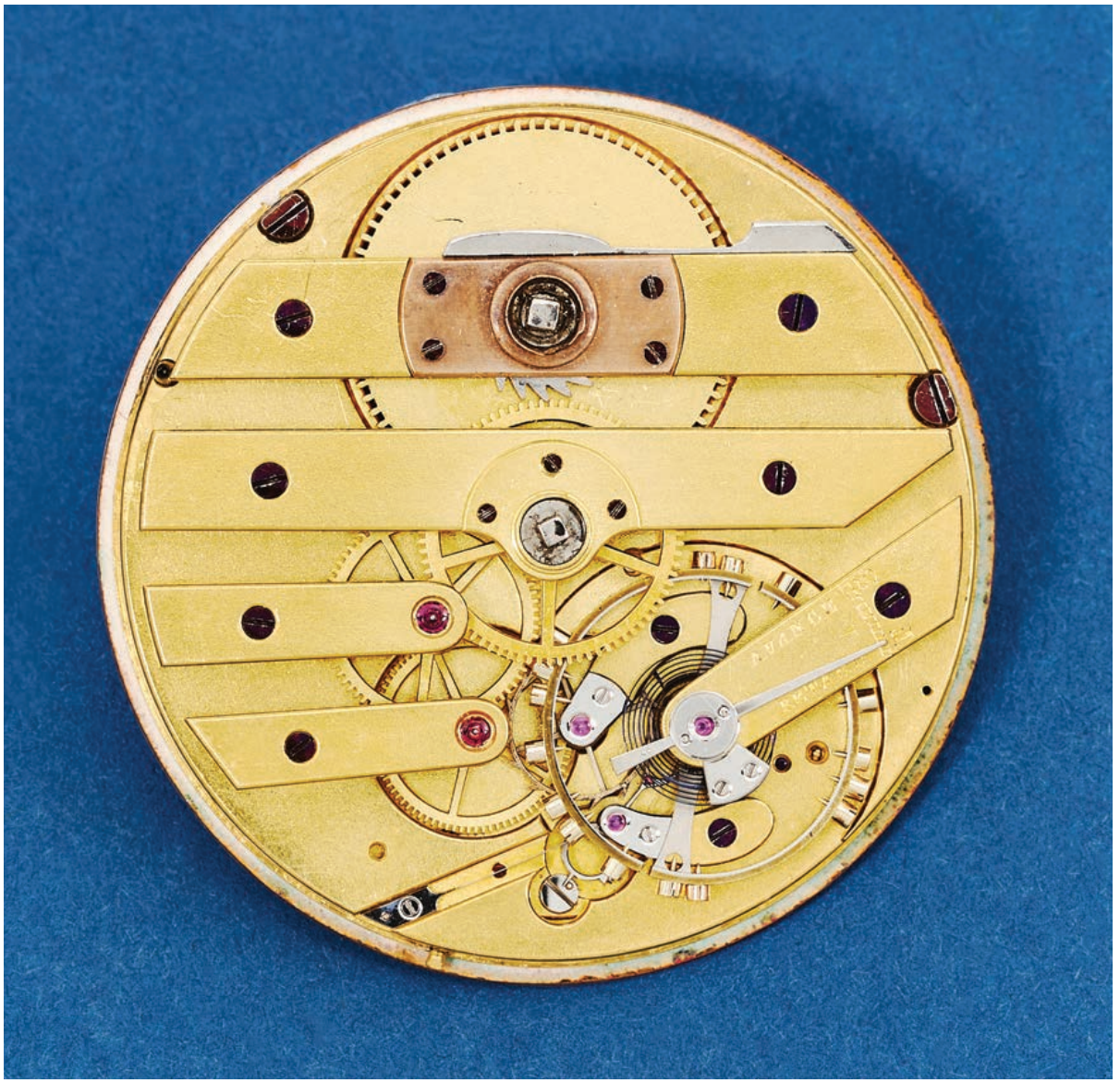
Another Barrauds & Lund watch in this exhibit, numbered 3/117, has the same caliber and bridge arrangements and was made like Breguet pocket chronometers. However, 2/828 has a spring-detent escapement while 3/117 has an English lever escapement.

[8] Cedric Jagger, *The Supplement to Paul Philip Barraud: A Study of a Fine Chronometer Maker, and of His Relatives, Associates and Successors in the Family Business 1750-1929* (Antiquarian Horological Society, 1968), 206.

28. HENRI MOTEL, Swiss pocket chronometer, c. 1840, coin-silver case, key-wind Motel caliber 15-jewel free-sprung movement with helical hairspring and Berthoud pivoted-detent escapement, enamel dial, 54mm.

Collector Notes: Henri Motel was a student of Louis Berthoud. After Berthoud's death, Motel mentored his two sons who later formed Berthoud Frères. In 1823 Motel succeeded Louis Berthoud as Horloger de la Marine and supplied the French Navy.

[9] This high-precision timepiece is identical to two examples documented in Jean-Claude Sabrier, *Longitude at Sea in the Time of Louis Berthoud and Henri Motel* (Éd. Antiquorum, 1993).



29. UNSIGNED, Swiss, c. 1860, movement only with pivoted-detent escapement, 42.5mm.

The pivoted-detent is supported on pivots, as preferred on the Continent, as opposed to the spring-detent in conventional English usage.

Collector Notes: This is an early version of a pivoted-detent movement. Such pivoted-detent ebauches were made by a few Swiss makers such as Vacheron Constantin and Rossel & Fils.

30. ALBERT H. POTTER (1836-1908), Geneva, c. 1880, No. 37, 18K associated gold case, stem-wind movement with pivoted-detent escapement, enamel dial, 50 mm.

Potter apprenticed in America and first worked in New York and Chicago, but after his move to Geneva around 1876, where he made hundreds of high-grade timepieces, he was considered an equal by the most prestigious contemporary Swiss watchmakers.

31. JAMES FERGUSON COLE, London, c. 1840, associated gold-fill case, stem-wind free-sprung 14-jewel movement with Cole double-rotary detached chronometer escapement (fusee-chain modified to stem-winding by James M. Orr, Philadelphia USA), enamel dial with "3696 Chronometer," 47mm.

A free-sprung balance does not use a regulator to adjust the effective length of the hairspring. Instead, adjustments are made by altering the moment of inertia by using weights on the balance. Cole (1799-1880) was a prolific inventor of escapements, and his work was always regarded as being of the highest quality.

Collector Notes: The Cole double-rotary detached chronometer escapement is one of the rarest. In this example, the detent wheel can be viewed directly next to the balance wheel. An example is shown in Clutton and Daniels, Watches.[10]

[10] Cecil Clutton and George Daniels, *Watches*, photo 66.

32. HESS & METFORD, Geneva, pocket chronometer, c. 1850, No. 2023, 18K half-hunter case, key-wind constant-force movement jeweled to third wheel with two linked co-axial escape wheels, enamel dial, 50mm.

A constant-force escapement has a subsidiary spring or weight providing motive force. This is wound by the main train at frequent intervals so that force at the escapement is virtually independent of fluctuations due to imperfect gears and in the mainspring's strength.

Collector Notes: This watch was discussed in an article in the Association Nationale Des Collectionneurs et Amateurs D'horlogerie Ancienne (ANCAHA) Bulletin.[11]

[11] Adolphe Chapiro, "Un Chronometre de poche avec un échappement à force constante," *Bulletin Association Nationale Des Collectionneurs et Amateurs D'horlogerie Ancienne* (ANCAHA), No. 98 (2003): 37-40.

33. AUBURNDALE WATCH CO. c.1876-1883 rotary watch with club-tooth lever escapement, the movement revolving once in about 2 ½ hours, No. 884, c. 1900, 3/4-plate movement only.

Auburndale, Massachusetts was the site of the first attempt to manufacture an inexpensive American watch. The entire movement revolves inside its case every 2 ½ hours to eliminate the need for position-accuracy adjustments. Only about 500 were made before the business failed.

34. PATEK PHILIPPE, Geneva, for T&E Dickerson & Co., No. 173703, c. 1910, gold case, stem-wind 20-jewel 8-adjustments movement, enamel dial, 47mm.

No.25, CHARLES FASOLDT, co-axial escapement

No.27, BARRAUDS & LUND, Earnshaw spring-detent escapement

35. BLONDEAU, Grande & Petite Sonnerie Quarter-Repeating Clockwatch, c. 1830, 20K gold case, key-wind 8-jewel double-train movement with cylinder escapement, 60mm.

Grande sonnerie strikes the hours and quarters automatically and repeats the hours, quarters and minutes when actuated by a push-piece. Petite sonnerie does not repeat the hours.

Collector Notes: This watch was in the collection of the late Theodore Beyer (d.2002) who established the Beyer Watch and Clock Museum in Zürich, Switzerland.

36. FRITZ PIGUET & BACHMANN, Geneva, c. 1890, 18K gold case, minute-repeating stem-wind 31-jewel movement with lever escapement, enamel dial, 50mm. Complete with a leather-covered retailer's box.

Minute-repeating is the most complicated of the repeaters and also the most popular. It strikes the numbers of the hour, the quarters, and the number of minutes that have elapsed since the last quarter.

Collector Notes: The inscription on the cuvette states that the movement was equipped with a palladium hairspring.

37. A. GOLAY-LERESCHE, Geneva, No. 5918, c. 1850, 18K gold case, stem-wind movement with retrograde perpetual calendar, enamel dial, 47mm.

A perpetual calendar accommodates the varying number of days each month, providing for shorter 30-day months, the three years of 28-day February, and February's 29 days in leap years.

Collector Notes: This retrograde perpetual calendar was presented to *Frank B. Fay, Chelsea, U.S.A., Mass,* according to the engraving (Mayor 1861-1863).

38. LOUIS CHANSON, c. 1950, stainless steel case, stem-wind movement, skeletonized perpetual-calendar dial with lunar indicator, 48mm.

Skeletonized dials permit viewing of the dial side of the movement, normally hidden from the front of the watch.

Collector Notes: Chanson, a watchmaking school student in the Vallée de Joux, produced this "École d'Horlogerie" watch to demonstrate skills learned in school. A nearly identical watch by another student is shown in *Dix Écoles d'Horlogerie Suisses,* which claims that these were based on Le-Coultre 17CV movements.[12]

[12] Estelle Fallet and Antoine Simonin, *Dix Écoles d'Horlogerie Suisses* (Neuchâtel: Editions Antoine Simonin, 2010), 514.

39. EKEGREN made by Edouard Koehn, Geneva, for J.E. Caldwell, & Co., Philadelphia, No. 78914, c. 1900, split-seconds chronograph and 60-minute register, 18K gold case, stem-wind 29-jewel movement with lever escapement, silvered dial, 45mm.

A split-seconds chronograph is a form of double-chronograph that has an additional seconds hand enabling an operator to measure two successive intervals of time.

A 60-minute register shows elapsed time up to one hour.

40. EDOUARD KOEHN, Geneva, split-seconds chronograph and 30-minute register, 18K case, stem-wind 26-jewel movement lever escapement, enamel dial, 47mm.

Collector Notes: Swiss patent No. 34029 was issued on July 8, 1906, to LeCoultre & Cie. Edouard Koehn became its director after a 15-year career at Patek Philippe. In 1891, Koehn left Patek and bought the Robert Ekegren firm.

41. PATEK PHILIPPE & CO., Geneva, for Tiffany & Co., No. 80902, c. 1890, split-seconds chronograph, 18K gold hunting case, stem-wind movement with lever escapement, enamel dial, 53mm.

A hunter case has a metal cover protecting the dial and crystal, usually spring-actuated by releasing a catch.

Collector Notes: The Patek Philippe archives confirmed that the enamel dial and 19-ligne movement were sold to Tiffany & Co. on June 28, 1890.

42. HAAS NEVEUX & CIE, Geneva & Paris, minute repeater and split-second chronograph with 30-minute register, No. 19578, c. 1900, 18K gold case, enamel dial, 45.5mm. The caseback was enameled with entangled letters, possibly spelling "Arthur."

Collector Notes: This watch belonged to Arthur Erich Haas, an Austrian physicist who pioneered a new approach in early quantum theory.[13] Dr. Haas fled to America from the University of Vienna in fear of Nazi Germany. With a recommendation letter from Albert Einstein, Dr. Haas became a professor at Notre Dame University until his death in 1941. The watch was passed down to his younger son and daughter-in-law, the late Dr. George A. Haas and Mary Jane Haas, who lived in Alexandria, Virginia. The Haas family who owned this watch may have been related to the maker, although we do not have clear evidence of this.

13 Michael Wiescher, Arthur E. Haas - *The Hidden Pioneer of Quantum Mechanics: A Biography* (Cham, Switzerland: Springer, 2021).

43. LOUIS LEROY & CIE, Paris, No. 13416, c. 1920, split-seconds and 1/5-second pocket chronometer with 60-minute register, No. 13416, c. 1923, silver case, stem-wind movement with lever escapement and Guillaume balance, enamel dial, 55mm.
In 1901, L. LEROY & CIE created the "Leroy 01" watch, the most complicated watch at the time. Leroy won the Grand Prix at the International Exhibition of Saint-Louis in 1904 and from 1908-1924 was winner of the Besançon Chronometric Cup.[14]

Collector Notes: The Leroy Heritage Department archives confirm that the watch earned a First Class Bulletin de Marche at the Besançon Observatory. The movement bears the famous "viper's head" mark.

[14] "Louis Leroy," *Fondation de la Haute Horlogerie: Watches and Culture.*

44. UNSIGNED, Swiss or French, c. 1890, 18K gold case, stem-wind movement with two trains and barrels, dead jump independent seconds, and lever escapement, 50mm.

The dead-jump independent seconds hand moves from second to second, in stops and starts, without sweeping between seconds' marks. The two-barrel design was inspired by Louis-Elisée Piguet's patent.

45. ZENITH, Le Locle, c. 1910, silver case, stem-wind 15-jewel movement with alarm and lever escapement, enamel dial, 49mm.

Alarm watches include an extra train that rings or buzzes at a preselected time like an alarm clock.

Collector Notes: This is the same model of watch that was owned by Mahatma Gandhi.

46. HENRY CAPT, Geneva, c. 1880, montre à tact, silver and gold hunting case with cylinder escapement, stem-wind movement with lever escapement, enamel dial, 46.6mm.

A montre à tact is a watch that can be read by blind and visually impaired people, having a hand or pointer outside the case. It also allows a sighted person to feel the current time inconspicuously.

47. JOSEPH WALTRIN, Paris, c. 1770, No. 130, 20K gold repoussé case, key-wind movement with verge escapement and dumb quarter-repeating, 47mm.

Repoussé is a decorative treatment in metal. The design is punched from the back so that the craftsman must work in reverse.

The hammers of dumb repeaters strike against blocks or case sides rather than on gongs or bells, providing the count more by feel than by sound.

48. JEAN ROMILLY (1714-1796), Paris, No. 1344-8/67, c. 1767, gold, enamel and gem-set case with young woman's portrait, key-wind fusee movement with verge escapement, enamel dial, 40mm.

Gem-set cases added additional light-catching decorations using either precious or paste stones.

Collector Notes: This watch was probably completed in August 1767 (8/67 is on the movement). The enamel painting is signed "Ds Petitot, M de la Suz", indicating that it was based on a miniature by Jean Petitot (1607-1691). Pictured is Henriette de Coligny (1618-1673), Comtesse de La Suze, a French poet.

49. A. GOLAY-LERESCHE, Geneva, c. 1840, lady's watch in gold hunting case with enamel scenes on both covers. Key-wind movement with cylinder steel-wheel escapement, irregular shape approximately 36mm.

Enamel is a vitreous material, which is fired in a kiln after application to metal dials and decorated cases.

50. HENRY CAPT, Geneva, c. 1890, gold and enamel pendant hunting case with pin, stem-wind movement with lever escapement, enamel dial, 29mm.

The pendant is the case piece through which the winding stem (if a stem-wind watch) passes and which carries the bow. Ladies' watches could hang from a gold, jeweled, or enameled pin to allow the watch to be worn as jewelry and to be easily viewed.

51. PHILLIPS BROTHERS, London c. 1870, stem-wind movement with English lever escapement, black enamel dial, half hunter 18K gold case with soft enameled coat of arms style decoration.

Collector Notes: Black enamel dials are rare. The movement is an English stem-wind caliber supplied by Nicole Nelson Company. The Phillips Brothers were suppliers to Edward Dent's watch company.

52. BENJAMIN HAAS (1828-1925) as "Ancienne Mason B. Haas Jeune," "Remontoire Perpetuel," Geneva, c. 1880s, 18K gold hunting case, case stem-wind Breguet style, enamel dial, 53mm.

Patented system winds the watch by closing the front cover; 12 closings will run the watch for 36 hours.

53. PATEK PHILIPPE, Geneva, No. 4758, 1850, 18K gold hunting case with floral polychrome enamel, key-wind movement with cylinder steel-wheel escapement, 37mm. Inside the caseback, the mark "P R" in a horizontal oval is that of the casemaker P. Rassy, Geneva (active during the 1850s). The "G" refers to Geneva. Both enamel paintings (landscape and flowers) may have been produced by the Workshop of Gaspard Lamunière (1810-1865) in Geneva.

Collector Notes: The Patek Philippe archives confirm 1850 as the date of manufacture, and the sale date of November 26, 1855, signifying that the watch spent nearly five years in inventory. Officially named "Patek, Philippe & Cie" by 1851, the business struggled during a difficult financial market. This led Antoni Patek to visit America in 1854-1855 to promote his company. The watch was possibly brought to America during this time.

54. PATEK PHILIPPE, Geneva, for Tiffany & Co., New York, c. 1890, gold case with enamel overlays showing complementary portraits of a cat and her kittens, stem-wind movement with lever escapement, white dial, 44mm.

Collector Notes: The Patek Philippe archives reveal the date of sale as February 14, 1891, (Valentine's Day), and note that the guilloché case covers a white opal background with enamel-painted cats on either side.

55. PATEK PHILIPPE, Geneva, c. 1920, for retailer Shreve & Co., San Francisco, No. 172283 with matching serial number to cuvette, 18K gold case, stem-wind 20-jewel 8-adjustments movement, enamel dial, 47mm.

Collector Notes: The cuvette was signed "H. Norman Snively 1920." According to the "Guide to Mining and Petroleum Resources", Snively was a geologist who worked for Standard Oil Company of California and other firms from 1916 to 1921. He then did exploratory work in Wyoming and Montana, publishing mining reports on uranium and other minerals. When Mr. Snively purchased the watch at Shreve & Co. in San Francisco, it did not have the luminescent hands and dial, according to the Patek Philippe archives. It is possible that Mr. Snively applied luminescent materials for exploring Wyoming caves.

56. PATEK PHILIPPE, Geneva, c. 1930, 18K gold case, stem-wind movement with lever escapement, silver two-tone dial, 45mm.

Two-tone silvered dials are appealing and less common.

Collector Notes: The Patek Philippe archives state the sale date as June 13, 1929

57. PATEK PHILIPPE, Geneva, for Shreve, Crump & Low (Boston), c. 1940, gold case, stem-wind movement with lever escapement, silver dial, 44m.

Collector Notes: The Patek Philippe archives state the sale date as May 20, 1947.

58. PATEK PHILIPPE, Geneva, circa 1990-2000, No. 1945077, 18K gold case, stem-wind 18-jewel movement with lever escapement, silvered dial with applied gold numerals, 44mm.

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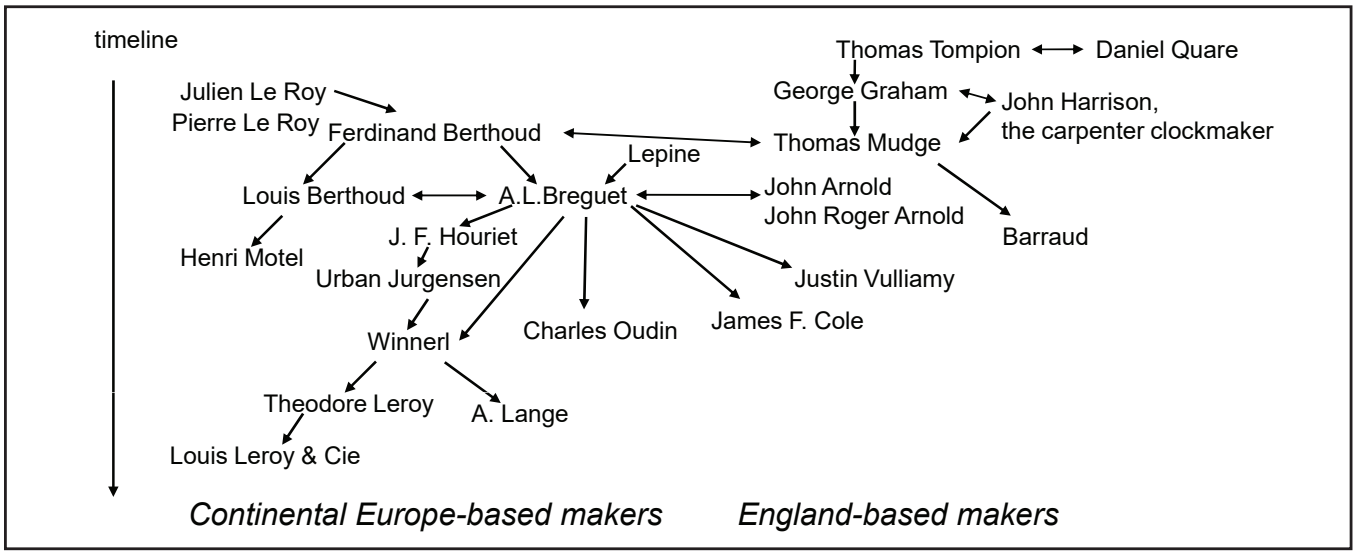

Additional Resources Related to the Exhibit

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