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Alice B. Carpenter	2	PRESIDENT'S MESSAGE
Henry B. Fried	6	QUESTIONS & ANSWERS More on the Eureka Electric Clock, 1906
Archie B. Perkins	10	TECHNICALLY WATCHES Antique Watch Restoration, Part LXXV
J.P. Kenyon	18	TIMELY TIPS FOR CLOCKMAKERS Calculating the Number of Teeth and Leaves On a Missing Gear and Pinion
Fred S. Burckhardt	20	ROCK QUARRY A Man Outstanding (?) in His Field
Marshall F. Richmond	22	PICKLE BARREL Jewelry Crafting and Repair Repairing Promotional Jewelry
Woody Woodward	26	SCHOLASTICALLY SPEAKING St. Paul Technical College
Robert D. Porter	28	WATCHES INSIDE & OUT How to Make and Fit a Center Wheel Bushing
Charles Cleves	32	OLD WATCHES Swatch Watches
Wes Door	34	SHOP TALK How to Start and Manage a Business Part VII, Expansion Watch Band Inventory
James H. Broughton	40	TIMESAVING CHARTS FOR SEIKO STEMS
Marvin E. Whitney	44	MILITARY TIME Military Wristwatches Introduction
Joseph L. Cerullo	48	AFFILIATE CHAPTER COLUMN Save Those Used Watch Batteries For AWI's ELM Trust

Transferring a Lantern Pinion to a New Arbor

24

The Itinerary for AWI's 1992 Tour

38

Helpful Seiko Charts for Replacing Stems

40

DEPARTMENTS

New Members/9
Ask Huck/24
AWI Project Extend/42
Bulletin Board/46
Association News/49
News in the Trade/50
Classified Ads/52
Dates to Remember/56
Advertisers' Index/56

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President's Message



A RESPONSE TO "A WATCHMAKER"

EDITOR'S NOTE:

President Alice Carpenter is responding to a rather bizarre letter she received from a "New York Watchmaker."

*The writer rambled on about unhappiness with the profession, AWI, its directors, staff, and particularly **Horological Times** and its writers. The only writer he liked was Joe Crooks. Burckhardt made no sense, Cerullo used "I" too often—besides he owns two stores. The "Restoration" articles were intimidating for beginners in the trade.*

The writer expressed suspicion that as soon as the title of Certified Master Electronic Watchmaker was announced, all of the staff had CMEW after their names.

The writer closed by saying that he and 15 others he knows will not be renewing their membership.

One thing he forgot—HE FORGOT TO SIGN HIS NAME!

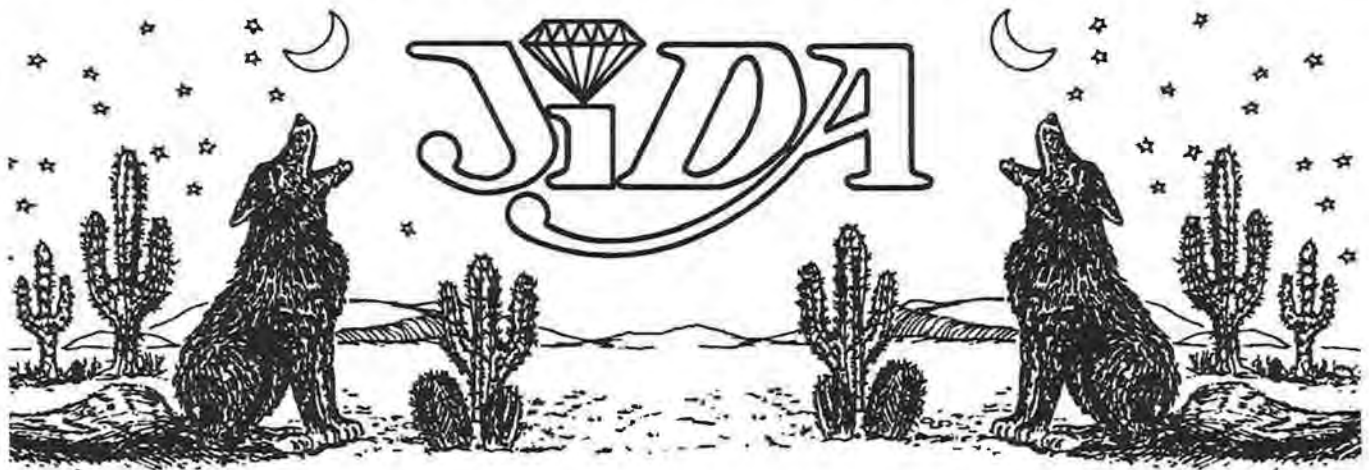
To: "A Watchmaker" from the state of New York who did not identify himself:

Yes, it's true we (AWI) need more members. Yes, there is a great demand for watchmakers. Yes, I, too, consider my profession an art. Yes, I agree, Joe Crooks' articles ARE excellent!

But perhaps I am not understanding your interpretation of "office staff." You said "when the CMEW exam was brought into place, all of a sudden everybody directly affiliated with the AWI staff became certified." As far as I can determine, not any of
(Please turn to page 4)

ON THE FRONT: Spring is on its way! This scene is from Hardangerfjord in Eidfjord, Norway, sent to us by Julius Lou Merkys, a resident of Lyndhurst, Ohio.

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President's Message

(Continued from page 2)

the ladies who work in the office, or their husbands, have certified for CMEW. Milt Stevens? Jim Lubic? Neither has certified. The executive officers? Only I have certified for CMEW. As for the Board of Directors, Bishop, Broughton, Carpenter, and Jaeger have certified for CMEW. Those men teach AWI seminars on quartz repair. Frankly, I would prefer these men to be certified when they travel and teach under the auspices of AWI. Wouldn't you? Perhaps you misunderstood something about certification--it's only by examination.

I also have a problem with the statement that most AWI directors own one or more stores and do not have to rely on watchmaking for a living. Please look at page 2 of *Horological Times*. There are 6 who own retail stores. There are 5 who own and operate trade shops, making them dependent on watch repair. As near as I can determine, there are 2 who are retired, and neither of these 2 depended on a retail store for their livelihood before retirement. But why does this bother you? I do not understand.

Now about *Horological Times*. I have to tell you that most people enjoy Fred Burckhardt's articles. I have to tell you that I enjoy Fred's articles, too. True, some statements he makes are over my head--but then I'm from North Carolina and not Texas.

You said that one *Horological Times* writer's articles were "great for us," but if we were just starting off in our business his articles would turn us off. I agree. He is intimidating! I've seen this man at work; he is so far above anyone else I've ever seen, that I am envious of his ability! Maybe he is above the heads of those just starting out, but isn't it nice to have the information on paper, that he has in his head, for future use?

As for the writer who constantly says "I, I, I, I, I"--he's young. Give him time. By the way, the video you spoke of that he did was good. I've seen it. True, many of us know as much, but then WE didn't put it on video, did we?

That brings me to another point. If some of us know as much as--no, *MORE THAN*--some of the writers in *Horological Times*, why don't WE write articles for the *HT*, especially those who have retired and finally have some time to do what they really want to do?

You say that you and 15 other watchmakers who are to retire shortly will not renew your AWI membership. Why? Did you hate your work? Is that why you are saying you will not renew your AWI membership?

Did you love your work? Then how can you walk out on your chosen profession when, as you clearly stated, "we or you should have a real good article in its place for the young ones who are starting out in our field." Retired doctors, lawyers, and even presidents keep up with what's going on in their field of work that has supported them for a good part of their lives. How can we do less than to stay in touch, or maybe even help where help is needed?

Where is help needed? Your continued presence is needed in your local guild. If the younger members in the guilds are smart, they will listen to what you have to say. "Pick your brains" is how one of my students stated it to me.

Your continued presence in AWI is needed. As you said, many of us can write better and know more than the ones who are writing in *Horological Times*. So, why aren't we doing it? We (AWI) need you and your many years of experience. Why are you depriving us of the valuable knowledge and help you can give? I really would like to know.

Alice B Carpenter

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Questions & Answers

Henry B. Fried, CMW, CMC, FAWI, FBHI, *FNAWCC



More on the Eureka Electric Clock, 1906

Q I was truly enthralled by your article (December issue, page 6) on the Eureka electric clock, 1906, but somewhat puzzled. You had the magazine print what appears to be a patent perspective and a front view of the 1906, but in your article you made no further reference to this particular clock. This piqued my curiosity, since I own that particular model, in prime condition and actively working.

I have no idea how much information has been garnered on this beauty, but have my own suspicion as to why the clock did not become a resounding success in its time, more as a result of its grace as a kinetic sculpture, with the bascule providing the dynamic aspect. The clock contains a severe engineering fault: The cam that activates the ratchet that activates the base wheel advances the hands only +/- 40 minutes in a normal 60-minute hour, since the click picks up only one tooth at a time of the transfer wheel. Increasing the cam size to pick up two teeth would result in an 80-minute advance for each hour, since the movement is a straight line equation, thereby rendering the clock a horological failure.

However, I still consider the 1906 one of my prized possessions and would like to have (if not from you, from the readers) an idea of its worth as well as information on the number of units manufactured. My clock is #9063, which appears to be a code system for the production quantity and year produced, thusly: 1(906)

--Unit #3 (strictly guessing, though).

Indicently, I had to redesign the power input to improve the performance by using two "D" batteries in series in lieu of type "A," which appears to be the original power supply specified.

Actually, I'd be pleased with any information at all that will give me further insight into this horological treasure.

Adonay Bergamaschi
South Miami, FL

A I cannot understand why your clock will not keep time with the indexing system you have. It is possible that someone changed the indexing system or the gear train to the dial and hands. Incidentally, I have since learned that there were some Eureka's made with seconds hands, but these are quite rare.

I cannot tell you how much your clock is worth as this Institute has a firm policy against rendering appraisal service, for obvious reasons. However, these rare clocks are bringing premium prices. If you intend to attend the Orlando Regional of the NAWCC, no doubt you will see some others and obtain all sorts of information.

You might also try writing to Martin Feldman who was the founder of the electrical clock chapter of the NAWCC. He has some and does some repairs on these.

Also, I do think that you are overloading with the voltage and believe that if you follow my suggestions on

diodes, clean contacts and testing of the coil for "shorts," you may be able to make this into a more economically running timekeeper.

Q I have on hand a Junghans striking clock of which I am sending a photo. On the movement is the number 4.14. Please advise me of the approximate date of manufacture of this timepiece.

Don Chu
Forrest City, AR



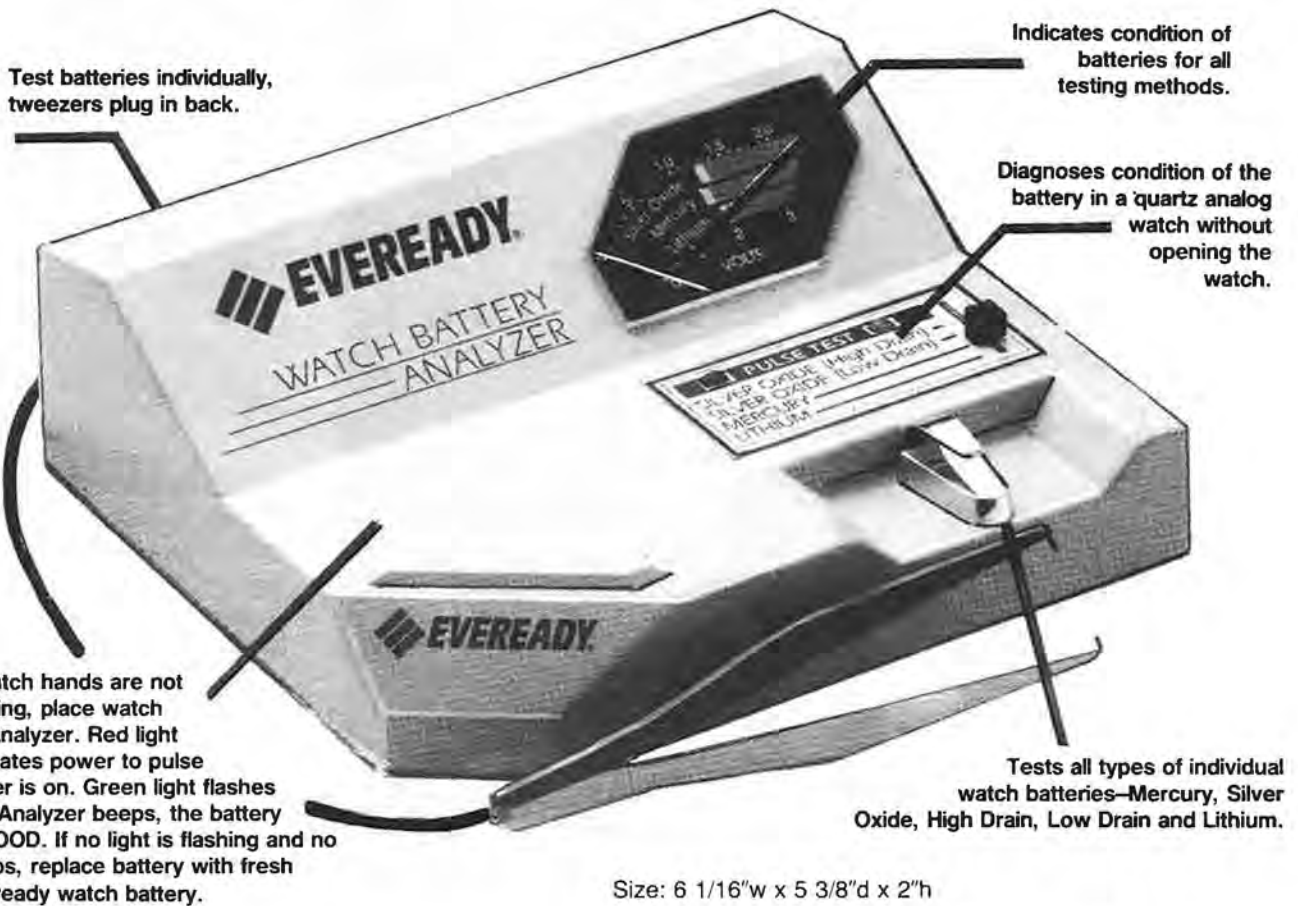
A Your photo reveals a Junghans clock of the 1900-1905 period. The book "Black Forest Clocks," in their section on Schramberg makers (which includes Junghans pictures similar, if not exact), dating as noted. I do not know what the 4.14 denotes. It couldn't mean a date such as 1914 since Germany was deeply in war and clockmaking brass was requisitioned for their war effort.

Henry B. Fried

(Continued on page 8)

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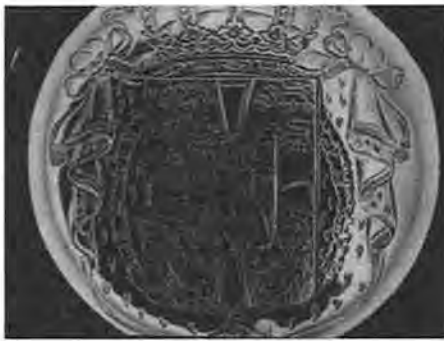


QUESTIONS & ANSWERS

(Continued from page 6)

Q Enclosed are some photos of a watch which I need your help in identifying. Any information you can provide is greatly appreciated.

Finn Morbech
Ringsted, Denmark



Achille Hirsch or not. The engraving of the crest and crown on the back of the case, and the crown maker's mark inside the case point to an attempt to show some connection with aristocracy. I can't make out the country of origin punchmarks on either side of the 0.585, but they are probably Swiss.

Kathleen H. Pritchard
Bethesda, MD

A Henry Fried has asked me to answer your letter about the identification of a watch marked "The Lord Watch."

This is a Swiss watch made ca. 1905-1910. The movement, with the mark of an arrow piercing an apple, was made by the Fabrique Robert, Fabrique d'Horlogerie de Fontainemelon. The factory was

the oldest ebauche factory in Switzerland, having been established in 1793. In 1891 they registered their name with the arrow and apple trademark and they continued to use that trademark until they became one of the original 26 members of Ebauches SA (in 1925), at which time they were one of the largest ebauche makers in the world.

As to who actually marketed the watch, I am a little uncertain. The case markings send a mixed message. Achille Hirsch, Vigilant Watch Manufactory of La Chaux de Fonds used the name "The Lord" and could easily have assembled the watch with a movement from Fontainemelon. However, from your photographs, the words "The Lord Watch" on the cuvette and "The Lord Watch" and "14K" on the inside of the case lid look to me as if they had been added after the original case manufacture, which, after all, had identified the quality as 0.585. Therefore, I am not sure if the watch was assembled by

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PART LXXV

UPRIGHTING PIVOT HOLES

When restoring antique watches, it is quite often found that one or more train wheels are out of upright. This condition may cause wheel teeth to butt or bind in the pinions preventing the train from being free. This out of upright condition is usually created by carelessness when a pivot hole is closed or bushed. One can detect when a wheel is out of upright by sighting the wheel from different positions to see if the wheel is parallel with the watch plate or bridge. If the wheel is not parallel, then it is not upright. One must determine which pivot hole is off center. Usually only one of the holes is off center. If both holes are off center, one of the holes must be re-established on center before uprighting the other hole. One should first recenter the hole in the plate, then upright the hole in the bridge. The depthing tool is used to re-establish the first hole on center. Then the other hole is uprighted by use of one of the following tools: uprighting tool, uprighting drill press, or the face plate.

UPRIGHTING TOOL

An uprighting tool used for uprighting watch pivot holes is shown in Figure 1. The purpose of this tool is for spotting a center to locate the position of a new upper pivot hole which is upright with a lower pivot hole. It is also used to check the uprightness of an already drilled pivot hole. This tool is excellent to use when making a watch. The following is a description of the uprighting tool. View A, Figure 1 shows the upper part of the frame of the tool. The upper centering spindle is shown in View B. The lower centering spindle is shown in View C. View D shows the table of the tool. The table is part of the lower section of the frame which contains the lower spindle guide. This section is held to the upper part of the frame of the tool by three screws, one of which is shown in View E. The table has been turned flat and true while its

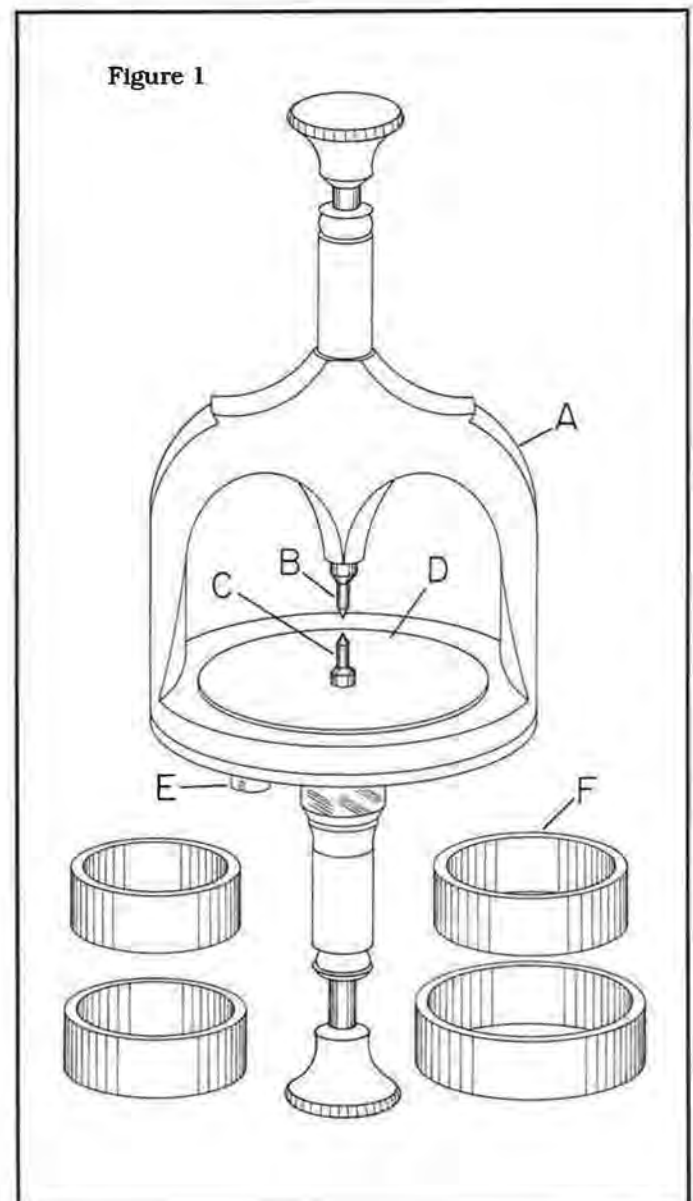
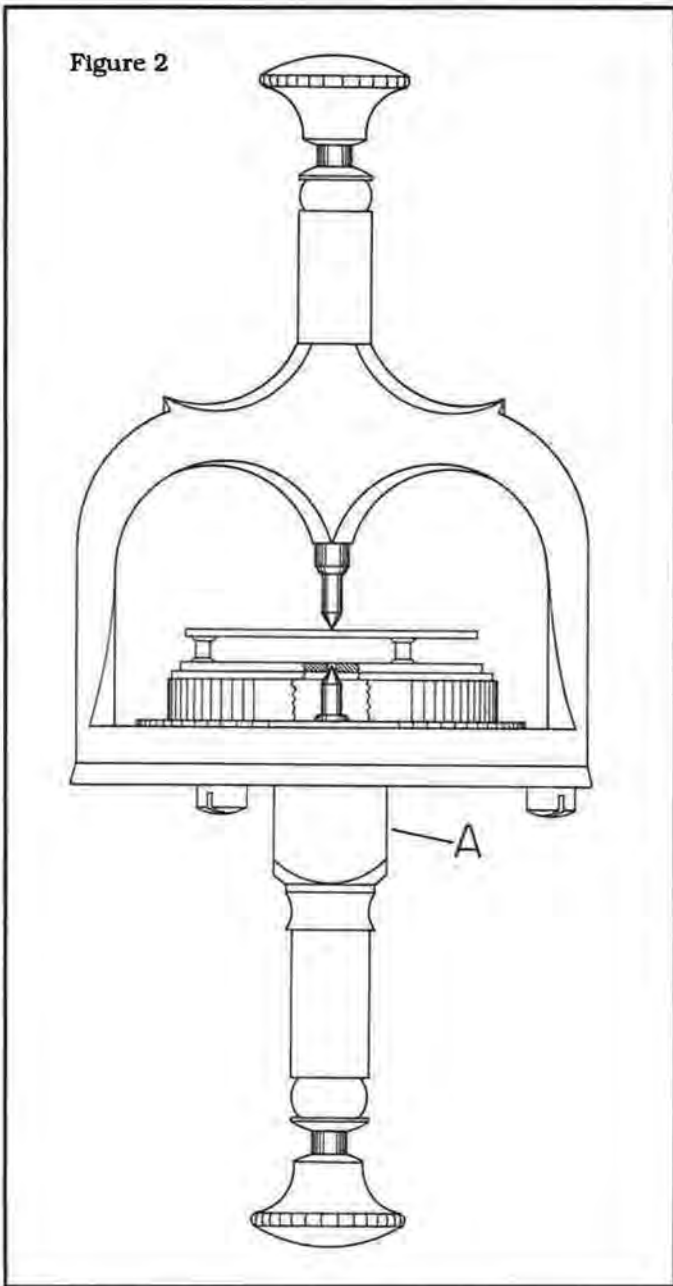


Figure 1

Figure 2



hole was chucked true on a mandrel in the lathe. Likewise, the lower part of the upper frame where the table seats was turned flat and true with its hole while chucked on a mandrel. This assures that the flat surface on the table is flat and square with the spindle holes. This allows one to rest a watch plate flat on the table with the point of the lower center in a pivot hole while the point of the upper spindle is brought down on the upper bridge to check the centering of the upper pivot hole. Sometimes the watch plate has projections which prevent it from resting flat on the table. In this case, a movement support ring would be used to clear the projections and still maintain the same squareness of the movement. One of these support rings is shown in View F, Figure 1. These support rings have been faced so their two end surfaces are flat and parallel to each other.

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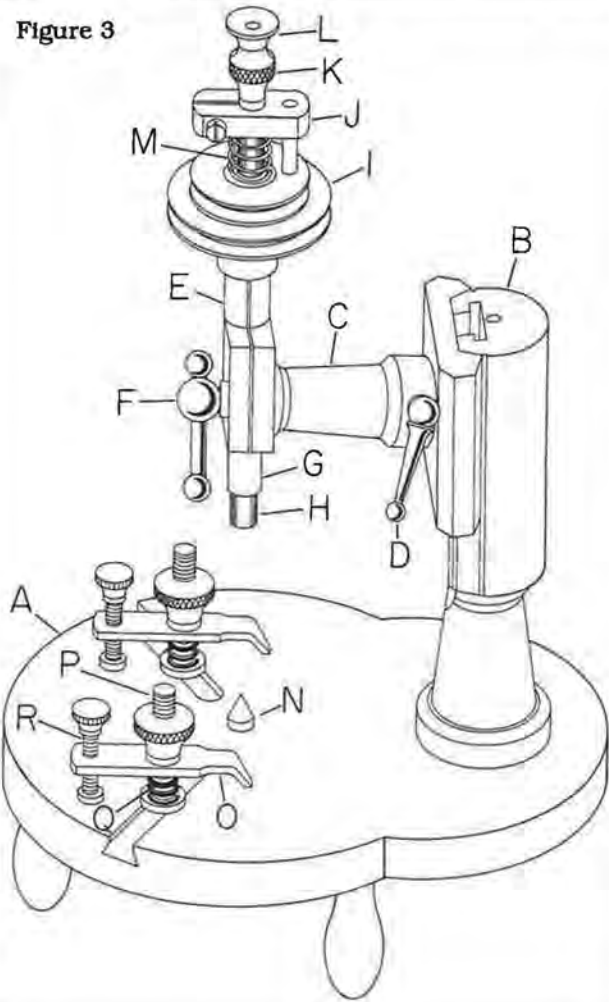
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Figure 3

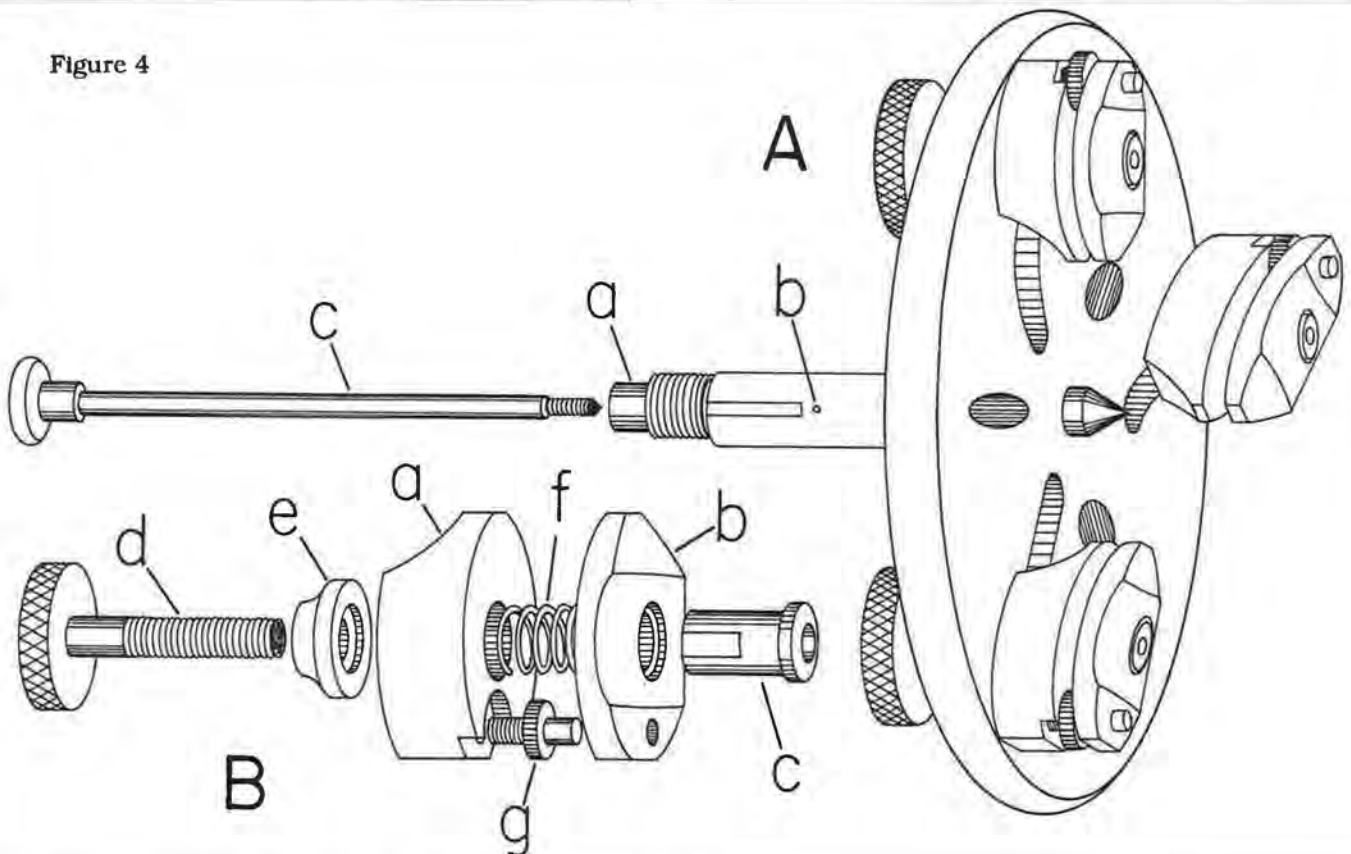


USING THE UPRIGHTING TOOL

Figure 2 shows how the uprighting tool is used. Before attempting to use the uprighting tool, one should check the two centers to make sure they are true and have sharp points. The points must be on center with the body of the spindle. This may be checked by turning a spindle in its hole in the tool and observing the point in relation to the point on the other spindle. The two points are brought close together without letting them touch in order to check to see if they line up correctly with each other. Make sure the table of the tool is tight in the frame. This is done by making sure the three screws holding the table to the frame are tight. Check the table for smoothness. The table must not have any roughness or burrs on its surface that could cause the movement to be out of flat on the table.

When using the uprighting tool, it is held in a bench vise in a vertical position by the square that is shown in View A, Figure 2. A movement support ring is selected which will allow the watch plate to be level while seated on the ring. The ring should be large enough to support the plate near its outside edge. The upper bridge or plate is mounted onto the lower plate. Now, as the plate and bridge are held down on the movement support ring, the lower centering spindle is pushed upward into the lower pivot hole. Make sure that the plate is held down flat on the ring when this is done. Next, the point of the upper centering spindle is brought down to the upper pivot hole to determine if it is centered with the

Figure 4



lower pivot hole. If the point goes centered into the upper pivot hole, these two pivot holes are upright. On the other hand, if the upper pivot hole does not line up with the point of the centering spindle, the hole is out of upright with the lower pivot hole. If both pivot holes show that they have been worked on before, then one must place this gear plus its mating gear in the depthing tool and set the correct depthing between the gears. Then the points of the depthing tool are used to determine which pivot hole is off center. After the off-center pivot hole has been corrected, the other pivot hole is made upright with the corrected hole. Note: This tool is not a drilling tool--only a marking and checking tool. Any pivot holes must be drilled on the lathe or a delicate drill press.

THE UPRIGHTING DRILL PRESS

Another uprighting tool is shown in Figure 3. This tool can be used to upright holes as well as to drill upright holes. A description of the tool follows. View A shows the table of the tool. This table is flat and square with the spindle of the tool. View B shows the post which holds the live spindle tailstock shown in View C. This post is made like the end of a lathe bed. The tailstock is held onto the post with a locking bolt and locking lever D. The housing E holds the spindle and its housing which is clamped into position

by lever F. View G shows the spindle housing, and View H shows the spindle. The pulley is shown in View I. Block J with its drive pin is clamped onto the spindle and the pin fits into a hole in the pulley; therefore, when the pulley is turned, the spindle turns also. The spindle uses split chucks. View K shows the draw-in spindle knob and View L shows a small button which is pivoted on the end of the draw-in spindle for the finger to press on when drilling a hole. View M shows the coil spring which causes the drill to retract when pressure is released on button L. This spring becomes compressed when the spindle is pushed downward. View N shows the lower centering spindle. View O shows one of the two clamps for holding the watch plate flat on the table of the tool. View P shows the clamp bolt and nut. View Q shows the coil tensioning spring for the clamp, and View R shows the tensioning screw for the clamp. This screw is used to further tension the clamp against the watch plate after the main clamp bolt has been set for height.

The live spindle of this tool can easily be removed to allow a centering spindle to be used for centering the position of the new pivot hole. After the center has been spotted for the new pivot hole, the live spindle is placed in the tool for drilling the pivot hole.

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USING THE UPRIGHTING DRILL PRESS

The following examples are given for using the up-righting drill press. If the upper pivot hole in the bridge is faulty but the lower hole in the plate is good, one would plug the upper hole. Next, the lower hole is centered with the pointed center and the plate clamped to the table. Then, the upper bridge with the plugged hole is fastened into position on the watch plate. Next, the centering spindle is placed in the tool and its point brought down on the plug to mark the center for the new pivot hole. Then this spindle is removed and replaced with the live spindle for drilling the pivot hole.

Another example of using the tool is when the lower pivot hole is faulty and the hole in the bridge is good, then the lower hole is plugged. Then the bridge is mounted onto the plate and the good hole in the bridge is centered with the centering spindle. Next the plate is clamped to the table of the tool while the upper pivot hole is still centered. Now the bridge is removed and the point of the centering spindle is used to spot a center in the plug in the plate. Then the pivot hole is drilled.

THE FACE PLATE

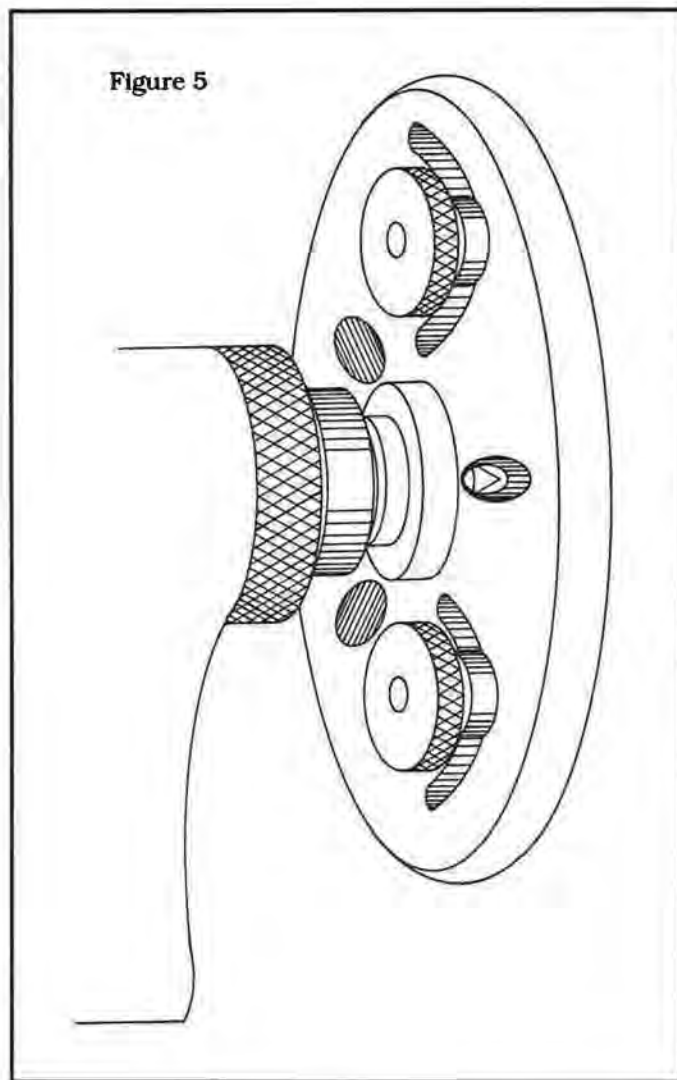
Another method that can be used for up-righting pivot holes is with the use of a face plate. Figure 4 shows a face plate. The purpose of the face plate is to hold watch plates and other flat objects so they can be worked on while being turned in the lathe. Therefore, the face plate is mounted onto a lathe chuck that fits the spindle of the lathe being used. Off-center positions on a watch plate can be centered in the face plate to be worked on.

The following is a description of the face plate shown in Figure 4. View A, Point "a" shows the back end of the pump center. The point of this center is shown at the center front of the face plate. The center has a keyway milled lengthwise of its body. View A, Point "b" shows a pin mounted in the chuck to work in the keyway slot of the center. This key and keyway prevent the center from turning in its hole in the face plate. This feature assures that the point of the center will assume the same position each time it is used. View A, Point "c" shows the adjusting rod for the pump center. This rod screws into the end of the pump center.

The face plate has three moveable jaws for holding work on the face plate. Two of these jaws work in circular slots and the third jaw works in a radial slot. The face plate has three peepholes for viewing the point of the pump center. This is necessary when placing the point of the pump center into the hole being centered up.

Figure 4, View B shows the construction of one of the jaw assemblies of the face plate. View B, Point "a" shows the base part of the jaw. The clamp part of the jaw is shown in View B, Point "b". View B, Point "c" shows the jaw bolt. View B, Point "d" shows the clamp screw. The clamp screw washer is shown

Figure 5



in View B, Point "e". View B, Point "f" shows the tension spring for spreading the jaws, and View B, Point "g" shows the jaw leveling screw.

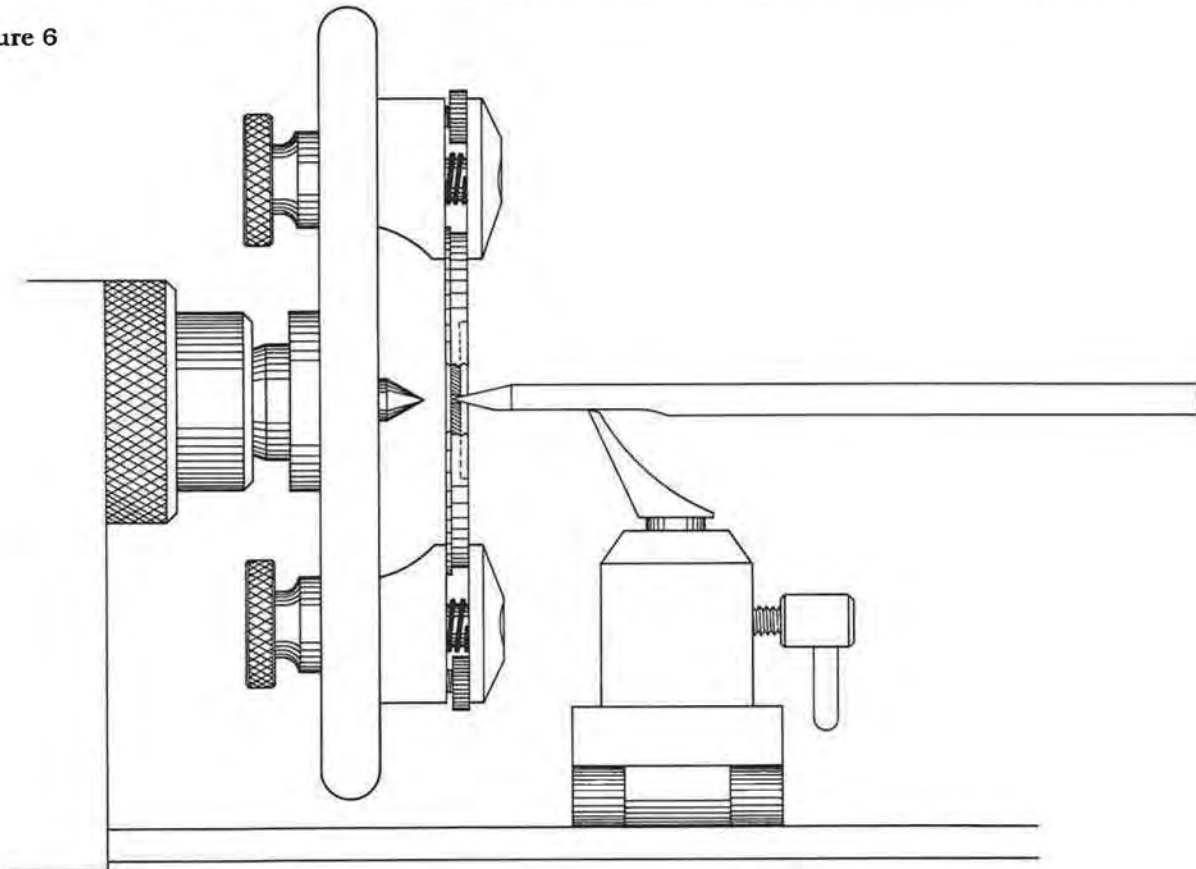
Figure 5 shows a backside view of the face plate. This view is for the purpose of showing how the point of the pump center is viewed through one of the peepholes when one is centering up the work in the face plate. These holes are drilled through the face plate at an angle. Some face plates have three large openings instead of the smaller angular holes that this plate has.

USING THE FACE PLATE

To use the face plate, it is first placed in the lathe headstock. Then the watch plate is placed between the jaws of the face plate so the hole being worked on is near the center of the face plate. Next the pump center is advanced so its point goes into the pivot hole that is to be centered. The jaws are tightened on the watch plate. Then the pump center is retracted from the hole.

Next the hole that was just centered is checked to determine if it runs absolutely true. This is shown being done in Figure 6. To test the truth of the pivot hole, a piece of pegwood is used over the T-rest as an

Figure 6



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indicator. The pegwood is sharpened with a long point and one side of the pegwood is cut flat. The flat side rests on the T-rest to prevent the pegwood from turning as the watch plate is revolved for checking the truth of the hole. **NOTE:** The point of the pegwood must be a loose fit in the pivot hole; otherwise, it will turn with the plate. When the lathe is turning slowly with the pegwood in position, one would observe the very end of the pegwood to see if it moves up and down. If the end of the pegwood remains still when the lathe is turning, the hole is running true. If the end of the pegwood moves up and down, the hole is not true and the plate must be shifted slightly between the jaws of the face plate. This is done by using a piece of wood and a small hammer. A punch made from a piece of large French clock pegwood will work well for this purpose.

Now we proceed with the wood punch and hammer to "fine tune" the truth of the pivot hole. First, as the lathe is turning slowly, observe the end of the pegwood indicator and stop the lathe when the end of the indicator goes down to the greatest point. At this point the top of the watch plate is high in the face plate; therefore, one would use the wood punch on the upper edge of the plate to tap the plate slightly downward in the face plate. Then we would again turn the lathe slowly and observe the end of the pegwood indicator. If the end of the pegwood remains still, the job of truing the hole is completed except for

checking to make sure the clamps are tight on the watch plate. After retightening the clamps, one should test the hole once more to make sure the plate did not shift during the retightening of the clamps.

UPRIGHTING IN THE FACE PLATE

To use the face plate to upright pivot holes, one would use the following procedure. If the pivot hole in the lower plate is correct but the pivot hole in the bridge is damaged, we would center up the hole in the plate after the plate is fastened in the face plate. Then we would assemble the bridge to the watch plate and bore out the damaged hole in the bridge so the hole could be bushed or jeweled to correct the damaged pivot hole. Figure 7 shows this operation being done. Note that an L-rest is being used to support the hand-held boring tool. The reason for using the L-rest is that it can be gotten closer to the work than can a T-rest. The jaws of the face plate prevent one from getting the T-rest close enough to the work without the jaws hitting the T-rest.

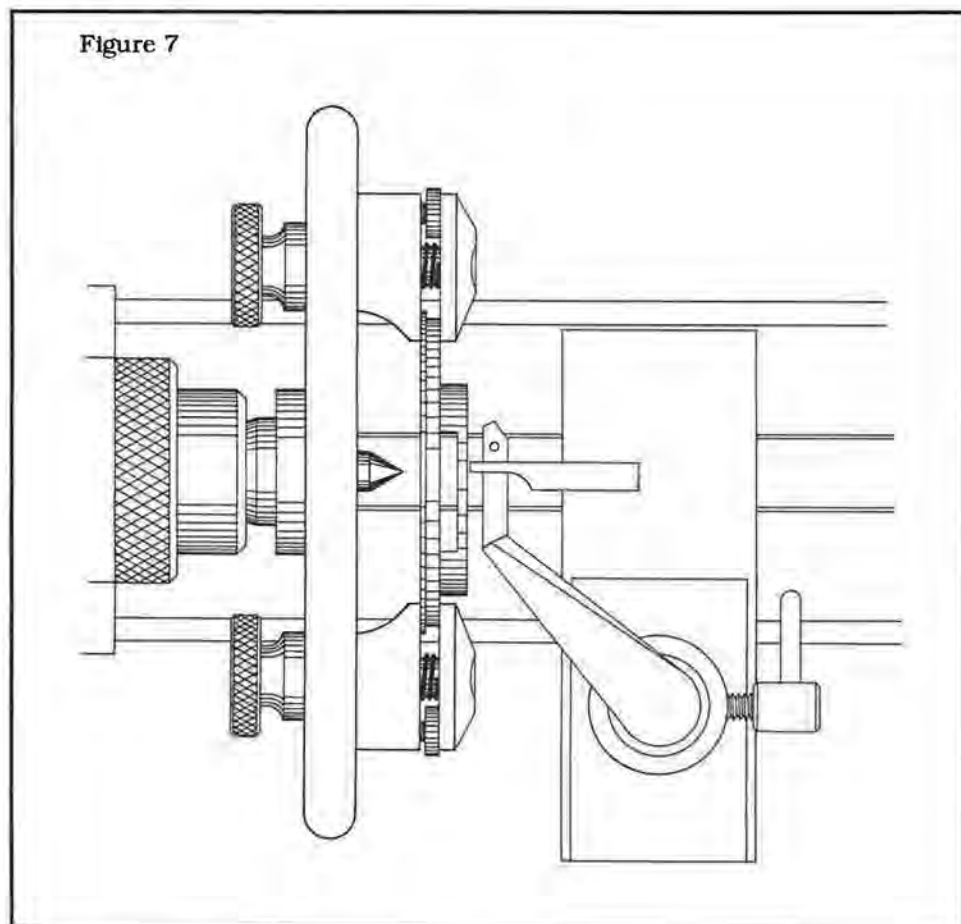
Another example of uprighting in the face plate is when the hole in the plate is damaged but the hole in the bridge is good. In this case, one would place the watch plate with bridge attached in the face plate. Then the good hole in the bridge is centered. Next the bridge is removed from the plate so the damaged hole in the plate can be bored out for bushing or a jewel.

A final note on face plates:

It is very important that the face plate runs true in the flat and round in the lathe. If the face plate is the slightest amount out of true, one cannot expect to get correctly uprighted holes. It is also very important that the pump center is sharp and runs absolutely true. When using the face plate, one must never have one of the clamps extending out past the edge of the face plate. One should turn the face plate a complete turn by hand before turning it with the motor. This is to make sure the plate and work clear the lathe bed sufficiently.

Boring the hole in a watch plate or bridge for a bushing or jewel can be done with a boring tool in the slide rest. This is a more controlled method than using the hand-held boring tool. Again, the face plate should be turned one complete turn by hand to make sure that the work clears the lathe bed and slide rest.

"Antique Watch Restoration" will continue next month. □



NORTH CENTRAL TECHNICAL CONCLAVE

APRIL 30, MAY 1 & 2, 1992

The North Central Technical Conclave will be held in Madison, Wisconsin. A planning committee representing AWI Central, The Central Illinois Watchmakers Association, The Minnesota Watch & Clockmakers Association, and The Wisconsin Horological Society have developed the North Central Technical Conclave. The Conclave will be held in Madison, WI on April 30 - May 2, 1992. Individuals in the North Central states will be able to select from the following educational opportunities:

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Timely Tips for Clockmakers



J.P. Kenyon, CMC

Calculating the Number of Teeth and Leaves On a Missing Gear and Pinion

The probability of removing a clock movement from a case and finding a missing wheel and pinion is remote. The thought of losing one of these components from a disassembled movement is appalling, but mysterious things do happen in a clock shop. Suppose a wheel and pinion have several of the teeth and leaves missing or is damaged beyond recognition. Several factors need to be considered when ordering or making a replacement. One of these is the correct number of teeth and leaves on the wheel and pinion. In this installment we will investigate a simple approach using principles and methods considered in previous articles to make this determination.

For this calculation we must know the hourly vibrations of the pendulum. This can be determined from its length, either by computation or by looking it up in the tables. After the vibrations are known, the teeth and leaves of the surviving wheels and pinions, starting with the center wheel, are counted and substituted in the following formula:

$$\frac{CTE2}{te} = \text{beats per hour}$$

- C = center wheel teeth
- T = third wheel teeth
- E = escape wheel teeth
- 2 = impulses per tooth of the escape wheel
- t = leaves in the third pinion
- e = leaves in the escape pinion

LOST ESCAPE WHEEL AND PINION

Let us assume that the escape wheel and pinion have been lost, and the pendulum used is 39.1 inches long. In a table giving the oscillations of a simple pendulum, it will express that a pendulum of this

length will vibrate 3600 times per hour. Now, let's substitute our known values into the equation:

- C = 64 teeth
- T = 60 teeth
- E = (X) teeth
- t = 8 leaves
- e = (Y) leaves
- beats per hour = 3600

$$\frac{64 \times 60 \times (X) \times 2}{8 \times (Y)} = 3600$$

$$\frac{(X) (64 \times 60 \times 2)}{8 (Y)} = 3600$$

$$\frac{X (960)}{Y} = 3600$$

$$\frac{X}{Y} = \frac{3600}{960} = 3.75$$

From this calculation we can postulate that the escape wheel will have 3.75 teeth for each leaf in the escape pinion. Usually the escape pinion will have the same number of leaves as the preceding pinion, or one less. If we examine the train count, we find that the third pinion has 8 leaves.

Let's try 8 leaves: $8 \times 3.75 = 30$ teeth

This means that (X) = 30 and (Y) = 8; in other words, the escape wheel would have 30 teeth and the escape pinion 8 leaves.

If we had tried 7 leaves (one less):

$$7 \times 3.75 = 26.25 \text{ teeth}$$

Obviously, this will not work because we cannot have .25 teeth.

The escape wheel and pinion selected will have to be of correct diameter and pitch to mesh correctly in the train. In reality it would not have been necessary to try 7, since multiplying by 8 leaves resulted in an answer with no fraction.

LOST TRAIN WHEEL AND PINION

Another scenario would be a lost train wheel and pinion. For example, let's assume that the third wheel and pinion are missing.

$$\frac{CTE2}{te} = \text{beats per hour}$$

- C = 64 teeth
- T = (X) teeth
- E = 30 teeth
- t = (Y) leaves
- e = 8 leaves
- beats per hour = 3600

Substituting the values:

$$\frac{64 \times (X) \times 30 \times 2}{(Y) \times 8} = 3600$$

$$\frac{X(64 \times 30 \times 2)}{(Y) \times 8} = 3600$$

$$\frac{X(480)}{Y} = 3600$$

$$\frac{X}{Y} = \frac{3600}{480} = 7.5$$

We can presume that the third pinion will have the same number of leaves, or one more than the escape pinion. If we examine the train count, we see that the escape pinion has 8 leaves, and 8 will divide equally into 64, the number of teeth of the center wheel, giving us a clue that we are on the right track. So to continue:

$$7.5 \times 8 = 60 \text{ teeth}$$

This means (X) = 60 and (Y) = 8; in other words, the third wheel would have 60 teeth and the third pinion 8 leaves.

If we had tried 9 leaves (one more):
 $9 \times 7.5 = 67.5 \text{ teeth}$

Obviously, this will not work because we cannot have .5 teeth.

The wheel and pinion selected will have to be of correct diameter and pitch to mesh correctly in the train.

From the values in the equation, other infor-
(Continued on page 21)

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Fred S. Burckhardt

A Man Outstanding (?) in His Field

You'll never guess who stopped by to see me the other day. It was my old friend Fern Haafwhit. Fern and I go back many years . . .

We first met when we worked together in an old candle clock shop in Tibet. The name of the place was Ye Olde Candle Clock Shoppe. There wasn't much work because the monks did a lot of the repair themselves. Once in awhile we would get in a job on a special candle that wasn't keeping time. Maybe it was a good thing we didn't get much work from the monks. They never had much money, so we usually ended up getting paid with a few pounds of Yak meat. After awhile it got tiresome: fried Yak, broiled Yak, Yak stew, Yak burgers, sauteed Yak, and Yak kabobs. Once I tried Yaksauerbraten, but without the sauerkraut to go along with it, it just didn't taste right.

Fern and I parted ways when I decided there wasn't any future working on candles. The last I heard of him he was bitten by a crazed Yak and spent six months in the hospital. It left his right arm paralyzed so he gave up repair work. He got a job in a zoo feeding the snakes. Everything was going along fine until one day when he and several others were moving a boa constrictor. The others let go, and Fern was left by himself.

. . . It was several years before Fern was right again. He decided to come back to the States and get back into the watch repair business. He didn't have much luck in finding a job, so he did the next best thing. He studied and became a psychologist.

Now he's very successful. You might say he got back into the business because his practice is made up of mostly treating watchmakers and clockmakers.

We talked for a long time about the changes that have taken place in the industry since we worked together. I'll never forget when the first Hamilton 500 came into the shop. It still wouldn't work after I put in a new battery. I asked Fern if he could tell what the trouble was. He looked at it and said, "No wonder it doesn't work. There are *two hairs* in here!" He pulled out the two contact springs. For some reason it never did run again.

Another time when the tuning fork watches were popular, Fern didn't like the way one of them sounded. He said it wasn't humming in the right key. After fooling with it awhile, Fern got it to play *Jingle Bells*. The timing was lousy, but when the customer came in to pick it up I explained what a unique watch he had and he shouldn't worry about the time. He left happy as a lark.

On the LEDs, Fern was a real jewel. He would never admit to not understanding how they worked. He re-programmed one of them so that instead of displaying the numerical digits it would display dirty words.

When it came to customers, Fern left a lot to be desired. I guess you could call him a contact person--all con and no tact. One time a woman came in with a watch that was really crummy. Fern looked at it and told her to get that filthy thing out of here. He told her she didn't deserve to wear a watch. She became very upset and asked to speak to the manager. Fern yelled, "Get outa here before I rip your kneecaps off!"

Needless to say, she never returned.

Well, the time came for Fern to go to the airport. He was heading to a new job in a putty knife factory in Montana. Just as he was heading for the door, a woman came in to leave her watch for repair. Fern took one look at it and said to me, "You're not gonna work on that piece of junk, are ya?"

Like I said before, he didn't have a surplus of tact.

□

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mation such as turns per hour of each wheel can be determined. For example:

$$\frac{CTE2}{te} = \text{beats per hour}$$

$$\frac{64 \times 60 \times 30 \times 2}{8 \times 8} = 3600$$

We know that the center wheel makes one turn per hour. Let (X) equal turns of the third wheel and (Y) equal turns of the escape wheel per hour. So,

$$X = \frac{C}{t} = \frac{64}{8} = 8 \text{ turns of the third wheel per hour}$$

and

$$Y = \frac{(X)T}{e} = \frac{480}{8} = 60 \text{ turns of the escape wheel per hour}$$

PRACTICE PROBLEMS (answers on page 56)

A	B
C = 96 teeth	C = 64 teeth
T = (X) teeth	T = 48 teeth
E = 30 teeth	F = (X) teeth
t = (Y) leaves	E = 15 teeth
e = 12 leaves	t = 8 leaves
beats per hour = 3600	f = (Y) leaves
	e = 8 leaves
	beats per hour = 9000

1. Calculate the number of teeth and leaves on a missing third wheel and pinion in train A.
2. Calculate the number of teeth and leaves on a missing fourth wheel and pinion in train B.
3. Would either of the above gear trains be suitable for a second hand? Which one and on what arbor?

Starting with the May issue of *Horological Times*, a new monthly series, "The Apprentice Clockmaker," will commence. Future "Timely Tips" will be included in this new series, and horological calculations covered over the last 16 months will be recalled from time to time for support in computations, so keep your files handy and continue to build them. □



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JEWELRY CRAFTING AND REPAIR Repairing Promotional Jewelry

By now, many jewelry repairmen are getting in for repairs and/or adjustments some of the promotional jewelry that was sold for Christmas gifts. In recent years, due to the high cost of gold, the actual gold used in jewelry has been greatly reduced. Many rings that had good heavy weight 14K gold have been reduced to half the weight, and many to 10K gold. This is not altogether due to the cost of gold; the competition from the discount stores has caused the retail jewelers and fine jewelry departments in the better department stores to have to meet the so-called discount prices. It has been my observation that the prices charged by the jewelry retailers is comparable to that charged by the discount stores for similar pieces of jewelry. Much of this promotional jewelry is so lightweight that prongs bend easily and often break off. Also, the catches are so flimsy that they break easily or will not stay fastened. Some watch bands are often fastened to a case and can't be removed from a case that has a finish that will not stand polishing, so any repairs that are to be made require a lot of ingenuity.

Probably the major amount of repairs that will confront a jewelry craftsman are karat gold **FINGER RINGS**, so repair of these will be the first part of our discussion. Promotional stone rings come in many styles with many kinds, sizes, and shapes of stones. Most multi-stone rings are probably gold castings. Many of them aren't the best quality castings; I have found very thin prongs on the settings, some of which are brittle, or thin and weak. When a prong is broken off and the ring comes in for repair, if it is a multi-stone ring with genuine stones, the chances are that all the stones will have to be removed before a new prong can be gold-soldered to replace it. For example, if the ring is a cluster with a center larger than those surrounding it, and six smaller (melee) surrounding it in a circle, and these are *genuine* stones, *all* the stones must be removed in order for you to be able to gold-solder a new prong to replace the broken one. Most genuine stones are not uniformly cut; some will be larger in diameter, some thicker, and some not perfectly round. Therefore, in order to reset the stones, they should be put back in the settings from which they were removed. Even then, to seat as they were originally, they sometimes must be turned so they will seat exactly as they did when originally set. When they were originally set, the settings were made to fit the stone.

However, if you try this in re-setting, there won't in many cases be enough available metal in the settings left.

Another pitfall is that in resetting seven stones there will be at least three prongs on each melee and at least four on the center, so it is highly unlikely to be able to reset all these stones without other prongs breaking off (which means removing them again and replacing one or more other prongs). This can go on until all the prongs have been replaced, but at this time there has been more time put into this job and the repair costs much more than the ring is worth. Many of these promotional rings have a combination of genuine stones and diamonds, and the diamonds don't have to be removed because they will usually stand the heat when replacing prongs. Rubies and sapphires will also usually stand the heat without removal. Most synthetic stones will usually stand the heat, except doublets and any green stone, which should be removed. These mountings are usually lightweight, and if you can foresee trouble, the repair should not be accepted. If these rings can be sent back to the original manufacturer, they can be taken care of for a minimal cost, or free of charge if the manufacturer feels a responsibility to honor a warranty. The manufacturer casts these rings in large quantities and buys the stones in large amounts, so the loss to them is nominal. They can salvage the gold and stones from the broken ring.

If the manufacturer is no longer in business by the time the ring is returned, the ring cannot be repaired. Having done trade repair for several retail stores, I've learned this lesson the hard way, having made some of those repairs with very little compensation for my time and material.

Some people feel that synthetic stones are a cheap imitation of the genuine, but this isn't always true. Pricewise most synthetics are less expensive than genuine stone, but they are usually harder, they'll take heat without damage or color change, they are uniformly cut, and many times they have a more attractive color than the genuine stones.

Many years ago finger rings were introduced as mothers rings that had birthstones to represent the children's (and sometimes the mother's and father's) birthstones. The most popular of these were karat gold mountings with synthetic stones. As with all products, there were cheaper ones made of

silver with synthetic stones, and even gold-plated base metal mountings with foil-back glass stones. Usually, the rings with 14K mountings were the most expensive, the 10K mountings a little less expensive, then the silver with synthetic stones somewhat less, and the cheapest ones the plated with glass stones. Most stones were easily replaceable, and prongs could be replaced usually without even removing these synthetic stones—even in the silver mountings. Some time during the years that followed the introduction of these mothers rings, some people felt that synthetics were inferior, and it caused some manufacturers to start making these with all genuine stones. Then they could put a higher price tag on these with little more expense in making them. This passed on to the retailer, who could also sell them over the mothers rings with synthetics merely by stating they were all-genuine stones. Usually, it would be several years before these would be brought in for service or repair, so they would be out of warranty. However, if any work such as replacing stones or prongs was necessary, the repair would be much more expensive for the customer than if the ring contained synthetic stones.

Many of these mothers rings were made so when a new child was born another setting could be added, and the new child's stone set. These generally required that the new setting had to be gold-soldered to the mounting, so if the stones were genuine they had to be removed. However, if the stones were synthetic, the new setting could be installed without having to remove a stone, the total cost being much less. Far be it for me to be opposed to the use of genuine stones, but usually in promotional rings the genuine stones used are poor quality, with poor workmanship in their cutting. Most genuine stones that are considered gem quality are of beautiful color, and the workmanship in the cutting is excellent. There's no way for me to make any kind of comparison in synthetics and genuine or in genuine stones and gem quality stones. There are stone suppliers that have catalogs listing all the stones in sizes and shapes, and all are priced with choices in the regular genuine stones of different qualities.

It has been an observation of mine that stones of excellent or gem quality are most always set in good mountings. By good mountings, they are usually at least 14K with good weight, and the metal shows no tendency to be brittle or porous. When work needs to be done, the metal doesn't show weaknesses, breaks, or pits, which will make the repair or alteration more difficult, quite unlike doing work on promotional grade mountings.

WATCH CASES AND BANDS are repairs that usually fall into the hands of the jewelry craftsman rather than that of the watchmaker. Today, watches that sell for under \$50 have cases that are very inexpensively constructed. Some are plastic; these are not practical to try and repair. Some cannot have a crystal replaced, while the metal ones have such a thin plating that it is almost impossible to polish them using any abrasive. I usually burnish these by using a bronze wire wheel on the polishing motor, which removes little or no plating.

To purchase a watch today with a quality case, the cost is probably well over \$200, and a karat gold case is no doubt over \$1000. This means that most watch cases we get to repair are either antiques with good quality cases, or the less expensive ones with the poor quality cases. Many of the watches with metal cases (both men's and ladies') have the metal band

(Continued on page 25)

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Ask Huck

CLOCKMAKING BITS

By J.M. Huckabee
CMC, FBHI

About...

LANTERN PINIONS and DRILLING DEEP HOLES

Q. I have an American clock with a broken arbor. What method do you use to transfer the lantern pinion to a new arbor?

A. This is a good lathe exercise that is not difficult, but it does require a good bit of skill and time.

Let's assume that one of the shrouds is also the wheel hub, and the other shroud is a separate piece. I remove the lantern wires with a strong, stubby needle-nose pliers, pushing the wires out through the outer shroud. If the wires are good, save them for reuse.

The next step is to drive out the old arbor. Clean up its surface so as not to stretch the wheel hub bore or the shroud bore. Now make up the new arbor with pivot size and length to fit the plate pivot holes. Make shoulder-to-shoulder length for proper endshake, but do not finish the arbor surface.

Measure the old arbor at the position of the wheel hub and shroud. Use caution, as the two dimensions may differ slightly. At this time mark the new arbor location for the wheel hub and pinion shroud position. The new arbor should now be finished to about 0.001 inch larger than the old arbor. The arbor should be tapered slightly to one or both ends to permit a slip-fit of the pinion parts until they approach their final position.

Use a bench block with a hole slightly larger than the arbor, and a deep hollow punch to drive the pinion pieces into position. The hollow punch should also be a close fit to the arbor.

I make the final arbor cuts with the arbor running between lathe centers; this assures concentricity of the wheel and pinion. The final cut can be made with a fine file, as the surface is best if not highly polished.

Be sure the pinion shrouds are in alignment; it's best to have measured shroud-to-shroud distance if the lantern wires are to be reused. Observe this dimension on reassembly.

A hardwood block with a hole drilled into the end grain makes a good bench block. A piece of brass tubing about three inches long makes an excellent punch. Brass tubing in a variety of sizes can be found in most hobby shops; and while there, look for brass rod stock, sheet brass, steel rods, and spring wire. Many raw materials needed by the clockmaker can be found in hobby stores, even wire for lantern pinions.

Insert the lantern wires and lock them in place. A light stroke or two with a three-sided punch will raise up a burr that captures the wires in place.

To make new wires, I place the stock in a lathe chuck and cut a ring around the stock at pin length. I cut 6 or 8 rings, depending on the number of wires needed. With rings about one third diameter deep, it's simple to insert the wire, break off, insert the next wire, and break off, etc. Your wire stock provides a self-handle for wire insertion.

Finish the job by being sure the wheel and pinion



run true and that pivot fit is in order. After a few jobs of this type, it becomes an easy routine.

Q. I need to make the cannon pipe for a clock. This piece is about an inch long, and after repeated drilling attempts the hole is not on center at the distant end. How is this done?

A. You are attempting a job that is almost impossible. The accepted ground rule says a hole deeper than 3-5 diameters cannot be drilled straight. Imagine drilling a rifle barrel that is 50-100 diameters deep!

The cannon pinion job is really quite easy. Always set up the job procedure so that it naturally ends right, rather than a natural failure. Here is how it's done: Select a larger piece of brass than required and drill an undersized hole. Now ream or redrill to bring the hole to size. Set up the job on male centers and machine the exterior surface. By this procedure you will cancel the problem of the drilling error.

A short-spade spade drill will make a straighter hole than a two-flute twist drill. Twist drills for deep holes should have a very short flute length in the interest of rigidity.

When drilling in the lathe, be sure the bit is straight, that it starts on center, and it is held on the tailstock center line.

For small bits in the watchmakers lathe, I support the bit in a female center in the tailstock. The bit shank is held in a very small hand vise, or a plier, to prevent its rotation. This technique is much faster than the use of a tailstock drill chuck.

As deep holes become much larger, and hour hand pipe by example, it's best to drill and then set up a boring tool to finish the hole. I make my boring tool bits from spring steel wire in diameters from about 2-4 mm. For deep holes it is best to hold these in a lathe slide-rest. Rods of spring wire are available in most hobby stores in three-foot lengths.

Let's say we are making an hour hand pipe. We can finish the exterior and drill without regard to hole straightness, provided we bore the inside diameter. The lathe boring process will true the hole in both round and length.

Another caution: Reground drill bits are likely to drill an oversize hole, even new bits may also drill oversize. Where hole diameter is critical, predrill at about 75% of the ultimate diameter and redrill with a bit of the finished diameter size. □

If you have a question, please write:
"Ask Huck," c/o *Horological Times*,
P.O. Box 11011, Cincinnati, OH 45211

permanently attached to the case. These in yellow are electroplated, and most whites are, also. Some of the catches are detachable, and there are a couple of styles that are available in millimeter widths in assortments. These will fit many of the bands that come in for repair, but the ones for which a replacement catch or half catch cannot be found can often be repaired by a competent jewelry craftsman who is skilled in hard-soldering and making and installing rivets. Some of the popular names in today's watches will furnish replacement catches or even bands that are detachable. These can be obtained from the material distributors. The distributors often have to order them from the factory, which can take several weeks and cost almost as much as the wholesale price of the watch. When repairing catches and bands that require hard soldering, it is wise to do the following before applying heat:

Dip the article in boric acid dissolved in alcohol and ignite it; the alcohol will burn off, leaving a protective coating of boric acid over the finish of the entire area to be hard-soldered. This protective coating protects the finish from oxidizing from the heat when it is applied, which will cause the metal to become redhot in order to flow the hard solder. When the soldering is complete, the boric acid coating can be removed by soaking in hot water or pickling solution, or boiling in either (unless the article is stainless steel, in which case the coating should be removed with only water, whether boiled or soaked). If this repair is on stainless steel and must be silver- or gold-soldered, Aircosil flux should be used. This is because gold or silver solder will not flow on any ferrous metal using the regular batterns or fluoron flux. This protective coating will in most cases protect the electroplated finishes, but not always. Therefore, a customer should be informed of this before you accept any job of this kind for repair. Repairing bands or catches requiring heat should probably not be attempted unless there is no available replacement parts.

We should realize that in jewelry the same is true as for most other consumer products; we get what we pay for. Today, most watches sell for about the same or even less than before World War II--even though the cost of most articles has gone up as much as 10 to 20 percent. Jewelry has never kept up with these percentage raises. The cost of jewelry has been kept down by using less expensive materials, more efficient production methods and volume sales. The cost of repairs has risen greatly due to the cost of labor today, as well as the cost of parts and material. In many cases today the cost of a repair is as much or more than the retail price of the item repaired. Customers should be advised of approximate cost of any repair so they have a chance to refuse, but many times for sentimental or other reasons a customer will have a piece repaired for as much or more than the cost of a new piece. The craftsman should not take in a repair if he or she has any doubt that a satisfactory repair can be made.

Our next article will be devoted entirely to soldering. To do a good job using solder, we should have a good understanding of solders, heats, fluxes, and pickling.



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392

SCHOLASTICALLY SPEAKING

Woody Woodward

A VISIT TO THE WATCH, CLOCK, & JEWELRY REPAIR DEPARTMENT AT ST. PAUL TECHNICAL COLLEGE

As you enter the Watch, Clock, & Jewelry Repair Department (Rm. 305), the first thing you'll notice is that everyone is busy. You'll be able to tell, almost immediately, that these people are serious about learning how to repair watches and clocks.

They're not in a big rush; they're just "going and doing it," each at their own, personal speed. They want to do something with the rest of their lives. They know that there is no "free ride" in the Real World--and that it *is* true that if you do nothing, you will become nothing.

They also know that for employment today you need something special to offer the world, something that not everyone else can do, something that can offer you a challenging and rewarding career, according to your changing goals, for the rest of your lives (and not just until retirement).

The second thing you'll notice when you enter the classroom is the wide diversity of the students. In my 26 years of teaching watchmaking and clockmaking, I've had men and women students of all ages (the average age is between 25 and 45), from over 15 countries, of all different ethnic backgrounds, with more than a dozen different languages, and many handicapped persons (especially those with back problems or in wheelchairs).

I've had tall people, short people, skinny people, fat people, *all* with different degrees of motivation, people with goals of going "retail" and those with a goal of a basement "trade shop" (away from people). I've had students that were husband and wife combinations, newlyweds, lots of single people, and single people who had been married for many years but are now on their own. I've found that most students were career changers; the older, job-experienced, honest persons with good communication skills and a willingness to make an effort in life. I can divide their reasons for becoming a watchmaker and/or clockmaker into three categories:

1) The older or retired person (man or woman) knows already that you must have something to do, that you can only sit around and watch TV for so long before you start to deteriorate mentally and physically. These

people (students) want to learn watch and clock repair as a hobby--and/or they need to earn some extra money to support their retirement program, and/or they may just want a flexible occupation where they can be as busy as they *want* to be.

2) The middle-aged person (man or woman) with some business background may appreciate the opportunity to go retail. Many of the WWII veterans that became watchmakers used that skill to pay for the start-up and maintenance costs for a retail jewelry store. Now could be an excellent time to become a watchmaking student and/or clockmaking student at their nearest watchmaking school. Now could be the time (on the "down" side of recession) to get training and position themselves for the time when all of us come out of this recession (and we will), so that they can be in a higher income bracket and be independent at the same time.

3) The young person (man or woman) trying to get started in life, may be looking around in the Real World and wondering: *Where do I fit in?* When unemployment is at an all-time high (and rising fast in 1992), large companies are laying off thousands of highly skilled workers, a *new* work force is forced onto the market every year by the high school and college graduates, 25% of the military is being discharged onto the market (because of the New World Order), "manufacturing type" companies and jobs are leaving this country for cheaper labor--and *there, in front of your eyes, is a service-oriented profession* (watch and clock repairing) *that has been around for a long, long time and will be around for a long time--because there will always be a need to service the timepieces that everyone must use in their daily lives. Technologies may change, but the need to service the watches and clocks in America continues!*

Now, as you continue the visit, the next thing you'll notice (as you enter our classroom) is the easy access to all the benches, which are furnished with a full set of watch repairing tools. You'll also see the comfortable chairs with arm rests, three tube lamps on each bench, a special "cleaning room" (on the right) that has

eight watch and clock cleaning machines, and a special timing room (on the left) that has the watch material cabinets and seven timing machines for evaluating both mechanical and quartz watches.

You will also notice (out in the classroom) that we have an engraving machine, vacuum and centrifugal casting equipment, special jewelry repairing torches, video equipment for playing educational programs, special magnifying video equipment for giving demonstrations that everyone can see, and we have the clock repairing equipment on rolling cabinets (mainspring winder, bushing tools, and lathes) for convenient accessibility.

Along the north wall we have windows that overlook the State Capitol and Highway 94. On the south wall by the timing room we have a large Progress Chart (3'x4') that lists each student and shows his or her progress through the nine-month course.

To the left of the Progress Chart (also hanging on the wall) is the Planning Board that lists the last five months' activities, day by day. The students know in advance about every lesson, lecture, demonstration, guest speaker, field trip, and video presentation--from January to graduation day in June.

The curriculum is updated and organized on the computer and accepted by the Minnesota State University (we can now offer credits as well as hours). We have weekly lessons that concentrate on only 10 or 12 questions (no homework), along with two quarterly exami-

nations that automatically prepare you for the written portion of the State Certification Examination (given by the Minnesota Watch and Clockmakers Association). The training projects prepare you for repairing quartz analogs, mechanical men's and ladies', automatic day and dates, Accutrons, pocket watches, and clocks. Classes start every Monday morning, from September through April. A free copy of the curriculum is available by calling (612) 221-1408.

If you know of someone interested in becoming a watchmaker or a clockmaker, you may also want to contact the American Watchmakers Institute for their roster of the 23 watchmaking schools in the United States; just call them at (513) 661-3838.

Watchmakers and clockmakers are needed in every state, many foreign countries, and especially in Switzerland. I just had a former student sign a three-year contract to live and work in Switzerland.

In closing, if you are interested in a visit to our Watch, Clock, and Jewelry Repair Department, please feel free to stop by any time, announced or unannounced, take a look around, ask questions, and talk with the students about their opinions, feelings, and goals.

Have an excellent day!

□

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WATCHES *Inside & Out!*



Robert D. Porter, CMW

How to Make and Fit a Center Wheel Bushing

The non-jeweled center wheel hole in the barrel bridge of 7- and 15-jewel watches will often be found to be worn considerably. The recommended method of repair is to make and fit a new bushing, thereby restoring the watch as nearly as possible to its original configuration.

Figures 1 and 2 picture two methods of centering the dial plate of the watch on the face plate. In Figure 1, the point of the tailstock center has been used to align the center wheel hole in the dial plate with the turning axis of the lathe. Figure 2 illustrates the use of the built-in center of the face plate to locate the dial plate.

Figure 3 shows that the barrel bridge has been attached to the dial plate. A drill that is about the same diameter as the oilsink around the center wheel hole has been chucked up short (for rigidity) in the tailstock.

The drill is at work in Figure 4 drilling out the worn hole in the barrel bridge. It is important to rotate the work slowly during the drilling operation to avoid having the work shift on the face plate due to an out-of-balance condition.

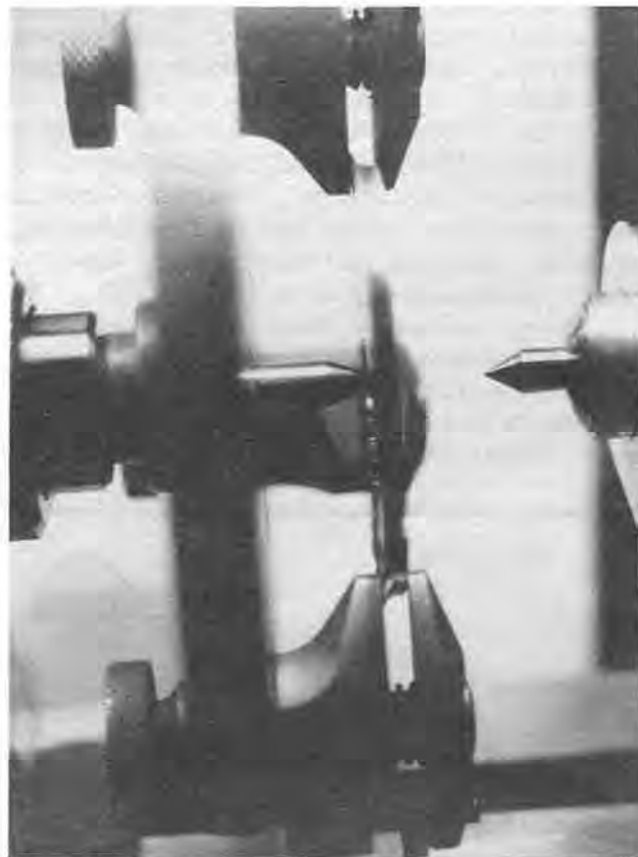


Figure 2



Figure 1

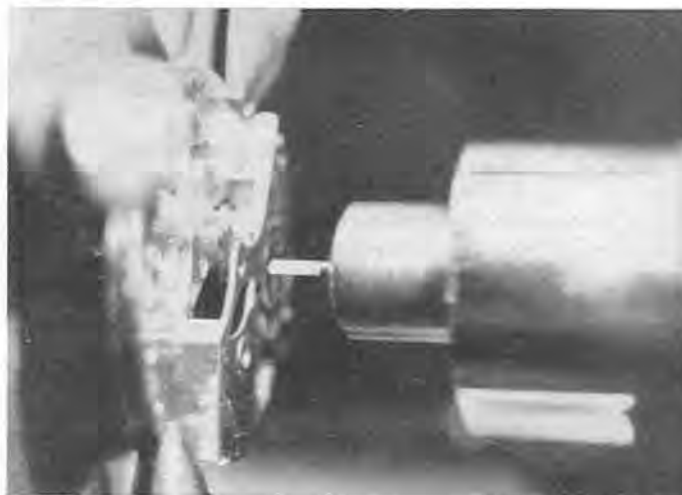


Figure 3



Figure 4

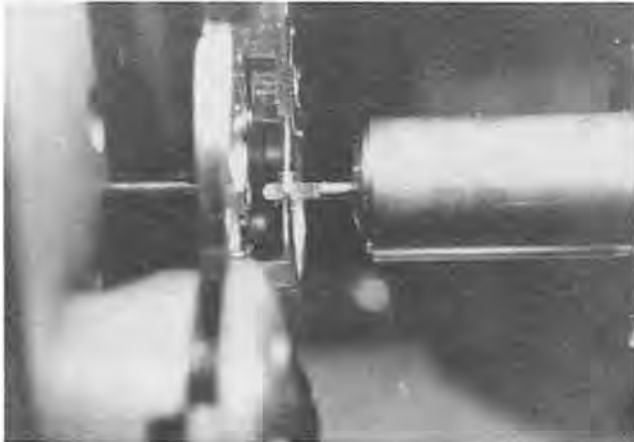


Figure 5

The drill has completed its work through the barrel bridge in Figure 5. The hole we have produced is shown in Figure 6.

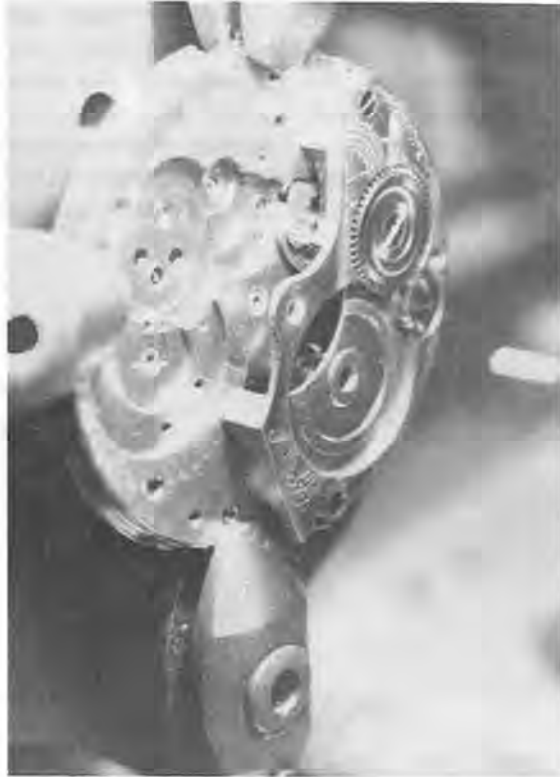
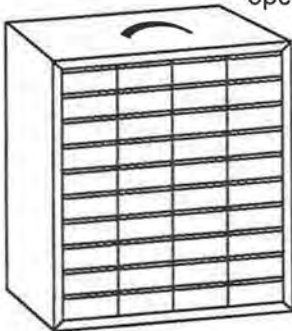


Figure 6

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A wheel type countersinking tool is being used in Figure 7 to deburr the edge of both sides of the hole.

A short section of brass stock (from a hobby shop) was then turned to a "plug gage" diameter that snugly fit the hole in the barrel bridge. Once the diameter of the hole was determined with our gage, the stock immediately behind the gage section was then turned to a diameter 0.0005" (0.012 mm) larger to assure a tight-fitting bushing. The gage end was then cut off and a combination center and oilsink turned into the end of the bushing as shown in Figure 8 so that the



Figure 7



Figure 8

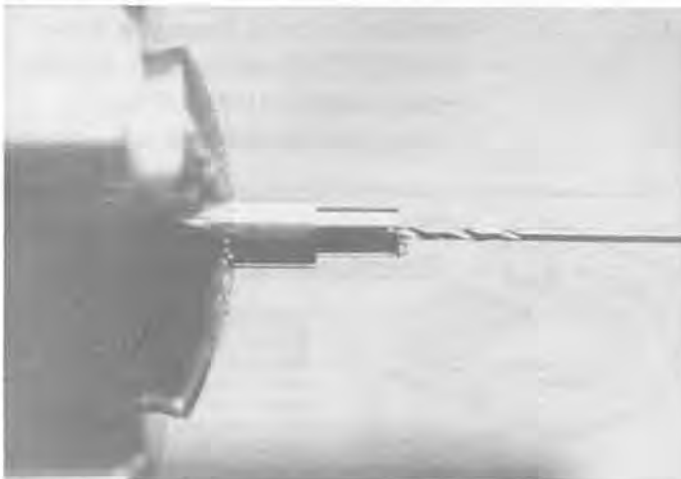


Figure 9

drilled hole will be concentric to the outside diameter. A drill that is slightly smaller than the center wheel pivot is at work in Figure 9.

The barrel bridge has been held up to the stock and a graver used to mark a slightly longer length of the bushing as pictured in Figure 10. Figure 11 shows that the pivot drill has been reversed in the tailstock chuck and inserted into the drilled hole to capture the bushing as it is parted from the stock as shown in Figure 12. The cut-off end of the bushing was then faced smooth and to length.



Figure 10

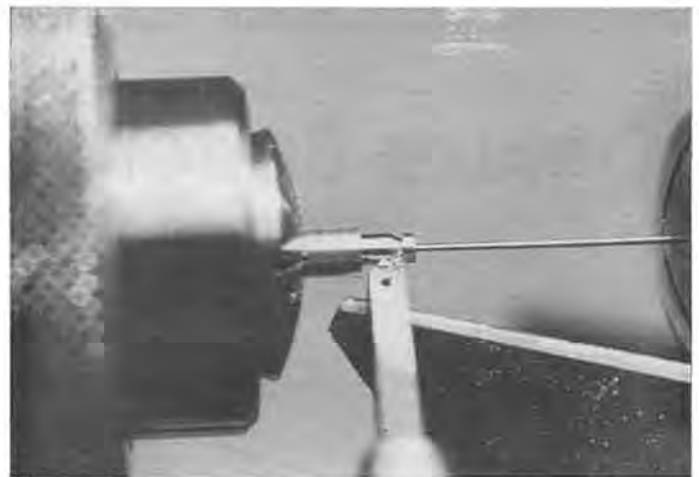


Figure 11

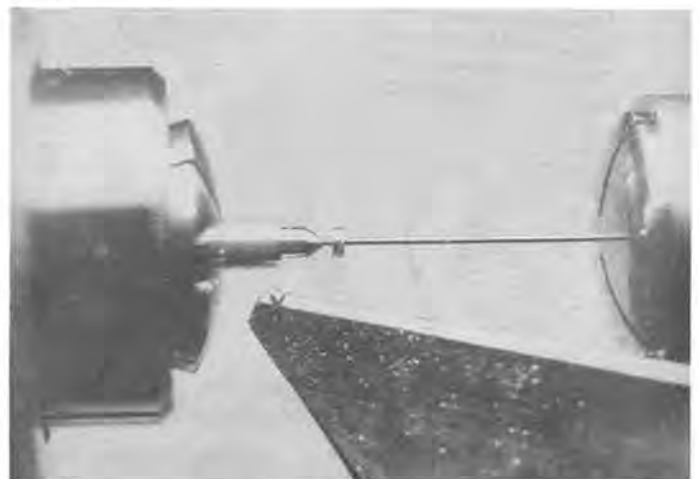


Figure 12



Figure 13



Figure 14

Figure 13 shows the bushing being tapped into the barrel bridge with a flat-faced punch in the staking tool. The pivot hole was then broached to size with cutting and smoothing broaches to a close, but not binding, fit to its matching pivot.

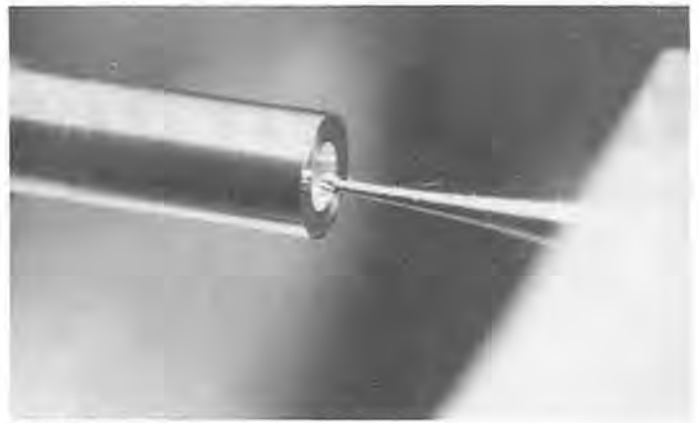


Figure 15

This bushing has given new life to an old time machine in Figure 14. Sometimes the center wheel pivot will also be worn and will need to be polished to a slightly smaller diameter before making a bushing to fit.

Figure 15 illustrates an alternate method of accurately opening a drilled hole to size by using a cone-shaped burr, held in a lathe slide rest, as a boring tool. The burr can be rotated to replace a dull-cutting edge with a sharp one.

Some useful drill sizes for pivot hole work include:

<i>Drill Size</i>	<i>Decimal Inch</i>	<i>MM</i>
80	0.0135	0.343
79	0.0145	0.368
1/64	0.0156	0.396
78	0.0160	0.406
77	0.0180	0.457
76	0.0200	0.508
75	0.0210	0.533
74	0.0225	0.572
73	0.0240	0.610
72	0.0250	0.635
71	0.0260	0.660
70	0.0280	0.711
69	0.0292	0.742
68	0.0310	0.787
1/32	0.0312	0.792
67	0.0320	0.813
66	0.0330	0.838
65	0.0350	0.889
64	0.0360	0.914
63	0.0370	0.940
62	0.0380	0.965
61	0.0390	0.991
60	0.0400	1.016

□

Old Watches

Charles Cleves



Swatch Watches

One of the latest crazes to hit the wristwatch market are Swatch watches. I was surprised to see several tables with Swatch watches at the last show in Lexington. Until recently, Europeans were the only ones buying and selling these watches. With the new book out by Roy Ehrhardt, you can become an instant expert in Swatch watches for the price of \$106.00. This book pictures every watch made since Swatch's beginning in 1983. There are only a few models that sell in the thousands of dollars. These are the limited editions of artists and also the ones that you blow on to see the time. Certainly these plastic watches made within the last nine years are worth looking into. As one dealer told me, "Swatch watches are a good place to invest a lot of money right now. Just don't do it for more than 5 minutes."

Here are the guidelines to what collectors want. The watches must be in the original box and never worn, not even once. A watch with the least bit of ripple in the band or any scratches visible under 10X magnification are worth less than half of a mint condition watch. Most of the watches that list in the price guide for \$500 or less are not even wanted if they are used. One of my local customers called me to say he thought he had a rare Swatch watch. It was a Keith Haring limited edition of 9999. In Ehrhardt's book, the watch lists for \$1250 new in the box. However, the watch that was shown to me was worn at least once. I called several dealers who advertise for Swatch

watches, and they all came up with the same figure of \$500 for this watch. I offered my customer \$450 for his. He told me it was worth more than that to him, and he would keep it. I was shocked because the watch sold new for under \$100. I wonder how this person thought his watch was worth more than \$450. It was purchased in 1986. Whatever makes a person think that a 5-year-old plastic disposable type watch is worth that kind of money is beyond my thinking.

At this time dealers are looking for artist, special issue, prototypes, scuba, and chronographs. How rare are these valuable models? Some of the rarer signed artist issues were only released in the United States. I showed the Swatch book to a customer who works for a large drug company in Cincinnati. He remembered the Swatch salesman trying to convince him to sell the fuzzy watches that you have to blow on to see the time (see Figure 1). My friend, being very conservative, told the salesman he didn't want any of them. Perhaps that's why they made so few of these watches. The name of this watch is "Blow Your Time Away." It lists for more than \$10,000 in blue or yellow.

One of the most sought-after of the Swatch watches is by the artist Kiki Picasso. There are several variations of this limited edition watch (Figure 2). This watch is in the \$30,000 range. Another rare model worth mentioning is the Mimmo Paladino model (Figure 3). It sells in the \$20,000 range. Because some of these more unusual watches didn't sell, they



Figure 1



Figure 2



Figure 3

ended up in discount chains like Sam's or Big Lots as closed-out merchandise. Next time you're in one of these places and see a big pile of Swatches, take a quick look to see if there are any valuable ones.

One aspect that has boosted the collectibility of these watches is the fact that they are all coded with the country they were made for and the year that they were made. On the back of the watches made for the U.S. market, you will find the numbers 755 or 5755. There is also another number on the back of the watch that tells you the date of manufacture. It is the 3 or 4 digit number printed at the 12:00 position on the back of the watch. The first digit of this number is the last digit in the year of manufacture. The second digit is the week number, and the last digit is the number of the day of the week. Having date codes on all of their watches and various limited editions has given collectors an extra incentive to buy them.

Keep an open mind and take a better look at the Swatch watches you see from now on. If you're near an outlet which discounts older models, Roy's book may be an excellent investment for you.

□

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How to Start and Manage a Business

Part VII

Expansion Watch Band Inventory

In starting a business, watch bands (generally known as attachments) are a very important part of our business. Although some of them are expensive, most are in a moderate price range and easy to sell. Watch bands don't last forever, so the customer is generally willing to buy a new one or even several new ones during the life of their watch.

Some care is needed in selecting the proper watch band to fit our needs. Our original purchase (our opening inventory order) is very important. The following suggestions may help those who are starting in business, and especially those who are ready to place their first order. It is a guess at best.

This article is really not designed for those who are in business now, as they have their own experiences in purchasing inventory. With that bit of clarification, we will make some suggestions.

Most of our watches today do not come with expansion bands. Some of our customers prefer these original non-expansion bands while others prefer an expansion band.

BAND DISPLAYS

In buying the first order of expansion bands, one should consider a band display. The good news is that most band displays come with a reasonable opening order at no

Figure 1

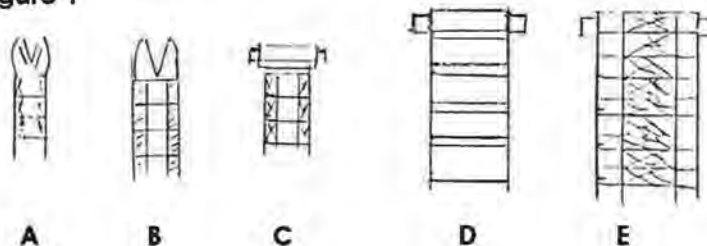
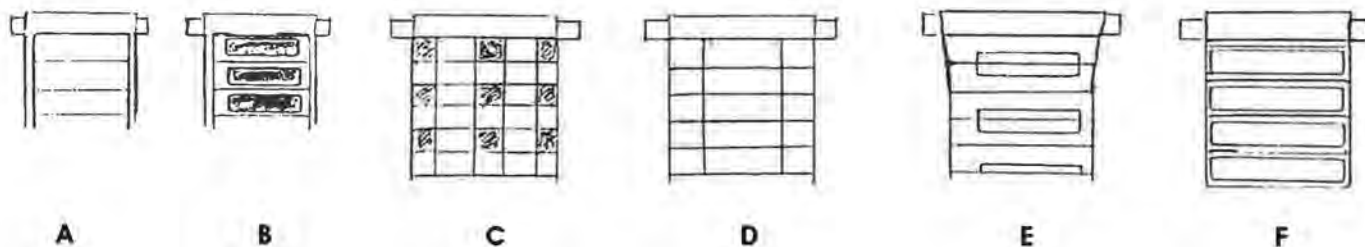


Figure 2



charge, or at least at a special price. Also, in addition to floor models, some occupy very little space since they are designed to set on a corner of a showcase. Most of these display cases rotate, thus exposing one side at a time and getting the maximum use from this display. All four sides can be used to our advantage since we need to purchase our expansion bands in the following categories: (1) ladies' yellow, (2) ladies' white, (3) men's yellow, and (4) men's white.

LADIES' YELLOW EXPANSION BANDS

Notice that we are simply saying that the band color is yellow and we are not saying yellow gold. The term yellow gold should not be used to describe any band other than those which are truly of a karat gold. This is a very important habit to acquire. On the other hand, if we are selling a 14 karat yellow gold band, then of course we can and should use this proper term. This includes specifying the amount of gold by mentioning the karat, such as 14 karat, etc. If the band is yellow gold-plated or yellow gold-filled, then we should use those terms. Too many times we hear a customer say, "I want a yellow gold band for my watch," and we, in turn, error if we answer, "Yes, these are our yellow gold ones."

The width, endpiece, band design, and length are all very important when buying watch bands. Figure 1 shows different widths, endpiece shapes, and band designs. Notice, Figure 1-A shows a very narrow band while Figure 1-B is a little bit wider. Their endpieces are the same style and thus they will both fit a ladies' lug-type case. Our customer has a choice of either of these two band widths. They also have a choice of whatever number of different design styles we decide to stock. If we stock three of each (of these two bands, A and B), then our customer actually has a choice of two widths in three designs which equals a selection of six bands to choose from.

Figure 1-C, D, and E show other band styles all with "T" ends. These, also, are of different widths. By stocking three designs of each of these three, we have nine different bands from which the customer can choose.

Let's see now, we have bought five band styles in three different designs each; this equals 15 bands. Now, if we buy two of each for a back-up stock, we will actually be buying 30 bands. If we want to stock three of each, we will have a stock of 45 ladies' yellow bands.

Expansion band lengths can sometimes be purchased in various lengths; however, the most desired length to buy for stock is "long." These long bands can easily be adjusted to shorten if, and when, needed.

We like to keep the extra links to use for future re-adjustment of our customers' bands. In a short time we will acquire many extra links and we can assure our customer that we will have extra links for them whenever needed. With this assurance and since this is a no-charge service to our customer, they are generally willing to leave the extra links with us. However, should they ask for these links, we give them to the customer asking them to keep the links so they can bring them back if needed for future adjustment.

Experience has shown that post-sale service of adjustments does pay off. We are in a good position

(Continued on page 37)

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J.M. HUCKABEE'S "Random Clock Talks"

The series of 37 "Random Clock Talks" videotapes listed below are available for loan to AWI members from the AWI Audio Visual Library. The tapes vary in viewing time from 1.25 to 2.00 hours and are available in the VHS format. A service charge of \$5.00 each is to accompany requests to borrow a tape; only one tape is loaned at a time. The service charge covers AWI's production and shipping costs. Tapes should be returned to AWI within 7 days after receipt, insured for \$30.00. Please order tape by number along with your name, address, and \$5.00 service charge. Send to: **AWI Audio Visual Library, 3700 Harrison Ave., Cincinnati, OH 45211.**

TAPE 1: Approximately 2 hours

SUBJECT MATTER: A brief view and discussion of a variety of clocks and tools used in the Huckabee shop.

TAPE 2: Approximately 2 hours

SUBJECT MATTER: Demonstration and discussion on using various tools and lathes to make and fit a clock bushing.

TAPE 3: Approximately 2 hours

SUBJECT MATTER: Discussion and demonstration on lathe operation using the Boley watchmakers lathe and the C&E Marshall watchmakers lathe.

TAPE 4: Approximately 1.50 hours

SUBJECT MATTER: An analysis and work with the Urgos 21/42 8-day trapezoid time only clock.

TAPE 5: Approximately 2 hours

SUBJECT MATTER: A demonstration and discussion about drilling the arbor using Huck's "turning in a box" method and making a pivot.

TAPE 6: Approximately 1.75 hours

SUBJECT MATTER: A demonstration of wheel cutting using clear plastic and a Mosley watchmakers lathe. Huckabee cuts four gears such as those required in the AWI certification examination.

TAPE 7: Approximately 1.75 hours

SUBJECT MATTER: The Birge & Mallory Striker Clock—a complete study and analysis of the Birge & Mallory Striker and the clock with its strap plates and roller pinions, circa 1841.

TAPE 8: Approximately 2 hours

SUBJECT MATTER: Making a great wheel and mounting the great wheel on its arbor.

TAPE 9: Approximately 1.75 hours

SUBJECT MATTER: Making and fitting a replacement pinion for a clock wheel.

TAPE 10: Approximately 1.50 hours

SUBJECT MATTER: Correcting problems caused by an elongated pivot hole by bushing with a solid bushing and the use of a "preacher" to relocate center distance.

TAPE 11: Approximately 2 hours

SUBJECT MATTER: Huckabee discusses the IBM #37 Master Clock Movement and IBM 90 Series Clock Movement.

TAPE 12: Approximately 2 hours

SUBJECT MATTER: Using a custom-made attachment to make wheels and index plates on the Unimat lathe. The custom-made attachments can be made from drawing available from AWI upon request (cost to cover printing and postage is \$2.00).

TAPE 13: Approximately 2 hours

SUBJECT MATTER: Cutting clock wheels—a demonstration of cutting the wheels used in the AWI CMC examination.

TAPE 14: Approximately 2 hours

SUBJECT MATTER: Using an inexpensive quartz analog clock movement, Huckabee disassembles the movement and provides an in-depth explanation of each component and their function in the operation of the timepiece.

TAPE 15: Approximately 2 hours

SUBJECT MATTER: Huckabee presents an in-depth discussion on the design of cutting tool bits, both hand-held and those held in the tool post rest. Also a discussion of steel—its composition and characteristics.

TAPE 16: Approximately 1.50 hours

SUBJECT MATTER: Huckabee presents an in-depth discussion about hairsprings. He also demonstrates how to vibrate a clock hairspring.

TAPE 17: Approximately 1.75 hours

SUBJECT MATTER: Huckabee goes through the process of making a knurled nut, one like those used as hand nuts in Early American kitchen clocks. He demonstrates a simple way to knurl the nut.

TAPE 18: Approximately 1.75 hours

SUBJECT MATTER: Huckabee demonstrates the process of inserting a tooth into a clock wheel to replace a broken or damaged tooth.

TAPE 19: Approximately 2 hours

SUBJECT MATTER: Pivot work in the American antique Sessions, count wheel, and clock movement.

TAPE 20: Approximately 2 hours

SUBJECT MATTER: Continuation of work with the Sessions clock used in Tape 19. Complete restoration work on the movement and treating a worn great wheel.

TAPE 21: Approximately 2 hours

SUBJECT MATTER: Making an American clock verge. Huckabee demonstrates how to select and work raw materials into a verge for an Ingraham miniature kitchen clock—time only.

TAPE 22: Approximately 2 hours

SUBJECT MATTER: Completion of making a verge for an Ingraham kitchen clock from Tape 21. Also random tips and cutting a 32-tooth recoil escape wheel for an Ansonia kitchen clock.

TAPE 23: Approximately 2 hours

SUBJECT MATTER: Pivot and bushing problems and their repair.

TAPE 24: Approximately 2 hours

Not available at this time.

TAPE 25: Approximately 2 hours

SUBJECT MATTER: Clock mainspring and barrel work.

TAPE 26: Approximately 2 hours

SUBJECT MATTER: Clock mainspring ends and barrel teeth. Huckabee demonstrates how to replace teeth in the barrel of an Urgos 8-day modern clock. Huckabee also fashions a new hole end for the mainspring.

TAPE 27: Approximately 2 hours

SUBJECT MATTER: Understanding the antique American clock time train and repairs to it and using the Unimat lathe to polish pivots.

TAPES 28 & 29

Not available at this time.

TAPES 30-34: Approximately 2 hours each

SUBJECT MATTER: A series of five tapes designed as a teaching exercise which encompasses every facet of lathe work encountered in the clock shop. Produced in conjunction with a series of drawings which are provided by AWI when you borrow the first tape in the series. Upon completion of the work you have a set of excellent useable lathe accessories for use in your shop.

TAPES 35 & 36: Approximately 2 hours each

SUBJECT MATTER: Two tapes which demonstrate the use of the lathe accessories produced in the Series 30-34. This encompasses all facets of pivot work encountered in the clock shop.

TAPE 37: Approximately 2 hours

SUBJECT MATTER: A companion tape to the Huckabee book "How to Build a Regulator Clock." All components and details for their construction are discussed in detail. It is recommended that the viewer have the book at hand when viewing this tape.

to recommend a new band, either when the band becomes worn beyond safe repair or when a customer is tired of this band and wants an excuse to buy a new band.

LADIES' WHITE EXPANSION BANDS

At this point in time, ladies' white watches are not selling as well as the yellow ones; therefore, we need to stock our white bands accordingly. Since we like the styles we have selected in yellow, we should equally like these same bands in white. There could be some exceptions, but generally speaking this method of selecting the same styles in white as we did in yellow will be a good guess, especially for our first inventory order.

We may want to buy fewer numbers of these, especially the narrow ones shown in Figure 1-A and B. We do need to stock some of these as there are a number of older ladies' white watches out there yet. Also, the "T" end bands in white, as shown in Figure 1-C, D, and E, are needed for "nurses" watches.

Maybe we will want just two of each of these white bands and maybe only two different designs in each style. This gives us 10 bands with one back-up of each, which equals a total of 20 bands in white.

MEN'S YELLOW EXPANSION BANDS

Figure 2-A and B show narrow expansion bands which will

look good and fit nicely on men's smaller watches. The telescoping endpieces will fit down to 5/8 inch. One of these bands has black inserts to match some of the newer watches.

Figure 2-C and D are wider bands and fit most of the newer watches. One of these might have black inserts to match watches that are wider and have a black dial.

Figure 2-E is the widest band and it tapers out on each end so it gives a nice look on some of the newer watches.

Figure 2-F is a dual tone band having both yellow and white links.

If we stock three different styles of each of these six bands, this would equal 18. Then if we also stocked two extra (duplicates) of each, this would be a total of 48 men's yellow bands.

MEN'S WHITE EXPANSION BANDS

Men's white expansion bands can be purchased like the yellow ones above. If 48 is too many, we should cut that number.

After having some real experiences with our new attachment order, we will be able to better choose our future orders.

Good Luck!



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Day 2--May 5th--Paris: Arrive in Paris, the "City of Lights," in the morning. Transfer to our hotel, where we have been pre-registered. Here there will be a Welcome Dinner Party with unlimited wine.

Day 3--May 6th--Paris: Our guided morning tour of the city will include the Champs Elysees, the Arc de Triomphe, Eiffel Tower, Sorbonne, the Pantheon, Napoleon's Tomb, Sacre-Coeur, and Notre Dame. Independent lunch (allowance) included. Our afternoon technical visit will include the Conservatoire des Arts et Metiers/Musee des Techniques with their remarkable clock collection. A meeting with the members of the Association of the French Clock Collectors is being arranged.

Day 4--May 7th--Loire Valley Castles: Today we will tour the "Garden of France" where the kings built their royal mansions to enjoy the pleasures of life away from the court and the capital. Visit the watch collection in Orleans, the Castle of Blois housing the museum, and Robert Houdin's mystery clocks. Lunch by the Attrape Abbey in the nearby charming village. Afternoon we'll visit the Chenonceau castle on the Loire Valley. Late return to Paris. A typical French dinner, served en route, will complete the day.

Day 5--May 8th--Versailles and Chartres: Motor to Versailles to admire the greatest living museum of a vanished life. Tour the Palace with the Grand Apartments and Hall of Mirrors, the Grand and the Petit Trianons, and the famed gardens. Lunch in Versailles, followed by a trip to Chartres to visit the Gothic Cathedral, a masterpiece of Romanesque art whose beauty outshines all its surroundings. View the portal and the collection of stained-glass windows from the 12th-13th century, considered the finest in France. Tonight dinner with champagne at "Grand Siecle" served by waiters in Louis XIV costumes. Floor show at the Folies Bergere, the most popular entertainment in Paris for over 100 years, will cap the day.

Day 6--May 9th--Paris/Geneva: Following breakfast at the hotel, we are transferred to the rail station. Board the "Bullet Train" (TGV in French) for our trip to Geneva, the horological capital of the world. Our lunch will be served at the seat, airline style, aboard the TGV. Upon arrival, motorcoach transfer to our hotel where our group has been pre-registered. Dinner and overnight at the hotel.

Day 7--May 10th--Geneva/Chamonix/Mt. Blanc: Drive through lakeside Montreux, past Chillon Castle, to Martigny. Climb to Chamonix, historic capital of alpine skiing.



Here we ascend by cable car to Aiguille du Midi (12,610 ft.) providing a panoramic view of the Alps and Mont Blanc, the highest peak in Europe. Lunch will be served in Chamonix. Return to Geneva along the valley of the river Arve for dinner and overnight.

Day 8--May 11th--Geneva: Our sightseeing of the town of Calvin will include viewing the Reformation Monument, St. Peter's Cathedral, Town Hall, a drive along the shores of Lake Geneva to see the Jet d'Eau, the European office of the United Nations, and more. Independent lunch. A technical visit to the Horological Museum and/or Patek Philippe, Vacheron or Rolex will be combined with the sightseeing tour of the city or a full day tour to Anemasse, the village famed for its clock manufacturing and collecting. Return in time for dinner in Geneva.

Day 9--May 12th--Geneva/Madrid: Transfer to Geneva Airport for a brief flight to Madrid. Lunch aboard, before we touch down in the Spanish capital. We will check in at a centrally located hotel, our residence for the next three nights. Dinner and overnight at the hotel.

Day 10--May 13th--Madrid: Our city sightseeing will include a choice of the art treasures of the Prado, one of the world's greatest museums, the extensive clock collection founded by Charles III, housed in the Royal Palace, or a visit to the Watch and Clock Lazaro Galdiano Museum to view the superb collection of enamels and ivories. Also included will be Puerta del Sol, Plaza Espana, the Parliament, and elegant Calle Alcalá. Independent lunch, followed by an afternoon at leisure. Time to visit on your own the scores of antique shops and galleries concentrated on Lagasca and C. Coello streets. Paella, the seafood dish, unlimited wine, and a Flamenco show will conclude our second day in Spain.

Day 11--May 14th--Madrid/Toledo: Today we head for Toledo, the monument city, where the three major religions have intermingled for centuries. Among our stops will be the 12th Century synagogue, the church of San Tome with El Greco's masterpiece, and more. Lunch is included in Toledo. Late afternoon return to Madrid for dinner and overnight.

Day 12—May 15th—Madrid/Seville: Following breakfast at the hotel, transfer to the train station. Experience Spain's first modern high-speed train, which has cut the traditional 7-hour ride between these two cities to 3 hours. Lunch on board. Our afternoon drive in the Moorish past includes the Gothic Cathedral, the Arts Museum, Giralda Belltower, and the Alcazar Palace with its famous gardens. Dinner and overnight at a first-class hotel in the area surrounding Seville.

Day 13—May 16th—Seville/Expo '92: The entire day is dedicated to the World Expo, on the Cartuja Island. 104 pavilions, 200 restaurants, 22 international organizations, 110 nations make this the greatest Fiesta on Earth in 1992. Lunch and dinner on Expo grounds are included.

Day 14—May 17th—Jerez/Cadiz/Marbella: Early departure for Jerez de la Frontera to visit the Clock Museum and a sherry bodega for which the town is famous. Continue to Cadiz where we lunch on "Pescaito frito," a known delicacy. Afternoon drive to the jet-set resort of Marbella, the most aristocratic resort on the Costa del Sol. Dinner and overnight in Marbella, the focal headquarters for the rest of our trip.

Day 15—May 18th—Malaga/Granada: Today we travel through Fuengirola and Malaga before turning inland to history-steeped Granada. Our sightseeing tour here includes a visit to Moorish Alhambra, the Generalife, the summer residence and the maze of Albaicin. Lunch included. Late return to Marbella for dinner and overnight.

Day 16—May 19th—Costa del Sol: Day at leisure, free of pre-planned activities. Shop at the many boutiques, visit the picturesque harbor, the Moorish fortress, the 16th century Town Hall, and the Trinity Convent. You may also want to visit the out-of-town Roman baths and the National Park. Your included lunch (allowance) will give you total freedom for the day. Our Gala Farewell Dinner with unlimited wine will be served at El Refugio. This is a well-known Andalusian house-restaurant, with vegetables from its own garden, and a divine lemon mousse. Overnight at the hotel in Marbella.

Day 17—May 20th—Marbella/Madrid/New York: Breakfast at the hotel, followed by transfer to the airport. Transatlantic flight via Madrid, arriving in New York the same day, in the afternoon.

Tour Prices:

Land Arrangements	\$2879
International Airfare	\$1021
Total Tour Cost	\$3900
Single Room Supplement	\$ 550

Included:

- *Air transportation, as per itinerary, via Iberia Airlines.
- *Accommodation for 15 nights at first-class or best available hotels, all with private facilities, as per the itinerary, or similar.

*All meals consisting of buffet, Continental or American breakfast, according to the hotel. Also table d'hote lunch or dinner at the hotels or outside restaurants. On certain days, a money allowance, in local currency, will be handed to each participant, allowing for independent meals.

*Welcome and Farewell Gala Dinner Parties with unlimited wine.

*Dinner and floor show at the Folies Bergere.

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By James H. Broughton, CMEW

EDITOR'S NOTE

In the May 1988 issue of *Horological Times* we printed Seiko crown information compiled by James Broughton. The data has been updated and reproduced here, along with Mr. Broughton's guide for using the information.

In my shop I try to save as much time as possible, even to the smallest detail. Because we are frequently called upon to replace a Seiko stem, I keep these charts close at hand. Because I use them so often, I have the charts covered in a plastic page holder, the type you can buy at any stationery counter. I also have the charts saved on a computer disk so that I can quickly alter or add to them or make a new copy when necessary. These charts, of course, do not contain all Seiko calibre numbers. I purposely included only those calibres that I frequently use; you will want to use any others that are on your "frequent use" list.

The timesaving feature results from having the Seiko calibre numbers listed in numerical order. When I need a stem, I grab the chart rather than go to the bother of using the microfiche. Now I don't mean to downplay the importance of the microfiche system; it's a real help in the shop. But, for items used as frequently as Seiko stems, this chart close at hand saves me time.

To either select or order a Seiko stem, I look at

the calibre number chart. When the calibre number is located, I can quickly determine the bottle number I need to complete the task. If I am ordering that stem, I look to the stem chart, find the bottle number, and order the corresponding stem number displayed in this chart. For example, if I have a Seiko calibre 6106 needing a stem, I grab my chart and look down the calibre number column to 6106. This tells me that the stem is to be found in bottle #42. If I want to order the stem, I proceed to the stem chart listing bottle numbers, find bottle #42, which tells me to order stem #354615. All of this happens in less time than it took you to read the explanation.

When changes are needed in the charts, I put the disk into the disk drive unit of my computer, complete the changes, and print out new copies of the charts. I am glad to be able to share these charts with you. Feel free to copy them and use them as you see fit. Guilds may want to reproduce the charts in their newsletters for their members' use; you have my permission. Please note that this is not a complete list but just those stems I have in stock. □

SEIKO STEMS BY WATCH MODEL NUMBER

Bottle Number	Model	Bottle Number	Model	Bottle Number	Model	Bottle Number	Model	Bottle Number	Model
53	0532	38MS	1700-17A	05	2E20A	83	4633	42	6102
77	0843	59	1800A	05	2E50A	82	4633	42	6105
37	0903A	69	1E20	07	2G28A	18	5420A	42	6106
01	1100A	06	2201A	07	2G38A	18	5421A	24	6106B-C
54LH	1104A	06	2202A	07	2G78A	30	5606A	42	6109
54	1104A	06	2205A	07	2G98A	30	5626	42	6117
01	1120A	06	2220A	68	2Y00	17	5780A	47	6117
01	1140A	90	2320	79	3863	30	5919	42	6118
01	1144A	100	2620	75	3Y03	84	5931	42	6119A
74	12N01	78	2620	40	4006A	25	5A23A	24	6119B-C
02	1320A	45	2622	41AL	4006A	57	5C22	32	6138
03	1400A-B-C	91	2623	31	4110	56AL	5C22	24	6139A-B
66	1421	14	2821A	92	4300	19	5Y00A	42	6146
67	1428	28	2A23	**93	4303	19	5Y01A	58	6205A
04	1520B	07	2C20A	99	4326	19	5Y02A	34	6206
97	1600	07	2C21A	**80	4336	19	5Y13A	49	6217
39FP	1700-17A	**94	2E20	81	4336	76	5Y23	17	6300A

NOTE: VX37 = V321
NOTE: * HI GRADE \$3.50

354530 #73
** SAME MODEL DIFFERENT STEMS

(Chart continued on next page.)

SEIKO STEMS BY WATCH MODEL NUMBER

(Continued)

Bottle Number	Model	Bottle Number	Model
17	6302A	08	H448A
17	6306A	08	H449A
17	6308A	19	V102A
17	6309A	19	V103A
17	6319A	27	V220
17	6347A	05	V220A
17	6349A	13	V230A-B
61	6439	29	V231
19	6530A	14	V231A
19	6531A	26	V232
19	6532A-B	26	V233
19	6533A	13	V235A
19	6539A	14	V236A
33	6601	70	V250
43	6602	64	V320
85	6730	73	V322
12	6922A	12	V403A
12	6923A	12	V4054A
48	7001	96	V515
44	7005	71	V533
44	7006	95	V803
11	7121A	88	V811
11	7122A	19	Y100A
11	7123A	19	Y101A
11	7143A	19	Y102A
36	7320A	19	Y106A
12	7424A	19	Y107A
63	7430	19	Y108A
62	7430	19	Y112A-B
12	7432A	20	Y121A
12	7433A	20	Y130A
12	7434A	20	Y131A
12	7439A	22	Y142A-B
12	7454A	22	Y143A
17	7545A	22	Y145A
17	7546A	22	Y147A-B
52	7559	22	Y148A
50	7606	01	Y431
50	7625	03	Y432A-B
46	7800	02	Y434A
35	7A38A	09	Y480A-B
19	8121A	10	Y481A-B-C
19	8122A	10	Y482A-C
19	8123A	17	Y504A
21	8221A	17	Y512A
21	8222A	17	Y513A-B-C
21	8223A	72	Y520
21	8241A	16	Y561A
21	8242A	16	Y562A
21	8243A	16	Y563A
51	8305	16	Y572A
10	8610A	16	Y573A
86	8620	23	Y580A
87	8Y21	23	Y588A
11	9721A	18	Y590A
11	9722A	18	591A
11	9723A	15	Y642A
60	9839O	15	Y643A
06	9839O		

NOTE: VX37 = V321
NOTE: * HI GRADE \$3.50

354530 #73
** SAME MODEL DIFFERENT STEMS

SEIKO STEMS BY STEM NUMBERS

Bottle Number	Stem Model	Bottle Number	Stem Model	Bottle Number	Stem Model
85	351089	44	354015	17	354601
25	351105	98	354022	42	354615
01	351110	48	354025	32	354616
54	351111	77	354034	61	354641
89	351117	83	354040	33	354692
02	351130	99	354041	18	354705
70	351131	**80	354041	34	354720
26	351134	92	354042	58	354721
03	351142	81	354043	35	354728
66	351144	53	354048	36	354735
04	351152	11	354055	52	354753
97	351160	28	354073	19	354765
59	351183	12	354076	46	354780
05	351205	62	354077	20	354786
94	351206	63	354079	56	354800
27	351208	*13	354230	40	354805
06	351221	67	354232	90	354811
07	351225	14	354235	65	354822
68	351236	29	354236	21	354825
95	351291	45	354260	79	354838
08	351307	91	354260	51	354849
86	351460	78	354261	57	354856
09	351480	100	354263	22	354866
10	351486	15	354340	37	354900
75	351546	88	354365	23	354902
43	351663	50	354421	49	357500
76	351670	55	354423	47	357611
87	351671	84	354494	24	357612
71	351702	73	354530	93	372003
96	351784	64	354532	38	372170
74	351807	30	354560	39	373250
72	351930	16	354576	41	8999984
69	351931	31	354588		

NOTE: VX37 = V321
NOTE: * HI GRADE \$3.50

354530 #73
** SAME MODEL DIFFERENT STEMS

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Allow 3 weeks for handling and delivery.

SEIKO CROWNS

Bottle Number	Crown Number	Bottle Number	Crown Number	Bottle Number	Crown Number	Bottle Number	Crown Number	Bottle Number	Crown Number
103	25E50NF	18	35M17N	28	35ND9NN5	50-141-142	40M58N	63	45M40N
93	25N010	19	35M34N	29	35NJ1N	115	40M61N	129	45M44N
01	25N04N	20	35M38N	30	35NM3N	79	40M64N	64	45M76N
108	30E21N	21	35M39N	110	35R04N	113	40M65N	59	45M01N
92	30M06N	96	35M42N	77	35R08N	116	40M67N	60	45M04N
02	30M08N	22	35M54N	37	35R23N	125	40M69N	65	45W12N
97	30M22N	105	35M68N	38	35R34N	51	40M69N	66	45W29GN
109	30M51N	83	35M68N	36	35R05N	52	40M71N	67	50D05N
76	30M54N	23	35M82N	39	39M04N	112	40M75N	84	50E10N
03	30M98N	24	35M86N	101	40M09N	53	40M76N	68	50E29N
107	30MA2N	25	35M98N	118	40M16N	81	40M78N	69	50M04N
126	30N11N	13	35MF6N	43	40M16N	114	40M81N	70	50R35N
99	30N15N	14	35M03N	44	40M17N	54	40M97N	143-144-80	55E10N
78	30N39N	16	35MR6NR	45	40M19N	102	40M99N		ST&CRO
06	30N63N	127	35MR8NF	95	40M21N	40	40MH3N	144-143-80	55E10N
07	30N77N	106	35MU6NF	46	40M24N	41	40MJ3N		ST&CRO
08	30N97N	128	35MW8N	117	40M25N	42	40M017N	80-143-144	55E10N
04	30NA9N	104	35MZ4N	90	40M26N	88	40R27N		ST&CRO
05	30N06N	98	35N11N	47	40M29N	100	40W13N	121	55M18N
09	32M13N	31	35N18N	122	40M30N	55	40W05N	71	55M06N
91	32M29N	32	35N20N	123	40M32N	56	45D01N	72	55W06N
10	32N23N	33	35N47N	48	40M33N	57	45E51N	73	60W01N
11	35E08N	34	35N55N	120	40M35N	58	45E75N	74	60W06N
12	35E09N	35	35N57N	87	40M52N	124	45M14N	75	65W02N
82	35M03N	86	35N67N	89	40M54N	61	45M30N		
15	35M05N	26	35NA1NW	49	40M56N	62	45M31N		
94	35M06N	85	35NA3N	141-142-50	40M58N	111	45M35N		
17	35M10N	27	35NA5N	142-141-50	40M58N	119	45M36N		

PROJECT EXTEND CLASSES FOR 1992

Contact AWI Central for the general information brochure for Project Extend and specific course brochures for classes that interest you. **AWI Central, P.O. Box 11011, Cincinnati, OH 45211; (513) 661-3838; Fax (513) 661-3131.**

March 2-6	Lathe I (beginners)	James Lubic
March 9-13	Lathe II (advanced)	Archie Perkins
March 16-20	Watch Case Repair	Marshall Richmond
March 23-27	Clock Case Repair	James Williams
March 30-April 3	Clock Repair I (beginners)	James Lubic
April 6-10	Clock Repair II (advanced)	Roland Iverson
May 4-8	Clock Repair III (restoration)	David Christianson
May 11-15	Quartz I (beginners)	Gerald Jaeger
May 18-22	Quartz II (advanced)	Robert Bishop
June 1-5	Watch I (staffing, poising, and timing)	James Lubic
June 8-12	Watch Repair II (hairspring vibrating & finishing)	Hal Herman
June 15-19	Watch Repair V (restoration)	Archie Perkins
June 20-24	Complicated Watches	Antoine Simonin
July 6-10	Clock Repair VI	John Nagle
July 13-17	Clock Repair VII	John Nagle

PROJECT EXTEND

Antique Clock Movement Restoration

INSTRUCTED BY
DAVID A. CHRISTIANSON,
CMW, CMBHI

The principals of restoration, conservation, and preservation of antique clock movements commanded the attention of the first group of students in AWI's week-long clock movement restoration class at the Project Extend laboratory in Cincinnati.

Through an intensive hands-on program that included such necessary restoration techniques as heat treating of horological metals; soldering, welding, and brazing techniques; and the shaping, filing, and finishing of metal surfaces, the students learned by practical exercises and one-on-one interaction with each other and the instructor how important skillful, knowledgeable, and faithful the repair and fabrication of parts are to preserving the integrity of antique clock movements.

Students ranged from novice to professional in skill levels, and from their early twenties to retirees in age; yet each went home with a collection of useful tools that they made in class, along with a volume of related literature, new skills to explore and perfect, and a real appreciation of the skills, research, and knowledge necessary to perform a faithful restoration.



David Christianson



Following a week of intense benchwork that also included such projects as making and bluing a pierced clock hand, fabricating clicks and artfully shaped springs and silvering a dial, the class finished up by completely restoring an antique English dial clock movement, putting all of their previous and newly learned skills to a very practical test. The fact that all the work was done "by committee" (as it were), in one day, is a tribute to the comradery and even friendships that formed during that week.

□

MILITARY TIME



Marvin E. Whitney, CMW, CMC, FAWI

Military Wristwatches *Introduction*

The first authoritative reference to the wristwatch or decorative watch worn on the wrist was made by a Geneva jeweler in 1790, and these watches were primarily worn by women. The watches resembled small pocket watches encased in beautiful and colorful enameled cases, often encrusted with gemstones. Others were held in cups on leather wrist straps.

About 1910, when small pendant watches were making their appearance, many were designed so they could be easily attached to a wrist strap. Even though the wristwatch was becoming increasingly popular with women, men hesitated to accept the new vogue of wearing a watch on the wrist.

The first proof of the versatility of a wristwatch during a military campaign occurred during the Boer War, 1898-1902. However, in the early 1880s, Girard Perregaux of La Chaux-de-Fonds and several Swiss watch companies were producing wristwatches for German naval officers. The story was that during a German naval engagement, an officer encountered great difficulty in his attempt to carry out his assignment with one hand while holding a watch in the other. Subsequently, he attached his watch to his coat sleeve, and later recommended that a watch be designed to be worn on the wrist. Action by the German Admiralty resulted in contracts being placed with Perregaux and others for such a watch.

During World War I, military personnel, and particularly those in the field, found it awkward to have to continually unbutton their coats or jackets to check their watches. So they devised a means of fastening their watches to their coat sleeves, and for pilots, to their legs. Out of this came the designing of a large 13-line or 0 size wristwatch with luminous numerals and hands and a small seconds subsidiary dial at the 6 o'clock position. Many were fitted with a pierced round metal protective grille which snapped over the bezel or was hinged to the bezel to protect the glass crystal (see Figures 1 and 2). Such watches were manufactured by Girard Perregaux, Movado, Waltham, Elgin, Solrex (trademark of Marshall Fields and Company, Chicago) and Ingersoll.

The Robert H. Ingersoll & Bros. (known for their famous dollar pocket watch) model had their one-year, trouble-free guarantee glued to the inside back cover. Manufacturers, in their advertisements, referred to these watches as 'military,' 'trench,' 'soldier,' or 'aviator' watch.

During 1917, Cartier, the famous New York jewelry house, designed and produced a thin flat wristwatch which they called their 'tank' watch. The watch was rectangular shaped, approximately 35x25 mm, with molded sides, analogous to a tank's caterpillar tracks. However, this watch was not designed or produced at the request of the U.S. Government for the American Expeditionary Forces as is often noted in articles and auction catalogues. Louis Cartier designed the tank watch as a tribute to the men and officers of the American Tank Corps who so gallantly helped in the defense of France during World War I.

Although the war provided additional impetus to the wristwatch, American watch manufacturers refused to take advantage of the new style and/or trend. They felt that the American people were not ready for fashionable timepieces, and that men still regarded them as being too effeminate. Thus, their lack of interest gave the Swiss an unchallenged opportunity to design and produce many new styles and types of wristwatches, which allowed them to dominate the market for years to come.

During the late 1960s and 1970s, the 'tank' style wristwatch was revived.

During the twenties, ladies' wristwatches continued to increase in their popularity among women. Watch manufacturers moved away from the small round models, creating narrow baguette-type watches which had a greater appeal, since women looked upon them as fashionable pieces of jewelry. Resistance among men began to diminish as makers continued to experiment and design more fashionable and masculine-styled wristwatches. By 1930, men's wristwatches became the 'latest thing,' and the demise of the pocket watch began.

During World War II, the wristwatch became an indispensable piece of equipment for our fighting forces.

Since warfare had become so sophisticated, accuracy and the synchronization of time in the deployment of troops, pinpointing gunfire, etc. was crucial to the success of an operation. Thus, the wristwatch was one of many various timing mechanisms that were used by various branches of

the service requiring precision timing for their operations.

In the May issue we will feature some of the various wristwatches used by the Armed Forces during World War II.

□



Figure 1. These figures above show Elgin's 3/0 size, 7-jewel, Grade 462, Movement No. 20, 780, 765, silver case, metal dial with radium numerals, World War I aviator's wristwatch with pierced cover to protect the glass crystal. The watch was made in 1917 during Elgin's Grade 462 1st production run (photo courtesy of Glenn D. Gardner, Madison, WI).



Figure 2. Beleco (Swiss) 16-jewel World War I aviator wristwatch with snap-on pierced crystal guard (Fred C. Hougham, Daytona Beach, FL).

BULLETIN BOARD

A. NEW REQUESTS

EUROPEAN CLOCK?

Steve Makowski, Bluffton, IN, sends two photos and the markings from a clock he has in his shop. He would like to know:

- the country of origin
- approximate age
- any other information



NO-KEY BATTERY CLOCK

Raymond Novak, Muskego, WI, sends these three photos of a clock he has. It was manufactured or marketed by Mountain State Electrical Co., Wheeling, WV. Novak seeks the answers to these questions:

What voltage is needed to operate the electromagnet?

How are the points set to energize the magnets?

How does the electromagnet system wind the clock?

Is there anything special to look for in servicing the clock?



GRUEN 910 SS/LANGENDORF 1241

Virgil L. Falk, Stillman Valley, IL, is seeking spare parts identification and service information for a Gruen 910 SS Alarm Watch which actually is a Langendorf calibre 1241. AWI has nothing in its technical files and would welcome this information.

B. RESPONSES

QUARTZ SMQ CLOCKS FOR AUTOMOBILES

Robert A. Hoffman, Buffalo, NY, sends one more response to the question of whether a standard quartz clock movement can be used in an automobile. Hoffman writes:

In reference to the request for information regarding SMQ movements for automotive use, we have been using retrofit movements supplied by Instrument Services, Inc., 433 South Arch Street, Janesville, WI 53545.

The majority of movements used by American manufacturers were Borg which could be directly replaced with a quartz without any problem. We have also used these movements in many foreign vehicles and when we can't easily retrofit the job ourselves, Instrument Services has been able to do so.

As for durability, I replaced the movement in my own vehicle two years ago and have had no problem whatsoever. Living in Buffalo, NY, the unit has been exposed to anything from 100 degree temperatures inside the vehicle to 20 degrees below zero without effect.

On the same subject, we have the following note from Stephen Priesthoff, Couvet, Switzerland:

Through my experience with SMQ clocks subjected to temperature extremes and vibration, I would say you have an excellent chance of installing one in an automobile with good results. You may be surprised to know that it is not a new idea. I own a 1982 VW with an SMQ clock installed (factory) that, of course, keeps excellent time. Also, I diagnosed a bad I.C. in an SMQ clock in a Honda and was surprised to find a 4.19 MHz quartz crystal regulating it. I suppose this high rate helped stabilize the timekeeping against temperature extremes and vibration.

In conclusion, I would say a conservative approach would be to buy three or four of those inexpensive small square movements, put some hands on them, and stick them on your dashboard or put one in the glove box or trunk. Use your imagination and see how they work.

CHELSEA SHIP'S BELL CLOCK

Responding to Edward Beyer's reference to the Chelsea Ship's Bell Clock in the January "Bulletin Board," Cy Felheimer, Westmont, NJ, sends a copy of servicing procedures for a Chelsea model 4L ship's bell movement. AWI already has this bulletin in our files and will gladly send a copy to anyone interested if they will send a letter size SASE with 52 cents U.S. postage.

LORCH LATHE

J. MacKinnon, New Lynn, Auckland, New Zealand responds to Murray Falk in Alberta, Canada who sought information about the Lorch lathe as follows:

We handle Lorch lathes 6 mm and 8 mm, plenty of collets, and three-jaw chucks and accessories. Lorch is closely related to Wolf Jahn and interchanges.

We use three Lorch lathes in our workshop. New collets are still available in England, but are expensive at £40 each.

If you require further information, please write: J. MacKinnon, 13 Totara Ave., New Lynn, Auckland, New Zealand.

C. ITEMS STILL NEEDED

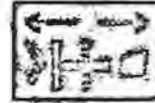
CAMBRIDGE QUARTZ CLOCK

Milo Bresley, Bloomington, MN, is seeking a serv-

ice agent or distributor who can provide a new movement for a clock he describes as follows:

The clock measures 3-1/8" high, 2-3/16" wide, and 1-15/16" deep. The dial measures 1-3/16" in diameter with Roman numerals and "Made in England" in the lower circular part of the dial. The face opening is 2-3/16" high and 1-11/32" wide. The word CAMBRIDGE is approximately 3/8" below the dial numbers.

A rubbing taken from the back of the quartz movement reveals that the movement is German; it also has a lower case "e" in the upper left-hand corner of a capital letter "J" and the number 987. Another rubbing appears as follows:



Not Actual Size

SOUND FROM CHIME RODS

Harry Carlson, Minneapolis, MN, works for a chime clock company where floor and wall clocks are made. They assemble sound boards, seat boards, and movements into units for installing into cases. Mr. Carlson writes:

We have increasing problems with the quality of sound from the chime rods. The notes are far from true, not very musical, and not much volume. I'm sure the quality of the metal in the rods and the configuration of the rod blocks have something to do with this. The sound boards are the same.

Do you or anyone you know have any words of wisdom for us? Is there any written information available on the subject?

ULYSSE NARDIN BROCHURES & CATALOGS

Marvin E. Whitney, Alexandria, VA, is researching material for articles he is preparing about the famous Ulysse Nardin firm. He is interested in pamphlets, brochures, and catalogs dealing with watches and chronometers produced by this firm. One catalog in particular was published about 1920 by Bigalke & Eckert Company, 527 Fifth Ave., New York, NY. They were the sole U.S. agent for Ulysse Nardin during that period. A reprint of this catalog is available; however, Mr. Whitney seeks an original for the purpose of reproducing some of the photographs and illustrations. Any materials loaned to Mr. Whitney will receive the special care they deserve and providers will be acknowledged in the finished articles.

Do you have information regarding this month's requests? Do you need information about one of this month's responses?

If so, send a self-addressed, stamped business-size envelope and your request to: "Bulletin Board," c/o AWI Central, 3700 Harrison Avenue, Cincinnati, OH 45211. □

Affiliate Chapter Column



Joseph L. Cerullo, CMW, CMC

Save Those Used Watch Batteries For AWI's ELM Trust

At this time I would like to remind all readers and especially the Affiliate Chapter officers and their appointed delegates to think about our annual battery collection contest. This contest has been held for the past several years, and it has helped greatly to fund AWI's ELM Charitable Trust.

Each chapter spends the year collecting used batteries and brings them to the AWI meeting as a donation to the Trust. The batteries are weighed and then sent to a refiner for reclamation of the silver and mercury still left inside the old cells. Each Affiliate Chapter is notified of the number of pounds of cells they have donated, and prizes and ribbons are presented at the banquet dinner at AWI's June meeting.

The 1st Place Prize is a one-year free membership to the AWI for that particular chapter. The rest of the chapters receive a ribbon designating their finish place. At last year's meeting, New Jersey finished 1st with approximately 84 pounds of batteries. The year previous to this, the total batteries collected were reclaimed for \$1,129.18. The total dollar amount for those collected at the past meeting will be announced at our 1992 meeting in June. The contest is great fun, and the money is well spent.

Let me take a moment to explain to you where the money goes and how it is spent.

The AWI ELM Charitable Trust stands for Education, Library, and Museum Trust. This Trust is not funded by AWI dues. The Trust receives its funds only by donations, and it is controlled by a group of AWI Trustees (those being Marvin Whitney, James Broughton, Fred Burckhardt, Henry Fried, and Bob Nelson). The monies received help to upgrade the Henry B. Fried Library and the Orville R. Hagans Museum located at AWI Central.

The Education Financial Loan Committee chaired by James Broughton reported at our last meeting that 9 out of 12 grant requests of \$250 each for attending Project Extend were approved. The committee also approved 3 of

4 student loan applications, for a total of \$9,000. Improvements were made to the museum and also to our vast library. As you can see, the money is needed and used for a good cause. Please work hard on your local level to support the ELM Charitable Trust with your batteries.

Here are a few of the rules of the contest. The batteries that are needed must be regular button type watch cells, both silver oxide and mercury oxide. These can be packaged separately, but it's not absolutely necessary. Please do not add the larger flashlight type batteries, such as C, AA, or AAA, or even N type. Also, do not include your lithium cells, as these have no reclaimed value. Just send the button type mercury and silver. You may send them to AWI Central.

* * *

Now I'd like to announce that the AWI has a new Affiliate Chapter--their third chapter adopted this year. It is the Central Pennsylvania Watchmakers Guild. Their President is Daniel Fenwick, who many of you may recognize as the Technical Director of the Swiss Watch Technical Center in Lancaster, PA. □

Support

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3700 Harrison Avenue
Cincinnati, Ohio 45211

Association News

FLORIDA

The Florida State Watchmakers Association annual convention is scheduled for October 23, 24, and 25, 1992. It will be held at the Howard Johnson Hotel in Daytona Beach, FL.

For more information: Florida State Watchmakers Association, 13465 S.W. 16th Drive, Okeechobee, FL 34974.

ILLINOIS

The Central Illinois Watchmakers' Association will again be sponsoring the Illinois Watchmakers' 16th annual convention. This event will be held on October 23, 24, and 25, 1992 at the Keller Convention Center in Effingham, IL.

For more information contact Fred Schroeder, President, Central Illinois Watchmakers' Association, 102 N. Center Street, Bloomington, IL 61701.

MASSACHUSETTS

The Massachusetts Watchmakers Association will hold their next meeting on March 15, 1992 at 2:00 p.m. The Stoneham, Massachusetts Public Library, located on Main Street (Route 28) will be the location for this meeting. Guest speaker will be Jim Lubic, Technical & Educational Director of AWI. He will present a program on escapements.

TEXAS

The Texas Watchmakers Association is holding its 45th annual convention in Austin, Texas on May 22, 23, and 24, 1992. It will take place in the Wyndham Hotel, at the corner of Interstates 35 and 71.

For more information contact Kip Naleski, Executive Secretary-Treasurer, Texas Watchmakers Association, 8103 Hillrise, Austin, TX 78759. □

UPCOMING CONVENTIONS

April 3-5, 1992

*Virginia Jewelers Association
and*

*The Horological Association of Virginia
Annual Convention
Embassy Suites Hotel -- Richmond, VA*

May 8-10, 1992

*North Carolina Watchmaker's Association
Annual Convention
Hampton Inn -- Morehead City, NC*

May 16-17, 1992

*Arizona Clockmakers & Watchmakers Guild
Annual Convention
Las Campanas Quality Inn -- Cottonwood, AZ*

May 22-24, 1992

*Texas Watchmakers Association
45th Annual Convention
Wyndham Hotel at Southpark -- Austin, TX*

October 3-4, 1992

*Watchmakers Association of Pennsylvania
Annual Convention
Penn State University Campus -- State College, PA*

October 23-25, 1992

*Florida State Watchmakers Association
Annual Convention
Howard Johnson Hotel -- Daytona Beach, FL*

October 23-25, 1992

*Illinois Watchmakers
16th Annual Convention
Keller Convention Center -- Effingham, IL*

Send Convention Dates to:

*Horological Times
AWI Central
P.O. Box 11011, 3700 Harrison Avenue
Cincinnati, OH 45211*

News in the Trade

EVEREADY RECEIVES DIANA AWARD

The Eveready Battery Company was the recipient of a National Wholesale Druggists' Associations' (NWDA) 1991 DIANA Award.

Eveready received a Best New Product Introduction award for its Outdoor Area Light/Flashlight. The award-winning light can be used as a flashlight or a 360° area light. It features a focusing beam--from spot to flood--and a 200% brighter Krypton bulb. The outdoor Area Light is perfect for hunting, backpacking, camping, home, and auto.

"We are particularly proud to receive this award," said Gary Baker, Vice President of Trade Development. "In these financially challenging times, consumers are demanding more in the products they buy. The versatility of the Outdoor Area Light represents the dedication of Eveready to answering consumers' needs."

Begun in 1959, the DIANAs (Drug Industry Annual NWDA Awards) recognize overall manufacturer excellence in marketing innovation, as well as marketing for new product introductions and promotions in the wholesale drug industry.

The Outdoor Area Light/Flashlight is a product of Eveready Battery Company, the world's largest manufacturer of batteries and flashlights.

ROSEN APPOINTED SENIOR VICE PRESIDENT OF BULOVA CORPORATION

Carl E. Rosen has been named Senior Vice President for Bulova Corporation, it was announced recently by Herbert C. Hofmann, President and Chief Executive Officer of Bulova Corporation.

In this position, Mr. Rosen will assume managerial responsibility for all retail sales for Bulova's watch and jewelry divisions, as well as overseeing Bulova's Clock Division. He will continue to serve as Executive Director/Management Information Systems Development for Loews Corporation, the parent company of Bulova, a post he has held for the past three years.

Mr. Rosen holds a B.S. degree from Tufts University in Civil Engineering and an M.B.A. from the Wharton School of the University of Pennsylvania. Mr. Rosen is a resident of Stamford, CT.



RFE INDUSTRIES INSTITUTES HAZARDOUS WASTE HOTLINE FOR THE JEWELRY INDUSTRY

RFE Industries, a refiner of precious metal scrap in the jewelry industry, has announced the installation of a *Hazardous Waste Hotline* to offer free advice on the following: How to obtain EPA ID numbers; proper handling and disposal of hazardous substances; how to achieve compliance with existing local, state, and federal regulations. The hotline number is **1-800-327-7938**.

According to Jack Leiner, President of RFE, many jewelry manufacturers are confused about environmental compliance. "The laws are constantly changing, and governmental pollution authorities are becoming more aggressive regarding compliance issues," states Mr. Leiner. "Our pollution control experts at RFE are familiar with the latest regulations as they apply to the jewelry industry and can lead jewelry scrap generators through the maze of forms and compliance measures."

For additional information, contact **RFE Industries, 19 Crows Mill Road, Keasbey, NJ 08832; 800-327-7938; in NJ call 201-738-5200**.

RARE 16TH CENTURY ASTROLABE TO BE AUCTIONED AT CHRISTIE'S

A rare 16th Century brass astrolabe, an instrument used to measure the altitude of the stars and the cycle of the moon, will be offered in Christie's sale of Engineering and Scientific Works of Art and Instruments on April 2, 1992.

Expected to realize between £50,000 and £80,000, the astrolabe is important for its possible association with one of the foremost workshops of scientific instruments in 16th century Europe.

Made for an unknown Spanish aristocrat, the astrolabe

measures 6-1/2" (116 cm) in diameter. While it is unsigned, it bears many features reminiscent of the workshop of Walter Arsenius of Louvain, Flanders. For example, the 'Quadratum Nauticum', a navigational device, and various engraved designs featured on the instrument are both marks associated with the Arsenius workshop.

The world-renowned maker, Walter Arsenius, was the nephew of Gemma Frisius, who was professor of Medicine at Louvain University and an established authority on astronomical instruments in the 16th century. The piece to be offered is typical of the Gemma Frisius family due to the universal stereographic projection which is featured on the back.

From as early as the 12th century, astrolabes were regarded as prestigious objects of learning and their makers were as highly respected as the major artists of the day. The Spanish aristocrat who commissioned this instrument would have been a man of considerable wealth and standing to have been able to afford such an instrument.

Engravings essential to astronomers are visible on the plates. These include almucantars (lines of constant altitude above the horizon) and azimuths (celestial circles from the zenith to the horizon), the equator, both tropics, and the 12 Great Sky Houses.

In keeping with the astrolabe's provenance, the Iberian Peninsula is covered by the latitude plates marked for latitudes 37 to 39 and 41 to 43. Another plate, made of paper, is printed in Spanish and depicts a shadow square and calendrical information including a table of the planets governing each hour of the day and another charting the cycle of the moon.

Astrolabes ceased to be made in Europe in the early 17th century, although Islamic astrolabes were made until the 20th century for the timing of prayers.



For more information, contact **Christie's, 8 King Street, St. James's, London SW1Y 6QT; phone (071) 839-9060.**

MAZZONE NEW SALES CHIEF AT LONGINES-WITTTNAUER

The promotion of Robert Mazzone to Senior Vice President, Sales was recently announced by Renny Swift, President, Longines-Wittnauer Watch Company, New Rochelle, New York. In announcing the appointment, Swift commented that the 40-year-old Mazzone, formerly Vice President, Special Markets, has produced remarkable sales growth by creating partnerships between Longines-Wittnauer and its customers. Adds Swift, "This promotion recognizes Bob's industry knowledge, sales leadership, and professionalism, and gives him the opportunity to apply his skills for the entire company."



Renny M. Swift and Robert M. Mazzone of Longines-Wittnauer.

BULOVA DISPLAYS CAPTURE NATIONAL AWARDS

Two Bulova displays were judged among the best product merchandisers developed for 1991 in the 'Personal Products and Accessories/Jewelry and Fine Items Perma-

nent Displays' category. Known in the industry as the 'Popai Awards,' this annual competition is conducted by The Point-of-Purchase Advertising Institute, Inc. Among the watch, clock, and jewelry companies who entered the contest, Bulova was the only one that won in the top three categories.

Their silver award went to Bulova's clock floor merchandiser. This illuminated unit, conceived and executed by both Bulova and by D.W. Leo & Co., provides Bulova retailers with maximum clock visibility utilizing minimum in-store space. The display's wood and plexiglas exterior measures 22 square inches and is over 6 feet high.

Anthony J. Rodriguez, Vice President and General Manager for Bulova Clocks, stated, "We're pleased to see a 'floor merchandiser', specifically designed for maximum return on investment, can be aesthetically complimentary to the environment in which it was intended to function. It's an honor to be recognized by an industry dedicated to innovation and creativity."

The bronze award honored Bulova's new Accutron watch collection display created in conjunction with De Plano Design, Inc. The display, produced in two configurations--small and large--was themed to capture and enhance the three-tiered watch case design of this new watch line. Accutron tuning forks, crafted of 24K gold-plated solid brass, display the watch line.

"Being acknowledged as an industry leader in developing point-of-purchase material reinforces our commitment to provide our accounts with the very best... now and in the future," said Philip X. Shaw, Vice President/Marketing for Bulova Watches.

Retailers seeking additional information about these award-winning displays should contact their Bulova Representative.



Bulova's Accutron display



Bulova's clock floor merchandiser (22" square, 76-1/2" high).

BATT-TRONIC'S NEW 1992 CATALOG NOW AVAILABLE

Batt-Tronic Corporation is now featuring their complete product line in a new 20-page catalog. Batt-Tronic's full line of batteries are for use in all watch, calculator, photo, and hearing aid applications. Also featured are alkaline and rechargeable batteries, watches, watchbands, 14K gold chains, findings, tools of the trade, jewelry cleaner, cloths, and Minigrip bags. New items presented

in the catalog are GE replacement lamps, a personal ultrasonic cleaning machine, and the Alkaline Starter Kit. Batt-Tronic has also added heavy-weight chains and ball earrings to their 14K gold line. Batt-Tronic continues to offer same-day shipping and guaranteed customer satisfaction. For your copy, contact: **Batt-Tronic Corp., Catalog Dept., P.O. Box 10, Orangeburg, NY 10962-0010.**



Batt-Tronic's 1992 catalog

1992 CATALOG UPDATE FROM KASSOY

Kassoy's early '92 catalog features a 16-page section of new merchandise and a '92 price list update. The color-coded section has been placed in front of the book so that customers can see what's new for '92 quickly. New merchandise includes electronic scales, ionic cleaning systems, gold testers, camera systems, and more. Contact: **Kassoy, 16 Midland Ave., Hicksville, NY 11801; (800) 4-KASSOY.**

Classified Ads

REGULATIONS AND RATES

Ads are payable in advance \$.60 per word, \$.70 per word in **bold type**. Classified display ads are \$25.00 per column inch, 2-1/4" wide. Ads are not commissionable or discountable. The publisher reserves the right to edit all copy. Price lists of services will not be accepted. Confidential ads are \$4.00 additional for postage and handling. The first of the month is issue date. Copy must be received 30 days in advance (e.g. April issue closes for copy on March 1st).

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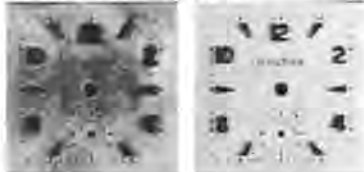
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BOOKS

Clockmakers Newsletter is edited by Steven G. Conover and is in its fifth year. *CN's* monthly issues give you clock repair information, articles, repair tips, and Q & A. With your payment of \$34 for a new one year subscription, mention this ad and choose one of these bonus issues free: *Making Cutters for the Bushing Tool*, *400-Day Clock Repair*, or *Making Large Bushings on the Unimat Lathe*. Don't forget to order your copy of the 210-page hardcover book, *Chime Clock Repair*, by Steven G. Conover, \$28.50 postpaid. PA residents add 6% sales tax on book only. *Clockmakers Newsletter*, 203 John Glenn Ave., Reading, PA 19607.

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Dates to Remember

MARCH 1992

14—Introduction to Quartz Watch Repair Bench Course (AWI); Buddy Carpenter, instructor; San Diego, CA.*

14-15—400-Day Clock Repair Bench Course (AWI); John A. Nagle, instructor; Trenton, NJ.*

20-21—400-Day Clock Repair Bench Course (AWI); John A. Nagle, instructor; Orlando, FL.*

21-22—Repair of the Atmos Clock Bench Course (AWI); Gerald Jaeger, instructor; Denver, CO.* THIS COURSE IS FULL.

21-22—Beginning Lathe Bench Course (AWI); James Lubic, instructor; Albuquerque, NM.*

22—Useful Techniques: Mechanical Watch Repair Bench Course (AWI); James Adams, instructor; Houston, TX.*

22-23—Striking Clocks Bench Course (AWI); John A. Nagle, instructor; Orlando, FL.*

27-29—Advanced Lathe Bench Course (AWI); Roy Hovey, instructor; Albuquerque, NM.*

29—Servicing ETA Quartz Chronographs Bench Course (AWI); James Broughton, instructor; Bay Area, CA.* THIS COURSE IS FULL.

APRIL 1992

3-5—Virginia Jewelers Association and the Horological Association of Virginia Annual Convention, Embassy Suites Hotel, Richmond, VA.

11—Introduction to Quartz Watch Repair Bench Course (AWI); Buddy Carpenter, instructor; Austin, TX.*

11-12—Beginning Lathe Bench Course (AWI); James Lubic, instructor; Orlando, FL.*

12—Introduction to Quartz Watch Repair Bench Course (AWI); Buddy Carpenter, instructor; San Antonio, TX.*

20—Servicing ETA Quartz Chronographs Bench Course (AWI); James Broughton, instructor; Sioux Falls, SD.*

24-26—Advanced Lathe Bench Course (AWI); Roy Hovey, instructor; Orlando, FL.*

26—Servicing ETA Quartz Chronographs Bench Course (AWI); James Broughton, instructor; Jamestown, ND.*

26—Useful Techniques: Mechanical Watch Repair Bench Course (AWI); James Adams, instructor; Charleston, SC.*

29-May 2—North Central Technical Conclave, Radisson Inn Madison, Madison, WI. For more information contact AWI Central at (513) 661-3838.

MAY 1992

4—Servicing ETA Quartz Chronographs Bench Course (AWI); James Broughton, instructor; Kansas City, MO.*

5—Servicing ETA Quartz Chronographs Bench Course (AWI); Remy Waelchli, instructor; Denver, CO.*

6—Servicing ETA Quartz Chronographs Bench Course (AWI); Remy Waelchli, instructor; Oklahoma City, OK.*

8-10—North Carolina Watchmaker's Association Annual Convention, Hampton Inn, Morehead City, NC.

9-10—Beginning Lathe Bench Course (AWI); James Lubic, instructor; Alexandria, VA.*

15-17—Advanced Lathe Bench Course (AWI); Roy Hovey, instructor; Alexandria, VA.*

16—Introduction to Quartz Watch Repair Bench Course (AWI); Buddy Carpenter, instructor; Ellisville, MS.*

16-17—Cuckoo Clock Repair Bench Course (AWI); James Williams, instructor; Portland, OR.*

16-17—Arizona Clockmakers & Watchmakers Guild Annual Convention; Las Campanas Quality Inn; Cottonwood, AZ. For more information contact Bob Macomber (602) 778-5720.

17—Introduction to Quartz Watch Repair Bench Course (AWI); Buddy Carpenter, instructor; Mobile, AL.*

17—Useful Techniques: Mechanical Watch Repair Bench Course (AWI); James Adams, instructor; Norfolk, VA.*

22-24—Texas Watchmakers Association Annual Convention, Wyndham Hotel at Southpark, Austin, TX. For information: Kim Naleski, 8103 Hillrise, Austin, TX 78759.

29-31—Advanced Clock Repair Bench Course (AWI); Roland Iverson, instructor; Seattle, WA.*

JUNE 1992

13-14—Beginning Lathe Bench Course (AWI); James Lubic, instructor; New York, NY.*

14—Introduction to Quartz Watch Repair Bench Course (AWI); Buddy Carpenter, instructor; Boston, MA.*

14—Useful Techniques: Mechanical Watch Repair (AWI); James Adams, instructor; Nashville, TN.*

19-21—Advanced Lathe Bench Course (AWI); Roy Hovey, instructor; New York, NY.*

19-21—Advanced Clock Repair Bench Course (AWI); Roland Iverson, instructor; Denver, CO.*

20-24—Complicated Watches Course (AWI); Antoine Simonin, instructor; Cincinnati, OH.* THIS COURSE IS FULL.

*For more information on AWI Bench Courses and Regional Seminars, contact AWI Central, P.O. Box 11011, 3700 Harrison Avenue, Cincinnati, OH 45211; (513) 661-3838; Fax (513) 661-3131.

Ad Index

Blue Ridge Machinery & Tools	8
Borel Co.	7
Cas-Ker Co.	inside back cover
Charlie Precision Co.	20
Charles Cleves	13
Davis Supply	35
Esslinger & Co.	inside front cover
Finn Time Products	33
Gem City College	33
Germanow-Simon Corp.	9
Hess Investments	39
Innovative Electronics	37
JIDA	3
S. LaRose, Inc.	19
Livesay's, Inc.	25
Maxell Corp.	5
New York Jewelers Supply Co.	37
Plymouth Watch Material	4
Precision Crystal Cutting Co.	33
Ray Gaber Co.	29
Redco Supply, Inc.	4
S & G Industries	21
Toledo Jewelers	23
Twin City Supply Co.	17
Vibrograf USA Corp.	15
Witschi Electronics	27
Wm. S. McCaw Co.	11
Young-Neal Co., Inc.	35

ANSWERS TO PRACTICE PROBLEMS IN THIS MONTH'S COLUMN "TIMELY TIPS FOR CLOCKMAKERS" (From Page 21)

1. X = 90 Y = 12
2. X = 50 Y = 8
3. A, third arbor

*It is with deep regret that we announce
the passing of*

***Helen Cassedy
1900 - 1992***

A longtime employee, she was the wife of the late John R. Cassedy, Sr., one of the company's founders. She was also the mother of the late John R. Cassedy, Jr., and grandmother of Thomas, Daniel, and Patrick Cassedy, third generation owners.

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card expiration date, and signature. **FAX: (513) 661-3131.**

For more information, call (513) 661-3838.

MARCH 1992

- 14--Intro to Quartz Watch Repair--San Diego, CA
- 14-15--400-Day Clock Repair--Trenton, NJ
- 15--Intro to Quartz Watch Repair--Los Angeles, CA
- 20-21--400-Day Clock Repair--Orlando, FL
- 21-22--Repair of the Atmos Clock--Denver, CO
- 21-22--Beginning Lathe--Albuquerque, NM
- 22--Useful Techniques: Mech'l Watch Repair--Houston, TX
- 22-23--Striking Clocks--Orlando, FL
- 27-29--Advanced Lathe--Albuquerque, NM
- 29--Servicing ETA Quartz Chronographs--Bay Area, CA

APRIL 1992

- 11--Intro to Quartz Watch Repair--Austin, TX
- 11-12--Beginning Lathe--Orlando, FL
- 12--Intro to Quartz Watch Repair--San Antonio, TX
- 20--Servicing ETA Quartz Chronographs--Sioux Falls, SD
- 24-26--Advanced Lathe--Orlando, FL
- 26--Servicing ETA Quartz Chronographs--Jamestown, ND
- 26--Useful Techniques: Mech'l Watch Repair--Charleston, SC
- 29-May 2--North Central Technical Conclave--Madison, WI

MAY 1992

- 4--Servicing ETA Quartz Chronographs--Kansas City, MO
- 5--Servicing ETA Quartz Chronographs--Denver, CO
- 6--Servicing ETA Quartz Chronographs--Oklahoma City, OK
- 9-10--Beginning Lathe--Alexandria, VA
- 15-17--Advanced Lathe--Alexandria, VA
- 16--Intro to Quartz Watch Repair--Ellisville, MS
- 16-17--Cuckoo Clock Repair--Portland, OR
- 17--Intro to Quartz Watch Repair--Mobile, AL
- 17--Useful Techniques: Mech'l Watch Repair--Norfolk, VA
- 29-31--Advanced Clock Repair--Seattle, WA

JUNE 1992

- 13-14--Beginning Lathe--New York, NY
- 14--Intro to Quartz Watch Repair--Boston, MA
- 14--Useful Techniques: Mech'l Watch Repair--Nashville, TN
- 19-21--Advanced Lathe--New York, NY
- 19-21--Advanced Clock Repair--Denver, CO
- 20-24--Complicated Watches--Cincinnati, OH

JULY 1992

- 18-19--Cuckoo Clock Repair--Omaha, NE

COURSES & INSTRUCTORS

- Introduction to Quartz Watch Repair**
Buddy Carpenter, CMC, CMEW
- Advanced Quartz Watch Repair**
Robert Bishop, CMEW
- Introduction to Clock Repair**
James Lubic
- Advanced Clock Repair**
Roland Iverson, CMC
- Repair of the Atmos Clock**
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- Cuckoo Clock Repair**
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inside the magazine.***