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Pendule d'officier by Robert & Courvoisier,

Swiss, 10 inches tall with handle up, numbered 7822.

President's Report

Stan Boyatzis

Welcome to our last newsletter for 2015. I hope you have enjoyed reading the articles published .in this year's newsletters.
Our Director, Ken Hogwood, recently had discussions with Noel Poirier and Kim Jobinelli from the NAWCC museum about a temporary exhibit. This would feature carriage clocks and other portable time pieces from past to present. This is hoped to be set up towards the end of next year. Discussions are also under way for an island type display case in the museum to house a permanent collection of carriage clocks.
Breguet's first carriage clock No.178 was sold to General Napoleon Bonaparte. This clock, together with another four of Breguet's early travel clocks will be on exhibition to the middle of January at the Legion of Honor museum in San Francisco. If you are in the area it is well worth visiting the museum.
This month's feature article is on "A Most Interesting Swiss Travelling Clock" by Doug Adams and Tom Wotruba (USA). This clock was meticulously and sympathetically restored by Doug. The article is an encore by Tom of a previous Bulletin article that appeared in 2004.
Tom Wotruba (USA) also has written a short article ' Replacing a Paper Dial'. This is a method that Tom used in the late 1990's to replace a paper dial in an American carriage clock. Today many paper dial replacements are available off the shelf but the satisfaction of doing it your self is well rewarding.
Remember copies of previous newsletters, hints and a question page are included on our website. There are also carriage clock articles from the Bulletin and carriage clock videos from the NAWCC library. You will need to be logged in as a NAWCC member to access these.

http://community.nawcc.org/Chapter195/Home/

A link to the Online Galleries website is again included. This is a useful websites to research retail prices of carriage clocks and what is currently for sale. The website is updated weekly. We are happy to include other websites that may be of interest to the membership.
On behalf of the Executive Committee I would like to wish all our members Season's Greetings and a happy and Prosperous 2016.

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A Most Interesting

Swiss Traveling Clock

Doug Adams (USA) and Tom Wotruba (USA)

An antique clock can be the source of great enjoyment and learning, especially when it is interesting both historically and mechanically. The clock that is the subject of this article is interesting in both of these ways. It is a Swiss-made traveling clock, circa 1799, (shown in Figure 1) measuring ten inches tall with handle up and signed Robert & Courvoisier on the dial. Historically, it represents the pendule d'officier clock, one of the forerunners of the carriage clock that emerged and flourished in the nineteenth century. The clockmaker names that appear on the dial also have an intriguing and somewhat complicated history, which we will first review. The movement contains a fascinating assortment of mechanical complexities, especially considering that it was made in the late eighteenth century, and we will examine it in detail.

Figure 1. *Pendule d'officier* by Robert & Courvoisier, Swiss, 10 inches tall with handle up, numbered 7822.

History: The Pendule d'Officier

According to Charles Allix in his definitive work on carriage clocks, the first spring-driven clocks appeared in the closing years of the fifteenth century, possibly in the year 1480 (CA, 6). Large traveling watches were made in the seventeenth century, and the famous clockmaker Tompion made some small clocks designed to run with either a pendulum or a balance at about the start of the eighteenth century. During the last quarter of the eighteenth century there evolved a succession of small decorative gilt-metal clocks particularly suitable for travel, termed prependule de voyage by Allix because they predated the pendule de voyage or carriage clock. Among these pre-pendule de voyage was the style known as the pendule d'officier or officer's clock, a distinctive form of traveling clock with a gilt-metal case such as that shown in Figure 1. The name came from their popularity during the Napoleonic wars, as these clocks were sometimes taken by military officers on campaigns (AS, 91; CA, 21; DR, 16). Many of their cases were highly decorated with cast and chased laurel wreaths or trophies of arms, and they usually sported an oval or round serpentine handle.

Pendules d'officier clocks were made from circa 1775 until about 1820 in France, Switzerland, and Austria. They typically had fusees and chains for going trains and spring barrels for the striking trains. Alarms were a common feature, and were often powered by a separate standing barrel that was wound with a pull cord. Repeat mechanisms were likewise typical, frequently

activated by a pull cord as well. Most of these clocks were two days in duration, and were originally supplied with a leather carrying case. Many carriage clocks that followed in the nineteenth century were of longer duration (e.g., eight days), had somewhat less complex movements, were smaller in size, and especially in France, were unlikely to have fusees. We will return to examine the movement of the clock in Figure 1 in much more detail.

History: Robert & Courvoisier

Robert & Courvoisier is more accurately the name of a firm that made this clock rather than the names of specific individual clockmakers. The firm was active during 1795-1805 and evolved from a series of enterprises initially involving members of the Robert family. Josué Robert (1691-1771) was an important Swiss clockmaker for many years, working in La Chaux-de-Fonds in the Swiss canton of Neuchâtel, and there is evidence from circa 1725 that he had been appointed as Clockmaker to the King of Prussia (KHP, R-43). Sometime prior to 1770 he established Josué Robert & Fils, which included his sons David (1719-1769), Louis Benjamin (1732-1781), and Jean Pierre (1758-1832), along with his son-in-law Louis Courvoisier (1758-1832). Josué's grandson Aimé (1758-1854), who was Louis Benjamin's son, was also involved (KHP; MIH).[1] Shortly thereafter in 1771 Josué died, leaving Louis Benjamin (often called Captain Louis) in charge.

A traveling clock signed "Robert," which is very similar in appearance to the clock in Figure 1, appears in Allix's book (plate I/36, page 26) and was likely made during this period, circa 1775. Another signed "Robert" appeared in Christie's South Kensington auction of November 26, 1998.[2] The auction catalogue estimated its date as the first quarter of the nineteenth century, though the signature suggests that it possibly was earlier. An Internet search turned up yet another pendule d'officier clock signed "Robert" that was offered for sale on the website of the antique-clock dealer Pendulantic in Sainte Blaise, Switzerland. Its estimated date offered in response to our inquiry was the beginning of the nineteenth century, though again because of the signature it is likely earlier—more like circa 1775.[3]

In 1781 Louis Courvoisier became financially interested in the firm and headed its watch department; previously it was focused largely on clocks. As a result, the firm's name changed to J. Robert & Fils & Cie. A clock with this signature was recently offered for sale and pictured on the website of Van Dreven Antiquair, Amsterdam, with a date of circa 1780.[4] Louis Benjamin died later that year and his widow Charlotte carried on the firm along with Jean Pierre, Aimé, and Louis Courvoisier. In 1787 the prominence of Louis Courvoisier was recognized formally, as the firm's name changed to J. Robert & Fils, Courvoisier & Cie.

In 1795 the name of the firm changed to Robert & Courvoisier, and watches assumed greater importance than clocks. Active at this time were Aimé Robert, Jean-Pierre Robert, Charlotte Robert, and Louis Courvoisier, and they would have been responsible for the production of the clock in Figure 1. In 1805 the name became Robert, Courvoisier & Cie, with Philip Grandjean as a partner. Then in 1811 the name "Robert" dropped out of the firm name entirely as it became Courvoisier & Cie. Jean-Pierre Robert was still involved at that time as were three of Courvoisier's sons, Henri Louis, Frédéric Alexander, and Philippe Auguste.

Others involved were Philibert Humbert-Droz and Philippe Ducommun, who was Frédéric's uncle. Louis Courvoisier gave up control of the firm in 1825 to Frédéric (who was always known as Fritz), and Louis died in 1832. The firm was reconstituted in 1845 to become Courvoisier Frères.

Related Clocks in Books and Auctions

Because the clock in Figure 1 is signed Robert & Courvoisier, it must have been made sometime during the period 1795-1805 when that firm name existed. Even though watches had taken on more importance, with the influence of Louis Courvoisier,[5] there were many pendules d'officier clocks made with this signature. A search of some selected books and catalogues discovered the following as described in each source:

In Derek Roberts' book Carriage and Other Travelling Clocks, Figure 15-1, page 241: Robert & Courvoisier. An ormolu traveling clock with grande sonnerie and alarm, chain fusee for the going, and spring barrel for the striking train (Figure 2A). A verge escapement is employed with a vertically mounted outside balance. A pull-wind alarm with a center-sweep setting hand. .Arabic chapters, two winding arbors, signed Robert & Courvoisier on one line.

Figure 2A. Ormolu travelling clock with grande sonnerie and alarm, signed Robert & Courvoisier on one line.

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[1]The dates come from Pritchard (KHP) see references. David's birth is recorded as 1717 and Aimé's death is recorded as 1834 in Cecil Clutton (ed.), Britten's Old Clocks & Watches and Their Makers, 9th edition, London: Bloomsbury Books, 1990.

[2]It was described as a Swiss ormolu-mounted mahogany seconds-beating grande-sonnerie traveling clock with alarm and club-toothed lever escapement striking on two bells via four hammers and with three winding arbors.

[3]Correspondence with Jacques Duvoisin. Website: www.pendulantic.com.

[4]The clock is described as a pendule d'officier having an eight-day verge escapement with one spring barrel, alarm, and pull repeat/striking, numbered 368. Website: www.artonline.nl/dreven.

[5]A watch signed Robert & Courvoisier and identified as "The Forge of Love," was lot 49 in Zurich at an Antiquorum auction of November 16, 2003. It was described as a very fine and rare 18K gold three-train quarter-repeating virgule escapement watch with independent automaton, and was numbered 79905.

Also in Derek Roberts' book, Figure 1-19, page 17: Drum-shaped pendule d'officier case by Robert & Courvoisier, circa 1790 (Figure 2B). (The caption incorrectly stated the name as Robert Courvoisier, perhaps because a winding arbor obscures the ampersand between the two names.) Hour and half-hour strike, repeat, and alarm on one bell; chain fusee for the time train and a verge escapement with a plain, three-arm brass balance. Three winding arbors.

Figure 2B. Drum-shaped *pendule d'officier* case by: Robert & Courvoisier, circa 1790.

Christie's New York, lot 5, October 30, 1996: Robert & Courvoisier pendule d'officier clock number 1571 (Figure 2C). White enamel Arabic chapters, foliate engraved ormolu center, verge escapement with hair- spring mounted on the back plate, pull-wind alarm, full grande sonnerie strike/trip repeat on two bells. Two winding arbors, not signed on the dial (does not say in description where it is signed), late eighteenth century. Christie's New York, lot 6, October 30, 1996: Pendule d'officier clock number 6958 with Roman chapters and Arabic outer minutes signed Robert & Courvoisier in two lines, verge escapement with bridge-cocked balance, pull wind alarm and pull-quarter-repeat pullies on the back plate, strike on two bells (Figure 2D). One winding arbor, early nineteenth century.

Sotheby's London, lot 434, October 1, 1997: Gilt- bronze repeating petite-sonnerie pendule d'officier with alarm, numbered 8780 with Arabic chapters and fusee and chain for the going train, verge and balance, spring barrel for the strike on two bells and pull wind for the alarm (Figure 2E). Signed Robert & Courvoisier in three lines within an oval. Two winding arbors, circa 1800.

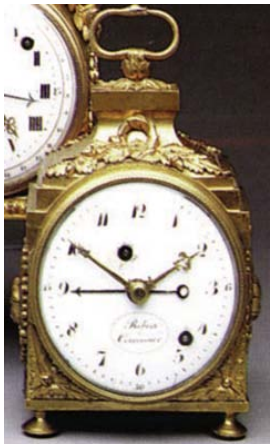


Figure 2C and 2D, left. Robert & Courvoisier *pendule d'officier* clock number 1571 and *pendule d'officier* clock number 6958. **Figure 2E**, right. Gilt-bronze repeating *petite-sonnerie pendule d'officier* with alarm, numbered 8780.

Christie's London, lot 12, November 24, 1999: A silvered-brass quarter-striking pendule d'officier numbered 8950 (Figure 2F). Arabic dial signed Robert & Courvoisier in three lines (the catalogue description incorrectly stated the name as Robert Courvoisier), later pierced brass

hands and outer concentric calendar ring, with re-trained movement with chain fusee for the going train and spring barrel for the quarter strike on two bells, later lever platform. Two winding arbors, no estimated date given.

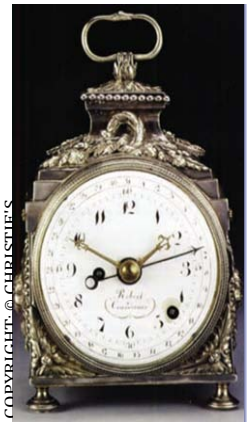


Figure 2F, left. Silvered-brass quarter-striking *pendule d'officier* numbered 8950. **Figure 2G**, right. Ormolu repeating *grande sonnerie pendule d'officier* with alarm, numbered 9824.

Figure 3, Left side of clock case.

Sotheby's London Olympia, lot 161, March 19, 2003. An ormolu repeating grande sonnerie pendule d'officier with alarm, numbered 9824 (Figure 2G). Arabic dial signed Robert & Courvoisier with fusee and chain for the going train, replaced platform lever escapement, striking and pull-repeating on two bells and with pull-wind alarm; the strike work visible on the backplate; the case with stepped top and concave- sided cresting applied with oak swags and with serpent heads, the sides with beaded leaf rosettes and raised on talon feet. Two winding arbors, circa 1800.

It should be noted that pendules d'officier clocks with the signature Courvoisier & Cie have also appeared in some major auctions including Sotheby's London in December 1996, Christie's South Kensington in November 1998, and Christie's London in July 2001. All of these were dated circa first quarter of the nineteenth century.

The Clock at Hand: Overall Arrangement

We now turn to the clock at hand. The clock examined in this article has a gilt case embellished with floral patterns and cherubic faces (see Figures 1, 3, and 4). It has a porcelain dial with "Breguet" Arabic numerals indicating the hours and 15 minute intervals. Three concentric hands indicate hours, minutes, and alarm setting. Two winding holes are arranged in an asymmetric manner. The winding hole closer to the center at the 10:30 position is for winding the time train and the one located near the 2:00 position is for winding the strike train. A pull cord on the left side of the clock activates the repeat train and a pull cord on the right side winds the alarm train.

Figure 4, Back of case,

The clock has a round two-day movement, numbered 7822. Two nickel-plated nested bronze bells are mounted concentrically on the back of the movement (Figure 5). Each of the strike, repeat, and alarm trains has its own separate pair of hammers arranged radially around the bells. Four spring-driven gear trains are mounted in a single plane between the front and back plates of the movement (Figure 6).

Figure 5. Back of case with door open showing two nested bells and hammers.

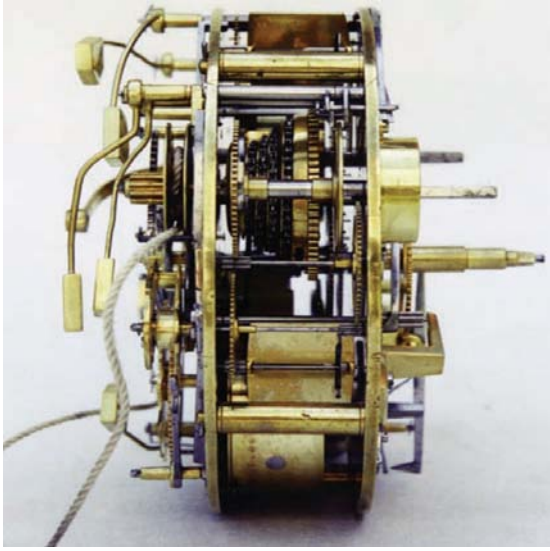


Figure 6. Movement from left side showing gear trains and fuse.

Mainsprings: Time and Strike

The time and strike mainsprings were replaced during a recent overhaul, and appeared to be original parts. The fixed end of the strike mainspring is clearly dated June of 1799, which is consistent with the above historical profile and would suggest that the clock was completed in the same year (Figure 7). The signature on the spring is less clear, and appears to be S. Langin or S. Langly. The fixed end of the time mainspring had been reworked sometime in the past, and no signature was found.

Figure 7. Signed and dated strike mainspring.

Movement: Time Mechanism

The time train is fusee driven (Figure 6). However, a Geneva-style fusee stop works is used in lieu of the more conventional chain-activated fusee stop. This is seen at the left of the hour wheel in Figure 8. The time rate is controlled by a verge escapement, which is constructed in the same fashion as a pocket watch of that time period. It has an uncompensated three-arm balance wheel and flat-spiraled carbon-steel hairspring (Figure 9). The potence is adjustable as well (Figure 10).

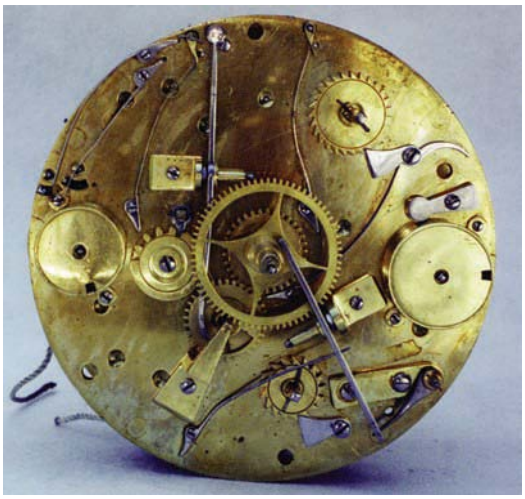


Figure 8. Movement from the front showing Geneva-style fuse stop.

Movement: Striking Mechanism

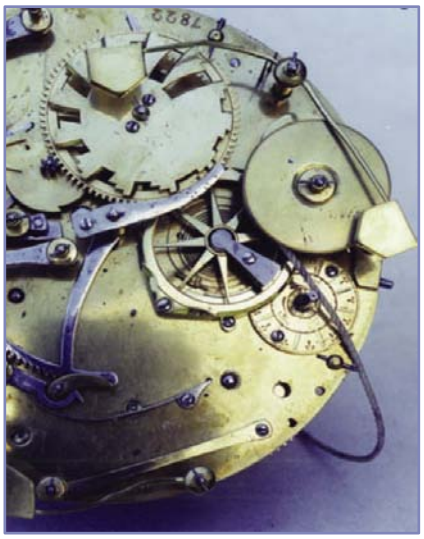


Figure 9. Movement from the back showing escapement and balance as well as the twin alarm hammers

The striking train is driven by a going barrel and regulated by a fly. The striking is petite sonnerie . On the hour, the hours only are struck on the low-tone bell. The intervening three quarters are struck progressively as a ting-tang on both bells. Both the hour and quarter-hour strike are controlled by single rack and snail wheel, seen at the lower portion of Figure 11. The snail wheel is driven by a pinion mounted on the minute wheel shaft, which extends all the way from the front plate through the back plate.

The two striking hammers are at the top of Figure 12. The uppermost hammer is for the low tone and below it is the hammer for the high tone. The high-tone hammer is lifted indirectly by articulated interaction with a parallel strike shaft, seen just above it, which in turn engages the hammer wheel. This shaft is arranged so it can be shifted axially to the right to disengage the pins on the hammer wheel, as is its current position in Figure 12. The right-hand pivot is bearing on the control lever and the left-hand pivot is spring-loaded. The control lever can be seen to the left of the hour wheel in Figure 8. It hinges at the center, with the upper end engaging the strike shaft pivot and the lower end resting on the surface of the minute wheel. The lower end drops into a slot on the hour to disengage the high-tone hammer.

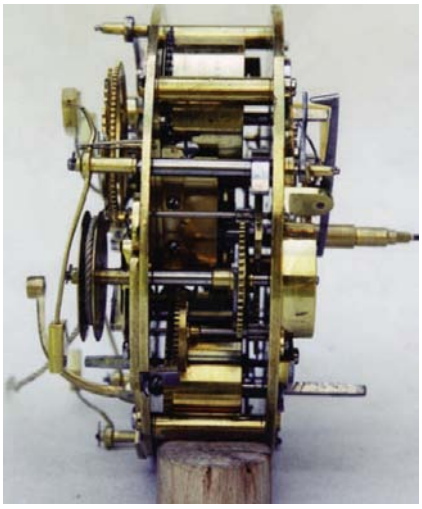


Figure 10. Movement from the left side, supported to show the potence more clearly underneath the back plate at center left.

Movement: Repeating Mechanism

The repeating train is driven by a fixed mainspring and regulated by a fly. The spring is wound in by a pull cord wrapped around a pulley mounted on its arbor, seen at the very top of Figure 11. As the pulley turns when the cord is pulled, a pinion on the pulley drives an hour rack against an hour snail, seen just below the pulley and to the right of the rack respectively. Pins on the surface of the pulley also release a spring-loaded quarter rack, allowing it to drop onto the quarter snail at the center of Figure 11. The quarter snail is mounted on the extended shaft of the minute wheel, and it advances the hour rack through a surprise piece.

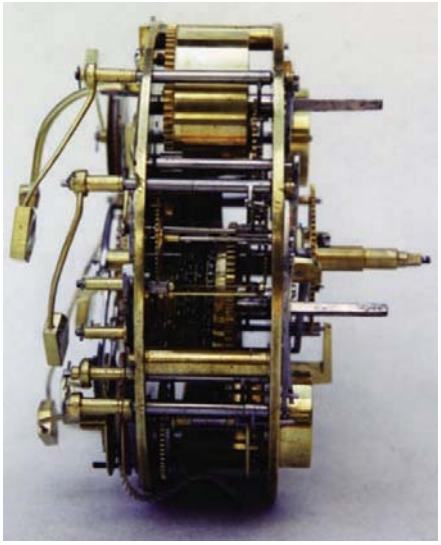


Figure 12. Movement from left side showing striking hammers.

Figure 11. Movement from back showing rack and snail wheel and repeating train.

The repeating hammer wheel is also mounted on the barrel arbor, and can be seen one- third of the way down the movement in Figure 6. The pins on the front plate side of the wheel lift the low-tone hammer and repeat the hours. The pins on the back plate side of the wheel lift the high-tone hammer and repeat the quarters. The number of quarters repeated is controlled by pins on the surface of the winding pulley that engage the tail of the quarter rack.

Figure 13. Dial showing the hub of the hour hand with the alarm release notch.

Movement: Alarm Mechanism

The alarm train is driven by fixed mainspring and regulated by oscillation of twin hammers (Figure 9). The mainspring is wound by a pull cord wrapped around a pulley mounted on its arbor, seen at the bottom of Figure 11. Alternate high and low tones are struck by a fairly standard alarm arrangement. The notch for releasing the alarm is cut directly into the hub of the alarm hand and the release ramp is machined into the hub of the hour hand (Figure 13), therefore, the hour wheel shifts up and down to release and arrest the alarm mechanism, as can be seen at the lower right portion of Figure 8.

Conclusion

Both historically and mechanically, this pendule d'officier by Robert & Courvoisier is intriguing. For horological enthusiasts curious about clockmakers, their lives, families, work, and relationships with others, the story surrounding this clock should be abundantly interesting. For collectors, the information on similar clocks uncovered in books and auction catalogues provides descriptions of what features were incorporated into these clocks as well as some indication of their aesthetics. Those enticed by the technical aspects of a clock's functioning will find a range of diverse mechanical operations to observe in the pictures of this time- keeper. Regardless of your interest in antique horology, we hope you will find some enjoyment and perhaps some new information from this article.

References

AS Alan Smith (ed.), *The International Dictionary of Clocks* (London: Chancellor Press, 1996).

CA Charles Allix, *Carriage Clocks: Their History & Development:* (Woodbridge, Suffolk: Antique Collectors Club, 1974).

DR Derek Roberts, *Carriage and Other Travelling Clocks:* (Atglen, PA: Schiffer Publishing, 1993).

KHP Kathleen H. Pritchard, *Swiss Timepiece Makers:* 1775-1975, in two volumes (West Kennebunk, Maine: Phoenix Publishing, 1997).

MIH Musée International d'Horlogerie, Centre d'Etudes Institut l'Homme et le Temps, La Chaux-de-Fonds, Switzerland; website: www. mih.ch; e-mail correspondence: cet.vch@ne.ch with Nadja Birbaumer and Barbara Ortega.

Author's Note:

This article was originally published in the *NAWCC Bulletin* in October 2004. Most of the material in this article dealing with the movement and functioning of this clock was prepared and written by Doug Adams, while the historical background of these clocks and clockmakers was the result of research by Tom Wotruba. Doug was a master at understanding the mechanical operations of complicated clocks and highly skilled at correcting their problems and making them perform properly and happily. Unfortunately, Doug Adams passed away in late 2012. His co-author of this article and many others who knew him in Southern California and elsewhere have great memories of working with him and learning much from him. He was most appreciated, both personally and for his talent, and will be decidedly missed.

Replacing a Paper Dial on a Carriage Clock

Tom Wotruba (USA)

Some interesting old clocks, especially of American origin, were made with paper dials that have suffered much wear and tear over the years. Fading, water stains, and what often looks like smudges, smears, or blotches from oil or some other substance give a truly deteriorated look to these dials. Of course, a dial that is evenly faded can.be quite charming, and some "purist" collectors are offended by any attempt to replace an original dial. But for others, the uneven deterioration on a dial makes it far less enjoyable to look at and possibly even embarrassing to display. As a result, clocks with unsightly paper dials often come on the market for prices that would be far greater if the dial were more readable or more attractive. I recently bought one of these clocks with the determination that I would try to replace the dial with a reproduction that eliminated these undesirable blemishes. The clock is an old Gilbert carriage-type time- piece with. an alarm that sounds on two bells at the top of the clock. The 1901-02 Gilbert catalogue pictures it as the "Hello Long Alarm" having an alarm that rings for eight minutes with one winding if not switched off. Its catalogue price was $3.75. The dial showed not only fading from its near 100-year age, but also other ravages of its environment, most notably stains from moisture or other liquid as well as just the wear and tear that affect paper over time. The dial measures 35/8 x 47/8 inches and the chapter ring is 2 3/4 inches in diameter. A smaller seconds dial appears at the VI position, and the alarm-set dial is at the XII position. Above the chapter ring is the fancy Gilbert trademark, and immediately at the bottom of the chapter ring are the words "Wm.L.Gilbert Clock Co.Winstead, Conn. U S A" in very small type.

Fortunately, all the original printed material on the dial was intact and visible except for a small nick in the first I of the VIII. My plan was to create an enlarged image of the dial using a photocopy machine, then scan in the image to a computer software program that would allow cleaning up the unwanted blotches and smears, printing the cleaned result, and then reproducing it again on a photocopy machine using the degree of reduction that would make the resulting image the correct size to fit the clock. I did not scan the original dial into a computer file directly because I do not have a flatbed scanner, which is the proper equipment to do this.

Step 2 discusses this option further. Here's the process I used, including the trial-and-error needed at each step.

Step 1. Photocopy the Dial into an Enlarged Image

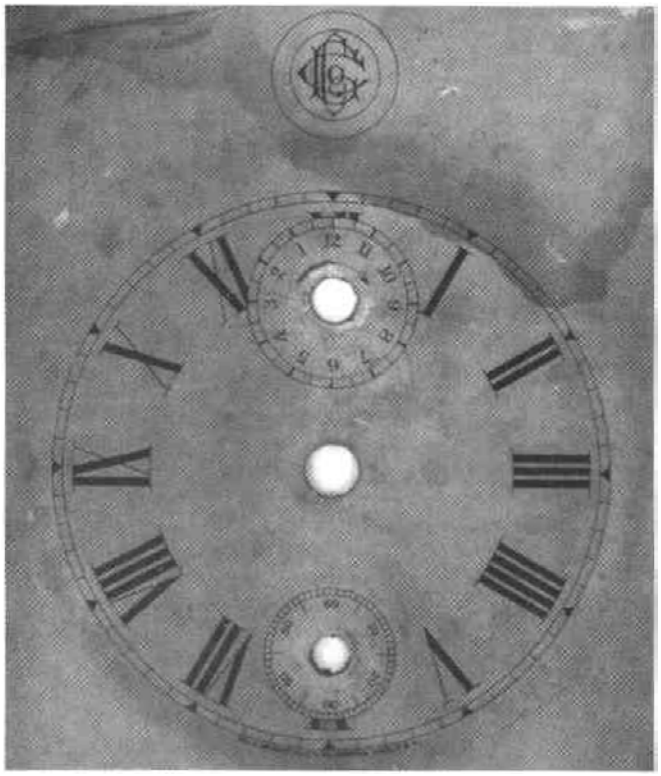
I discovered, after trying numerous black-and-white photocopies at varying density settings, that the problem areas on the dial were being exaggerated-if the settings were sufficient to capture the numerals, lines, and other aspects of the printed dial itself, the blotches and smears were made darker as well. The solution was to copy the dial using a color photocopy, and a couple of attempts with the color process at the local copy center produced an image that provided good blacks of the printed material but subdued the extraneous blotches and smears that I wanted to eliminate. Figure1shows the results of the color photocopy, which was enlarged to fit an 81/2 x 11-inch page with one-half inch margins, suitable for scanning.

Step 2. Scan the Photocopy into the Computer.

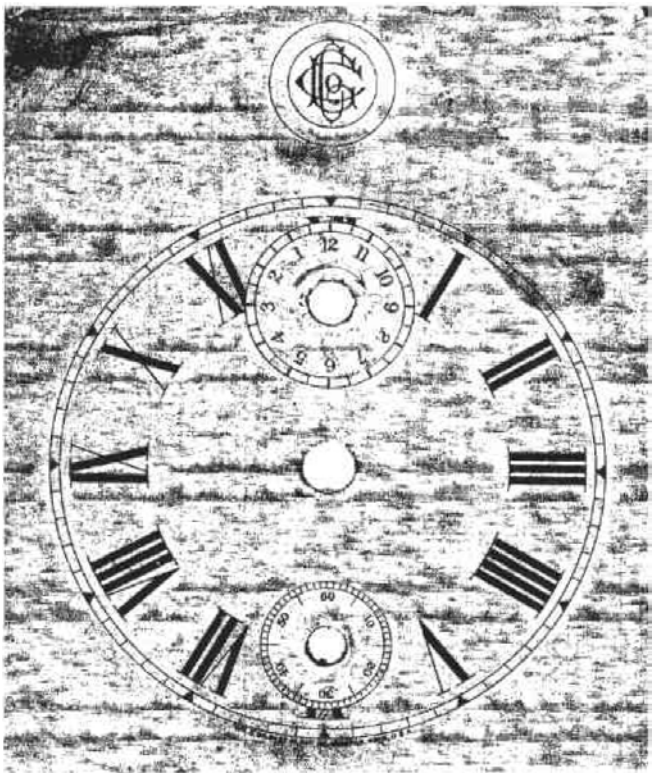
My Compaq computer has a simple scanner built into the keyboard. It is not a flatbed scanner but requires that the item is placed into the scanner slot, where it is fed through and bends around to come out the front of the keyboard. The scanned image appears in PaperPort, the software that allows manipulation of the image. My description of what I did relates specifically to PaperPort, but most other scanner and image- manipulation software will do the same things, and many are far more sophisticated than PaperPort. For instance, a flatbed scanner will produce a more perfectly circular image of the chapter ring (avoiding the problem noted in Step 4), and will allow a scan of the original dial directly into a computer file without the initial photocopy in Step 1.

There are usually choices of modes or settings to use when scanning a document into software like PaperPort. My software provides five choices, which are basically different combinations of bit depth and resolution. Bit depth involves shades of gray that will appear in the resulting image. In this case, I wanted no shades of gray, just "contrasty" black and white, so I set the bit depth to 1(fewest levels of gray). Resolution refers to sharpness as measured by dots per inch (dpi). I set the resolution to the maximum my software would allow, which was 400. This combination of bit depth and resolution can be set in the "custom" mode of PaperPort, but it is also found pre-set in the "business card" mode. Other modes available are "article," "letter," "snapshot," and "photograph." Each of these either has higher bit depth (i.e., too much gray) or lower resolution (i.e., not enough sharpness), though they scan faster and require a smaller file size for the image in the computer.

Left, Figure1. The results of a color photocopy.



Right, Figure2.Theresults of a computer scan



My software also allows variation in a "lighter-darker" calibration regardless of modeI tried a number of different settings on this scale and found that a slightly darker setting than the default for "business card" mode produced the best result (I used 63 instead of the default 75 on the scale of 1to 100). In this case, the best result was that which reproduced all the printed parts of the dial as well as possible while minimizing the dark smudges and stains from the dial deterioration. I could not be sure which were the best settings and modes without printing out the images from each trial, however, because the image on the computer screen can be misleading. Figure 2 shows the version I selected. It was lighter than most of the trials, so it required less clean-up in the background but gave reasonably good blacks in the dial image.

Step 3. Clean the Image.

When the scanned image is brought to the computer screen, the cleaning process begins. I did three things here to improve the image.

First, there is a command available called "Clean Page" which removes small speckles or light gray patches that may have been picked up in the scanning. This can be done three or four times to reduce the background gray. If it begins to remove parts of the image you want to keep, then an "undo" command will restore what was last cleaned.

Second, there is a "selection" command that will place a dashed-line box around an area in the image that you select and form by using the computer mouse arrow. Then, when the delete key is pressed, everything within that box is deleted. Before carrying out this part of the process, I zoomed in the image so that the size of the image on the screen was increased by 400%. This allowed me to "select" areas in very small spaces (e.g. the spaces within the inner and outer rings of the seconds dial between the seconds dividers). If, by some mistake, a portion is deleted that should be kept, the 'undo" key will restore it. This process took a long time, probably three or four hours in total. to clean up every extraneous mark on the dial.

Third, it is possible to add marks on the image in a manner similar to using a pen to draw in lines or fill in holes. In my software this is done by selecting the "freehand" device and using the mouse arrow to make the marks. As a result I was able to fill in the hole in the first I of the VIII and to add some small lines at places around the chapter rings where the printed image had not come through.

While use of the computer's freehand drawing on the image will not be very precise, and may actually appear wobbly, the end result will not be noticeable once the final image is reduced back to the original dial size. If a big mistake occurs in the freehand drawing, the "undo" key will give you another chance to cancel what you did and try it again. (As an alternative, you can do any drawing directly on the paper image after it comes from the printer.) When all of this is done, print the image on plain white paper. In my case, the final result of this step appears in Figure3.

Step 4. Reduce the Printed Image to Fit the Dial.

I now headed back to the copy center to carry out the final step. As preparation for this step, I had to calculate how much reduction was needed to produce the proper final size dial. I found that my "created" dial was slightly more than two times the size of the original dial when measured horizontally (i.e., from the outer chapter rings between IX and III) but slightly less than two times the size of the original dial when measured vertically (i.e., from the outer chapter rings between XII and VI). This indicated that the reproduced image was not a perfect circle, probably because my scanner was not flat but rather used a roller through which the scanned page was fed. Thus, the question occurred as to how much reduction to use. I soon discovered that the key to this calculation was to determine exactly where the holes for the various arbors had to be so that the hands would fit properly in the middle of their respective rings. In my case, I simply took a 3 x 5-inch card, laid its edge vertical1y across the original dial between the IX and the VI, and marked off the outside rings of the chapters, the seconds dial, and the alarm-set dial, and also marked off the openings for the arbors. This provided me with a sort of ruler or template to place on the reduced images from the photocopy process and thus determine which is the correct reduction. After three tries (48%, 52% and then 50%), I had the correct reduction. Then I made the final copies on heavy board that was slightly off-white in color to give the appearance of some age. The result looks exactly like Figure 3 except, of course, reduced to the proper size.

As an alternative to Step 4, you can print the dial image in the proper dimensions to fit the clock directly without going through the photocopy reduction process. This is possible if (a) you can control the precise size of the final printed image to fit the clock, and (b) if your printer will accept the paper stock you want to use for the dial (such as 24 or 30-pound card stock).

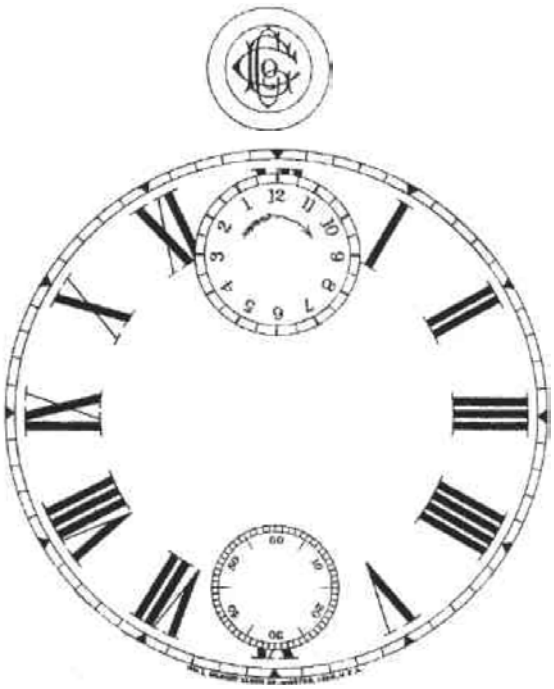


Figure 3. The cleaned-up image.

There are advantages, however, in printing the image in larger format and then reducing it via photocopying. For one, you have an opportunity to do any final "retouching" on the printed image prior to reducing it to its final dimensions. Another advantage is that the reduction will increase the contrast and apparent sharpness of the image by compressing the black lines, and it will smooth out any slightly jagged lines or marks from any freehand corrections.

Step 5. Create the Arbor Openings.

Using my 3 x 5-inch card template, I marked off where the arbor openings should be on the new dial image. Then, after carefully but lightly drawing the complete circles for those openings, I used an X-Acto knife to cut out the three openings. The holes could be made neater by twirling a small piece of very fine sand- paper rolled up to fit each hole (or a very small and fine circular or semi-circular file).

Further Options

The resulting dial on the heavy board is now ready to be placed on the clock. There are some further options to consider, however. One is to put some kind of protective coating on the dial to protect it from fading. I made five copies of the dial and have not used any protective coating. But a number of sprays are available that might be used, such as those that artists use to protect their drawings, etchings, or other works. Of course, any spray used must be very fine or else the image in the new dial will run.

A second option involves the shape of the dial itself. The original Gilbert dial on my clock had a slightly recessed area inside the seconds ring and a protrusion surrounding the chapter ring. These dimensional shapes of the dial occur in the metal piece to which the original paper dial was adhered. If I wanted them to appear in my newly created dial, I could use the original dial's metal backing, soften the newly created dial with a glue on its back, press it onto the original dial's metal backing, and thus gain the dimension that the original dial had. But in the process, the original dial would be covered and destroyed, since there is no way the original paper dial could be removed from its metal backing and remain intact. I have chosen not to do this, but it remains an option for those whose dials have such protrusions and indentations. Of course, there may be other creative ways to produce these three- dimensional effects as well. Instead, I attached the dial directly to the brass front plate. This can be done with double-sided tape or with the cement used to attach photos to album pages. The paper dial must remain flat enough on the front plate so that it does not raise up or warp and interfere with the seconds hand. If cement is used, take care to keep it from bleeding through the back of the dial paper and thus causing blotches on the face of the dial.

Of course, another option is to purchase a new dial from a supplier's catalog. The catalogs I have do not offer a trademarked dial of this size and style, however. But even if one were available to buy, creating your own replacement dial can bring a great deal of enjoyment from meeting the challenge of doing it yourself. It might be of interest to know that the 1901-02 Gilbert catalog did offer replacement dials for this clock for the grand sum of 25¢.

My clock now has a new dial and is proudly displayed. Figures 4A and 4B show the clock with the original dial and with the new dial as produced with the method explained here. It took a couple of trips to the copy center and a few hours of playing

with relatively simple scanning equipment and software. For those who don't have scanners or computers with proper software, check with your copy center. Many copy centers have computers with scanning equipment as well. Give it a try. It doesn't cost much, just a few dollars for copies and a day's worth of your time, and the result can be very satisfying.

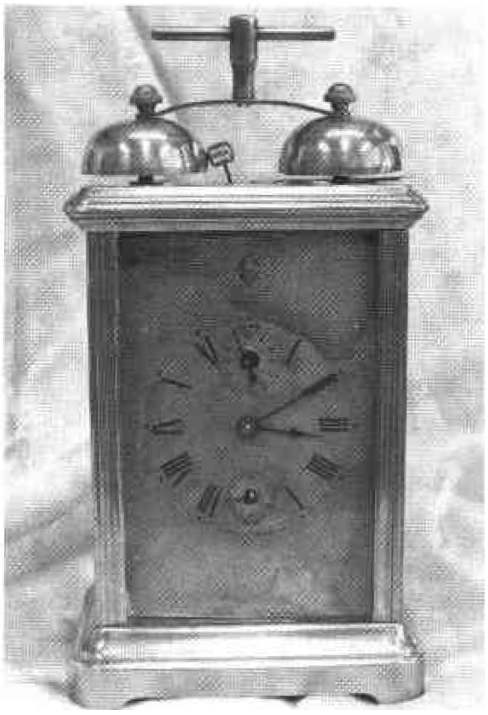


Figure 4A. Before.

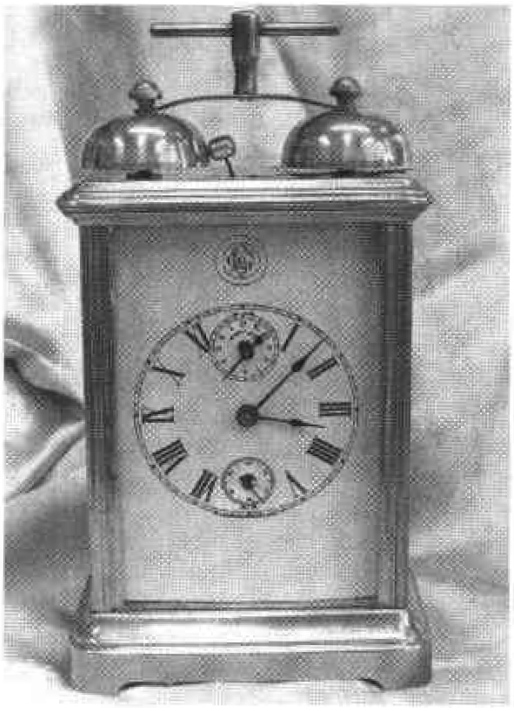


Figure 4B. After.

Do you own a carriage clock?

If so, you may have questions about your clock.

Such as - - - -

1. When was it made and by whom if it is not signed by a maker.

   Many carriage clocks are marked by retailers, such as “Tiffany”. Many times the maker is not identified. However the maker can often be identified by the construction style and other tell-tell signs found on the movement.

2. Should I clean the case, or not?

3. And the greatest question of all, what is it's value.

   This is the hardest question to answer because of the many variables, such as condition of movement and case, the name and standing of the clockmaker, & the quality and rarity of the clock. We are not licensed appraisers. We can only advise you where to look for comparable clocks so you can make your own "best guess" as to the actual value, always remembering the oldest approach to a value is "Willing Buyer, Willing Seller".

Members of our chapter have many years of experience collecting, researching and restoring carriage clocks. Many are willing to help you answer some of these questions.

This free service is for NAWCC members only.

Email questions and pictures of your carriage clock (one clock at a time, please) to:

Ken Hogwood: (USA) kenhogwood@aol.com

Doug Minty: (Australia) dminty@optusnet.com.au

Link to the Online Galleries website

www.onlinegalleries.com/art-and-antiques/antique-clocks/carriage-clocks