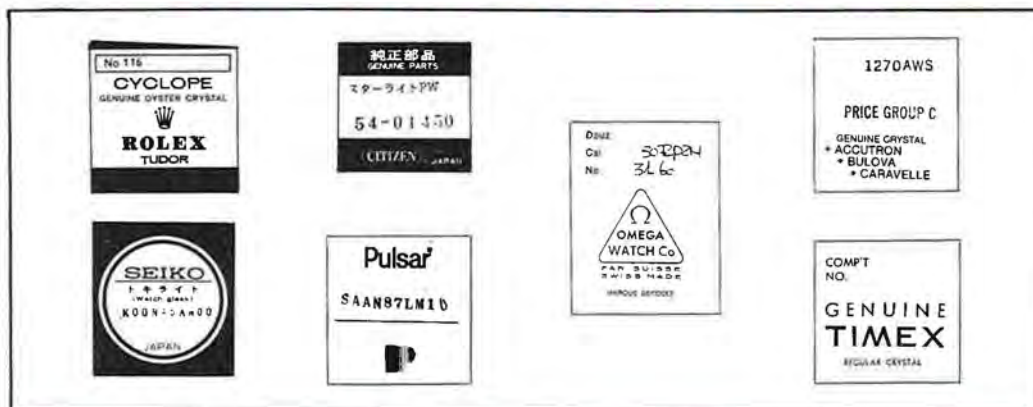


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Editorial

A few years ago, only a select group of watchmakers may have had the feeling of what to purchase as test equipment for testing in this new electronic age. Now that the quartz analog watch has firmly established itself as the big seller in the medium to high price range, the rest of the watchmakers now know what they will need to know about component failures so that they can intelligently talk to their customers. Some will concern themselves with separating electronic failure from mechanical failure. But many others will want to check continuity, quartz crystal, I.C., coil, and microampere drain.

Beginning now, more sophisticated test equipment will be purchased by watchmakers since mechanical watch repair has decreased from some 94% a couple of years ago, to 80 or 85% today.

Aggressive manufacturers and distributors will come out on top, but they will find that they will have to show exactly what functions their equipment performs.

On the Front

Mere words seem inadequate to describe the peaceful forest scene on our front cover. Only the eyes of our readers can fully appreciate the brilliant color scheme which Mother Nature has created especially for Fall!

Photo by Mervin Levenberg



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PRESIDENT'S MESSAGE...

Fred S. Burckhardt



We Want To Hear From You!

Whether you are a Charter Member or a brand new member of AWI, we are always happy to hear from you. Anytime you have a complaint, criticism, words of advice or encouragement, or if you would just like to get your "two cents" worth in, please let us hear from you.

Please be advised, anytime a letter or phone call is received, it is given immediate attention and directed to the party or parties involved. Action on it will be taken as soon as possible and you should be notified of such action within a reasonable amount of time.

AWI can only be as good as what you make it because *you are* the AWI. We are here to serve each and every member. Let us know how we can better serve you!

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Chime and Strike

Steven G. Conover



The Schatz Ship's Bell Movement*

We turn our attention to a ship's bell clock this month. The ship's bell clock is, of course, a form of striking clock. It marks the hours and half hours for us. What makes it different is the fact that it gives us nautical striking instead of an hour count. This is an important difference, for it makes the strike train a special case for the repairer.

Our Schatz movement is contained in a brass case, seven inches in diameter at the back. The dial is marked: "Made in West Germany Expressly for Swift & Anderson, Inc., Boston 25, Mass." The four-jewel movement is by August Schatz & Sohne. The brass bell is mounted on the rear of the movement. The platform escapement is located at the top inside of the rear movement plate. The regulator arbor passes through the dial at 12.

There are two means of silencing the strike in this clock. A selector, piercing the dial at 3, raises the lifting lever to silence the clock. It sends the strike train to "warning," keeping it there. When the selector lever is lowered, the clock resumes striking. The other method of silencing is through a screw on the case back. It is connected to a lever mounted inside the case. The lever has a notch for each hammer. When the screw is turned, the lever simply clamps down over the hammers, stalling the gear train at the beginning of the next strike cycle.

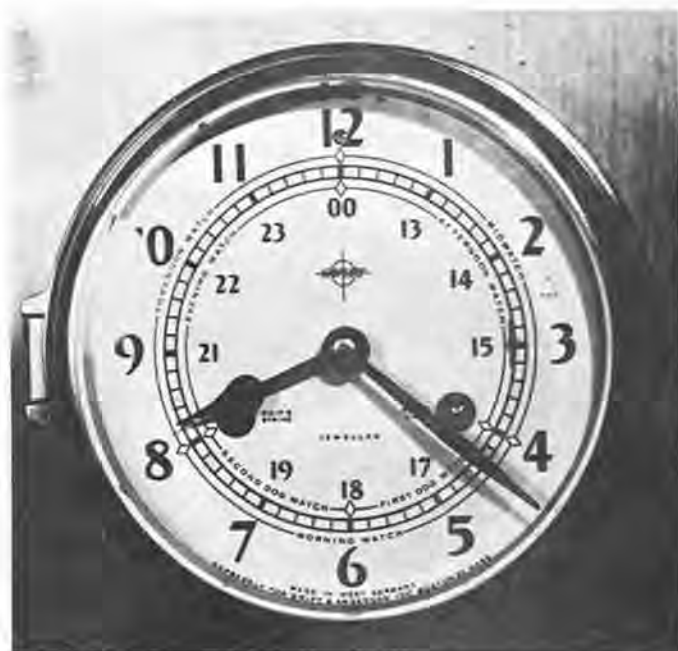


Figure 1. Schatz Ship's Bell Clock, dial marked Swift & Anderson.

The basic movement is rack and snail strike. We have looked at several of these in the series. It is a good idea to check this aspect of the Schatz before we tackle the details of the ship's bell counting mechanism. Figures 4, 5, 6, and 7 identify the major strike train parts. The gathering pallet (10) is fitted with a pin to move the teeth on the rack (14). It is also shaped as a cam, so it raises the rack hook (12) as each tooth is counted off. The rack hook rests between two rack teeth at each strike, holding the rack motionless until the pin on the gathering pallet comes around again to push the rack one tooth space ahead.

Strike locking is by means of the lock pin (8), which comes to rest against the locking lever (9). The pin also doubles as the warning pin. As the strike train moves from the rest position to the warning, the lock pin and locking wheel (7) simply move the predetermined distance from the locking lever to the warning lever (11). This means that there is no warning to set up when you assemble the clock. It is already established at somewhat less than a half revolution of the locking wheel, based entirely on the location of the levers. A star cam (18) with two equal arms raises the lifting lever (15). This lever has the warning lever at one extreme, and the unlocking lever (13) at the top. Notice that the rack hook and the locking lever (9) are made from one piece.

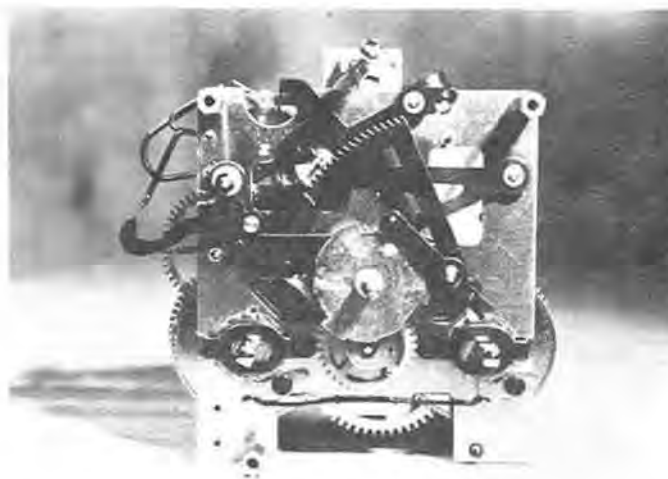
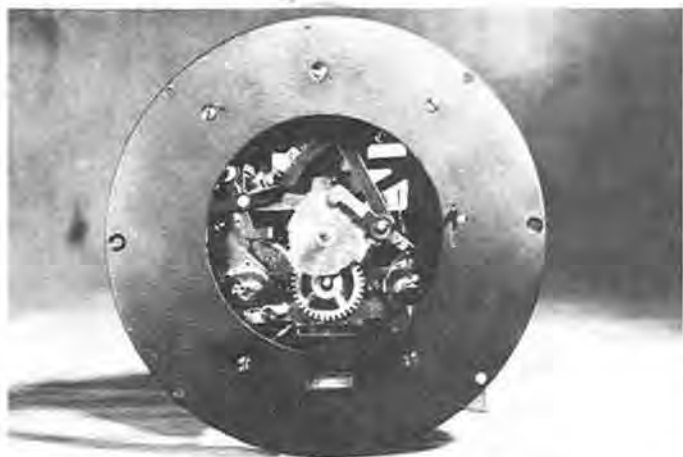


Figure 2. Round movement mounting plate, with movement attached.

Figure 3. Front of movement.

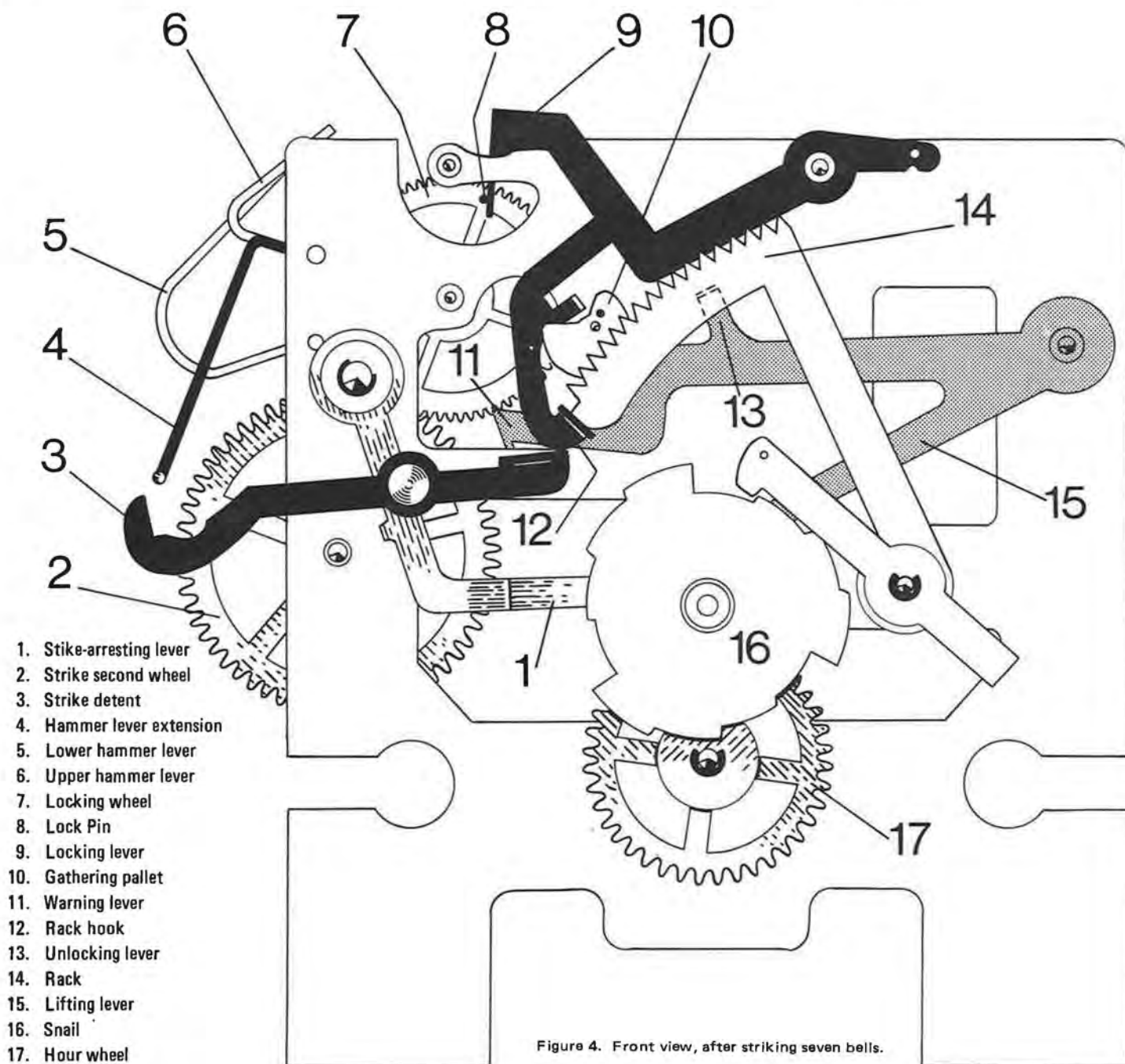
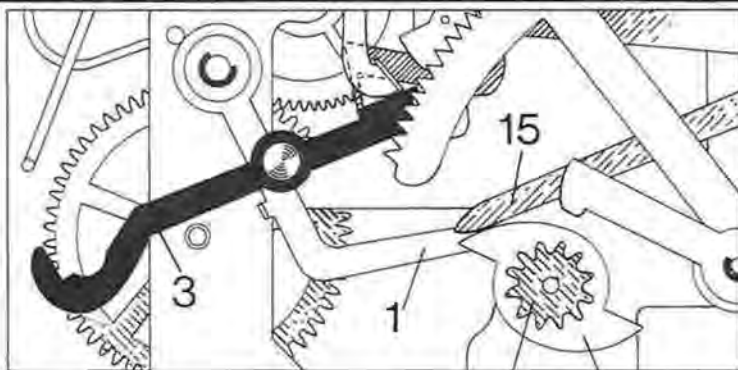


Figure 4. Front view, after striking seven bells.

The third wheel carries the hammer-lifting star (27). The star has 10 equally spaced arms. As the clock strikes, the two hammers deliver their blows in distinct pairs. The spacing of the notes does not come from the spacing of the 10 arms. It comes rather from the placement of the upper and lower hammer tails (26) and (25). These are close together, so that each arm on the hammer-lifting star raises the two hammer tails in quick succession; hence, the pairing of notes.

Now for the ship's bell strike mechanism. The clock is designed to sound eight bells at 12, 4, and 8 o'clock. From each of these three points, the sequence continues with one bell at the following half hour, two on the next hour, and so on until the count of eight bells is reached again. The hours always have an even count, and the half hours odd. If the count is odd, the odd (not paired) note is sounded last. Five bells, for example, is sounded as one pair of notes, a pause, a second pair of notes, another pause, and a single note at the end.

The snail (16) has three "high spots," with three steps leading up to each. From this, we can figure the sequence of 1, 2, 3, 4 performed three times. This might appear to give us a maximum of only four bells instead of eight. The movement does, however, give us our eight bell count. Each step on the snail represents an even count; two, four, six, or eight.



- | | |
|---------------------------|-------------------|
| 1. Strike-arresting lever | 18. Star cam |
| 3. Strike detent | 19. Cannon pinion |
| 15. Lifting lever | |

Figure 5. Snail removed, showing star cam and cannon pinion.

The rack tail hits a step at the hour, and then touches the other end of the same step for the following half hour. This means that the rack and snail mechanism counts two, two, four, four, six, six, eight, eight.

Counting the odd (half) hours is the key. It is the feature which really distinguishes one ship's bell strike mechanism from another. If you understand this aspect, you can repair the strike. What the Schatz does is simply arrest the last hammer blow at each half hour. The gear train runs, counting out pairs of hammer blows each time. At the last strike, the hammer moves but just doesn't reach the bell; there is no sound. The mechanism for this is shown in Figure 6.

The strike-arresting cam (20) comes into play as the half hour approaches, when an odd count is always required. The strike-arresting lever (1) rides up on the cam, which pulls the lever upward and to the right. This movement positions the strike detent (3) so it can do its work. The right end of the detent touches the rack hook (12), moving with it as the clock strikes. At the end of the strike sequence, the rack hook

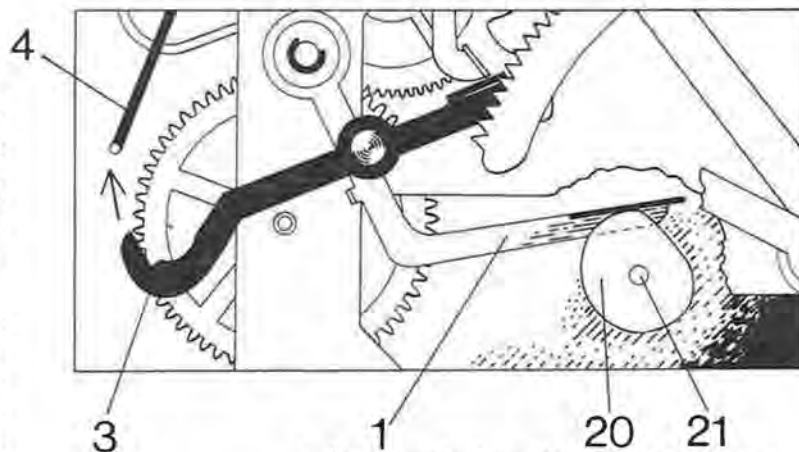


Figure 6. Mechanism for the odd (half) hour strike.

- | | |
|---------------------------|--------------------------|
| 1. Strike-arresting lever | 20. Strike-arresting cam |
| 3. Strike detent | 21. Center arbor |
| 4. Hammer lever extension | |



Figure 7. Rear movement strike parts.

drops to its low point, at the end of the rack. Pushing the detent down at this end moves its opposite end upward. The detent is pivoted in the middle (notice the round head of the rivet in Figure 6). As the last strike note is to be sounded, the hooked end of the detent comes up to catch and hold the hammer lever extension (4). This is enough to prevent the upper hammer from sounding the last (even) note. Thus we have the odd count we are looking for. The hammer remains hooked until the next hour strike begins.

At the hour, the same motions occur, but the last note is not suppressed. The strike-arresting cam (20) does not move the strike-arresting lever (1) far enough to the right and upward. The detent moves, but misses the hammer lever extension. The last note is sounded, and the strike count is even.

When you assemble the movement, take care to observe a few points which will make your job easier. We've been over rack and snail strike work many times in this series, so it should be enough for us to concentrate on what is different about the Schatz. Figure 7 shows the positions of the two hammer tails when the strike train is at rest. They are between two of the ten arms of the hammer-lifting star (27). This set-up guarantees that the notes will come in pairs as they should. The snail (16), shown in Figure 4, must be installed the correct way. To check it, turn the minute hand as you watch the strike-arresting lever (1). When the strike-arresting cam (20) raises the lever, you know you are approaching an odd (half) hour. Adjust the snail so the rack tail will fall upon the right-side portion of the step. Check to be sure that the rack tail will fall upon the left part of the same step at the next hour.

(Please turn to page 18)

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Questions & Answers

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



Is it the Real McCoy?

Q Could you please identify this movement in these two photographs? The train bridge jewels are all capped. Is this a Swiss fake?

Joseph Tyner
Martin, Tennessee

A Your pictures show a Swiss watch marketed by Sears in the 1910 period. It sold for less than five or six dollars. The "jewels" were actually colored celluloid and the jewel setting screws as you will notice don't hold anything and are merely there for show. If you will try with a sharp needle or tweezers, you'll most likely find that the jewel caps are also plastic. It was an attempt to capitalize on the reputation held by bonifé railroad grade watches.



Q I am attempting to locate information about the history of the stop watch, especially in relation to its use in timing athletic events. I am particularly interested in the accuracy possible in such methods at different times. My research on this topic (to supplement work on the history of trends in world records) has led me to dead ends, and the meager amount I have found has been somewhat contradictory. I wonder if you might be so kind as to direct me where I should be looking. Your assistance is greatly appreciated.

Here is a brief summary of what I have found:

1. None of the standard encyclopedias (American, Britannica) mention anything about stop watches.
2. None of the sources I have been able to locate on the history of clocks, or on

the history of inventions, so much as mentions the stop watch. One source, *Clockwork Man* (Lawrence Wright, Horizon Press, New York, 1969, esp. 160-167) contains some anecdotal type material, but nothing very specific whose authenticity is quoted.

3. According to the Oxford English Dictionary, the first reference to a stop watch was in a book called *Sportsscrapiana* by C.A. Wheeler (1867, p. 214), "A practical man with one of M.Cabe's stop watches at the finishing post."

4. An often-quoted book on the history of track and field (R.L. Queraceti, *A World History of Track and Field Athletics*, 1864-1964, Oxford University Press, London, 1964) contends "The invention of the first chronograph by Adolphe Nicole of Switzerland was patented on 14 May, 1862. One can imagine, therefore, the difficulties under which the times of early sprinters were recorded." (p. 1)

5. Another well-regarded book on the history of sports (A. Guttmann, from *Ritual to Record*, Columbia University Press, New York, 1978) asserts "The stopwatch itself is often taken as a symbol for the development of modern sports. It was invented ca. 1730 as an instrument to time races." (p. 48)

I have been unable to proceed beyond this point to determine when the kinds of accurate timing necessary

(Please turn to page 29)



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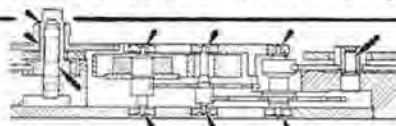
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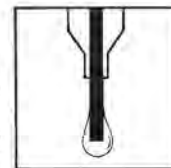
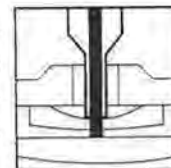
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The Staking Tool

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AND HOW TO USE IT PART X

The staking tool is a very important tool to use for tightening cannon pinions, replacing cannon pinions, and replacing hour and minute hands. It is also important when working on old watches which have a hollow center wheel pinion. When increasing the tension for carrying the hands and removing and replacing the cannon pinion on this type of watch, the staking tool is a necessity.

Figure 1 shows how the special K & D cannon pinion punch and stump is used to tighten a cannon pinion. View A shows a front view of the punch and stump and View B shows a side view. The stump is slotted to accommodate the wedge shaped punch that is to be used with the stump. The stump has a steel insert which has a vee notch cut in its center

that forms a crotch for the body of the cannon pinion to rest in while the special punch is used to dent the cannon pinion to close it. The slot in the stump guides the punch and keeps it centered over the cannon pinion. In order to help prevent the cannon pinion from being closed too much and becoming damaged, a brass taper pin is inserted into the hole in the cannon pinion during the closing process. For more results, a flat side can be filed on the brass taper pin where the dent is made, or the pin can be retraced slightly which allows the body of the cannon pinion to be dented deeper for more results. When using this special punch and stump, the hole in the die plate that the stump fits into should be centered and locked into position so the punch is centered up exactly in the slot in the stump. When closing the cannon pinion, only light taps on the punch are needed to close it. It would be better to attempt the closing two or three times to get the desired results than to over-do the process and damage the cannon pinion. If the cannon pinion should be closed too much causing too much tension, a cutting broach can be used inside the hole to remove some of the burr created by the punch. It is very important that the dent made in the cannon pinion be at the proper height to fit into the groove on the center staff. If the dent is too high, when the watch is set the cannon pinion will work up on the center staff and will become very loose and easy to pull off of the center staff. If the dent is too low, when the watch is set the cannon will work up on the center staff and become loose but will be hard to pull off of the center staff.

Usually when closing a cannon pinion, the end of the punch should be placed in the same dent made previously and this dent made deeper. If no dent is showing, then there will have to be an estimate made as to where the dent should be made. On open ended cannon pinions, a measurement can be taken from the end of the center staff to the groove on the center staff and this measurement transferred to the cannon pinion to determine where the dent should be placed on the cannon pinion. If the cannon pinion has a closed end, the measurement can be taken from the shoulder on the center staff where the cannon pinion seats to the groove on the

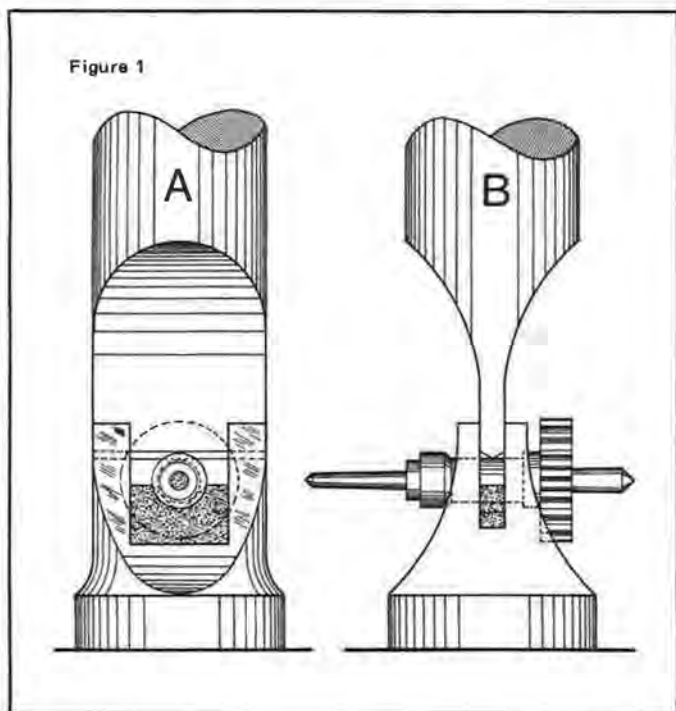
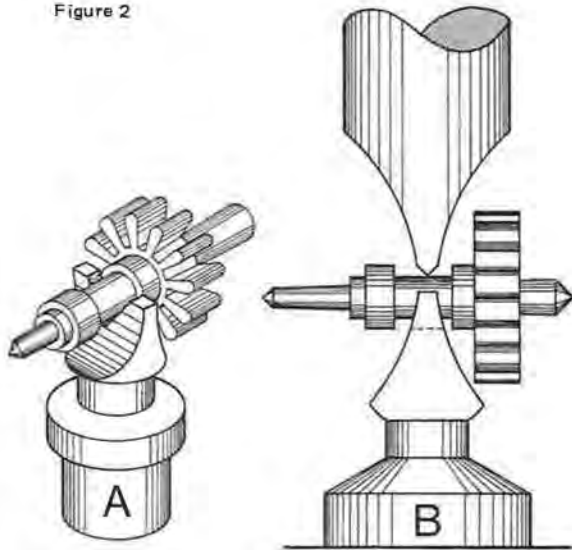


Figure 1

Figure 2



center staff and this measurement transferred to the cannon pinion. NOTE: The center staff should always be slightly oiled before pressing the cannon pinion onto the center staff to check it for fit.

Figure 2 shows another special stump being used to close a cannon pinion. This stump is called a crotch stump. View A shows an isometric view of the stump with a cannon pinion to be closed resting in the vee notch of the stump. View B shows a side view of the stump with a cannon pinion in position in the crotch of the stump and a chisel shaped punch in position for closing the hole in the cannon pinion.

The brass taper pin in the hole of the cannon pinion not only supports the wall of the cannon pinion while it is being closed, but it acts as a handle to use while placing the cannon pinion in the crotch of the stump.

Figure 3 shows a special style of cannon pinion and the method used to close it. This style of cannon pinion was manufactured by Elgin and was used in their watches during the 1950s and 1960s, and is called a "lantern type" cannon pinion. This cannon pinion is designed with four equally spaced slots sawed lengthwise in the center of the body of the cannon pinion. A circular groove has been rolled or turned around the center part of the body of the cannon pinion. The body tapers in from the bottom and top part of the cannon pinion toward the circular groove. To create more tension on this type of cannon pinion, it is placed on a flat solid stump as shown in Figure 3. Then a flat solid punch is brought down on top of the cannon pinion. A light tap with a small brass hammer is all that is usually needed on the end of the punch to cause the center of the body of the cannon pinion to close in at the circular groove. If, after being closed, the tension is

Figure 3

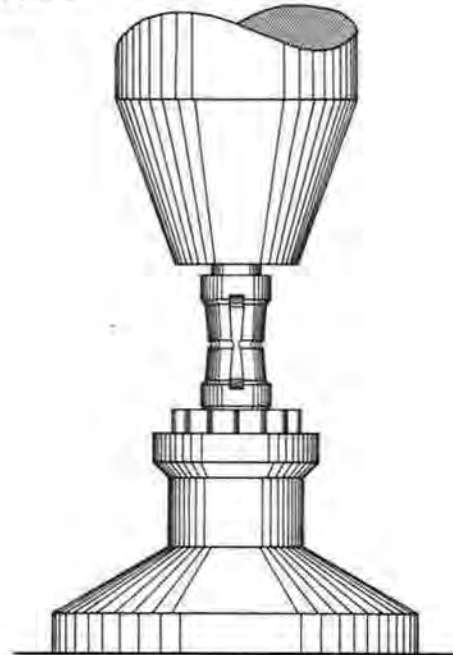
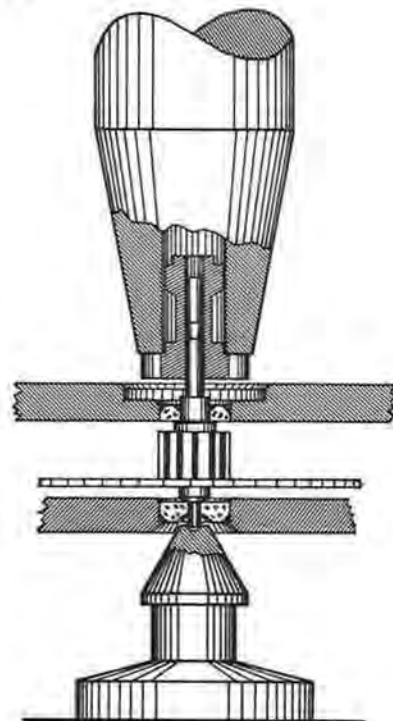


Figure 4



too great, it can be reduced with a round burnishing broach. The broach is inserted into the hole in the cannon pinion and turned. This forces the wall of the cannon pinion outward where it was closed at, thus reducing its tension on the center staff.

When replacing a cannon pinion onto its center staff, it is very important to support the end of the upper pivot as is shown in Figure 4. If the center staff is not supported, there is danger of breaking or shifting the upper center jewel and/or changing the end shake on the center wheel. If the center wheel is not jeweled, there is still the danger of increasing the end shake on the center wheel if the end of the center staff is not supported during the process of pressing the cannon pinion onto the center staff. The stump used to support the end of the center staff is a special stump with a concaved depression in its end which is designed for this purpose. The end of this stump is tapered down so it is small in diameter at the end where the depression is. This is to allow the end of the stump to enter the beveled surface around the jewel and allow the pivot on the center wheel pinion to rest in the depression in the end of the stump. NOTE: This special stump should also be used to support the center wheel pivot when pressing hour and minute hands onto the hour wheel tube and cannon pinion. The punch used to press the cannon pinion onto the center staff is a flat face hole punch. The hole in the punch should be just large enough to clear the pipe of the cannon pinion so the end of the punch will rest on top of the pinion leaves.

Some of the older watches had a unique design which had a different method for creating tension on the center wheel for carrying the hands of the watch. These watches have a hollow center wheel pinion. A steel pin which has a head on one end goes through the hole in the center wheel pinion. The pin fits closely in the hole with enough tension so it takes some effort to turn the pin in the hole in the center pinion. This is the tension needed to cause the hands to turn when the watch runs. The cannon pinion frictions tight onto the end of the pin. The cannon pinion must be tight enough not to slip on the pin. The end of the pin extends through the cannon pinion far enough for the minute hand to fit friction tight onto its end. This arrangement is shown in Figure 5. The dotted lines in the illustration show the outline of the pin going through the center wheel pinion. Figure 5 also shows how the center pin is removed from the center wheel pinion. In this example, the center wheel is not jeweled; therefore, the upper train bridge can be supported on top of a flat face hole stump while the pin is staked out of the cannon pinion. The stump should have a hole that is just large enough to clear the head of the center pin. The punch used to stake the center pin out of the cannon pinion is a flat face solid punch.

If the watch should have jewels around the center wheel pivots, then a different method is used to give support while the center pin is staked out of the cannon pinion. Figure 6 shows this method. In this method, the center pin is not staked out of the cannon pinion until after the train bridges are removed. NOTE: This method of removing the center

Figure 5

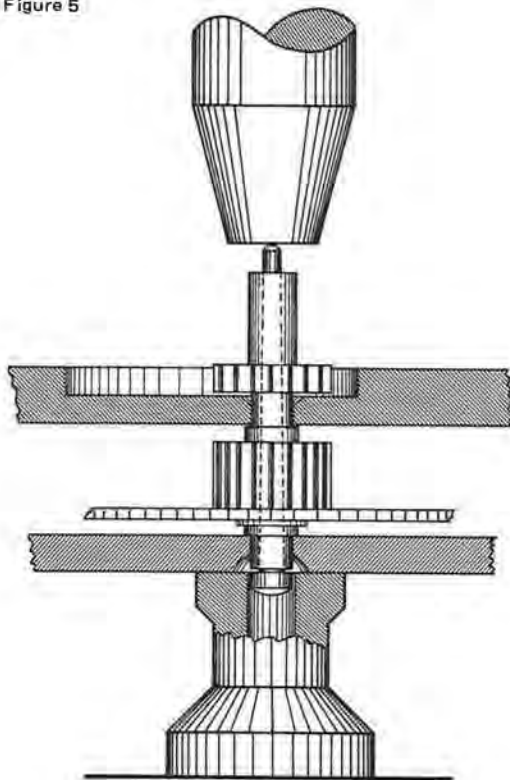


Figure 6

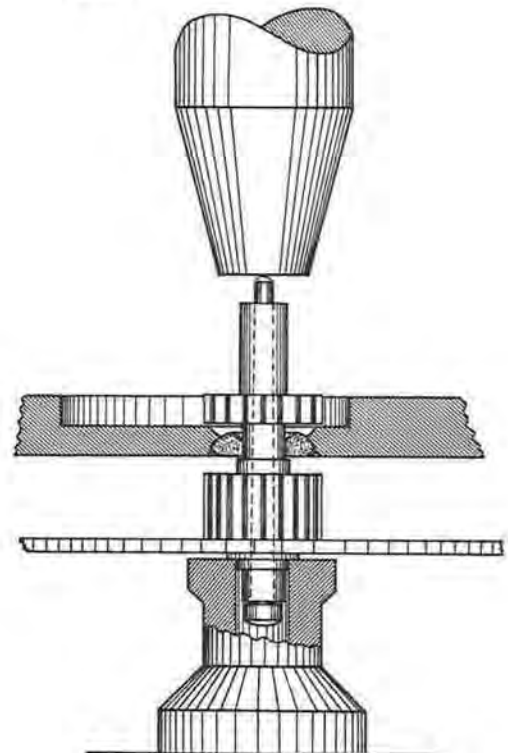
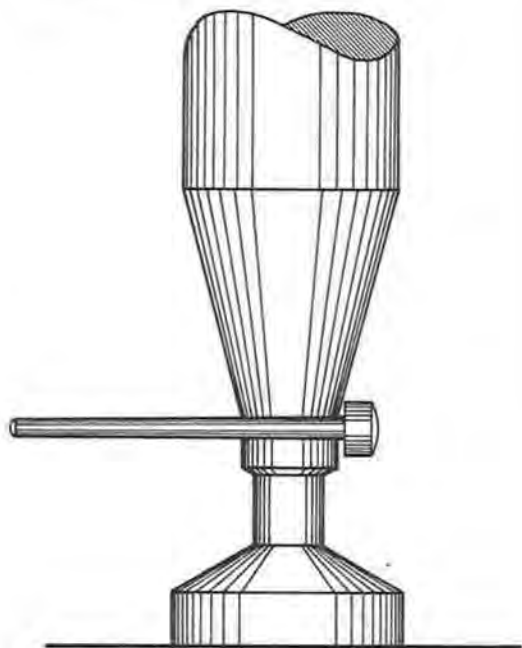


Figure 7



pin cannot be used if the head of the pin is too large to go through the pivot hole when the center wheel bridge is being removed. The center wheel and pinion are supported on a flat face hole stump in this method while the center pin is staked out of the cannon pinion. The hole in the stump should be large enough to allow the rivet of the pinion or the center wheel around the rivet to rest on top of the stump as shown. It is not desirable to support the pinion on the shoulder of the pivot as this could damage the shoulder. The punch used to stake the center pin out of the cannon pinion is a flat face solid punch. Since the tension to carry the hand is between the center pin and the inside of the hole through the center pinion, a different method is used to create this tension. Figure 7 shows how this is done. When more tension is needed, the pin is flattened slightly near its head. To do this, the pin is supported on a small flat solid stump as a small ended flat solid punch is used to flatten the pin. The flattening process should be done cautiously in order to avoid overdoing the process. The pin should always be oiled slightly before being inserted into the center pinion. The pin can usually be pressed into the center pinion with the butt end of a brass or bellmetal tweezer. When replacing the cannon pinion, the head of the pin is supported in the end of a concave stump and the cannon pinion is staked on as is shown in Figure 4. If the cannon pinion should need tightening, it is done in the same manner as is shown in Figure 2.

The Staking Tool and How to Use It will continue next month.

TIMES

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THE ROCK QUARRY

Fred S. Burckhardt



Everything You Wanted To Know About Rubies...

Quite often I am asked "What is the fastest way to learn about gemstones?" My only answer is, "There is no fast way. Not only does it take a great deal of time studying, but there is a lot of practical work involved."

Through the last decade or so, many changes have taken place in the watch industry. As watchmakers, we are all familiar with these changes. At the same time, many changes, in the form of new material, treatments and synthesis of gemstones have also taken place. To give you an idea of what's taken place with one gemstone, let's take a look at the ruby.

NATURAL RUBY

In recent years, it has been discovered that many of the natural rubies in the market place have been treated. One of the most common treatments is that of 'heat treatment.' This is done to improve both the color and appearance of the stones involved. It is almost impossible to detect a heat treated stone except for certain inclusions. Another process which uses heat is the "diffusion" treatment. In this treatment, a prefacted stone is 'painted' then heated. A very thin coating or skin is formed on the stone, enhancing the color.

The 'oiling' of rubies is another treatment that bears mentioning. This is similar to that used in oiling emeralds. A special oil is used, with dye added, and applied to an inferior stone, filling the crevice openings on the stone's surface. The result is a much better looking stone in both color and clarity. The only problem is, this is not a permanent treatment. Ultrasonic cleaning, boil-out pot, or steaming can clean away the oil and you'll end up with a very unhappy customer.

Natural rubies are still fairly easy to identify, but what about the synthetics that are becoming more prevalent in the market place?

If you'll remember from earlier articles, ruby synthesis has been slowly developed since the early 1800's. In the latter part of the last century, these synthetic rubies started to become very popular. There are several processes now used to produce synthetic rubies.

FLAME-FUSION

This is the most popular method used today. A powdered material drops through a very hot hydro-oxygen flame, melts, and then drips onto a ceramic rod. As these drops solidify, a boule is formed. When this boule gets to be about two or three hundred carats in size, the oven is turned off and the boule is cooled. This is the way watch jewels and the stones

used in class rings are made.

CRYSTAL PULL

This method is becoming popular. A small ruby 'seed' is lowered to the surface of a melted material. As it is withdrawn, the 'melt' crystallizes. It is said that these rods are up to four inches in diameter and about two feet long.

FLUX-MELT

In this process, corundum (ruby) is dissolved in a melt consisting of several compounds. When the melt is saturated with corundum, it is slowly cooled and the ruby crystals begin to form.

HYDROTHERMAL

Water is used instead of the 'melt' in this process. Even though these stones are the closest to nature's, it is a very expensive and dangerous process. It is doubtful if these stones will ever be marketed because of the cost.

FLOATING-ZONE

Seiko Watch Company developed this process in an effort to make better watch crystals. A rod consisting of all the components to produce the gem material is heated until the rod begins to melt. The heating continues down the rod until the rod is consumed, and a ruby crystal forms. (Please remember, these are very simple explanations of the various ways in which synthetic material is made.)

At one time, these synthetic stones were easily separated from the natural material by a few simple tests. As the various methods are becoming more fully developed, the separation process is becoming more involved. The earlier flame-fusion stones could be detected by their curved striae and gas bubbles. Now that the process is becoming more perfected, the newer material is being produced and treated to do away with these indications so that other tests must be performed. At one time, only the natural material would show fingerprint inclusions. Now these are being introduced into some of the new synthetic material.

Of course, ruby isn't the only gemstone synthesized or treated. It is believed that most of the stones reaching the marketplace are treated in some way. How can you tell which have been treated? In many, if not most cases, you can't.

TUES

MAXELL OFFERS FREE BATTERIES AT AWI TECHNICAL SEMINARS

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CHIME & STRIKE

(Continued from page 8)

Another important thing to check is the strike detent (3). It must securely catch and hold the hammer lever extension (4) to suppress the last strike at each half hour. If it does not, look for a bent hammer lever extension or a strike-arresting lever which does not ride up on its cam before the hour.

Finish the repair job with the usual testing. Listen carefully to the sounds of the two hammers. They should be equalized so they don't sound like two hammers, but one striking pair of notes. The strike must operate through eight days. Try to catch any irregularity in striking, especially an even strike at the half hour. This indicates a problem with the mechanism pictured in Figure 6.

TIMES

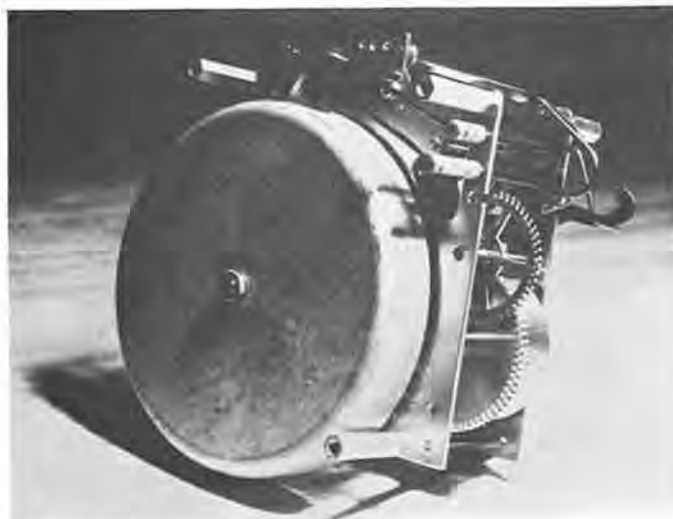


Figure 8. Rear quarter view.

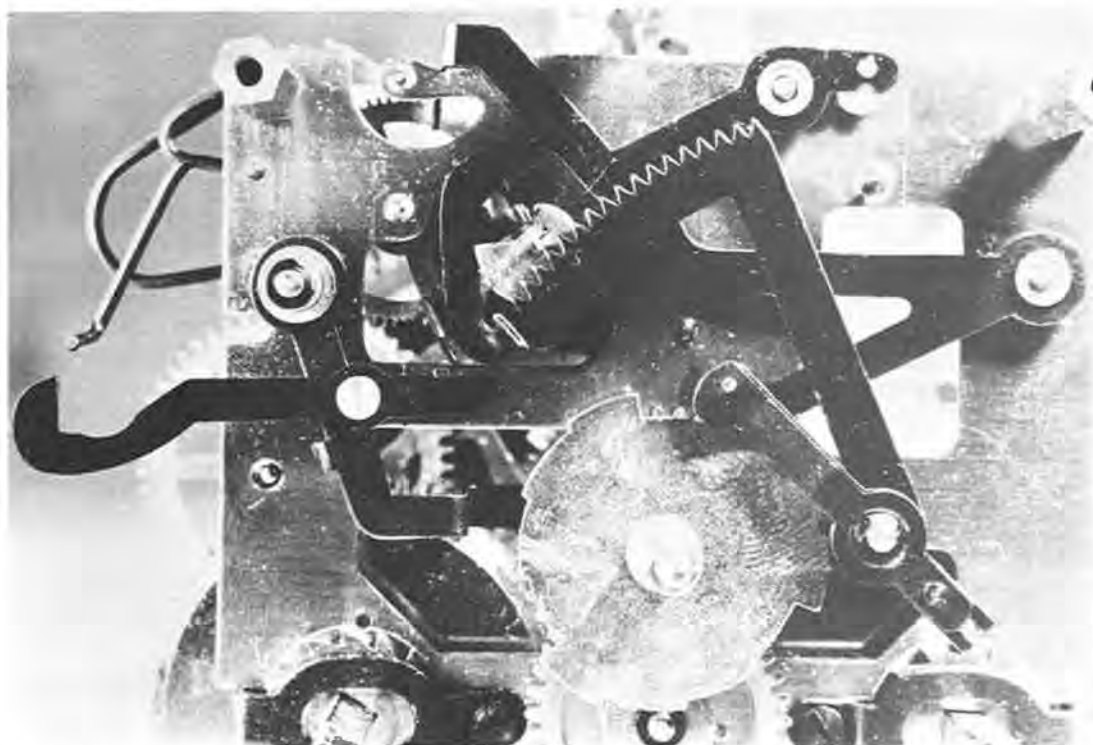


Figure 9. Closeup of front movement parts.

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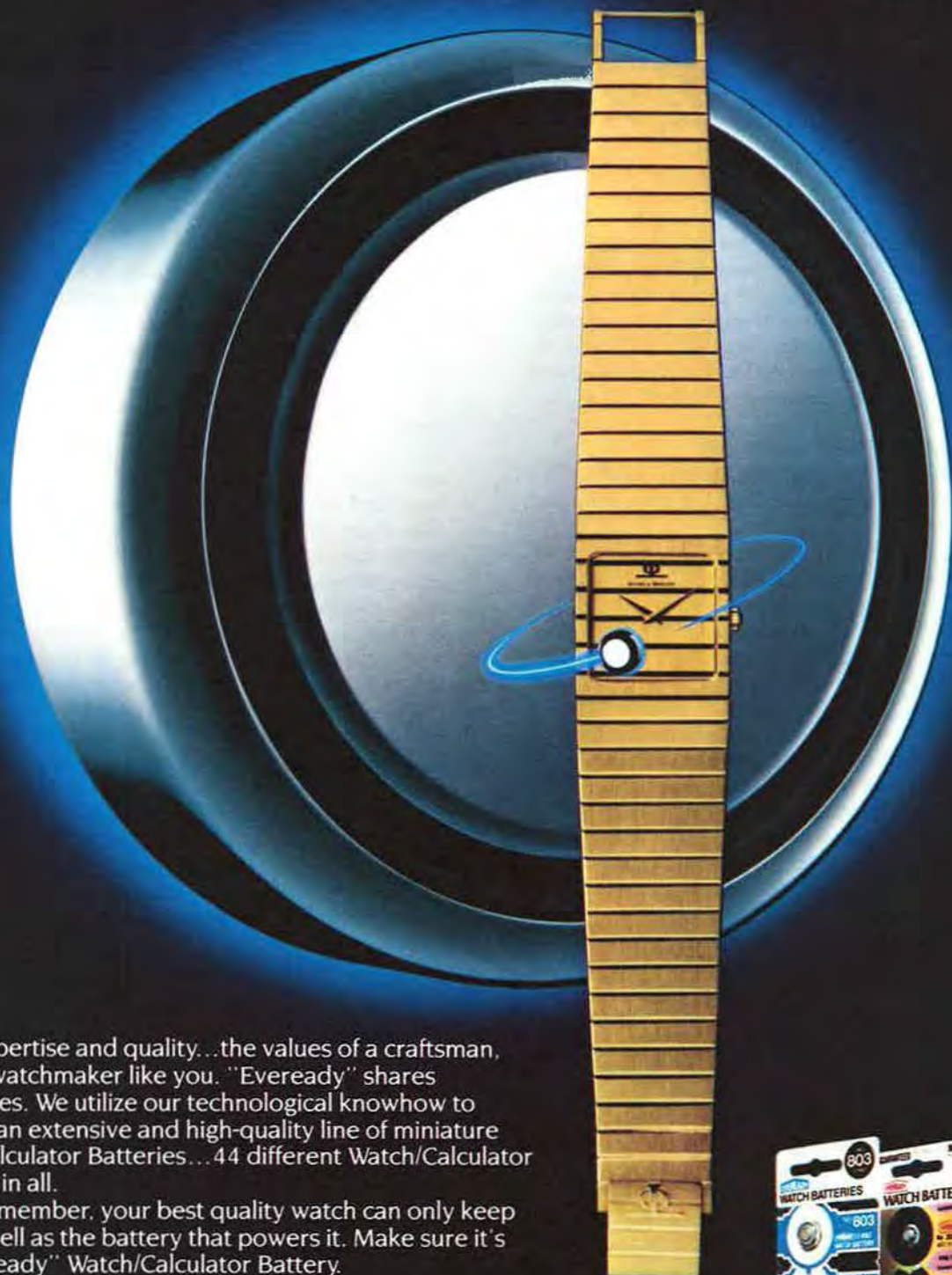
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THE PICKLE BARREL

Marshall F. Richmond, CMW



Solder Repairs & Ring Sizing (PART III)

There is no way that everything about ring sizing can be said. So many different situations can develop in sizing the many styles, shapes and materials encountered, so there is no way I can completely cover this subject. If you learn the basics well and absorb much of what has been described in these articles, most of the situations that do arise can be taken care of.

ENLARGING RINGS WITHOUT CUTTING

There is a way of enlarging rings without cutting. This is done by stretching and using solder of the same color and karat as the ring.

Solder can be applied to the bottom of the shank of stone set rings or anywhere on plain bands. It can be pulled either direction by moving the heat while the solder is in a fluid state. This will build up the size of the ring for a place one quarter to one half inch. The ring can then be placed on the ring mandrel and tapped with the steel chasers hammer to about the original thickness. This will enlarge the ring about a quarter size. Remove the ring from the mandrel and lay the portion of the shank on a steel bench block or the large end of the mandrel. Tap until the width is the same as the original which will again thicken the other dimension of the place on the shank where the solder was applied. Place the ring again on the mandrel and tap it again until the thickness of the shank is returned to its original thickness. The ring should now be about one half size larger than when you started. If the ring is a half-round shank, do the tapping at an angle—it will save some filing. Turning the ring on the mandrel and tapping toward the larger part of the taper also stretches the ring faster. The ring can be sized quickly and easily to a size larger but enough solder should be applied to insure that the shank in this place will be as wide and thick as it was originally when the shape filing is completed.

There are a few things that should be considered in sizing rings with this method. Solder may not be as hard as the original ring shank. The heating to flow the solder also anneals this portion of the ring shank which will allow it to stretch without breaking, but does not draw the hardness out of the rest of the ring. The tapping will re-temper the portion of the ring that was annealed. There is no way to determine if this type of enlargement will wear as well as if a piece had been put in. However, when putting in a piece, solder and heat are also involved so it will probably remain soft because no tapping with a steel hammer is used. It has always been my feeling that not cutting the ring will keep it stronger and it will wear well, if not better. Costwise, it is less expensive because solder costs less than karat gold sizing stock. Sizing a ring up to one size larger can be done in about one half the time it takes to cut the ring and fit a piece.

RING STRETCHERS

In the August 1984 issue of *Horological Times*, reference was made to using the ring stretcher for wedding bands that have no stones (pp. 22 and 23). They can be stretched a small amount with the ring mandrel and a rawhide mallet. The ring stretchers that are available to everyone today were just becoming available shortly after I started to do jewelry repair. The method that was taught then was to put the band on the tapered ring mandrel and with the rawhide mallet start pounding on the band toward the large part of the taper. Sometimes when the bands were hard and difficult to stretch, they could be annealed by heating a cherry red and quenching in water or laying on the asbestos pad until cool. The rawhide mallet will not damage even an engraved wedding band since the rawhide is much softer than the gold. Turning the ring end for end after stretching about one-eighth size will work faster because of the taper of the mandrel. When the ring is turned after stretching one-eighth size, the other side will not show an increase in size. After turning and pounding several times as much as a full size can be accomplished—and after any type of ring sizing, the ring should be completely polished with tripoli and rouge, cleaned with cleaning solution (either by hand and brush, or in the ultrasonic tank), then rinsed and dried. Regardless of how rings are sized, the shape of the bottom of the shank should be consistent with the rest of the ring for the job to be professional.

The quickest way to size rings larger is with the use of prepared ring sizing stock. It is available from the material distributor in square, half round and rectangular shapes. They are in almost any length from one inch and practically any karat or color. Over the years I have found that the ring sizing stock was much more expensive than buying plain wedding bands and cutting pieces from them to fit in rings to be made larger.

BUYING OLD GOLD: IT'S A GOOD IDEA

With today's gold price what it is, carrying a large stock of ring sizing and findings can really be expensive. One of the most inexpensive ways to get gold sizing stock is to buy old gold. All kinds of gold is brought in to exchange for cash. Salvage material can be purchased from 50 to 70 percent of the value of the actual gold content. Old finger rings will accumulate in all karats and colors of gold along with old wedding bands, some of which will be two colors of gold and are excellent for sizing two-color wedding bands when it is necessary to add a piece. Old engagement rings will usually have a useable piece about halfway from the bottom of the shank to the head. Although tapered, a piece can be cut from this to add two or three sizes to an engagement ring that needs enlarging.

Sometimes salvage engagement rings will have a shank that shows little wear and has never been cut, so even a whole shank can be used for replacement. Men's heavy signet, stone, or emblem rings usually have heavy shanks that will furnish heavy pieces for sizing heavy gent's rings. Over the years, I never made a practice of buying old gold as enough would accumulate for my use in old mountings from the remounts or trade-in rings I received. I would always figure the gold content and allow 70 percent of the current gold price to be applied to the cost of the work to be done. After getting all the useable gold from the salvage rings, I sent the residue to a refiner who would return it to me in a 1½mm-thick plate in 14K yellow and white and/or a .8mm white and yellow 14K gold wire. The time consumed in doing this is well paid for in the savings over buying manufactured gold stock.

EMERGENCIES FOR RING REMOVAL

There is another facet that is expected of us in this business of ring sizing, and that is removing rings from fingers when the customer can no longer get it off his finger. This sometimes becomes an emergency situation, and more than once I have been called on to make house calls in such emergencies. I was even called in to nursing homes to remove rings from badly swollen fingers. I recall one particular night, very late, a call came to me at home from an elderly lady whose finger had swollen so badly that she couldn't withstand the pain through another night. I went to her apartment and cut the ring off her finger, which gave her immediate relief. I never made a charge for this service, but I was well paid by the ring repair that came after the swelling was gone and the finger size stabilized.

There are several ways to remove rings from fingers. The last resort and safest way to do this is with a ring cutter made especially for this purpose. It is a small circle saw with a handle, a key to turn the blade, and a guard that clips under the ring and acts as a shield for the finger when the ring is cut through. It is simple to use: the guard is slipped between the ring and the finger with one hand holding the handle, and the fingers on the other hand rotate the blade by turning the key in a clockwise direction. A small or medium shank can be cut with a few turns of the blade while massive heavy rings require many turns. If it is possible on stone, signet, or emblem rings, turn the stone or top of the ring a half turn on the finger, leaving the stone, signet or emblem on the palm side of the finger. Have the customer make a relaxed fist—this gives more room to operate the cutter. After the ring is cut with two pairs of chain nose pliers, the shank can be spread and the ring easily removed.

Care must be taken in removing the ring as the edges are sharp and there is danger of cutting the finger. When I mentioned this to be the last resort, I have always felt that if a ring can be removed without cutting, it is much better to do so. If it is a band that can be stretched if removed without cutting, it can usually be stretched out large enough to fit the finger after all swelling has left with the size of the finger stabilized. This removal can often be done even though the customer has tried all the ways they know of, including using soap or vaseline. Since the person wearing the ring has only one hand to work with, the more they pull the tighter the ring gets on the knuckle as the skin bunches up in front of the ring. With two hands to work with, we can pull the ring toward the knuckle with one hand and work the loose skin back under the ring with the other. When the ring is worked to the center of the knuckle, bend the finger slightly and the

ring will usually go over the knuckle. In most cases the ring is free. This usually will not work if a finger is swollen from injury. However, when people gain weight, their fingers also get larger and this method works well if the ring needs only to be made a size larger or less. Before starting this removal, always advise the customer that if it causes any pain you will abandon the method and cut the ring off with a ring cutter.

Another method that is quick is to use heavy duty side cutting pliers and get the tip of one jaw between the ring and the finger and just snip it in two. This works well but is limited to thin to medium weight shanks. In cutting any stone set, signet, or emblem ring, the cut should be at the bottom of the shank directly across from the stone, signet or emblem. Then when it is to be sized, the cut is in the correct place to do a quick and easy repair.

SHORT-CUTS FOR EFFICIENCY

In working in a retail jewelry store, being able to size rings within an hour after the sale can often be the difference between making a large ticket sale and losing it, but for normal ring sizing I always felt it best to give one week service. This enabled me to set aside one day a week to do ring sizing and jewelry repair and use a system where all the pre-cleaning, cutting, and all the steps could be done in a time-saving way. To pre-clean twelve rings takes less than half the time than it does to clean them one at a time. The same applies to sawing, soldering, filing, polishing, and final cleaning. In doing multiple repairs, easily one-third more work can be produced in the same amount of time with the same amount of effort. Doing one piece at a time requires so much motion. To pick up the saw for sawing one piece is not wasted motion because it is necessary—but in doing several pieces at a time, the saw is picked up once saving this motion for every piece being repaired. The same applies to all steps such as cutting one piece of solder or cutting several pieces and only picking up the solder and shears one time, as well as lighting the torch once and making all the solder joints at one time compared to the time involved in doing it for each piece. We all know that time is money, and to produce one-third more work in a day means one-third more revenue. So as soon as one becomes proficient in doing jewelry repair jobs, it is wise to try and organize to do it on a production basis.

To be successful in making and repairing jewelry, your business will have to be built on customer relations. There are several things to bear in mind. What the customer wants is what they should get, if it is practical and feasible. Since you are the person that does the work, you should know your capabilities, the practical construction of jewelry, and how to repair it in a practical manner, or custom-make it. If the customer's wants do not fall in these categories, it may be impossible to please them. It is well to explain how the job will look, wear, and how much abuse it will stand. If you can have a complete meeting of the minds with the customer before accepting a job, including costs, there should never be an embarrassment of dissatisfaction when the job is delivered or a later return to haunt you. Although money is important and necessary, I derive more pleasure in receiving a complimentary note or phone call after completing a job than the money received.

Next month we will discuss Findings. This will include the construction and use of spring rings and jump rings.



Honest Quartz Repairs

A few days ago, my mother-in-law returned from vacation and her watch had stopped. Since she was over 1,000 miles from home when her quartz watch quit, she stopped at a jewelry store to have her battery replaced.

Unfortunately, the clerk who checked the cell said it was good and therefore, the watch needed a good cleaning and oiling. My mother-in-law decided not to leave her watch there, and returned home to give her favorite son-in-law—ME—a chance to repair her watch. Guess what was wrong! You're right, it simply needed a cell.

My mother-in-law was delighted that her brilliant son-in-law could repair her watch so fast. She was also wondering why anyone would be so dishonest as to tell her that a cleaning was necessary when all that was needed was a new power cell.

This discrepancy between that store and ours was easy to understand after reviewing the facts. The cell did show O.K. so it was understandable that the other store simply concluded that the only thing left was to clean the watch. They have probably found out by experience that this "guess" technique would cover most things (and without showing any sign of their lack of knowledge).

As I said, the cell showed O.K., that is, until we tested it under load, after which the voltage dropped and the cell needed replacing.

Now, let's review this case based on honesty. Could I have done anything better? Possibly so, after all, I did sell the watch and knew when the last cell was replaced. Maybe if I was not so busy and a little more thoughtful, I would have remembered that it was about time for a new cell. Since I knew the story on this watch, I could have suggested a new cell just before my mother-in-law's trip, and she would have had a more *timely* trip.

In my defense, it is hard to remember all of our customers watches and the date when we replaced the last cell. I suppose the first great watchmaker who keeps track of these cell replacement dates and customers names, and sends out a form card advising their customers in ADVANCE, may have the best "cell" in town. I mean the best "cell business" in town.

This may not be too far fetched, car dealers send out cards telling us when its time for another service job. It's a nice gesture, but it does take a little time and effort. We have not tried this yet, but it would be a good and profitable idea. Any takers?

Now, let's talk about the other store, you know, the one in which a cleaning job is mandated when only a cell is

needed? I'm quite sure the clerk in this store really believed the watch needed a cleaning. After all, the cell checked O.K.

It is unfortunate that most of the stores selling cells want to play "watchmaker". Can we blame them? It seems so easy to loosen a screw or two and move the cell strap and replace the cell. It seems so easy to find one the correct size or close enough, and if it doesn't seem to run maybe the cell is put in upside-down. So it's turned over and tried that direction. Maybe that will work. Also the best of these so called repairmen may even wipe off some of their fingerprints. And if one of the cell strap screws are lost, just find anything to fit, or leave it out. After all, one doesn't want to put too many scratches on the coil, and that lost screw is probably the one closest to that delicate coil.

I'm sure we have all witnessed all of the above plus many more interesting situations, all indicating that there are too many unqualified screwdrivers slipping into our watches.

Those of us who have been working on conventional "tick tocks" for years and years must be sure we too are qualified to repair quartz if we want our share of the "quartz pie". It is a big business and it's here to stay.

We already have many of the ingredients needed even if we have never repaired a quartz. We have our common sense and our ability to sit at the bench for a large number of hours (although fewer are needed for quartz). We have our tools and we already know how to fit crystals, hands, replace gaskets, and clean and oil watches. We need to learn the small difference in cleaning and oiling for quartz and learn to replace coils, oscillators, and how to use a meter and a slightly different type of timing machine, also a few new words like "trim" instead of "regulate". A few new reference books are nice, maybe a few new tools, and a few more things like a stock of parts.

It's not that hard to get into quartz repairs. One of the best helps I have found is to attend some of the watch companies' seminars and/or some of the AWI Seminars and Courses.

Of course the job we do the most on quartz is cell replacements. This is a big business as we all know. Hopefully everyone reading this is using the BNS (Battery Number System) developed by Ewell Hartman for AWI. This is our exclusive system, and gives us just the information we need to make those quick, easy, and accurate cell replacements.

Remember, *to be incompetent is being dishonest*, so let's get all of the learning we can to make those honest quartz repairs.



Battery News

By Ewell Hartman, CMW

BATTERY NUMBER SYSTEM

Refer to your 1984 AWI Battery Number System booklet to make the following additions:

SECTION II—Specifications and Cross-Reference

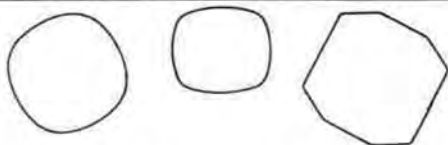
AWI,	S01:	Add to Varta, V350
AWI,	S05:	Add to Varta, V357
AWI,	S07:	Add to Varta, V386
AWI,	S09:	Add to Varta, V389
AWI,	S11:	Add to Varta, V391
AWI,	S13:	Add to Varta, V392
AWI,	S15:	Add to Varta, V393
AWI,	S17:	Add to Varta, V396
AWI,	S19:	Add to Varta, V399
AWI,	S04:	Add to Varta, V301
AWI,	S06:	Add to Varta, V303
AWI,	S08:	Add to Varta, V309
AWI,	S10:	Add to Varta, V344
AWI,	S12:	Add to Varta, V362
AWI,	S14:	Add to Varta, V364
AWI,	S18:	Add to Varta, V371
AWI,	S20:	Add to Varta, V381
AWI,	S22:	Add to Varta, V384
AWI,	S24:	Add to Varta, V390
AWI,	S26:	Add to Varta, V394
AWI,	S28:	Add to Varta, V395
AWI,	S30:	Add to Varta, V397
AWI,	S32:	Add to Varta, V377
AWI,	S34:	Add to Varta, V321
AWI,	S36:	Add to Varta, V341
AWI,	S38:	Add to Varta, V315
AWI,	S40:	Add to Varta, V373
AWI,	S42:	Add to Varta, V329
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 CLEVES, Charles—Bellevue, KY
 CLIFTON, Bob Jr.—Centralia, IL
 CONNELL, Hampton L.—Newfield, ME
 DEMARAY, Neal—Lancaster, PA
 DURR, Gary T.—Albany, NY
 EMADI, Enayat—Derbyshire, ENGLAND
 HALEK, Rudolph K., III—Fairview Park, OH
 HENNERSDORF, Ed—Fort Worth, TX
 HOTCHKISS, Terry A.—Bethel, CT
 JAGELS, Nick A.—Eugene, OR
 KETTELHAKE, Larry W.—Stockton, CA
 LITEL, Donna—Kingston, MA
 MEEKS, Charles H.—Downey, CA
 MURPHY, Stephen R.—Newton, MA
 NORIMOTO, Frank—Miami, FL
 PEER, Mark—St. Croix, VI
 PETRO, Larry—Marietta, GA
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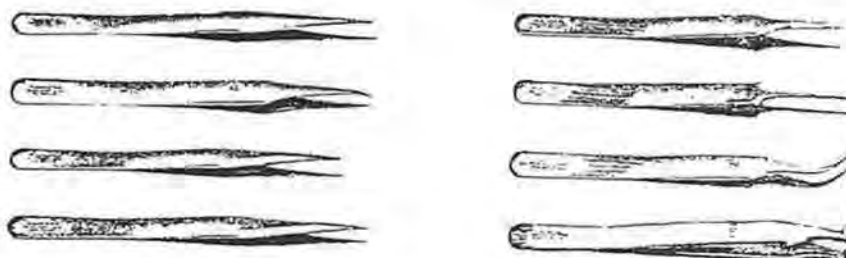
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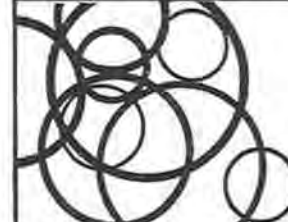


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Size :

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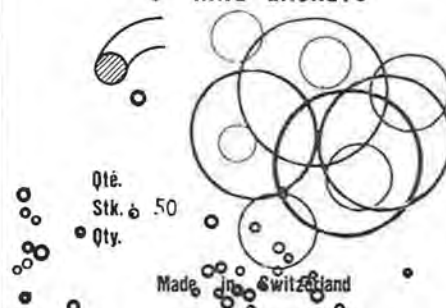
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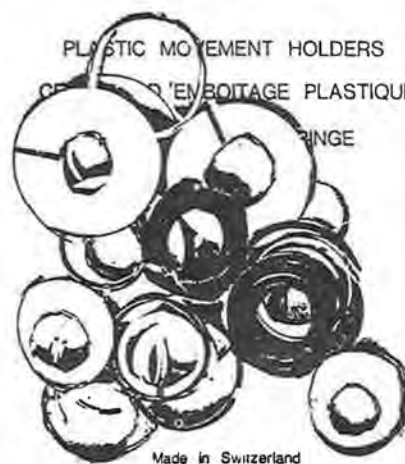
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HOW TO KEEP FROM LOSING YOUR BEARINGS

By Ralph Geiger, CMW



Recently in the course of repairing a watch, I found a small brass bushing which needed to be replaced. The bushing was very small—smaller than available friction jewels—and was located in a position that would make it impossible to use a slightly larger friction jewel. The best alternative I could think of was to make a bushing to the required dimensions.

At first thought, this seemed an easy task, but as I reviewed in my

mind the steps involved in making the part I found a distinct problem. I had seen others make bushings before. Basically, their process had been to chuck a piece of round stock in the lathe, drill the hole, turn to necessary outside diameter, and then part the bushing from the rod. It sounds simple. It *is* simple. The hard part is finding the bushing after it has been parted from the rod and has dropped between the ways of the lathe bed, bounced off the bench top,

and rolled across the floor. Since the bushing I was intending to make was .50 mm (diameter) by .20 mm thick, I decided I needed to find a better method.

A description of the process I used follows:

Secure a brass rod in the lathe and turn the end true. Cut a starting center for the drill in the end of the brass rod. Turn the rod to the exact outside diameter required and chamfer the corner



Figure 1. Brass rod turned to size, corner chamfered, and starting center cut.



Figure 2. Bushing cut to length; partial parting cut made to 90% of diameter of drill.



Figure 3. Positioning drill.



Figure 4. Hole drilled; bushing parted from rod.



Figure 5. Bushing removed from drill, ready for finishing.

er (to facilitate pressing the bushing in place); see Figure 1. Mark the length required of the bushing. Using a lozenge graver or a parting tool, make a *partial* parting cut. Stop cutting when the diameter is about 90% of the diameter of the drill which is to be used (see Figure 2). Place the drill squarely in the

starting center and drill the hole (see Figure 3). While drilling through the bushing, the drill will simultaneously part the bushing from the rod as it finishes drilling the hole (see Figure 4).

It may be noted that the steps involved in making a bushing with the "hide and seek" method are not sig-

nificantly different than with my method—the major difference is the order in which they proceed. Arranging the steps in such an order makes it virtually impossible for you to lose your bearings in this area of horology.

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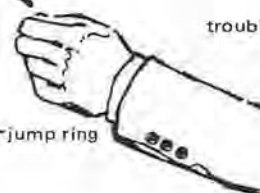
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By Q. T. Anomaly

Pot-pourri From the Bench

I realize this is a very unusual title for an article, but I wanted it to be descriptive of the type of articles that will be presented during the coming months. In case you are not familiar with the word *pot-pourri*, it comes from an old French word which means "rotten pot." I'm sure you will agree the name fits the article!

Speaking of rotten, I think nowadays customers are trying to out-rot each other. Remember when customers were easy to get along with? It used to be when a customer brought in a come-back, you could explain what went wrong and they would be satisfied with the explanation. Nowadays, the first thing they want done in order to be pacified is to string-up the watchmaker. I don't know about you, but I've had some close calls lately.

Last week a woman brought back a watch we had repaired two years ago. She demanded it be repaired for free because it never did run right since the last time. It seems she didn't have time to bring it back before now. To look at her, you wouldn't think she was the type to cause trouble. She mentioned that she was in her late seventies, had snow-white hair (with a tinge of blue), a widow, and weighed about 43 pounds. She would accept no rational explanation as to why there would be a charge. After several minutes of arguing, I started to lose my usual easy-going ways, and decided to punch her out. Little did I know that she had a black belt in karate. When I got up and started toward her she said, "*YOU TOUCH ME SUCKER AND I'LL TEAR YOUR HEART OUT!*"

Please understand, it wasn't that I was afraid of her. It would have been different if she had been alone, but she had two of her girlfriends with her, about the same age, and when one raised her purse in defiance and called me a name that raised a question about my ancestry, I must admit, I hesitated. I tried to talk them into taking them on one at a time, but they wouldn't even agree to that. I finally got rid of them when I agreed to arm wrestle the little one for the cost of the repair. My arm has been sore ever since, plus I had to give away a free job.

Another customer was almost as bad. Just because the ring we had sized was a little snug and turning his finger blue, he thought he had a right to complain about it. I told him it was better than taking a chance on it being too large

and losing it. Besides, I went on to explain, as long as his finger didn't start to turn black, there was nothing to worry about. Even then, the medical profession can do wonders with a gangrenous digit.

I just don't understand customers anymore. They all expect good service and quality workmanship. It's getting to the point where, if they have to bring their watch back more than a few times, they start to complain. If something isn't done soon, it will get to where they won't expect to have to bring it back at all. How unreasonable can a person get?

It isn't only the repair customers. Even those making a purchase can get on your nerves. I sold a watch band the other day to a woman who was rather large. Her wrist was about the size of a full-grown bull moose's neck. It took about 20 extra links and a half hour of time to adjust it to fit. After all was said and done, I figured the total loss came to a little under ten dollars.

If you've never had to explain to a customer that her Great Grandmother's jewelry was worthless, you've missed out on a great experience. I've never been able to figure out why everybody thinks family pieces are priceless. A customer brought in a box full of—shall we say—*un-worthless* jewelry, and was very demanding that she be told how much each piece was worth. When she was told that there would be a charge, she decided it wasn't worth the expense. What was considered to be precious became "junk" in only a few seconds when money was involved.

Another favorite customer is the one who won't spend the money to have their jewelry appraised, but when they suffer a loss of some kind they'll bring in a list of pieces and expect someone to spend a great deal of time (gratis, of course) helping them to get current prices for the insurance adjuster. These people are just the opposite. Their jewelry isn't worth appraising until it's lost. Then it becomes the most expensive in the world. What was a micron-plated watch suddenly becomes a 14K watch. What was a low quality diamond becomes a "perfect" stone. You can't help but admire people like that.

All in all, customers *are* nice. There are times when some may be a little irritating. On the other hand, maybe it's just me. I know I must be different. I've never even lost my traveler's checks!!

WIB

QUESTIONS AND ANSWERS (Continued from page 10)

to establish running records, especially for the short events, became possible.

Harry A. King, Ph.D.
San Diego State University

A The history of stopwatches and timing devices other than ordinary watches and clocks is said to start with Jean-Moyse Pouzait, employing a most eye-appealing but very large balance and escapement, and who in 1776 invented a watch with independent dead seconds using the escapement and large balance described here. This watch had a center seconds. It could be stopped at will (which also did not stop the watch). These were made up to about 1800. Watches with independent trains of wheels which allowed seconds hands to jump quarter seconds around a small dial were made from about 1840 to 1885.

The real birth of the chronograph with fly back to zero seconds hand was the invention of Adolphe Nicole in 1862 and was exhibited at the London Exhibition of that year. The real inventor is said to be Henri-Fereol Piguet who worked for Nicole in the London shop and informed his employer of his invention in 1861.

Books which deal a little with this history are very few. Two which will give you much information are *Complicated Watches* by LeCoultre, Pub. Chas. Rohr, Ltd., Bienne Switzerland, 1952; and a very fine work, *The Swiss Watch Technique and History* by Eugene Jaquet and Alfred Chapuis, published by Urs Graf Verlag, 1953, Switzerland and published under the auspices of the Swiss Society of Chronometry and the Swiss Watch Chamber. Urs Verlag is in Olten, Switzerland, although the book may be had in many bookshops specializing in horological literature. I have examined the horological shelf at the San Diego Public Library. It has some but not enough. Horological book-sellers who might help are: The Adams Brown Co., P.O. Box 357, Cranbury, NJ 08512, and American Reprints, 111 West Dent, Ironton, MO 63650.

Actually, real mechanical timing of events started with the invention by Fereol with the heart cam and "hammer" allowing the hands to return to zero.

Henry B. Fried



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	512	5 1/2" Height 2.5mm	\$11.95	\$12.95		242 252 <i>Speciline</i>	10 1/4" 11 1/4"		* *
	910 <i>Gemini</i>	6 3/4" x 8" Height 2.5mm	\$9.95	\$10.95		241 251	10 1/2" 11 1/2" ALL 2.5mm	\$12.95 \$12.95	\$14.95 \$14.95
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RONDA 3673	6 3/4" x 8"	2.30mm	3 HANDS	14.95	13.00
RONDA 3775	10 1/2"	2.90mm	3 HANDS - DATE	15.95	14.00
RONDA 3777	10 1/2"	3.35mm	3 HANDS - DAY/DATE	16.95	14.00
RONDA 3875	8 3/4"	2.90mm	3 HANDS - DATE	15.95	14.00
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CITIZEN 12025	6 3/4" x 8"	2.80mm	2 HANDS	10.95	9.00
CITIZEN 12035	6 3/4" x 8"	2.80mm	3 HANDS	11.95	10.00
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CITIZEN 12105	10 1/2"	4.15mm	3 HANDS - DAY/DATE	12.95	11.00
CITIZEN 12115	10 1/2"	4.15mm	3 HANDS - DATE	12.95	11.00
CITIZEN 33130	6 3/4" x 8"	2.53mm	3 HANDS	13.95	12.00
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Why Open the Banks?

The question "why open the banks?" is one which confronts many a watchmaker as he, in the process of conditioning a watch, discovers that someone has opened the banking pins. It is quite obvious and perfectly natural to assume that by bending the banking pins, the tooth could make its escape and allow the watch to run. There is an all-too-common practice of bending the banking pins in an effort to make a correction in the escapement, for it is not only an immediate problem but one with an abstract condition which is far-reaching in its effect.

To the less skillful and inexperienced watchmaker this practice would seem to correct the condition, but to the experienced, the act of bending the banking pins or "opening the banks" could create three bad faults.

Types of Bankings

There are at the present time only three types of banks. The first is the common banking pins—two pins projected up from the plate which limit the angular motion of the lever. The second is the "banking screw." This is simply a brass screw into which a pin has been inserted or milled out of the screw off center (Figure 4).

By placing the pin off center the banking screw can be turned, thus giving the banking pin a greater range in position due to this eccentric action. The third type is referred to as the "solid banks" which are part of the lower plate. This is an old type which lost favor for a time but recently has appeared in some of the late model watches.

All three types are good. The first is easily adjusted. The second is very convenient in its adjustment, but one must watch that the screw part is tight at all times, and the third is in a class by itself (see Figure 6).

The Problem

An escapement is perhaps not the easiest part of a watch to understand due to the abstract nature of its construction and operation. Nevertheless, if taken slowly, the various factors of its operation will be understood much more easily. In this article my object is to show that opening the banks either by bending the pins, by turning the banking screw, or by removing metal in the solid type of bank to increase the banking, are fundamentally unsound in principle as well as in practice.

As mentioned above, the opening of the banks causes three errors or faults. The first is that it makes an escape wheel so that when the act of unlocking takes place (which is the function of the fork and roller action), the strain is placed on the balance and hairspring. Naturally, the motion is going to suffer and as watchmakers all know anything which affects the motion affects the rating or timing of the watch.

In summing up the situation, it can be seen that this is one of the intricate problems whose solution lies in a more thorough understanding of the escapement. The proper method of correcting this condition is to adjust the pallet stones instead of opening the banking pins. It is necessary to see first that the angular motion is correct by testing for "corner freedom." Now proceed to adjust the pallet stones to allow an initial or drop lock equal to one-sixth the width of the pallet on both stones. If these two steps are followed carefully, they will result in correcting the condition shown in Figure 5 without resorting to "opening the banks."

Sloppy and inert guard action by lifting the lever off the banks and pressing the guard pin against the safety roller, one can see at a glance that the movement of the lever is greater than it need be. The amount of freedom varies with the size of the watch.

The second fault is that if one banking pin is opened



Figure 1. Testing the Guard Action.



Figure 2. The Guard Pin passing through the crescent.



Figure 3. Testing the "Corner Freedom."



Figure 4. Banking screw.

it makes the angular motion greater on that particular side in addition to the sloppiness, and if both banking pins are affected, the conditions are that much worse. To show the condition clearly, test what is known as "the corner freedom" (the freedom which exists between the corner of the fork slot and the center of the roller jewel). Move the roller jewel and the corner of the fork slot into the position as shown in the sketch (Figure 3). The distance between these two points varies with the size of the watch but in practice it requires only enough freedom to allow the roller jewel to move safely and freely in and out of the fork slot and along the horns of the fork.

In addition, too much freedom makes the action sloppy and can be the cause of roller jewel breakage. The third error and by far the greatest is that by opening the banks the total lock is increased unnecessarily—or, in other words, the pallet slopes deeper into the escape wheel so that when the act of unlocking takes place (which is the function of the fork and roller action) the strain is placed on the balance and hairspring. Naturally, the motion is going to suffer; as all watchmakers know, anything which affects the motion affects the rating or timing of the watch.

In summing up the situation, it can be seen that this is one of the intricate problems whose solution lies in a more thorough understanding of the escapement. The proper method of correcting this condition is to adjust the pallet stones instead of opening the banking pins. It is necessary to see first that the angular motion is correct by testing for "corner freedom." Now proceed to adjust the pallet stones to allow an initial or drop lock equal to one-sixth the width of the pallet on both stones. If these two steps are followed carefully, they will result in correcting the condition shown in Figure 5, without resorting to "opening the banks."



Figure 5. The error "no let off."



Figure 6. Solid Bankings.

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A Burning Question

Dear Mr. Stevens:

Firstly, may I congratulate you on your tenure as the energy of the AWI. I learned of your long-time efforts by reading past issues of the Horological Times.

Secondly, after my research, I have only one burning question—and that's unusual. As a newspaperman for 20 years, I've suffered through many burning questions. I'd desperately like to know why the AWI is apparently populated with old fogies who are afraid of the quartz analog watches which have taken over from the mechanicals? Have we no new members? Is the fear of learning quartz watch technology the reason for the huge decline in the numbers of watchmakers? Could it be AWI's responsibility?

Our magazine recently ran a series of articles explaining how to remove stems from quartz watches. The series showed the removal of stems of only 20 quartz watches, leaving out some of the most difficult. I handle more than 20 different kinds every three days! What about the remainder of the watches, some extremely difficult if you've never encountered them before?

Maybe we should run a series showing them all. Is there a profit angle? Is there a market for such information, should I compile it? Is there a market should anybody compile it?

It might be that we are attempting to teach at the wrong level. Maybe we should direct our efforts at getting more youngsters into quartz watchmaking.

Sincerely,

Jim

Thanks for your recent letter. In order to attempt to answer several of your questions, a general explanation of how *Horological Times* is put together is in order.

With a dues structure of \$35 per year (soon to be \$40), *Horological Times* certainly doesn't have the resources required to hire professional writers to do the many hours of research required to write original technical articles. Many writers donate their time because they care enough to want to share their knowledge; others receive a token payment which may cover

their cost for drawings and photos. The stem series was a donated one and its authors deservedly received credit for it. While it may not have covered all calibres, I'm sure it was of benefit to our readers.

While the publication is an important means of communication, we elected to use our limited resources in a different area. We chose the bench course approach to bring the mechanical watchmaker into the quartz watch era. By using bench courses, we can utilize the talent of experienced watchmakers who are much too busy to write

for *Horological Times*. Bench course instructors provide actual working experiences on the various calibres, and they teach concepts which can be applied to servicing all calibres of quartz watches.

If you are a long-time reader of this magazine, you know that the H.T. has not been totally void of quartz watch articles. The series by Lou Zanoni and Tom Hyltin were certainly as up-to-date as the state of the art would allow at the time. Later, the series by Gerald Jaeger which ran from February to August (1982) certainly was one that should have helped anyone who really

wanted to get involved with quartz watch repair. Then there was the June 1983 issue of H.T. completely devoted to quartz watch repair. Joe Crooks and Henry Fried frequently have timely bits of information on quartz watch repair. While he couldn't afford to give us the manuscript for his book *Repairing Quartz Watches*, Henry Fried did give us the opportunity to publish it and peg the price so that it is well within the reach of anyone seriously wanting to learn quartz watch repair. This book alone can give anyone with the initiative to study and experiment the knowledge they need to repair quartz watches. Our home study course also prepares individuals to embark on a career in quartz watch repair.

Now with that background, let me attempt to answer some of your questions that remain unanswered.

We would like to run a series on all calibres of quartz watches currently encountered at the bench, dealing with stem removal. We would certainly welcome such an article from you, or anyone capable of writing it.

Dealing with AWI people as closely as I do, I don't think we are populated with old fogies who are afraid of the quartz analog watch (well, maybe a few). Just because many of our people are too busy servicing quartz watches to write articles for the H.T. doesn't mean they are not doing it. You have got to understand that *Horological Times* is not the total AWI program, just a portion of it.

I guess one of the things that concerns us most is the difficulty our schools are having in attracting students to their programs. Few young people seem to have the desire to establish their own business and be responsible for their own destinies—especially when entering our trade, which requires at least two years of training and a considerable investment in equipment. It seems that young people prefer to enter jobs with equal or higher starting salaries which require little or no special training or investment, and which offer many fringe benefits. The more than 40,000 career brochures we distribute each year to vocational counselors have done little to reverse this thinking.

Our schools, for the most part, are doing a good job of training their students to enter the field of quartz watch repair. Each year AWI offers in-service training to the school instruc-

tors. The instructors who attend regularly have had instruction by the experts, and have been able to build a meaningful program in their schools. It has been many years since we have seen an instructor from your area's school, and attempts to bring workshops into the area have met with very poor attendance. This may contribute to your perception that AWI people are not repairing quartz

analog watches. Maybe they are not being trained to do so in your area.

Our best estimate is that there are about 11,000 to 12,000 watch and clockmakers who presently earn their living by working full time in the trade.

These may not be the answers you were seeking, Jim, but this is how we see it from here.

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5½ x 6¾	Cell Included	Y 590	Replaces 5420A	10 ⁹⁵	11 ⁹⁵	12 ⁹⁵
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Affiliate Chapter Column

Walter Riegler, CMW



Let's Communicate!

The recommendation to publish each Affiliate Chapter's name and mailing address at least once a year was passed at the 1983 AWI Board Meeting.

The original intent was for our chapters to be able to communicate with

each other throughout the year. I recommend that each chapter send out at least one newsletter of their own at least once a year. This is not a difficult assignment for your 1984 delegate or whomever you elect for the task. There also may be AWI members in your geo-

graphic area who are not aware of a chapter in their area.

Let's communicate with a concerted effort this year to contact each chapter at least one time. Here they are!

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IOWA

The Iowa Jewelers and Watchmakers Association held their Convention and Trade Show early in September at the Des Moines Marriott Hotel. Included in the convention was a presentation given by Art Stiever of DeBeers on "Diamond Desires." The Iowa Jewelers and Watchmakers Annual Business meeting followed Mr. Stiever's presentation.

NEBRASKA/SOUTH DAKOTA

The Nebraska and South Dakota Jewelers Association recently held their 79th Annual Convention at the Holiday Inn of Kearney, Nebraska.

The convention got underway with a Board of Directors Meeting, followed by a cocktail party and open evening on the town. The next day included a "Diamond in the Rough" Golf Tournament, "Flawless" Tennis Tournament, and a presentation on "Beauty for All Seasons" given by Rosie Killham.

The Convention Speaker was Mr. Robert T. Justis, Professor in the management Department at the College of Business Administration, University of Nebraska. Mr. Justis is presently teaching and researching areas concerned with franchising, small businesses, use of financial records, marketing analysis with small businesses, business policy and organizational behavior-leadership. His talk centered on "Marketing the Small Business in the 80's."

Later in the day Mike Allbritton of Park-Allbritton gave a presentation on "How to Sell Colored Stones." The President's Banquet was held that evening, with President Albert Kendle III as the Master of Ceremony.

The last day of the convention included a talk given by Marvin Serbin, "A Practical Guide to Profitable Communications With People," followed later by "Gem Market Update" given by Mike Allbritton.

NEW JERSEY

The Watchmakers' Association of New Jersey, Inc. recently held a meeting at the Holiday Inn, on Garden State Parkway.

Mr. Joe Noble, Service Manager for the Pulsar Watch Company, spoke on the service policies of Pulsar. The lecture included a slide show, discussions on parts distribution, and an in-depth question and answer period.

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ARCHIE B. PERKINS -- AWI Instructor

Teaching horology has been Archie Perkins' career. He's still at it in semi-retirement! Perkins officially retired recently after serving 32 years as Instructor of Watch and Clock-making for the Denver, Colorado Public Schools at the city's Emily Griffith Opportunity School. However, he still devotes his time to horology by making wheels and pinions for antique clocks and watches in his home shop, writing a monthly column for HOROLOGICAL TIMES magazine, and teaching a new AWI seminar on "Using the Watchmaker's Lathe."

A native of Frances, Kentucky, Perkins served his apprenticeship in Nashville, Tennessee. He later attended Elgin Watchmaker's College in Chicago, Illinois, and served as an instructor at the school. In 1946 he moved to Denver as an instructor at the American Academy of Horology. He worked as a watchmaker in the area before joining the Denver School System as an instructor. His formal education includes study at the University of Colorado, Colorado State University, and the University of Northern Colorado.

Perkins is a charter member of the AWI. He is also a Fellow of the National Association of Watch and Clock Collectors, and is a charter member of AWI Chapter 102 of that organization. He is past vice-president and member of the Board of Directors of the Colorado Horological Society. They elected him as their delegate to the AWI Annual Meetings in 1982-83.

His contributions to horology have earned him many professional titles and honorary awards. He is a Certified Master Watchmaker (CMW) from AWI; he holds certificates from the Bulova Watch Company as both an Accutron and Quartz Watch Technician. The Vocational Teachers Federation (Local 203) awarded him the honor of Vocational Educator of the Year in 1980-81, and also recognized his 32 years of dedicated service as an instructor at the Emily Griffith School with a special plaque.

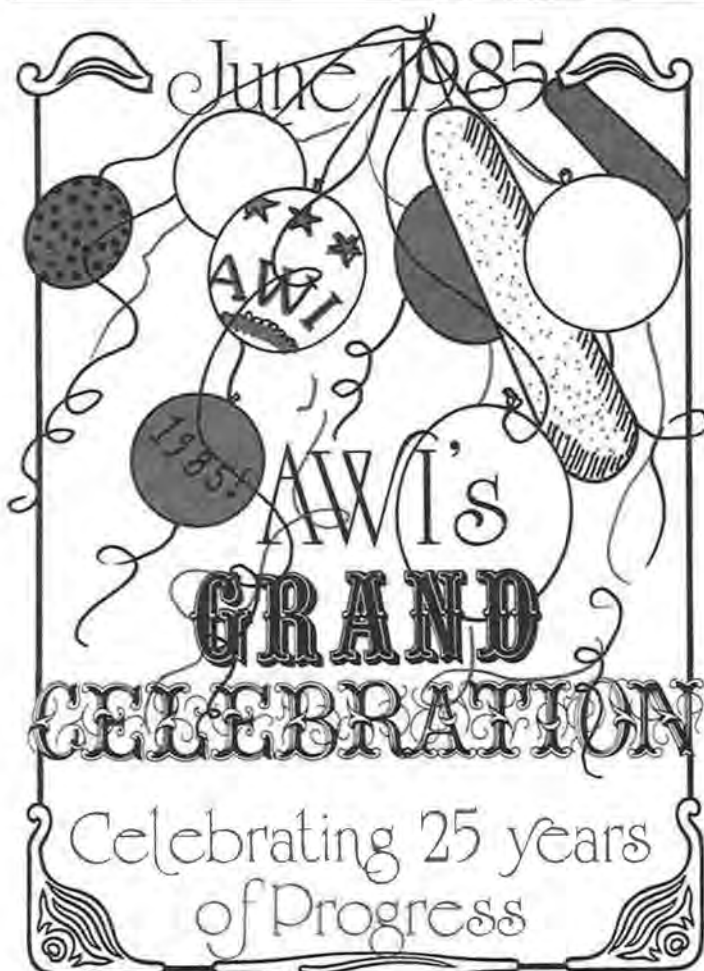


Perkins urges his students to learn the basics of repairing mechanical watches and clocks as well as the new electronic techniques. He states: "Although the horological trend is mainly toward electronic timepieces, there is also a strong trend toward the restoration of antique watches and clocks. Some of these antiques are valued at many thousands of dollars. These valuable timepieces require the restorer to be very skilled in the use of tools and equipment of the trade. Horologists who are skilled enough to restore these old and valuable timepieces can demand top dollars for their services."

"My advice to young people going into watch and clock restoration is to learn fully how to use the watchmaker's lathe. Learn to make balance staffs, winding stems, pallet arbors, screws, and learn to set jewels by the burnish-in method and make jewel settings, as well. Practice and become good at repivoting balance staffs, pinions and arbors. It would also be valuable to learn to make watch/clock gears because this type of training is needed in restoration work."

See page 38 for a complete listing of AWI seminars in the coming months.

TIME



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- ☐ # 2: "The Digital Watch Repair Manual" @ \$19.95 plus shipping
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OCTOBER

2	E	Norman, OK	SUSTACHEK
3	E	Norman, OK	SUSTACHEK
5	E	Ft. Worth, TX	SUSTACHEK
6	E	Ft. Worth, TX	SUSTACHEK
7	B	Hutchinson, KS	CARPENTER
13-14	J	Greensboro, NC	BISHOP
26	C	Tampa, FL	BROUGHTON
30	C	Charleston, SC	BROUGHTON

NOVEMBER

10-11	J	Milwaukee, WI	BISHOP
18	C	Chicago, IL	BROUGHTON
18	A	Seattle, WA	JAEGER

Send inquiries or reservations to:
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9-84 issue

I am interested in your bench course to be presented on _____
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Please send me more information.

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SCHOLASTICALLY SPEAKING

Alice Carpenter, CMW, CEWS



It Pays to be Thorough

I recently visited a material supply house and spoke with the lady who fills the watch material orders. We discussed the various problems that she encounters in her job—problems that could be eliminated and at the same time insure better, faster service.

Does this sound interesting to those of you who have had problems when ordering material? Well, this lady pointed out certain responsibilities of each person who sends in an order to a supply house.

First and foremost, the order must be readable. So . . . all of us can't write in beautiful script! We can print, and some of us can type. If we can do neither of the above, it would be to our mutual benefit to have someone else write the order for us. Or we can just phone the order in. Let's be honest. If no one can read the order, there is no way it can be filled.

Then there is certain specific information that is needed. I instruct my students to include the following in each order for Swiss watch material:

1. Quantity
2. Ebauche part number
3. Bestfit part number
4. Item wanted
5. The model/caliber of watch the part is ordered for
6. Any other pertinent information, such as: straight or conical pivots, height of pinion, etc.

This information is required for the plain, run-of-the-mill parts for Swiss watches.

It is helpful to have the Bulova, Citizen, and Seiko catalogs when ordering parts for these watches. The part needed can be looked up and ordered by its official part number. This will

allow the supplier to fill the order without having to stop and look up the proper number.

The format for ordering parts for Bulova, Citizen, and Seiko is basically the same as for ordering Swiss material, such as:

1. Quantity
2. Bulova, Citizen, or Seiko part number
3. Item wanted
4. The model/caliber of watch the part is ordered for
5. Any other pertinent information, such as: straight or conical pivots, height of arbor, color, and case number if ordering case parts.

Whether ordering Swiss, Bulova, Citizen, or Seiko parts, many times extra information is needed. For instance, sometimes there will be several lengths of arbors of the sweep second wheel, for the same model. This means you will need to include the height of the arbor.

Frequently the upper and lower jewel settings will be different and not interchangeable. This means that you must specify whether a jewel setting is the upper or lower one.

When ordering any train wheel that has conical pivots, this must be specified. There are models of watches that have escape wheels, for instance, available with either pivot conical, neither pivot conical, or both pivots conical.

When in doubt about what information to include, ask your supplier what information is needed.

The importance of all this is: *include all the information you have, whether you know if it is pertinent or not.* If you have too much information, your order will be filled promptly. If you have just enough information,

your order will be filled promptly. If you do not have enough information, then you will either (a) receive a request from the supplier for more information—resulting in several days delayed shipment, or (b) receive the part that the supplier guessed you wanted from the information they received—which may or may not be what you wanted.

If you do not receive what you wanted, you will be upset or even angry. After all, your customer is on your back. So what do you do now? Throw your weight around? Be nasty? Maybe, just maybe, that will show them who is boss. After all, the squeaky wheel gets the grease, right?

WRONG! After a while you become a problem. Sooner or later, you become the one who is pushed to the back of the line because it takes so much time to decipher what it is you want. Or maybe you will be given the suggestion to try another material supply house.

Now that's not what we want, is it? After all, we need to be on good terms with our material supplier, so why alienate them in this way?

What about that order that came in with the wrong parts and needs to be returned? The information needs to be just as complete as when you first ordered the part. Be sure to include the invoice number, the date of the invoice, the reason for returning, and instructions to either credit your account or exchange the part.

Why not fulfill our obligation to include as much information as we have at our disposal and have our material supply company as our ally rather than our adversary?

TIMES

Bench Tips

Joe Crooks



Toilet Articles to Retrofit Quartz Clock Movements!

This tip is from Mr. David Nicholson of Enid, Oklahoma.

Here is some information that might be useful when changing a movement in a clock to quartz. Sometimes a $\frac{3}{4}$ " hand-shaft is too long, and the right washers are hard to find. Here's something I've found to work good. It's the Closet Hinge Gasket, Part No. G201, flat white, measurements: $\frac{7}{16}$ " (inside diameter), $1\frac{1}{8}$ " (outside diameter), $\frac{1}{8}$ " thick; made by the Radiator Specialty Company of Charlotte, North Carolina. Made for the toilet, it can be found at any plumbing shop.

David, thanks for your quartz clock movement tip to shim up a movement for the proper amount on the dial side for the hands.

I have used everything from cardboard to hard foam plastic to get the correct distance on the dial side for the hand shaft. Want to know something funny? The owner of Radiator Specialty Company has been a close friend of mine

for the past 30 years, and I never knew he made toilet articles! I knew he manufactured liquid wrench (something like WD-40) to clean out carbon from engines, radiator stop leak, and a number of other auto products—but toilet articles caught me by surprise!

Your toilet washer is a lot like a water hose washer which is not as thick and has a little bit larger hole in the center. I got a tip on this for spacers a few years ago, but can't find who sent it to me. They usually come five to a pack, are very inexpensive, and can be bought at any hardware store. Better yet, most supply houses that sell quartz clock movements have rubber washers in a larger diameter and they really aren't that expensive.

TIMES

Send your tips to: Jingle Joe, AWI Central, 3700 Harrison Ave., Cincinnati, Ohio 45211.



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AWI's promotion department has prepared a series of professional advertisements designed to help you sell your products and services to your community. Simply call your local newspaper, magazine, or service publication and ask them to add your name, address, and telephone number in the area provided. These ads mean business for you! **NOTE: Ad layouts in the kits are approximately 50% larger than reduced versions used in this advertisement.**

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JA PRESSES FOR CONTINUATION OF FEDERAL CRIME INSURANCE PROGRAM

Jewelers of America, Inc. has contacted key Congressional sponsors of legislation urging them to continue the Federal Crime Insurance Program for one year.

"The Federal Crime Insurance Program," JA Chairman Mike Roman explained to the legislators, "provides policies to 444 retail jewelry stores with more than 60 percent of the policies covering jewelers who generate annual gross receipts of less than \$100,000. These companies, true 'mom and pop' operations, represent the smallest of small businesses and are located, for the most part, in poor urban areas plagued with high crime rates."

Roman explained that JA feels this "insurance of last resort" offers small businesses in high risk urban areas the necessary protection to remain in business. Private insurance carriers either refuse to provide coverage in these neighborhoods or offer it at prohibitively high premiums that effectively preclude these small companies from obtaining coverage. Businesses in urban areas that manage to obtain private insurance frequently have their policies cancelled after filing a couple of claims.

"Without passage of this measure," Roman continued, "many courageous and proud entrepreneurs who have built a modest business in the neighborhood of their upbringing will be left unprotected from criminal acts."

EARL R. WEAVER SELLS SWEST SHARES, AND OPENS NEW OFFICES

Earl R. Weaver, formerly President of Swest, Inc., Dallas, Texas since 1957, has sold his interest

in the firm to his former partner Mr. Fletcher W. Ward.

Mr. Weaver has opened offices in the United States for WW Co., Inc., Taipei, Taiwan, a firm he has co-owned for many years with Mr. Mickey Wu of Taipei. WW Co. is a manufacturer, exporter and importer of jewelers tools, supplies, and equipment.

The United States office, to be called WW Impex Co./USA, Inc. will act as liaison between U.S. customers and the Taiwan operation, and will handle the design of new products for the industry.

SEIKO TO LAUNCH ITS BIGGEST AD CAMPAIGN EVER

Seiko Time Corporation will launch the biggest spot TV and print consumer advertising campaign in its history, according to David Strousse, vice president/advertising and public relations, of Seiko Time Corporation.

This new Fall watch multimedia program is coordinated to significantly support Authorized Seiko Dealers during the important holiday gift-giving season. Mr. Strousse pointed out that the advertising program is the biggest watch promotion of all time. He expects both retail and department stores to experience strong sell-through the holiday season.

Scheduled from the beginning of October to Christmas, more than 1,000 Seiko commercials will be aired in all major markets on spot TV during prime time, news and sports programming, as well as on cable TV, reaching millions upon millions of viewers.

Three different watch commercials will be used—one on high-fashion Seiko ladies'

watches; a second highlighting Seiko's men's timepieces; and a third emphasizing the triumph in the art of watch design of Lassale Seiko.

To extend this ambitious program, Seiko has created its biggest Fall newspaper campaign ever. Scheduled in every major market will be five high-impact full page dealer listed ads from mid-October to mid-December, featuring "The Best of Seiko." To support Authorized Seiko Dealers at the local level, the same message will be used on posters and other Seiko point-of-sale material.

In addition, a dramatic Lassale Seiko newspaper campaign in major markets will utilize five full page ads, the biggest ever for a luxury watch. The combination of saturation newspaper ads plus major market spot TV will provide an unprecedented opportunity for Authorized Seiko Dealers who specialize in luxury watches.

Strousse also reported that Seiko has a spectacular magazine schedule planned. There will be dramatic full-page, four-color ads in multiple insertions of Sports Illustrated, the New Yorker, People, Newsweek, Esquire, Forbes, and Fortune. Four-color magazine ads for Lassale Seiko are planned for Architectural Digest, the New Yorker, Forbes, Fortune, Newsweek, Town & Country, and Harper's Bazaar.

PATRICIA PEPÉ-CLARK JOINS BULOVA'S WATCH DESIGN DEPT.

Bulova Watch Company has appointed Patricia Pepé-Clark as Watch Designer, according to Edward P. Goldberg, vice president - merchandising.

"The addition of this

young woman to our staff is another step in Bulova's continuing expansion into new fashion fields," Mr. Goldberg said. "Ms. Pepé-Clark studied design at the Fashion Institute of Technology, and has won awards in both jewelry and watch design categories. She brings to Bulova a fresh view of what young people want most in their watches today."

Ms. Pepé-Clark, of Lynbrook, New York, majored in Jewelry Design at F.I.T. while working as a freelance watch and jewelry designer. She also holds a degree in the Fine Arts of Nassau Community College. Ms. Pepé-Clark has won nationwide awards in watch designing as well as the acclaimed Drambuie Young Designers' competition. Her paintings also have been exhibited at major art galleries.



Patricia Pepé-Clark

MONTRES ET BIJOUX DE GENEVE EXHIBITION TO OPEN

After its successful showing in Milan (Italy) in October 1983, the "Montres et Bijoux de

Geneve" exhibition will be held this year in its "home port" of Geneva. Its autumn collections will go on display at the Hôtel du Rhône from November 7-18, 1984.

This year, 24 members of the Montres et Bijoux Association will be presenting their latest collections in the "large show-cases" typical of "Montres et Bijoux de Geneve." The number of exhibitors, and their quality, underline the pivotal importance of aesthetic research and design in Swiss watch and jewellery production.

JA'S 1984 "NEW DESIGNER OF THE YEAR"

During Jewelers of America's 1984 July New York Show, JA's Jewelry Industry Fashion Advisory Committee selected the jewelry design firm, "Diana Vincent Co." as "New Designer of the Year." The company, headed by Diana Chrambanis and Vincent Polisano, designs jewelry in 18K sandblasted gold and diamonds.

The Committee made its selection from JA's New Designer Room in the Sheraton Centre Hotel, featuring designers who had never before exhibited at a JA Show. This exhibit area has become a major attraction to retailers looking for fresh and innovative ideas in fine jewelry designs.

TIMEX PRESENTS NEW FALL LINE

C. Michael Jacobi, Vice President Sales and Marketing of Timex Corporation, introduced the popular improvisational troupe Chicago City Limits to present the company's exciting second half watch line. The innovative show was part of a press reception aboard the yacht

"Riveranda," which cruised down the Hudson during the recent Jeweler's of America Show in New York City.

Highlighting the product line is an elegant group of thinner-than-ever ladies' quartz analogs that feature attractive styling and sweep second hands.

Adding to the company's collection of popular Sports Quartz™ watches is the unique Triathlon™, which is priced at \$34.95 and features a 1/100 of a second chronograph with 8-lap memory, 3-mode countdown timer, and Step Tone™ alarm. It is water resistant, as well, to 50 meters below sea level. For the youngsters — or the young at heart — Timex has introduced a watch with the new children's character "Rose Petal" on the dial.



C. Michael Jacobi
Vice President Sales and
Marketing of Timex

PRECIOUS METALS EXPO '85

The world's first major conference and exposition of precious metals — gold, silver, platinum, and palladium — will be held in Orlando, Florida, on March 25-27, 1985, according to an announcement recently by Robert F. Mansell, Director, Investor Products for Engelhard



Bob and Marlene look like they are drowning in a sea of U. S. mail sacks. The Spences are on the way to the post office with the fall promotion on horological books. For anyone not on the mailing list, send a dollar and receive the promotion. (Refundable with first order.) Send to American Reprints Company, P.O. Box 6011, Bellingham, WA 98227. Phone (206) 647-0107. The company recently relocated from the St. Louis area to the moderate climate of the Bellingham Bay area. (Photo by Peter Redpath.)

Corporation, and President of the sponsoring organization, Precious Metals Industry Association, Inc. (PIMA).

Precious Metals Expo '85 will have as its theme "The Role of Precious Metals in Modern Society," continued Mr. Mansell. "By presenting interesting and authoritative speakers and exciting exhibits covering all precious metals in all of their aspects, this will become the national showcase of the beauty, utility, and values of precious metals.

Additional information may be obtained by writing to Precious Metals Industry Association, Inc., 82 Wall Street, Suite 1105, New York City, NY 10005.

STEVE JAGER PROMOTED TO PRODUCT MANAGER OF PULSAR TIME

Steve Jager has been promoted to product manager of Pulsar Time, according to Arthur J. Cohen, president. He will be responsible for the product planning and development of the Pulsar quartz watch and clock brand in the U.S.

Mr. Jager, who formerly held the position of assistant merchandising manager, joined Pulsar in November, 1982. Previously, he was assistant merchandising manager for two years at Seiko Time, another division of Hattori Corporation of America.

Manhattan Collection

The new Omega "Manhattan" collection features striking combinations of 18 karat gold and stainless steel, 18 karat gold with diamonds and new mini-versions in 14 karat gold and stainless steel. Omega will also introduce the "Manhattan" in new cushion shaped designs.

A handsome new interpretation of the "Manhattan" is created in 18 karat gold and stainless steel. Roman numeral markers decorate its bezel, while its familiar gold clutches serve to reinforce the watch case by pressing the crystal against its top and further securing the water-resistance to 100 feet. The links on the bracelet are connected by 18 karat gold hinges.

Over 25 new models in the Omega "Manhattan" Collection feature quartz movements and scratch-resistant crystals. The Omega tradition of excellency in

its Constellation "Manhattan" series continues through the introduction of all its new products.

For more information contact the Omega Watch Corp., 301 E. 57 St., New York, NY 10022.

LISTEN TO WHAT YOU'VE BEEN MISSING . . .

A unique security listening device has been announced by Mountain West ® Incorporated of Phoenix, AZ. Designated the LISTENER™ this highly sensitive instrument allows the user to telephone from virtually any location in the world and listen in to what is happening at another location such as his home or business. The user can hear the faintest of sounds ranging from hushed conversations to a water faucet left running—all with excellent clarity.

The LISTENER™ is installed by simply plugging it into the familiar modular telephone jack. No other connections are necessary since it derives its power from the telephone line. The unit is adjustable to answer after as many as 20 rings, so that normal use of the remote telephone is unaffected.

To demonstrate the LISTENER'S™ unique capabilities, an actual installation has been set up in the Los Angeles area that may be accessed (without beeper) by interested parties. Just dial (213) 660-6331 and hear the LISTENER™ at work in a demonstration application.

The LISTENER™ is

IN THE TRADITION OF EXCELLENCE



The time-honored tradition of pocket watches symbolizing success and good taste is combined with modern quartz technology in these new timepieces being introduced by Bulova. Both highlight sweep second hands, calendar windows and decorative stems. Model number 90B09 (left) has a two-tone case and ivory enamel dial with Arabic numerals. Model number 92B30 (right) features a goldtone case, matte gilt inner dial and circular brush outer ring with Roman numerals. Suggested retail: \$195 each. Contact: Bulova, Inc., Bulova Park, Flushing, NY 11370.



A new interpretation of the "Manhattan".

priced below \$130.00. To obtain further information or to place an order, contact Mountain West ® Incorporated, (602) 263-8831, 4215 North 16th St., Phoenix, Arizona 85016. Ask for bulletin #S17-001.



The Listener, a unique security listening device.

BATT-TRONIC MAKES THE FRONT COVER

BATT-TRONIC Corp. International, the sole distributor of Toshiba batteries in the U.S., has reached a packaging agreement with Toshiba. Toshiba, along with Maxell, Duracell, Panasonic, and Ray-O-Vac, has adopted a Universal Battery Numbering System using the Standard 300 series. All Toshiba 5 on tear strips are now identified with the BATT-TRONIC drawer numbering system. These numbers will be prominently displayed on the front of all Toshiba replacement batteries packaged for the U.S. market, making them easier to find, to stock and to store. BATT-

TRONIC's inventory control numbering system will appear on other battery manufacturers packaging in the near future.

For more information contact BATT-TRONIC Corp. International, Battery Park, P.O. Box 10, Orangeburg, NY 10962. Phone (914) 359-8858.



FREE CATALOG OF HARD-TO-FIND TOOLS

A new catalog of precision tools is offered free by Jensen Tools Inc. Illustrated in full color, the 160-page catalog contains more than 3,000 tools of interest to field engineers, technicians, computer and telecommunication service persons, and electronic hobbyists.

Major categories covered are test equipment, soldering equipment, tweezers, screwdrivers, cutters, drafting supplies, power tools, computer accessories, circuit board equipment, and miscellaneous. Also included are many new products from Jensen and over 40 pages of service kits and tool cases for electronic specialists and technicians.

To obtain a free copy, write Jensen Tools Inc., 7815 S. 46th Street, Phoenix, AZ 85040, or call (602) 968-6231.

POINT OF PURCHASE DISPLAY FOR KASSOY ROUGE CLOTH

Kassoy is now offering a professional double-sided rouge polishing cloth for resale. This well-known cloth, one side rouge and one side for polishing is now packaged in a counter top, eye-appealing, richly colored box.

These cloths make a perfect add-on sale for every piece of jewelry or silverware sold. They will fit on any counter top and are designed to move merchandise. Packed 12 to a box, it is an item everyone can use.

For more information, contact Kassoy, 32 W. 47th Street, New York, NY 10036. Or call toll free 1-800-1-Kassoy.



Rouge Cloth from Kassoy

CHELSEA CLOCK INTRODUCES QUARTZ CLOCK SERIES

Chelsea Clock Company, manufacturer of fine clocks since 1897, is introducing a new line of quality quartz clocks.

The new line, called the Jewelers Series, is traditionally styled with contemporary overtones. The clocks feature all brass cases, some with silver plated dials and face plates.

All the models in the series feature Chelsea's exclusive new quartz movement, which required two years to perfect. The six-jewelled quartz movement is made exclusively of brass and steel parts with gold plated wheels and no plastic components.

The clocks have suggested retail prices from \$250-\$350.

For more information, contact Chelsea Clock Company, 284 Everett Avenue, Chelsea, MA 02150.



Jewelers Series clocks from Chelsea Clock Company.

HAMILTON INTRODUCES A NEW SALES APPROACH TO THE WATCH MARKET

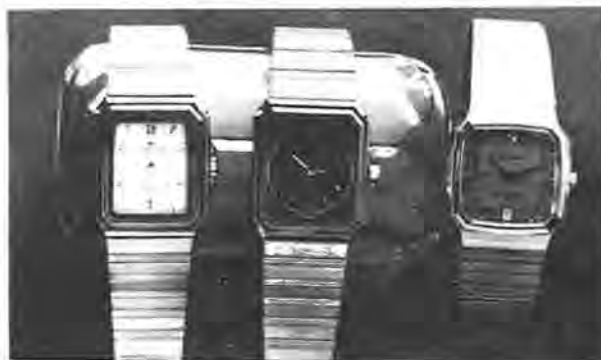
Hamilton, one of the oldest and most respected American names in watches, introduces a new approach to watch marketing. In the Fall of 1984, Hamilton will introduce four new named and nationally promoted watch collections that can bring back profitability to the giant one billion dollar watch market, according to a company spokesman.

These four collections are the Celebrity, SeaHawk, Saville and Chronometer collections. All are made here in America with precise, quality, Swiss quartz movements. Each of these collections makes a contemporary de-

sign statement that offers retailers exclusive product, exceptional styling, with promotable pricing at keystone markups.

To further insure the success of these lines Hamilton is creating strong retailer support programs featuring incentives for sales personnel, informative consumer four-color style booklets as well as other unique approaches to help retailers expand this new profitable area of their business.

Further information on this exciting new Hamilton program may be obtained from Mr. Fred Winans, Vice President of Sales for Hamilton, Lancaster, Pennsylvania 17604.



Classified Ads

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Horological Times, P.O. Box 11011, Cincinnati, OH 45211. (513) 661-3838.

Tradesman

CLOCK WHEEL AND PINION CUTTING. Fast Service - Write for free brochure and price list. Fendleys, 2535 Himes St., Irving, TX 75060.

NEW SWISS QUARTZ MOVEMENTS CUSTOM FITTED to Diamond, Gold, Antique and Accutron cases. Alfonso Zamora, 395 Bernhardt Drive, Buffalo, New York 14226; (716) 839-5091.

High domed crystals for fusee watches. Need bezel or case. \$23 plus \$4 postage. Bulls-eye \$27. Preferable Watches, P.O. Box 6105, Phoenix, AZ 85005.

Custom made Horological Parts and Tool repair by: Precision Instrument, P.O. Box 70004, Charleston, SC 29415-0004; Phone: (803) 553-1198.

For repair of Accutron Series 218 cell coil #715, mail to L. A. Blanchard Coil Repair, Box 6092 Broadview, Illinois 60153. Include check for \$15.00 for each coil. Postage and handling included. Crushed coils cannot be repaired. All coils will be returned and full refund will be made for each coil which cannot be repaired.

Yes! We also repair analog quartz coils. Instructions as above for #715 coils, price for quartz coil repair \$13.50 including postage & handling, **SPECIFY MAKE & MODEL OF COIL.** L. A. Blanchard Coil Repair, Box 6092 Broadview, Illinois 60153.

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Watchmaker's bench, Tempo 400 watch cleaning machine, Unimat lathe with WW spindle and other attachments, polishing machine, electro-plating outfit, exhaust hood, complete staking set, Seitz jewelry outfit with 100's of jewels, tools galore, supplies, shelves, tables, antique clocks and watches-everything goes. Over \$10,000 value. Highest bid over \$2,500 gets it all. Phone (312) 441-6447.

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WATCH REPAIR INSTRUCTOR—Require a CMW, CW, or individual with equivalent bench experience to instruct students of a Rehabilitation Facility in the basic theory and construction of watches, repair, and regulation of both mechanical and electronic watches. Salary negotiable. Submit resume or letter along with salary requirement to: P.O. Box 15848, Cincinnati, Ohio 45215.

Wanted To Buy

AUTHENTIC ENGLISH GRANDFATHER BRASS DIAL ca. 1850, 12 inches by 12 inches. Very good or better condition. Entirely legible. For discriminating collector. Send photo and price. Charles B. Welch, Craftsmen/Clockmakers, 20 Corte Patencio, Greenbrae, CA 94904.

Moseley Pivot Polisher for Watchmaker's lathe. Also laps, reamer, and taper chuck. Bill Neblett, 7240 La Cosa, Dallas, TX 75248; (214) 661-0667.

Paying up to \$35.00 for old Accutrons. Your shipment held intact pending approval of offer. Larry Blanchard Service Co., 1821 Roosevelt Rd., Broadview, Illinois 60153.

IMMEDIATE CASH PAID for Gold, Silver, Platinum, any form! Jewelry scrap, filings, gold filled, sterling! Immediate top dollar cash offer return mail! Satisfaction guaranteed. Ship insured/registered mail to: American Metals Co., 253 King St., Charleston, SC 29401; (803) 722-2073.

WATCHES—Instant payment by your choice of means for old watches, movements, dials (fancy or double sunk only, please), cases, high grade wrist watches (Patek, moon-phases, repeater wrist watches), old advertising relating to pocket or wrist watches; I specialize in entire buy-outs of jewelry stores, watchmakers, entire collections or individual watches. I urgently need Railroad watches, repeaters, enamels, verge fuses! **CALL ME TODAY AT (TOLL FREE) 1-800-235-2866. OR WRITE ME AT: MAUNDY INTERNATIONAL POCKET & WRIST WATCHES, MILES F. SANDLER, 9071 METCALF, SUITE 108HT, OVERLAND PARK, KANSAS 66212. BANKING REFERENCE: Peoples Mercantile Bank, K.C.Mo.**

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Schools

Correspondence courses in Quartz-Accutron-Watchmaking-Jewelry-Lost Wax Casting and Rubber Mold Making. Free folders. Watchmaking Institute of Canada, 1012 Mt. Royal St. East, Montreal, H2J 1X6, (514) 523-7623

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Miscellaneous

LEARN QUARTZ ANALOG REPAIR AT NO CHARGE! Instruction on a one-to-one basis in your store or your shop. Disassembly and assembly class using Vibrograf method. Call or contact Robert Swensgard, 2630-A Jett Hill Road, Richmond, Ohio 45157. Phone (513) 553-2113. Available in Michigan, Ohio, Kentucky, Tennessee and Pennsylvania only.

Dates To Remember

OCTOBER

- 2—Quartz Watch Test Equipment Bench Seminar; Sustachek, instructor; Norman, OK.*
- 3—Quartz Watch Test Equipment Bench Seminar; Sustachek, instructor; Norman, OK.*
- 5—Quartz Watch Test Equipment Bench Seminar; Sustachek, instructor; Ft. Worth, TX.*
- 6—Quartz Watch Test Equipment Bench Seminar; Sustachek, instructor; Ft. Worth, TX.*
- 6-7—Bay Area Watchmakers Guild Convention; Dream Inn; Santa Cruz, CA.
- 7—AWI Certified Citizen Quartz Watch Technician Bench Seminar; Carpenter, instructor; Hutchinson, KS.*
- 13-14—Illinois State Watchmakers Association Convention; Sheraton Inn; Normal, IL; (217) 762-4061.
- 13-14—Common Sense Quartz Watch Repair Bench Seminar; Bob Bishop, instructor; Greensboro, NC.*
- 26—Pulsar Bench Seminar; Broughton, instructor; Tampa, FL.*
- 26-29—Florida State Watchmakers Convention; Holiday Inn International Airport; Tampa, FL; (813) 879-4800.
- 30—Pulsar Bench Seminar; Broughton, instructor; Charleston, SC.*

NOVEMBER

- 10-11—Common Sense Quartz Watch Repair Bench Seminar; Bishop, instructor; Milwaukee, WI.*

18—AWI Bench Seminar; Broughton, instructor; Chicago, IL.*

18—Basic Electricity & Use of Meters Bench Seminar; Jaeger, instructor; Seattle, WA.*

FEBRUARY 1985

- 1-5—Inhorgenta: The Munich International Watch, Clock, Jewelry, Gems and Silverware Trade Fair; Munich Convention Center; Munich, West Germany; (201) 652-7070.
- 2-9—Tucson Gem Shows: American Gem Trade Association, 2-7, Doubletree Hotel, (213) 888-5771; Gem & Lapidary Wholesalers, 6-9, Holiday Inn North & Holiday Inn South, (601) 879-8832; Gem Shows Inc., 2-9, Ramada Inn, (415) 223-3800; GLDA Inc. Tucson Gem Show, 2-9, Marriott Hotel, (602) 742-5455; "US," 2-9, Sheraton Pueblo Inn; (602) 825-9115.
- 3-6—Jewelers of America Spring International Jewelry Trade Show and Conference; Sheraton Centre and New York Hilton hotels, New York, NY; (212) 489-0023.
- 16-20—International Watch, Clock & Jewelry Fair; Wentworth and Hilton hotels; Sydney, Australia; (212) 245-4000.

MARCH 1985

- 25-27—Precious Metals Expo '85; Orlando, FL; Information: Precious Metals Industry Assn., Inc., 82 Wall Street, Suite 1105, New York City, NY 10005.

* For details concerning the above programs, contact: AWI Central, P.O. Box 11011, Cincinnati, OH 45211. See page 40 of this issue for the list of AWI Bench Courses and Instructors.

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A Classified Ad in *HOROLOGICAL TIMES* is an Inexpensive Way to Get What You Need!

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Each Seiko Service Kit contains:

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- One battery hatch opener (S-822).
- One case opener (194) for screw-type case backs.
- One case holder (S-210D) with 12 sliding reversible clamps to conform with case lug size. Used in conjunction with case opener (194).
- One non-magnetic plastic tweezers.
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- Seiko Battery Hatch Gasket Assortment (HG72).

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Reference and Replacement Guide

System	Recommended Applications	Millimeter dia - ft	Standard				
			RENA- TA	BUL OVA	IEC	ANSI	JIS
Watch High Drain		11.6 x 5.4	7	228	SR44	WS15	SR44 (G13)
		11.6 x 4.2	8	260	SR43	WS10	SR43 (G12)
		11.6 x 3.05	17		SR54		
		11.6 x 2.05	23	317	SR55		
		9.5 x 2.73	35				
Watch Low Drain		9.5 x 2.05					
		7.9 x 5.4					
		7.9 x 3.6					
		7.9 x 2.6					
		7.9 x 2.15					
Silver Oxide Battery		9.5 x 2.73					
		11.6 x 5.4					
		11.6 x 4.2					
		11.6 x 3.05					
		11.6 x 2.05					

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