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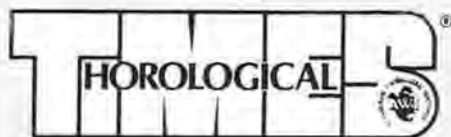
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Editorial

The technical aspects of clock and watch repair are thoroughly covered in this publication. Since there is more than one way to "skin a cat," articles on the same subject by different authors have been, and will continue to be published. Two experts expounding from different points of view to accomplish a like purpose, generate a curiosity within the reader. From this search, one may eventually choose another direction toward finalization. And all of this fruitful time can be spent reading.

The scope of subject matter can go beyond the path of horology. Books on economics, sales, taxes, marketing, display, gems, and jewelry repair are also waiting for your examination.

Take advantage of AWI's lending library, as well as purchasing books of the masters from the AWI Press. Other sources of book acquisitions are your supply dealer and publishing companies specializing in specific areas of interest. You may also be surprised by the available books at your local library.

Perhaps careful selection of television programs will help to provide the time needed to enjoy reading, thus adding to your knowledge and income.

On the Front

One of the outstanding tourist attractions in the Pacific Northwest is Butchart Gardens in Victoria, British Columbia. This world renowned showplace presents over 30 acres of indescribable botanical beauty. Our cover pictures one of the many breathtaking scenes which are planned and planted so that each season has its own special charm.

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Items of Importance

As we journey into the new year, we are faced with uncertainties which have not been experienced in recent years. Regardless how you feel about "Reaganomics," we see a period of difficult times for our members, their families, and our association. We are confident that we will come through with flying colors if we continue to receive the support and dedication each of you have given in the past. Please redouble your commitments and efforts in behalf of AWI. Promote its programs and membership so that we can continue the growth we have achieved over the years.

In the Fall of this year, I named a special committee to study the present AWI Constitution and Bylaws. It is the

consensus that since the present document was written more than twenty-two years ago, some revision may be in order. This Committee put in many hours of homework before they met at AWI Central for two days of very intense review of the Constitution and Bylaws.

It appears that this study group came up with a number of very valuable suggestions which overcomes some of the ambiguities and confusion that have been noted over the years in our present document. This study group is presently involved in giving their findings a final review before they are passed on to the Constitution and Bylaws Committee for its consideration.

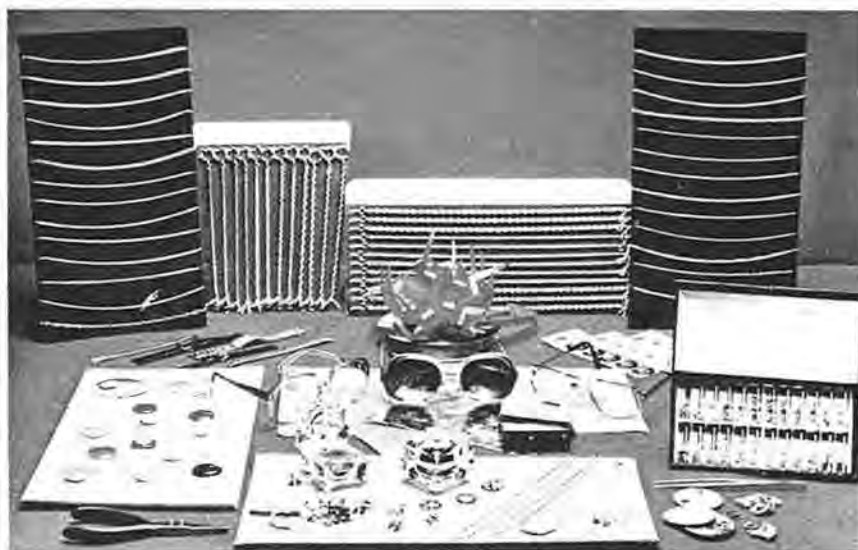
In anticipation of the recommenda-

tions from this special study committee, Constitution and Bylaws Committee Chairman, Jerry Jaeger, has tentatively called a meeting of his committee for February 13 and 14, to develop any recommendations they may wish to present to the membership in this year's annual election.

Most of the \$50.00 microfiche rebates from the B. Jadow Company have been mailed to AWI members electing to redeem their discount coupon. We experienced unexpected delay in processing these vouchers, because often the voucher was made out in the AWI member's name while the actual microfiche kit was

(Continued on page 49)

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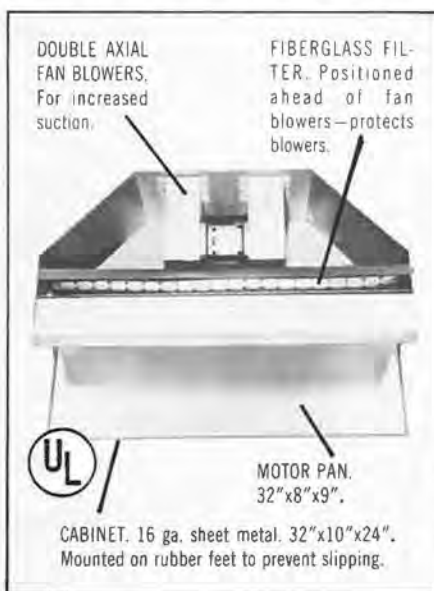
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Our Readers Write

A Clarification

I would like to congratulate Mr. Arnold on his very practical examination of the floating balance escapement. [See "Repairing and Adjusting the 'Floating Balance' Movement," *Horological Times*, November 1981.]

There is one point that I feel should be clarified. One of the rules of proper escapement design is to eliminate, when possible, any friction that inhibits the transmission of the maximum available power from the escape wheel to the balance. Mr. Arnold contradicts this rule by asserting that a small amount of tension should be applied to the pallet arbor by the end caps. This tension can and does inhibit the transmission of power from the escape wheel to the balance and therefore must be eliminated. Instead, the pallet arbor must have a very small amount of endshake. It must be held to a minimum in order to preserve the guard action. It is clear that the clearances between the guard pin and roller table were designed with a small amount of pallet arbor freedom in mind.

Timothy R. White
Livonia, Michigan

Author's reply: Mr. White's contention that I am encouraging tensioning the pallet arbor between "caps" is incorrect. A careful rereading of my article (step 4) reveals that there is one cap and one spring. As I stated, "The spring should provide only enough pressure on the arbor to keep the rear pivot against the cap." (Perhaps I should have added the words, "and no more," to the end of that sentence.) In other words, at the moment the rear pivot contacts the cap, the spring should cease exerting pressure. This provides for absolute freedom of the pallet arbor when properly positioned against the cap, and defines the designer's intentions regarding the function of the tension spring.

David G. Arnold

A PERSONAL SLANT

Just one helpful bit of information makes a paragraph, article, or whole book worth reading. Everyone who assimilates written knowledge does it at a different rate and may recall it differently. We've all said or heard someone say, "somewhere I read something about that." Even though you may disagree with something someone has written, you may just acquire one more bit of knowledge from having

read it. One more arrow in your quiver, as it were.

The importance of reading cannot be overstressed. Build your library. Read, read, and read some more. No single person knows it all. The more one does learn, the more readily an honest person will admit there is even more to learn, and we arrive at the AWI philosophy: "horologists helping horologists." The truly knowledgeable person is enthusiastic about sharing his or her knowledge.

Ken Law
Prescott, Arizona

WHAT A PACKAGE

I wish to comment on the *Horological Times*. I look forward to receiving each copy. The pictures on the covers are beautiful.

I hope you will convey my appreciation to the editors.

John J. Shannon
Malden, Massachusetts

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AWI is, without doubt, the best organization around. The bench courses and the Hot Line are great too. Where else can I get all this help from experts who have more than gone out of their way to help. In the past, I have written to both Henry B. Fried and Howard Opp. They both took time to answer my letters and tried to help in any way they could.

The Hot Line is about the best idea going today. This is a most professional organization.

Samuel M. Fribush
Randallstown, Maryland

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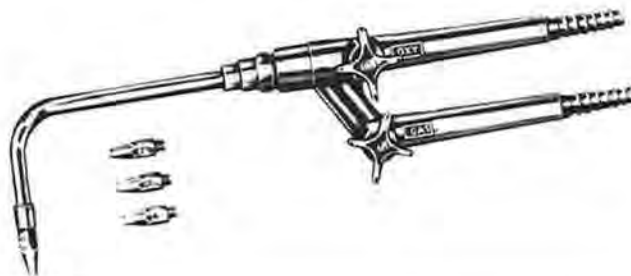
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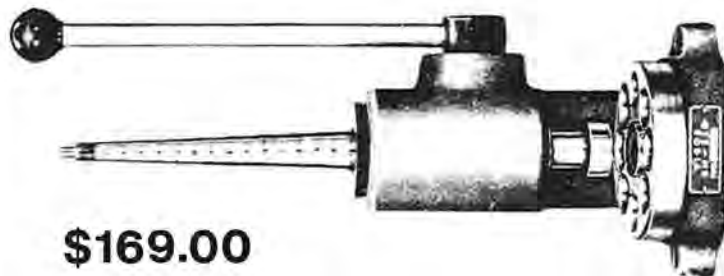


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By Gerald G. Jaeger, CMW
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In The Beginning

This series of articles is intended to be a primer addressed to those who may have neglected their study of electricity and its application to horology.

Give the watchmaker a series of wheels and pinions, a new type of automatic wind device, a different approach to driving a day or date ring on a calendar device, and he will study it in order to solve its intricacies. This is an old-hat problem for the watchmaker, because it is primarily mechanical, and it can be seen with the eye. This is what the watchmaker thrives on; he is trained in the art of mechanical problem solving. The watchmaker masters mechanical watch repair because he is able to apply mechanical concepts and principles to his trade.

However, these same concepts and principles do not apply to electronic watch repair. The difficulty in electronic watch repair is that electrons cannot be seen as they go about their work. As mechanical watchmakers, we were sure that if we ignored the electric watch long enough, it would fade away and never be heard from again. It is true that we cannot see the electron at work; however, the electronic watch has not faded away.

It is true that the first mass-produced and mass-marketed Hamilton 500 watch met with great consumer acceptance. The watchmaker found this watch hard to accept due to the difficulty in making the proper adjustment of the switching method used in the design of this watch. Many will recall that the contacts were fixed at the end of two extended wires attached to a bridge. The manufacturer apparently realized this was an area that could stand some improvement, so they made a design change. The new model became

the 505, and was heralded as an improvement over the 500 model. As a favor to the watchmaker, the contacts were now on an index wheel and a roller table tab. Shortly after this, another favor was bestowed: both models were taken out of production.

The electric watch evolved into the electronic watch, and the electronic watch is now and will continue to be, the predominant timepiece. Who can predict what form it will appear in? No one really knows, but we can be reasonably sure that the electron will be the charge that drives the display on both the contemporary watch and the watch of the future.

As watchmakers, we accept the fact that there are laws which apply to mechanical devices. It should not be too difficult for us to understand that electricity is also a science, with specific laws to which it must adhere. Our study of electricity will concern itself, in a most basic manner, with voltage, resistance, and current. When voltage, resistance, and current are understood, we will understand Ohm's Law, which is applicable to the everyday problems encountered in the repair of electronic timepieces.

It is not enough to know what voltage (volt), resistance (ohm), and current (amp) are; each must be seen. We can "see" volts, amps, and ohms when we learn to read the VOM (volt, ohm, milliamp meter). You will also see the VOM referred to as a multimeter. In this series of articles the meter will be referred to as a VOM.

There are three measurable quantities which, when combined, are electricity as it will be presented in this series of articles. These measurable quantities are volt, amps, and ohms.

The VOM

The VOM is the instrument we will use to measure the three measurable quantities of electricity. We will approach the use of this meter in, perhaps, a manner not consistent with the norm, but which is consistent with the format of this primer.

The VOM is, in fact, three separate meters. In the beginning, it is most important that we learn to separate the three meters. To separate the three meters we will have to examine both the selector scale and the readout of the VOM. See Figures 1 and 2. To get an insight into this separation, we will examine both displays as a whole.

The selector scale in Figure 1 gives us options of selecting DC volts, DC amps, ohms, or AC volts. We will disregard the AC volts and treat the 3 to 6 position as though it were not on the selector scale. At this time, we will also disregard the 6 to 9 position. This area allows for the selection of DC amps (current). The 1 to 3 position, which will be discussed later, allows for the selection of ohms (resistance). This area is the Ohm meter area. The 3 to 6 area is alternating current, and even though AC really keeps the electron

jumping about, we should not concern ourselves with AC at this time. The 6 to 9 position is another separate meter. It is an amp meter. It measures current flow which is measured in amperes. This area will also be discussed at a later time. Let us now consider the 9 to 12 position, which is the selector for the volt meter.

Voltage

Voltage, the moving force behind the electron, is comparable to the pressure in a water system. In a water system, voltage would be like pounds of pressure per square inch. Voltage is that comparable pressure which moves the electrons in an electrical circuit. Likewise, the electron flow could be compared to the water flow. This pressure which moves the electrons is measured on the VOM. At this stage of our study, we will address ourselves to the measurement of this pressure we call voltage.

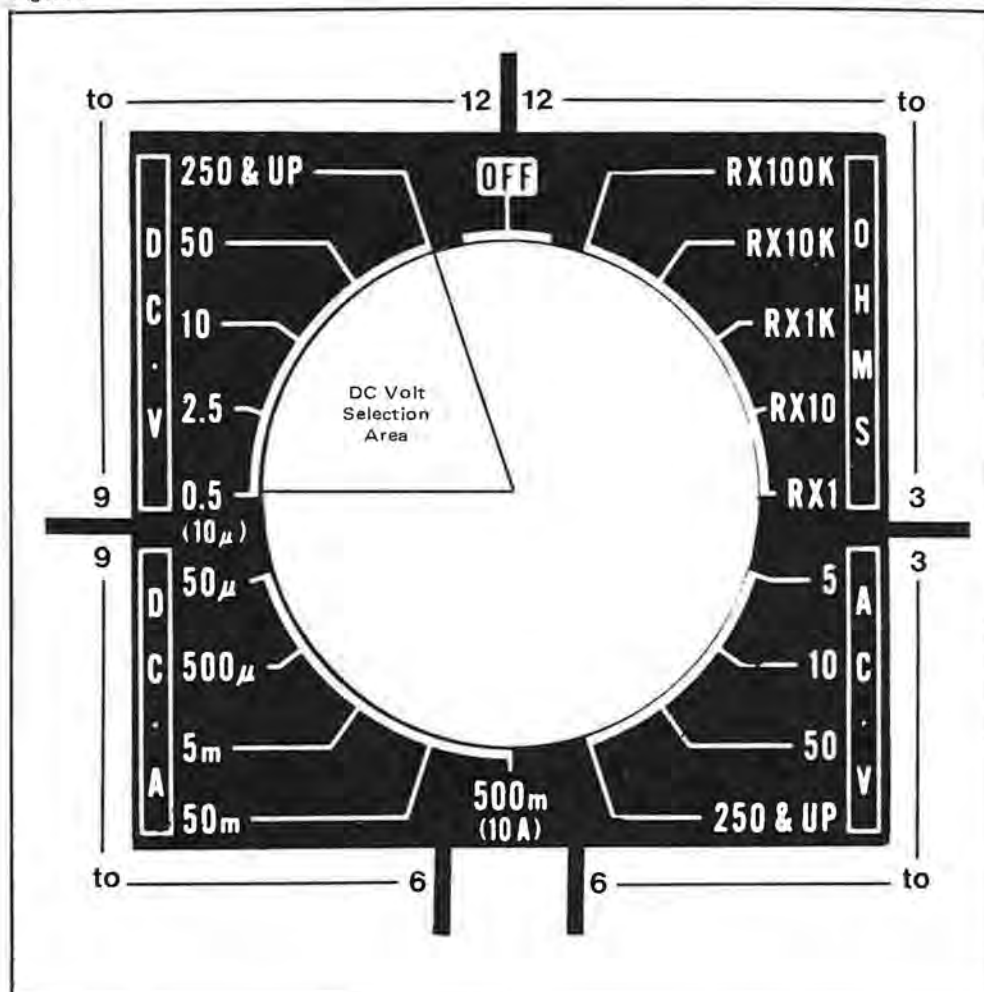
All VOMs come equipped with two jacks or probes. One is black and the other is red. Note the two jack positions on the panel in Figure 3. One is marked +V - Ω - A, and one is marked - COM. In DC voltage, the red jack is the positive (+), and the black jack is the negative (-), or ground. The red jack will be inserted into the positive outlet, and the black jack into the negative outlet on the panel. For our purposes, we will consider the electron flow to be from negative to positive, so the pressure or voltage will be applied in that direction.

When measuring DC voltage we must be concerned with polarity (direction); therefore, we must examine all voltage sources as to polarity and apply our probes at the proper position of these voltage sources. On most current watch cells, the outer case is positive. The red probe would be applied to this outer case. The little tab or button at the top of the watch cell is negative.

The black probe would be applied to this area. The C and D cells, which are commonly used in flashlights and other devices, are usually constructed in the opposite manner, with the little tab at the top being positive rather than negative. Most other cells are quite visibly marked. If the proper polarity is not observed when the probes initially make contact with the VOM, the pointer, or needle, in Figure 2 will move in the wrong direction. To remedy this, simply reapply the probes observing the proper polarity.

If you have a meter similar to the one being used in this series of articles, be sure the selector in the upper right hand position is set on + DC, as shown in Figure 3. At this time, do not be concerned with the other jack positions in Figure 3, since they apply to other meters, and will be referred to in due course. Please remember that VOMs are referred to as a group of different meters.

Figure 1



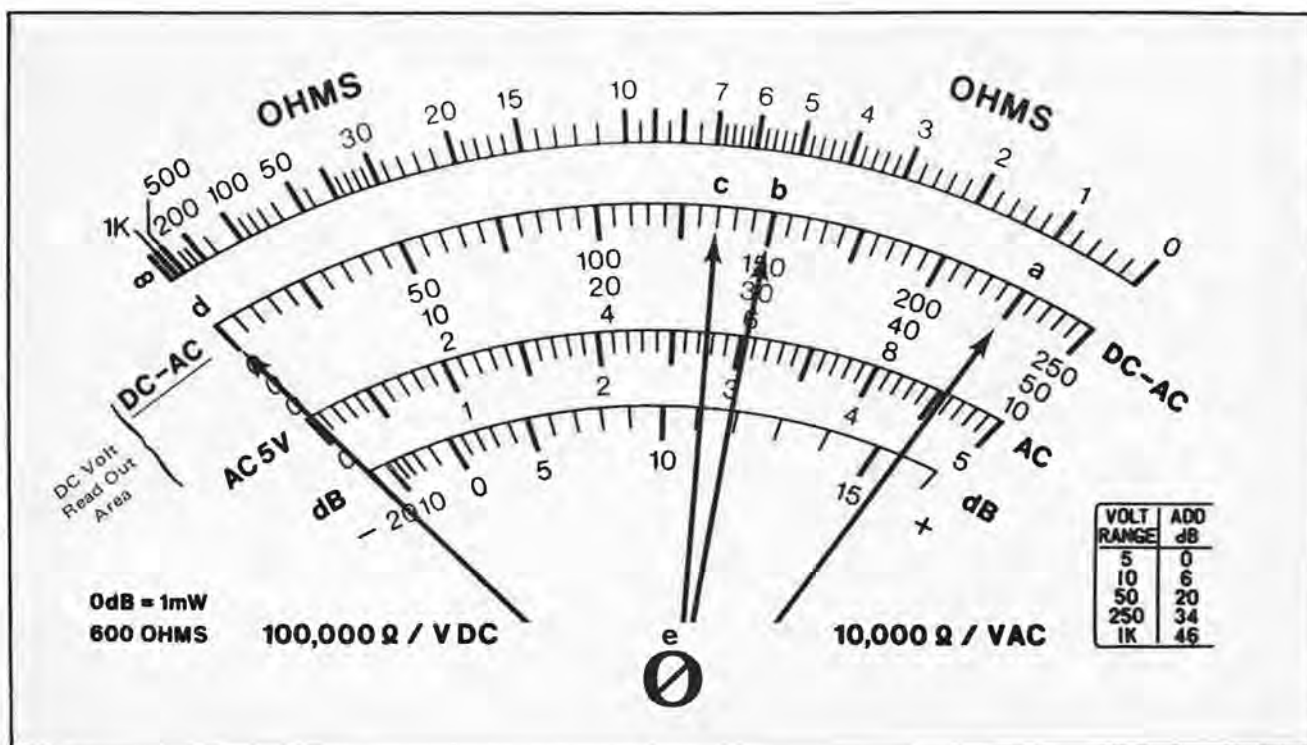


Figure 2

At this time, we are concerned with the volt meter, and only the volt meter. I would be remiss if I didn't point out that your meter may vary somewhat from the one pictured and referred to in this article, but all concepts and principles being put forth will apply to all meters with few or any exceptions.

The selection area shown in Figure 1 contains the selections for ohms, amps, and volts. We are concerned only with the DC volt area, which encompasses the 9 to 12 position. Note that there are five different ranges from which to make a selection. If the selector were positioned at the 0.5 position, we could measure any DC voltage source which supplied a voltage from 0 to 0.5 volts. Moving the selector to the 2.5 position, we could measure any DC voltage source which supplied a voltage from 0 to 2.5 volts; and positioning the selector at the 10 position, we could measure any DC volts source from 0 to 10 volts. This same concept applies to the 50 and the 250 & UP positions. It stands to reason that for each selection area in the DC volts range, there must be a readout area as well. Refer now to Figure 2. Note that there are six sets of readouts indicating figures from 0 to various maximums.

It was previously pointed out that the VOM is actually a number of different meters. Since we are concerned with only the DC volts portion of the VOM and the DC-AC readout area, disregard all other sets of numbers. Also disregard the AC designation of the DC-AC. When the selector in Figure 1 is positioned on any of the DC selections, we will be reading only DC voltages. You

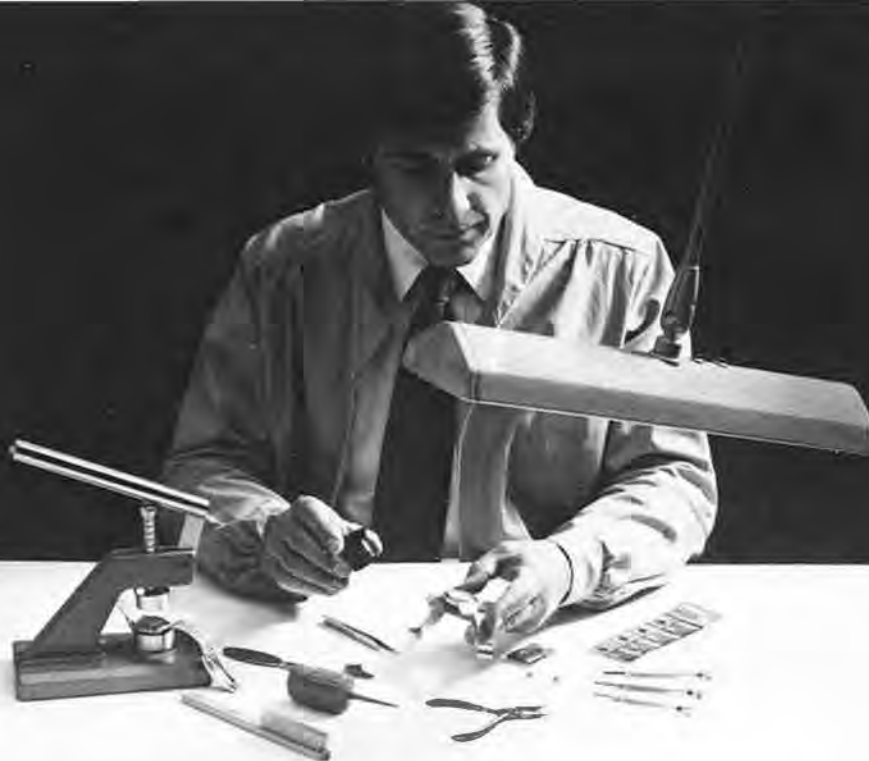
will note that there are three sets of numbers in the readout area with which we are concerned. See Figure 2. The readouts range from 0 to 10, 0 to 50, and 0 to 250. The graduations we will use for these three sets of readout numbers are the graduations that lie directly above the 0 to 250 set of numbers. This graduation will be used no matter which of the three sets of numbers are being used at a given time. The position on which the selector rests dictates the set of numbers which must be used. The number the selector rests on in Figure 1 will be found as the maximum number on one of the sets of readout numbers in Figure

2. If we would position the selector on 10 (Figure 1), then the 0 to 10 set of numbers would be used as the readout (Figure 2). This is the bottom row of the three rows of numbers in the DC readout area. This row of readout numbers must be used, since the meter is now set up to measure only from 0 to 10 volts. The other sets of numbers would not display a valid readout of the actual voltage. Were we to measure a voltage greater than 10 volts with the meter set at this range, we would very likely damage the meter.

Another concept employed in VOM readouts is, perhaps, a bit difficult to readily understand. With a bit of practice and patience, it is not as difficult as it appears at first blush. Note that there are five selection areas in DC volts. See Figure 1. Of these five selections, only three appear as the maximum voltage in our readout area. See Figure 2. They are selections 10, 50, and 250 volts. Our three rows of readout numbers can handle these selection ranges, since one row of numbers is for 0 to 10 volts, another is for 0 to 50 volts, and the other is for 0 to 250 volts. Were we to measure a 9 volt battery, we would set the selector at 10 volts DC and use the 0 to 10 readout row of numbers. The pointer would register 9 volts. This is indicated by point "a" in Figure 2. In this case, we have completely disregarded the sets of 0 to 50 numbers and the 0 to 250 numbers and have used the 0 to 10 set of numbers and the graduation line directly in line with the DC-AC readout designation which is under-

(Continued on page 52)





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CLOCK Stakes, Stumps, Punches, and Anvils

Part II

This month is a continuation of the discussion on clock stakes, stumps, punches, and anvils.

At times the steel punches are too hard and something softer is required to avoid marking the surface of the item being worked on. Figure 1 shows a series of punches that have been made from brass rod. Other materials may be used such as wood dowels, plastic rods, etc. When you rivet a wheel on a pinion or a collet, the same procedure is used as when riveting a balance wheel to a staff. First spread the staff, and then flatten it with a flat-face punch. The problem is that the watch stakes are too small for clocks. The punches in Figure 2 are made by the clockmaker to spread and flatten the pinion or collet. The making of these punches requires considerable work. They are usually hollowed out so you can see the work as you move around the arbor. Figure 3 shows this operation with the wheel supported in the bench block on its extension.

After having made many of these punches, it was thought that there should be an easier way. Figure 4 shows the result of the simplified operation. The round-face punches described earlier were put to the grindstone resulting in the diameter being reduced by one half. You can see from Figure 5 that they fill the bill very well.

The same thing is done with the set of flat-face punches. Notice that the

wheel is being held in a different sort of a stake. When you are required to mount a wheel on an arbor that has a pinion at the opposite end, it can be difficult to support it for riveting. Figure 6 shows this stake. It is made in two versions. One is similar to this one which is hinged at the end. The other version has two pins, one at each end with holes opposite them to guide the two pieces together in alignment with the holes. These pieces were commercially available not too long ago. Fortunately, they are easily made. Drill a series of holes, cut them in half with a saw, put in a couple of pins, and you have the stake. As you can see, this split stake allows one to select a proper fitting hole for support without worrying about how to accommodate the pinion.

Figure 7 shows an item that most old-time watchmakers made for themselves. It is a piece that accommodates watch stakes. The operation is self-evident from the picture. Notice that this device allows you to have two fingers available for holding the item being worked on. These pieces were called finger thimbles by the British.

Figure 8 shows the thimble with a stake mounted in it. Figure 9 shows the top view. Figure 10 shows the front view. Notice the set screw at the bottom which holds the stake in place. Figure 11 shows the side view. Figure 12 shows the rear view.

Figure 13 shows punches known as dapping and cutting punches. The

convex-ended punches (dapping) may be used in lieu of the round-ended punches referred to at the beginning of the article. When used in conjunction with the cutting punch, they are useful in forming or reforming hand collets. One is shown second from the left cutting punch in the photograph. Of course they also can be used in cutting out material for washers.

Special stakes can be made for use in the large bench block as shown in Figure 14. Many odd items can be used by merely turning one end to fit a hole in the bench block. The piece shown in this photograph was actually from a hydraulic cylinder. Figure 15 shows an automobile valve that was adapted. One edge has been ground to provide a flat portion that can be presented to the work. The lip on the valve provides a work surface that can slip under a narrow place, a rim, or a lip.

Figure 16 shows additional stumps—some of brass, some of steel—but all fit in the bench block.

Figure 17 shows a stake made from aluminum rod. The end is slightly curved and is used to close up a set of American strip pallets. (They are not properly called verges.)

This article is by no means inclusive of everything commercially available. For example, there is a clock-staking tool distributed by Bergeon and

Figure 1

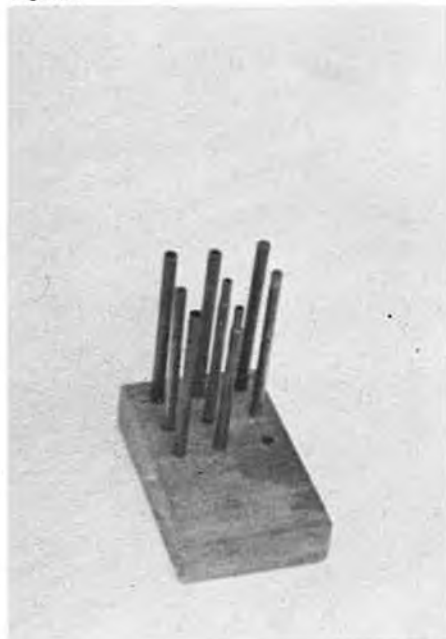


Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

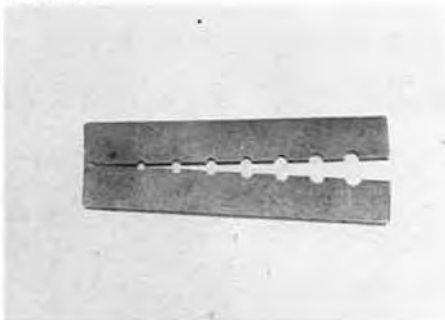


Figure 7



Figure 9



Figure 10



Figure 8

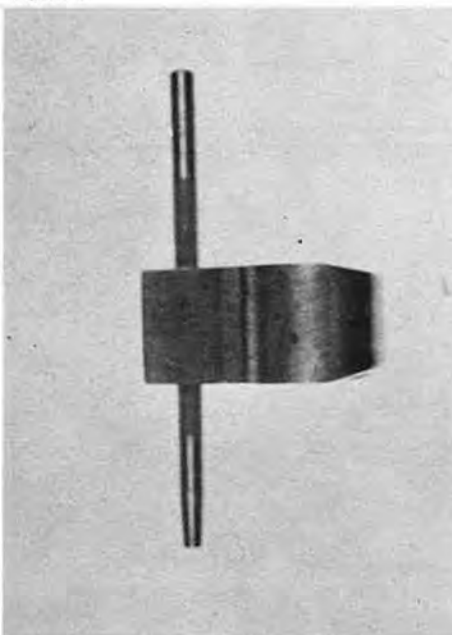
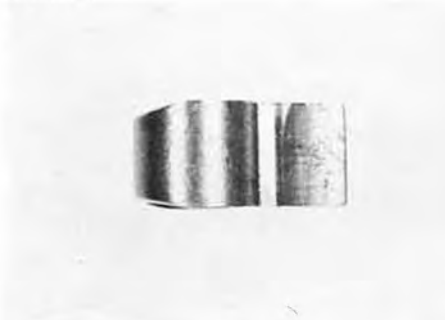


Figure 11



there are sets of clock hole-closing punches. I do not think too highly of the latter, since most people do not seem to be able to use them properly. Furthermore, today's excellent assortments of friction bushings do a far better job when used.

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Figure 12



Figure 13

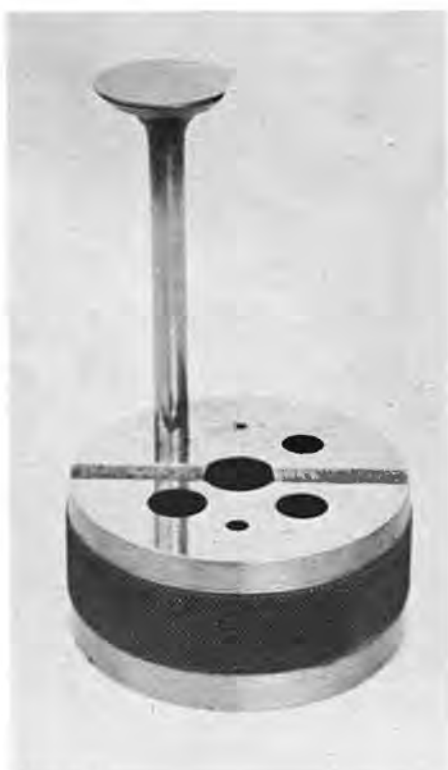


Figure 15



Figure 14



Figure 16



Figure 17

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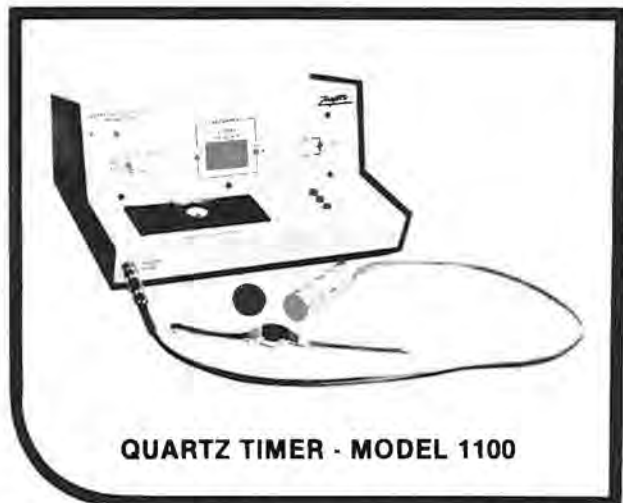
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The Modern Watchmakers Lathe © 1982 Part VII

In continuing with the discussion of the compound slide rest and other lathe attachments, it is generally accepted that the slide rest is one of the most important lathe attachments used in major turning and milling operations.

Figure 1 shows a slide rest made by the American Watch Tool Company. This company was the original maker of Webster-Whitcomb lathes and attachments, which have been a standard for many years. This slide rest has three slides. There is only one "T" slot for holding turning tools and the different attachments.

Figure 2 shows the slide rest in Figure 1 partially disassembled in order to show its construction. View "A" shows the base part of the bottom slide. View "B" shows the top part of the bottom slide. These two parts have matching dove tail ways so they work together to form the bottom slide. Point "a" shows the base guide shoe on the bottom of the slide. This guide shoe goes against the edge of the lathe bed to keep the slide rest aligned so that it rests square with the bed at all times. The guide shoe is held onto the bottom of the slide rest by a base guide bolt and nut. The head of the bolt works in a "T" slot that is milled lengthwise in the center of the bottom slide. The base guide shoe is shaped so there is a

thicker section at its center which fits the narrow part of the "T" slot. This keeps the guide shoe set square with the base slide regardless of where it is set along the "T" slot.

Point "b," Figure 2, shows the gib which is used to adjust the tightness of the bottom slide. The gib is a flat strip of steel or brass. There are three and sometimes four screws evenly spaced going through the side of the slide. The ends of these screws go against the gib to take up the side play in the slide. A gib screw is shown at "s," Figure 2. Point "c" shows the lead or feed screw for the bottom slide. Point "d" shows the feed screw nut. The slide cap is shown at "e." The cap is held onto the end of the slide by two screws. This cap supports the feed screw assembly. The feed screw crank is shown at "f." The swivel cam bolt is shown at "g." This bolt goes into hole "h" of the swivel slide "C." Swivel cam "i" goes into hole "j" of swivel slide "C." The end of the swivel cam goes into a hole in the swivel cam bolt to bind the swivel slide to the top of base slide "B." The swivel cam is turned about a one-fourth turn to cause the binding action. It is this cam that is turned to loosen the swivel slide when the slide is swiveled for a certain number of degrees. Swivel slide "C" fits into slide "D." The swivel slide gib is shown at "k." This gib fits in the

dove tail of slide "D." The feed screw "l" goes into hole "m" of the swivel slide. This feed screw works in the swivel screw nut "n." The feed screw is held in place in the swivel slide by screw "o." The swivel slide screw crank is shown at "p." View "E" shows the top slide. The top slide end cap is shown at "q." The top slides knurled knob is shown at "r." One of the gib screws for the top slide is shown at "s." The top slide fits together similar to the base slides.

Figure 3 shows a Moseley slide rest. This is one of the most unique slide rests that has ever been made for the watchmakers lathe. Although it has only two slides, the unique thing about it is that both slides swivel independently of each other. This allows the base slide to be set to a given angle for turning a bevel inside a hole or on the outside of the material. Then the top slide can be swiveled so it is straight with the base of the slide rest, which allows the end of the article that is being bevel cut to be faced off flat with the same cutter and setting. Figure 3 shows the slide rest set up in this manner. The Moseley slide rest fits a shoe on the lathe bed rather than having its individual guide shoe like the American Watch Tool Company slide rest.

Figure 4 shows how the Moseley slide rest fits the shoe on the lathe bed.

Figure 1



Figure 2

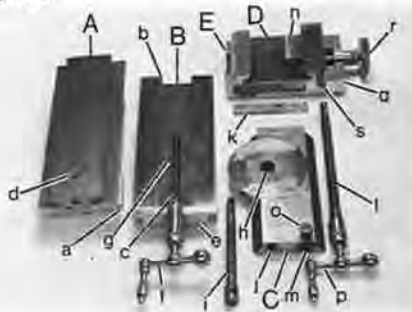


Figure 3



The base of the slide rest has been milled out, leaving beveled sides that fit the matching beveled sides on the lathe shoe. The base of the slide rest also has a "T" slot that the head of the locking bolt fits into to bind the slide rest onto the shoe. The base of the slide rest does not touch the lathe bed at all, but rests entirely on the shoe. The shoe holds the slide rest tight and square with the lathe bed. The lathe shoe is considered the best method of holding attachments on the lathe bed, because there is not the danger of the attachment twisting out of alignment while it is being used, as when the shoe is part of the attachment and the attachment fits directly to the bed. The index pointer for the top slide is shown at "A," Figure 4. The index degree scale is stamped on top of the base slide just below the end of the pointer. Figure 5 shows how the base of the slide rest fits the lathe shoe and also shows the degree scale on the base. A reference mark for this scale has been made on the edge of the bottom slide.

The attachments for the Moseley slide rest screw into a threaded hole on the top slide rather than being fastened on by the use of a "T" slot and locking bolt.

Figure 6 shows a Wolf-Jahn slide rest that has been modified so it can be used to cut fusees. This slide rest has three slides and fits onto a lathe shoe similar to the Moseley slide rest. Attachments are held onto the top slide by the use of a "T" slot. In order to modify this slide rest for cutting fusees, the feed screw and end cap were removed from the top slide. This made the top slide free so it could be moved back and forth with the hands. A strip of tool steel was fastened to the end of the top slide with the same screws that held the end cap in place. This is shown at "A" in Figure 6. This strip extends beyond the edge of the top slide. Then a tracer bar was made from a strip of the same tool steel. One end of the strip was filed down round so it could be threaded. The other end was beveled so it would be of suitable shape for sliding on the fusee form shown at "C." Three elongated holes were made in the strip to match the position of the gib screws in the top slide of the slide rest. The threaded end of this tracer bar goes through a hole in plate "A" and a nut is used on the threaded end. The tracer bar is held in position on the side of the top slide of the slide rest by the use of the three gib screws. See View "B" of Figure 6. The elongated slots in the tracer bar allow

it to be adjusted back and forth to adjust the relationship between the depth of the cutter and the depth of the tracer bar on the form. To hold the form, a block "D" has been fastened to the top of the base slide of the slide rest. To use this device to cut a fusee, the screw cutting attachment would need to be used with the proper change gears for cutting the proper pitch thread to match the pitch of the fusee being cut. The screw cutting attachment is shown at "E." When the fusee is being cut, force is applied to the top slide of the slide rest with the hand to keep the tracer bar against the form. At the same time, the screw cutting attachment turns the feed screw of the middle slide, causing the cutter to be moved and advanced on the fusee being cut. Figure 7 is a close-up view of the device showing the tracer bar against the form at "A" and the cutter making the fusee at "B." This modification to the slide rest converts it into a miniature pantograph machine.

One of the most important attachments that fits on top of the slide rest is the internal-external grinder. This grinder is shown in Figure 8. The grinder is held on the top slide of the slide rest by a bolt that has a head shaped to fit the "T" slot of the top slide. A washer is used on the bolt under the nut to protect the grinder base when the nut is tightened down to hold the grinder tightly on the slide rest. The spindle of the grinder is adjustable up and down to center it with the headstock spindle of the lathe. This grinder holds chucks in its spindle in the same manner as chucks are held in the lathe spindle. The spindle of the grinder has a small diameter pulley attached to it so that high speeds can be attained when doing grinding operations. High speeds are necessary when grinding to obtain the best finishes on the material. Small stones mounted on arbors can be chucked in the grinder spindle to do internal grinding operations as is shown in Figure 8. For external grinding operations, larger stones are usually used. The slide rest can be swiveled to any angle for grinding angles on the article. This grinder can be used with various stones and laps for producing the rayed finish on crowns and ratchet wheels for watches.

The internal-external grinder can also be used for drilling the holes when making lantern pinions. Figure 9 shows the grinder set up for drilling lantern pinions. Before drilling the holes for the

Figure 4

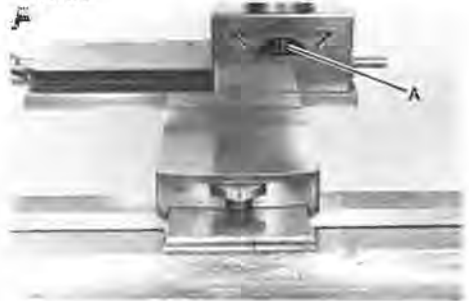


Figure 5



Figure 6



Figure 7



Figure 8

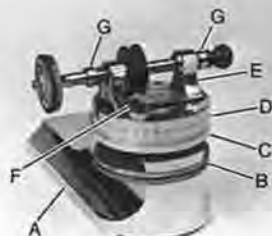


lantern pins, the drill must be lined up with a rod that is chucked in the lathe spindle which runs true. If the drill is not parallel to the side of the chucked rod, the slide rest can be swiveled to align the drill. If the drill is not parallel to the bottom or top of the rod, then a thin shim can be placed under the edge of the grinder base on top of the slide rest to cause the grinder to be tipped enough for the drill to be aligned with the rod. The grinder can be used for milling operations. Articles held in the lathe headstock can be milled in various ways by an end mill chucked in the grinder spindle. The grinder can be used to grind squares on winding stems. A large diameter grinding wheel is used in order to have only slightly hollow ground sides on the square of the stem. The grinding wheel must be set on center with the lathe spindle. The headstock locking pin can be used in the holes in the index plate on the headstock pulley to index the stem for grinding the square. There are usually 60 holes in the index plate, so 15 holes would be indexed each time.

Another type of grinder that fits onto the slide rest is the Moseley parallel grinder and pivot polisher. This device is shown in Figure 10. A description of the device is as follows. View "A" shows the frame which is pivoted freely around the base "B." Screw "C" holds the frame against a shoulder on the base "B." Yoke "D," which is clamped tightly to the base, has two adjusting screws "E," which limit the motion of the frame on the base. View "F" shows the spindle which is free to turn and to move back and forth in its two bearings axially. The axial motion of the spindle is limited by the position of the collars "G" and "H." These collars are held onto the spindle with set screws. The collar "H" is grooved and can also serve as a pulley, Figure 9



Figure 12



The main pulley is shown at "I." The end of the spindle has a hard rubber button "J" which is held on with a screw. This button is free to turn on the spindle. The other end of the spindle holds the laps. A lap shown at "K" has a tapered shank that fits into a matching tapered hole in the end of the spindle. The base of this grinder fits into the tool post of the Moseley slide rest as is shown in Figure 11. This grinder and pivot polisher is an excellent device for finishing the ends of pinion leaves flat, and for finishing pivots. When using this device, it should be adjusted so the lap is centered with the article being ground. NOTE: When grinding a conical shoulder pivot, the grinder spindle is set at right angles to the work and the lap is set above or below center with the pivot. The yoke screws should be adjusted so a small amount of rocking motion can be given to the frame of the device during the grinding of a flat shoulder. The collars should be set so the proper amount of axial motion can be given to the spindle for grinding cylindrical surfaces. When the grinder is being used, the button on the end of the spindle is held in the fingers so axial motion can be given to the spindle for grinding cylindrical surfaces. The base is held with the fingers of the other hand to give a slight rocking motion to the frame of the grinder for grinding flat surfaces, such as the ends of pinion leaves and pivot shoulders. Angles can be ground with this grinder by swiveling the slide rest to the desired angle. The lap should turn in a direction opposite to that of the article being ground or polished.

The laps used with the grinder and pivot polisher are made from different materials for producing different finishes. Some of the materials used to make laps (listed in order of their hardness with the hardest being listed first) are: carbide, steel, iron, bellmetal, brass, tin, boxwood, and ivory. Sometimes a lap is charged with diamond compound for grinding hard surfaces. India and hard Arkansas stones are also used for grinding. The laps made from the harder materials are used for grinding and shaping, and the laps made from the softer materials are used for polishing and finishing. The grinding materials used are carborundum, oilstone, and diamond. The polishing materials are red rouge, diamantine, Linde A, and fine diamond paste. The grinding and polishing materials used on the laps are mixed with clean light oil to make a paste to be applied to the lap.

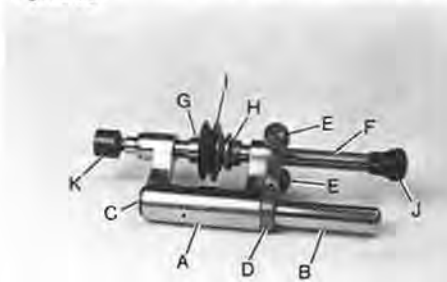


Figure 13



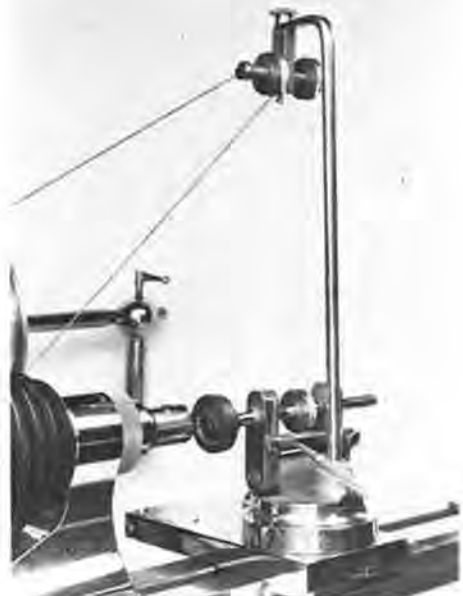
Another style of Moseley grinder and pivot polisher is shown in Figure 12. This grinder fits onto the lathe shoe like the Moseley slide rest. A description of this grinder is as follows. The base is shown at "A." The nut to change the height of the grinder is shown at "B." This nut works on a threaded stem that is part of table "C." The nut has a graduated scale around its edge in thousandths of an inch. One complete turn of the nut equals 0.025 in. The base for the frame of the grinder is shown at "D." This

(Continued on page 27)

Figure 11



Figure 14





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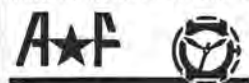
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Probably never. Quartz watches, however, are another matter. Over the past few years you have witnessed the increasing demand for the quartz watch and its servicing. That is why Michigan Jewelers Supply Co. and Albert Froidevaux & Fils have joined forces. Together we can provide you with the up-to-date technology necessary to compete in the quartz watch market.

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The Quartz watch has had a tremendous impact on the watch industry. Today, eight out of ten watches sold are quartz. Future estimates show that by next year, 90% of the watches sold on the U.S. market will be quartz.

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Developments in horological technology have led Albert Froidevaux & Sons to set up a department called ETIC for the purpose of supplying retailers with specially designed equipment, tools, components, and various other products for quartz watch service and repair. ETIC is based in Overland Park, Kansas, and is the only company to provide a **Total Quartz Watch Repair System** for today's watchmaker.

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The training program is two days in length and is designed to cover LED, LCD and analog quartz crystal watches. It will include a study of the "Principles of Operation", "Diagnosis Procedures", and the "Acceptable Repair Procedures" used in the Industry.

The Michigan Jewelers Supply Quartz Watch Training Program covers all areas of quartz watch repair in depth. It covers the basic ideas and concepts behind the operation of the quartz movement as well as "hands on" procedures to become a capable quartz watch technician. In fact, the student actually builds a quartz watch from component parts and takes it home with him. The student will also learn necessary skills such as soldering, use of epoxy, test procedures and circuit repair.

With this mix of concepts and practical exercises, the student will obtain the skill to repair —along with helpful information that could be used to aid in the sales of quartz watches. Training will be conducted at Michigan Jewelers Supply facilities in Troy, Michigan.

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Tuition for the Quartz Watch Training Program is \$250.00 (\$100.00 payable with application and the balance of \$150.00 at the start of class.) Remember that tuition fees are now tax deductible (100% — business and 95% — personal).

THE PICKLE BARREL

By Marshall F. Richmond, CMW



Use of Heat in Watch and Jewelry Repair

Part II

Heat is used in the watchmaking and jewelry trades in many ways with varied types of applications. In the past, before good torches, electric soldering machines, electric soldering irons, or guns were readily available, the common source for heat was the alcohol lamp and blowpipe. With the flame of the alcohol lamp, a watchmaker could easily set roller jewels and pallet stones, but when more heat was required to make solder joints, or temper and draw metals, the process of blowing air through the flame with a blowpipe was used. This produced a very small hot flame and even hard solder joints could be made. The air blown into the flame with the blowpipe not only supplied the oxygen to make the flame hot, but maneuvered the direction and intensity of the flame. This is similar to the flame of a modern torch. The use of the blowpipe was a highly skilled operation developed from practice and experience. Some workmen were so skilled with its use that they could even hard solder fine chain, but this required somewhat of a juggling act using both hands, the mouth, and moving the head to direct the flame.

Crude torches followed the blowpipe using combustible gasses such as acetylene and air that would make hard solder joints on limited size objects. Oxygen was then mixed with the combustible gas, usually in the handle of the torch. With a variety of size tips, most any metal could be soldered, brazed, or welded. Later it was found that natural gas, propane, or butane could be mixed with oxygen to greatly increase the heat produced so they could be used for hard soldering, brazing, welding, or even melting metals. Acetylene will burn with a hotter flame than propane, butane, or natural gas. Propane will burn with a hotter flame than natural gas. Propane, butane, or natural gas is a cleaner gas to use than acetylene, because the acetylene will burn with a sooty flame before the oxygen is turned on, and the black soot has a tendency to settle on the bench, your clothing, or anything in the room where it is used. Some workmen have learned to overcome this by turning on a small amount of oxygen with

the acetylene before igniting, but when shutting the torch down, if the oxygen is turned off first the same soot appears. Also, if the acetylene is turned off first, a small explosion occurs making a loud crack or snap. I have always been told by experienced jewelers who have tried using all the different gasses, that the ideal gas combination for jewelry repair is natural gas and oxygen. Having tried all of them myself, I am inclined to agree with them. However, since natural gas is not always available, propane is a very good second.

There are many torches on the market today. Some are listed in the material distributors catalogs, such as: Prest-O-Lite®, which uses acetylene and air taken from the atmosphere; the hoke type and Tescom®, which use oxygen and acetylene, or oxygen and natural gas, or propane; the Mini-Torch® which will use oxygen and acetylene, natural gas, or propane without any alteration in the mixing valve. The hoke or Tescom® torches are the same for natural gas and propane, but have a different mixing valve for acetylene or hydrogen. Many other torches are marketed and available at oxygen, gas, or welding supply companies. The advantage of buying your equipment from your material distributor is that the equipment they sell is tested and approved for the jewelry trade. Also, service on the equipment is available from them. Each of the above mentioned torches is adequate for most work encountered by the watchmaker-jeweler, but any piece of equipment has its limitations. The Mini-Torch® is the best that I have found for prongs, tips, or optical repairs. However, for heavy gold or especially silver rings, it will not produce enough heat. The hoke or Tescom® oxygen-gas torches are adequate for ring sizing, shanking, or soldering on heavy rings or jewelry. The Prest-O-Lite® torch that uses acetylene and air is adequate for most ring sizing and shanking repairs, but not really adequate for prongs, tips, or for soldering on extra heavy gold or silver rings and jewelry. This evaluation is made from my own personal experience after having used all the aforementioned torches.

THE PICKLE BARREL

Another source of heat for the watchmaker-jeweler is electrical devices. Some examples are the electric soldering machine, soldering irons, soldering guns, small furnaces for enameling and melting metals, and even small electric steam boilers for steam cleaning jewelry. The electric soldering machine operates on very low voltage so there is no risk of serious shock if the electrodes are touched. It has a heat selector knob and can be set to produce heat up to 2000°F. The heat for soldering is produced by touching the work with a carbon electrode which will produce the heat needed for soldering. Many of these machines have a foot switch that will permit the operator to turn the current off and on again while moving the contacts to prevent arcing. This machine can be used by a novice for simple jobs, but some jewelers, after years of practice and experience, can do many things with these machines that are done with a torch. The old electric soldering iron (actually having a copper tip) is still useful for many soft solder jobs. However, in most cases, it has been replaced by the electric soldering gun, which will produce instant soldering heat with no wait for warm up. These electric soldering guns are now available in small battery operated units that are excellent for mini-soldering. They can be used to solder broken circuits on electric watch circuit boards with little or no danger of damage to the circuit board. This is primarily because they are battery operated on a direct current and evenly heated, with no surge which might happen in using soldering guns that are operated on an alternating 110 volt current. A rule that I learned many years ago is never use an acid or acid salt as a flux when making solder joints in electrical connections. Always use a resin base paste or resin core solder.

The old way of melting gold, silver, or other metals for casting, was with a gas fueled blast furnace fed with air

produced by a compressor or blower. Today an electric melting furnace is available that will also melt the metals in a ceramic crucible, and furnish a controlled heat from 0°F to 2000°F with the temperature indicated by a built in pyrometer. This takes much of the guess work out of melting metals to the proper temperatures to make good castings. The hard enameling ovens and wax melting pots have also controlled temperatures that will produce the correct results without trial and error. There seems to be a piece of heat producing equipment available today for most any need in the watchmaking or jewelry trade.

As we acquire a better understanding of heat and its application, we can better understand solders and how to use them. With this article is a list of some of the available solders and the melt and flow temperatures of each. These listings were shown by one manufacturer of solders, but no melt and flow temperatures were shown on repair solders. Manufacturing solders contain the amount of gold indicated by the karat listings, such as 14K solder is 14K gold or 14/24 gold content. Repair solders contain less gold than is indicated, but the karat mark on the solder indicates on what karat gold the solder is to be used. Repair solders usually melt and flow at lower temperatures than even the soft manufacturing solders. This marks the reason behind the different melt and flow temperatures. Since repair solder flows at a lower temperature than manufacturing solder, it does not require excess heat to make the repair and does not cause the original solder joints to melt and come loose. This is the reason why manufacturing solder is used for the first solder joints. It is a hard solder with a high melt and flow temperature. Then, the second soldering can be done with less heat using soft solder with no danger of the first joints melting and becoming loose.

SOLDER	MELT TEMPERATURE	FLOW TEMPERATURE
	In degrees fahrenheit	
Easy flow silver		1350
Extra easy flow silver		1175
Yellow gold manufacturing solder		
14K hard	1350	1485
14K soft	1180	1330
10K hard	1260	1410
10K soft	1180	1360
White gold manufacturing solder		
19K weld	1340	1575
14K hard	1175	1320
14K soft	1160	1360
10K soft	1180	1270
6K soft	1130	1230

Now we will discuss a water welder which is now available to jewelers through watchmakers and jewelers equipment manufacturers. This piece of equipment breaks distilled water down to its elements of hydrogen and oxygen. Hydrogen is a very hot burning gas and oxygen is the supporting gas that will create a very hot flame when mixed with any flammable gas. These gasses are mixed and burned in a torch about the size of a lead pencil, producing a flame about the size of a pencil point. It is excellent for jewelry work or any fine soldering, small brazing, or small welding. Although it has been available through watchmakers and jewelers supply distributors only recently, this machine has been available through industrial sources for many years. One jeweler that I know has used this machine torch for at least twenty years. In fact, I have heard him praise the success of it since he has been using it. He had previously used oxygen and acetylene until one night his store caught fire. I don't remember if the oxygen-acetylene tanks and/or torch caused it, but they intensified it causing him a great loss. For this reason he purchased the water welder because in no way is there storage of combustible gasses, which lessens the threat of fire. Also, maybe this could give us an answer to the energy shortage. If someone can come up with a way to break down water to these gasses at a practical cost, we could have a perpetual supply of energy which would replace itself when used, because burning hydrogen with oxygen essentially reverts back to water.

In the use of heat, whether for home heating, cooking, or industry, there is always danger involved. There is danger of fire, injuries from burns, or if involving electricity, there is danger of electrical shock. There is no general warning or instructions that will absolutely prevent heat related accidents, but the use of common sense when using heat is a big plus. Although we cannot always see the reasoning behind laws, ordinances, and codes governing safe installations, they are put into effect for good reason. It is wise for your own protection to obey these laws and ordinances, by making installations according to codes governing them and using the heat producing devices accordingly. The best caution that anyone can give is "Be Careful."

In the next article we will discuss the use and maintenance of watchmakers' and jewelers' tools and equipment.

THE

SEMINAR IN THE NORTHWEST



A three-day Seiko Seminar was held at Spokane Community College recently. In the photo seated from left to right are Bill Shaw, Pullman, Washington; J. Tuttle, Yakema, Washington; and Don Doud, Toledo, Washington. Standing in front from left to right are Clifford Main, Helena, Montana; Jane Vedder, Richland, Washington; Chris James, Kalispell, Montana; Instructor for Seiko, Bob Watanabe; Thomas H. Imai, CMW, instructor with Spokane Community College; and John Randall, Ford, Washington. Standing in the last row from left to right are Ralph Steiner, Spokane, Washington; Bob Jenk, Coeur d'Alene, Idaho; Earle Osborne, Post Falls, Idaho; Vincent Smith, Seattle, Washington; John Haines, Lewiston, Idaho; Fred Reiber, Moses Lake, Washington; Paul Schumann, Omak, Washington; Vernon Barber, Sagle, Idaho; Eric Fleigel, Arizona; Mike Lampe, Othello, Washington; and Pete Smith, Cheney, Washington.

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354	.99	.75		RW54	.80	.73					
355	2.25	1.99									
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362	.89	.79		RW310	.75	.69		SR721W	.87	.81	
364	.89	.79		WIV	.75	.69		SR620W	.87	.81	
366	.98	.79						SR1116SW	.87	.81	
371	.98	.79		RW315	.68	.63		SR920SW	.87	.81	
373								SR916SW	.87	.81	
381	.89	.79		RW30	.75	.69		SR1120SW	.87	.81	
384	.79	.69		RW37	.64	.58		SR41SW	.75	.71	
386	1.09	.89		RW44	.93	.81		SR43W	1.00	.93	
387	1.34	1.19		RW51	1.04	.95					
388	.94	.84									
389	.94	.84		RW49	.80	.73		SR1130W	.94	.88	
390	1.18	.93		RW49	.80	.73		SR1130SW	1.06	.97	
391	.98	.79		RW40	.72	.63		SR1120W	.87	.81	
392	.64	.54		RW47	.55	.48		SR41W	.62		
393	.98	.79		RW48	.80	.73		SR754W	.87	.81	
394	.98	.89		RW33	.84	.69		SR936SW	.87	.81	
395	.94	.83		RW313	.80	.69		SR926SW	.87	.81	
396	.95	.83		RW411	.80	.69		SR726W	.87	.81	
397	.99	.83		RW311	.80	.69		SR726SW	.87	.81	
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Dance of Death Clocks

From the Manuscript and Photo Library of Orville R. Hagans, FAWI, CMW, CMC, FBHI

The "Dance of Death" is a grim Medieval fantasy whose origin is quite obscure. There have been many interpretations of this theme. It became a subject of religious drama based on Ludus Coventriae's portrayal of Death appearing in person to strike down King Herod. The "Dance of Death" is also portrayed as the King of Terror laying his bony hands impartially upon the king, pope, noble, peasant, and beggar alike in his quest for all that was mortal of them. However, it is the depiction of dancing Death in the paintings of Hans Holbein that influenced some of the early German clockmakers to follow this theme in their study of horology.

Father Time was represented as a skeleton swinging a scythe made to move by the train of the clock. Dancing skeletons were set in motion by the clock and numbered the hours by the evolutions of their steps in the dance. Some lantern and bracket clocks were fitted with the skeleton on the top of the case, while others were located in a niche in the dial. This was indeed macabre for a domestic clock, but more in keeping with an ecclesiastical one. Few, if any, of these specimens have survived so far as we know.

The "Dance of Death" and static Death were displayed in the engraving of clock dials and panels. Figure 1 shows bony, stark Death on a clock door with a torch and a streamer inscribed with the words, "The sting of death is sin." We also see time represented by the hour glass and there is an inscription which reads:

*Man is a glase, Life
Is a water weakly washed about,
Sinns brought in death,
Death breakes the glase
So runes this water out.*

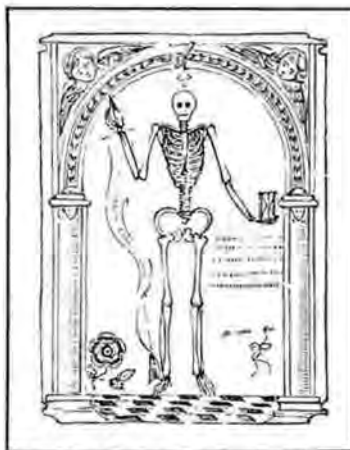


Figure 1

Death knows no rank and sees the mighty and the low in their bare skeletons, all reduced to a low degree of bony remains. This became the idea for the horologist in his quest of the unusual to incorporate in clocks of long ago.

Chalice Dial

The early sundial in Great Britain and Ireland was commonly called a Mass dial for its most important use in the earlier days of the Roman Catholic Church. It indicated the time that Mass was to be said, which was 9:00 A.M. on Sundays and church holidays. For this reason the line indicating the number nine was cut sharper and deeper than the others. In this way the exact time of saying Mass was correctly recorded by the sun in every church in the land. Serving this same horological purpose was the sundial chalice which contained the wine used in the Mass service. See Figure 2.

The chalice was usually made of silver or brass with the hour scales

engraved inside it marking the south or meridian line on which the priest positioned the chalice on the altar table. A gnomon rod mounted in the axis of the cup cast its shadow within it. The shadow was cast by a sunbeam from the east stained glass window being admitted by a prismatic piece of glass incorporated in the window's colorful design. Some chalices were also made in cut glass showing the Mass line on the outside for the congregation to see.

These chalice dials date as far back as the 12th century, but the most recent example is dated in the 16th century in Germany. In ecclesiastical horology this sacred type of timekeeper is indeed unique.

Figure 2



TECHNICALLY WATCHES

(Continued from page 18)

base has degree marks completely around it. The base can be turned to any angle. There are two locking screws to lock the base at any position. The top of the base is milled out to accommodate the bottom of the frame "E." The frame is pivoted between two pointed screws, one at each end of the frame. One end of the frame has a rocker bar going through it which is shown at "F." There are two screws in the rocker bar—one on each side of the frame to limit the swing of the frame in its base. A small flat spring is used under the rocker bar for tension. The spring is fastened to the top of the base with a screw. The spindle of this grinder has two small collars to limit its axial travel. These are shown at "G." The end of the spindle is tapered on the outside to receive lugs with tapered holes. There is a tapered hole in the end of the spindle to receive lugs which have tapered shanks.

Figure 13 shows the Moseley grinder and pivot polisher being used to polish a pivot on a clock pinion. The fingers of the right hand are used to move the spindle axially to finish the pivot, while the left index finger is used on the rocking bar to rock the frame back and forth. This causes the lap to finish the shoulder of the pivot.

Figure 14 shows another type of grinder and pivot polisher. This one does not have the maker's name stamped on it. It probably was made up by an individual machinist or watchmaker. The base of this grinder fits directly on the lathe bed. It has its own shoe to align it on the bed. This grinder has its own idler stand and pulleys for guiding the belt. The construction and operation of this grinder is basically the same as the Moseley.

Milling attachments will be discussed next month.

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Position 2

Crown pulled out one notch. Turning it forward sets the red alarm pointer to the desired alarm time. Turning it backwards corrects the calendar.

Position 3

Crown pulled out two notches. The MemoQuartz can be set to the correct time.

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By Fred S. Burckhardt



Things To Do In '82

Many of us get tied down in our daily routines, and we sometimes forget some of the other exciting things that go on in the world. We should resolve to get away and enjoy ourselves once in a while. I don't know about you, but I made a list, after careful study of course, of some things I hope to do in '82.

First, I plan to take a trip to Waxahachie, Texas and take a tour of the Coca-Cola bottling plant. True, this isn't as exciting as sitting at the bench all day, but I want to save the better trips till last. A return trip to Waxahachie will be made later in the year to attend the Annual Armadillo Race and Chili Cook-Off. If you like hot chili, you should plan to attend this event. Some of that stuff is so hot, even your fingernails will sweat.

In the Spring, if things go right, a trip to the Monti Chianti region of Italy is planned. This will be a rather exhilarating experience. Here you can sit all day, and watch them weave the little baskets that fit around the Chianti wine bottles. I guess it's just that I always enjoy being with people that work with their hands. If luck will have it, the timing may be right to watch the experts stuff those little red things in olives.

The summer time is especially interesting here in Texas. A trip to the cotton fields is always fun. Watching the boll weevils damage the cotton balls is the highlight of the summer season. After dark, you can go into town and watch the only traffic light change colors. Gee it's great, but don't plan on any more trips for awhile, as this one can really wear you

out. After a few months rest, try to make one of these trips. Choosing which one will be difficult. Planning on making both will prove to be too much for the weak, so don't try without your doctor's okay.

If you should decide on the first one, be sure to make reservations ahead of time, and be sure to time it just right. I'm speaking of a trip to the plant just outside of Peoria, where they can pumpkins. If my information is correct, this is the largest pumpkin canning plant in the world. I can hardly wait to see how they cram those big pumpkins into those little cans. Fascinating, to say the least!

Another wild excursion will be to the German area in South Texas. I know one watchmaker from this area who makes a fortune at hog-killing time, stuffing sausages. He is known as the "Swiftest Sausage Stuffer" in the West. Once, while he was stuffing, the rollers that carry the stuffed sausage along broke down. He had to stuff with one hand and push the stuffed stuff along with the other. He got tangled up and almost choked to death. It was a horrible sight. It looked as though a giant sausage boa constrictor was wrapped around him. He had to give up bench work for several weeks while he got back into shape.

I know that many of you are sitting on the edge of your seat hardly able to wait to start making your plans. Others of you may not be in the position to take a trip—don't despair. Staying home can be fun too.

I'll never forget an enjoyable two weeks I spent watching a watch rust after I dipped it in a glass of water. You see, you don't have to go running off somewhere to have a good time.

Another time, when cash was a little short, I spent my vacation taking apart and putting together again a FF 60 movement. I stopped counting after the four thousandth time. Gad, how much fun can a person stand!

If you plan on attending a convention, don't follow the crowd—do your own thing. For example, when AWI held their convention in San Francisco, others spent their time sightseeing, but I used my time wisely. I went out and watched them paint the Golden Gate Bridge. You just can't afford to miss out on opportunities like these. At another convention, here in Texas, while others were eating, dancing, drinking, and having what they thought was fun, I had some real fun. I went on a rattlesnake hunt. I came back with a burlap bag full of them. You should try this sometime, but be careful because those suckers are quick. (Did you ever eat rattlesnake meat? It's great—just like eating old sneakers.) As usual, everybody says it tastes like pork. Don't believe them. Have you ever noticed how some people, whenever

they eat something unusual, always say, "It tastes like pork!" You can take a cow chip, pour chocolate syrup on it, and they'll still say, "It tastes like pork!" To get back on the subject, eating rattlesnake is like eating a ten foot chicken neck—all bone, very little meat. Now I'm assuming you realize that it has to be cooked first. Don't bite into a live rattlesnake. For some reason or other they don't seem to like it and may try to bite back. If you should get bitten by one, let's say on the ankle, don't panic. Simply cut off you leg and then stop the bleeding. It's not nearly as painful as the bite would be. You must do this quickly. I remember one fellow who immediately cut off his leg, stopped the bleeding, but died anyway. He cut off the wrong leg.

Do try to get away for awhile, but don't overdo it. You may find it difficult to get back in the groove. As the old saying goes, "How you gonna keep 'em down at the bench after they've seen the sights?" (Sounds like it would make a good song title.) Who knows, we may get to see each other along the highway. If you happen to see a gold colored Rolls Royce, be sure to honk and wave. It won't be me, but you'll sure make the people in the Rolls wonder who you are!

1713

*"I know that many of you are sitting on the edge
of your seat hardly able to wait to start making your plans.
Others of you may not be in the position to take a trip—don't
despair. Staying home can be fun too. I'll never forget an enjoyable two
weeks I spent watching a watch rust after I dipped
it in a glass of water. You see, you don't have to go running
off somewhere to have a good time."*

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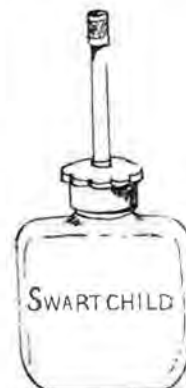
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The Betsy Ross Watch

Q Enclosed are photos of an "O" size movement watch. Could you tell me anything about it? It has the name "Betsy Ross" on the face and on the barrel train bridge. The name on the face looks like it was written with a quill pen. On the bridge, it looks as though it were hand cut.

The serial number on the movement is 902103. The case was made by the Philadelphia Watch Case Company, No. 9160639.

I can account for the whereabouts for the last fifty years. Any information you could provide would be greatly appreciated.

Daniel J. Dubrosky
Forestville, Connecticut

A The Betsy Ross watch was made by the United States Watch Company at Waltham (not to be confused with the Waltham Watch Company). This company started in 1885, and your watch dates from around 1892.

The quality of the watch was rather modest, although they did produce some better movements in the men's sizes. This company also produced some watches of the exact size and almost the same bridge configurations, but with a duplex escapement with milled teeth to the escape wheel, unlike that of the duplexes of the Waterbury, New England Watch Company. Yours is not yet overly rare.

Q I have been reading your column in the *Horological Times*, and I hope you will answer some questions I have about pin lever watches. I am including a chapter on watches in my doctoral dissertation on "The Throw-away Ethic in America." My research has uncovered a number of comments on the short lifespan of the pin lever



watch, but I could use an expert opinion on the matter. What is the average lifespan of a pin lever watch? Do the parts actually wear out by the end of this time? Could they be repaired if the owner were willing?

Although a pin lever is inherently inferior to a jeweled lever, some pin levers are better constructed than others and presumably would last longer. Can you give me an assessment of the quality and durability of the Ingersoll and Timex pin lever watches? I realize it is not your policy to discuss specific makes, but these two have so dominated the market, that their performance must determine the general public attitude

toward pin levers. I hope you will at least comment on the Ingersoll since it is no longer made.

I appreciate your assistance.

Jane Busch
Arlington, Virginia

A Despite the opinion that pin lever watches don't last as long as the jeweled lever watch, many pin lever watches do last a long time. This is especially true of the American-made pin lever watch. I am not a champion of any brand, and have no chauvinistic hang ups—horologically anyway.

The American-made pin lever watches lasted longer, mainly for the simple reason that their useful life was a decision made largely by the wearer—does the watch merit the repair cost to maintain it in case of breakage? The American-made watch in this category had a balance staff with a coned pivot which made it virtually unbreakable. This required a stronger mainspring. The mainsprings in the American-made pin lever watches were very strong. This should have made premature wear inevitable, but for the most part, it did not wear that rapidly. The plates bearing the wheels were thin, but the brass was especially tough and resisted wear. Furthermore, the pivots of the wheels were a little thicker than those found on jeweled lever watches or their Swiss counterparts. Thus, the pressure was distributed over a large surface, delaying any pivot hole wear. The Ingersolls (today's Timex) were made rather well for their class and price range. It was advertised as a watch that could be traded in for another. The factory merely took the traded watch parts and used most of them again.

The Swiss "aged" sooner for a few reasons. Their pivots were very fine,

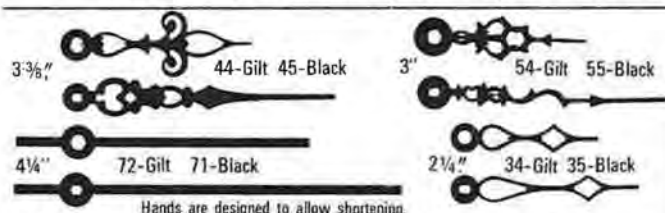
(Continued on page 39)

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UPQB 20404—Chime with pendulum.

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QA 28201—

QA 28203 LS (Long Shaft Version)

The second hand moves in an exact one second step motion. The movement is a thin and compact unit that can be fitted into any type of case or panel. Accuracy = 10sec./month. Length 56.0mm, Width 56.0mm, Depth 14.9mm. Shaft length: QA 28201—9mm, QA28203LS—19mm. Uses AA battery.

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QA 20801—

QA 20805 LS (Long Shaft Version)

Silent movement. Continuous motion second hand. High torque model. Size: Height 72.0mm, Width 62.0mm, Depth 28.0mm. Uses type C battery.

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PQ 20501—With Pendulum

Silent movement. Continuous motion second hand. Pendulum does not affect accuracy. Size: Height 62mm, Width 72mm, Depth 41mm. Choice of pendulum lengths: 8 3/8", 9 3/8", 11 3/4", 13 7/8", 16". Uses type C battery.

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The New Calendar Year

As we find ourselves halfway through the operating year and at the beginning of a new calendar year, we will review a number of pertinent topics relating to AWI activities. We welcome comments or questions from members concerning any items which interest them. Please address them to me at AWI Central.

Annual Dues & Renewal Packets

The first membership renewal statements went in the mail early in November, and the response was probably the best we have ever had. Because our members are responding to pleas to pay on just one billing, we have been able to realize a considerable savings in postage and labor. In a time of considerable financial pressure, your response is appreciated by your officers and the office staff.

All renewal packets have been sent to members whose payments were received up to the time of my writing this column. Still to come, will be the second edition of AWI's *Watch & Clockmakers' Buyer's Guide*, as well as a supplementary technical bulletin index for 1982. This index will list hundreds of new bulletins which have been supplied during 1981 and is the largest single year's accumulation in the history of AWI. Manufacturers have been most cooperative in making this technical information available. Many recognize that AWI's technical information service saves them many dollars in answering individual requests from watchmakers.

Annual Meeting

The AWI Annual Board of Directors Meeting is scheduled for June 26 and 27, 1982. (This is less than six months away.) The Affiliate Chapter Delegates will meet on June 25, 1982, and the Research and Education Council member schools will have their in-service workshop and annual meeting during June 21 through 24.

This year, the annual meetings will be held in Cincinnati, Ohio (actually Northern Kentucky) at the Drawbridge Inn and Convention Center located at I-75 and Buttermilk Pike, Fort Mitchell, Kentucky. It is not too early, for those who plan to attend any of these meetings, to secure their air reservations now. By so doing, dollars can be saved and disappointments eliminated, as passengers vie for the more limited number of seats available as a result of airlines curtailing their schedules.

With the annual meetings less than six months away, now is the time for committees to give that final push toward the completion of their committee projects for the year. President Crooks had set specific goals for a number of committees this past year, and has asked all to review their contribution to the AWI program.

Industry Relations Board

Henry Fried's speech to the WMJDA Board of Directors meeting on October 9, 1981, has resulted in the scheduling of a group of representatives from WMJDA, AWI, and AMA on February 22, 1982 in Chicago. This exploratory meeting will be held at the headquarters of the WMJDA.

Its purpose will be to look into the advantages such an Industry Relations Board might have to each group, namely, The Watch Material and Jewelry Distributors Association, The American Watchmakers Institute, and the American Watch Association. WMJDA will be represented by Karl Esslinger and John Cassidy, AWI by Henry Fried and Milt Stevens, and the AWA by Bert Lowe. This meeting is in direct line with the proposal President Crooks and Milt Stevens made for an Industry-wide meeting last Fall.

Questions and Answers of and for the Clockmaking Profession

The first edition of *Questions and Answers of and for the Clockmaking Profession* has sold out, and we are currently in our second printing. The second printing contains the correction of a few minor errors in the first edition and a complete index which has been compiled by Mr. John Cammarata. In keeping with increased costs, the new edition will retail for \$14.95. Persons who have purchased the first edition and who would like to purchase the index, may do so for a nominal cost.

In next month's column, we will report on the Executive Committee Meeting which was held in Boston, Massachusetts, January 29 and 30. I will make a special effort to report on Henry Fried's program which was presented at the Boston seminar on January 31, dealing with the emerging horological industry in Red China. Henry Fried recently visited Red China and was privileged to visit some of that country's horological factories.

MTS

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Let's Get Personal

They say that religion and politics should not be discussed with our customers; however, there are exceptions to this age-old philosophy.

There was a time when knowing my customers' religion would have saved me several hours making pieces of special jewelry. I was asked to make a star-shaped, yellow gold pendant and matching earrings. I was very proud of my workmanship until I showed this set to my customer, who agreed it was a nice job, except for one thing. They wanted a six-rayed Star of David, and not the five-rayed star that I had designed. I did not know my customer was Jewish.

If we are selling crosses, we must know what type it should be. This may also necessitate knowing the religion of the recipient of this gift.

In business, we sometimes need to be as personal with our customer as we would if they were invited to our home. We would certainly find out about our friends' likes and dislikes for certain foods, drinks, and activities.

Sometimes we need to get personal, but do we need to talk about politics? Probably not, unless we were to make a donkey or an elephant charm, and then it would become desirable to show the appropriate one to the right party.

Finding out what type of work a customer does is less personal, but sometimes this information is very important to know. A customer once asked me to design a heart-shaped pendant. This seemed to be a simple request; however, once finished with the design, I discovered that it had to be redone.



You see, this customer was a nurse, and her husband was a doctor specializing in heart disease. She wanted an actual heart-shaped heart, not the symmetrical ones we are accustomed to seeing on Valentine's Day. The human heart has an unusual asymmetric shape, and this is what she wanted.

We live in a personal world. Even the barber must get personal, and ask us how we want our hair cut. For instance, my barber must allow for the area where my visor goes (above my ears). This area can get matted down, and the hair above this spot sticks out by the end of the day. My barber takes a personal interest in me, and besides

that, he tells me how handsome I look when I get out of his chair. There's nothing as nice as having an honest barber!

If we are making special jewelry for a customer, and they want our help, we must ask personal questions. Maybe we will learn that he or she belongs to a lodge, or organization that has an emblem or logo to represent them. They may be interested in having this emblem made into a ring, lapel pin, or other jewelry item.

Another personal bit of helpful information is the customer's first name or initials, which could be used for a special jewelry design. While we are getting personal, let's find out their birthday. Perhaps the customer would like their birthstone made up just for them. And don't forget about anniversaries. Another idea that is certainly not new, and very much appreciated, is to cut out newspaper clippings about our customers, and mail the articles to them. They will certainly like this gesture; however, no accompanying advertising should be included. This would be too commercial, and they might get the wrong impression of your noble intentions.

I hope this month is a prosperous one for you—this is my personal wish. Now pass this personal thought on to your customers and maybe they will remember an anniversary, birthday, or at least Valentine's Day.

Buy now,
Wes

QUESTIONS AND ANSWERS
(Continued from page 34)

which allowed nice running on a weak spring but susceptible to breakage. When this occurred, the wearer would discard it since most often these were highly styled in thin-plated cases, which wore out long before the movement did. In the case of breakage, the wearer's decision was already influenced by the worn appearance of the watch and the cost of repairs. The balance pivots were thin, as those of a jeweled lever, and were not shock resistant. As for the escapement, which in truth should make the real difference from a jeweled lever watch, it didn't wear as some might believe. However, the parts were made flimsily, and in many cases didn't wear out but became loose or broken.

In summary, if a watch were made with a pin lever escapement but with jeweled pins and of the same quality as a jeweled lever, it should wear quite long. It is cheaper to make these with automatic machinery; however, not much is expected of it, so great refinements are not lavished on them. Consequently, this "stepchild" of the watch industry doesn't last as long. I too could write a dissertation on this subject, but that's another story.

WLB

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"TOMORROW'S WATCHMAKER"

Featured Topic at WMJDA Convention

The Watch Material and Jewelry Distributors Association will hold its 1982 convention March 2 through 7, at the Greenbrier in White Sulphur Springs, West Virginia. Four days of formal and informal programs are planned to provide an industry update and exchange of timely, vital information for distributor businesses.

The business sessions kick off Wednesday morning when Louis Zaroni, founder and president of Zantech, Inc., will present an analysis of "Tomorrow's Watchmaker." He will examine what is happening in the quartz watch service industry today, and present his ideas on how to prepare for the future.

Zaroni was instrumental in the development of liquid crystal displays and their application to the watch industry. His firm, Zantech, Inc., in Trenton, New Jersey, is an instrumentation

MEYER GOICHBERG NAMED WMJDA MAN-OF-THE-YEAR

Meyer Goichberg, founder and President of American Jewelry Box Company, Inc., has been named WMJDA's Man-of-the-Year. He will be honored at the traditional luncheon on Friday, March 5, 1982 during the Annual Meeting.

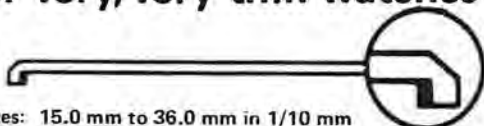
Meyer has been involved with WMJDA almost since its inception and has been one of the strong supporters throughout his membership.

and consulting company dedicated to the quartz watch industry, and the manufacturing of troubleshooting equipment for electronic watches. He is a frequent contributor to the editorial columns of *Horological Times*.

Other sessions will explore the new tax laws contained in the Economic Recovery Act (ERA) of 1981 and their impact on distributor businesses. Larue Simpson of Main Hurdman in Cincinnati, Ohio will present this phase of the program. Ron Kaanehe, Staff Manager at A.T. & T., will shed new light on present marketing systems at the Saturday business meeting. "Tele-marketing for Wholesalers" will cover the intricacies of controlling costs while expanding sales in a distributor operation.

On Friday, the traditional Man-of-the-Year Award luncheon and the Supplier Conference-Associates Tables displays will round out the program. 

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Are You Prepared For June?

Isn't it amazing how quickly time goes by, or as a friend of mine used to say, "Tempus Fidgets." It is difficult to believe that we are now into February and that in four short months it will be June, and time for our annual meeting. I hope that you have already elected or appointed a delegate and alternate. It is very helpful to AWI Central to have this information as soon as possible in order that this person will receive all of the advance information that will be forthcoming from the office. Every year, it seems that some of the delegates arrive with nothing because the material has been sent to the wrong person and has not been forwarded to the proper person. It is not negligence on anyone's part, but merely a lack of communication. When our members are spread over a distance of hundreds of miles, it is not always possible to be in constant communication. That is why it is necessary to forward the names and addresses of your delegate and alternate to the office

in Cincinnati as soon as they have been appointed. If your delegate has not yet been selected, please do it quickly. June will be here before you know it!

Your delegate will also be receiving a report form to be filled out and sent to the office. These are very important, because it is from these reports that we select the outstanding chapter of the year. I know that many of you are in a position to take this year's honors, but we will never know about it unless you tell us of your achievements.

While on the subject of the upcoming annual meeting, let me state that if you are going to have any proposals to bring before the AWI Board of Directors, please have them properly written and presented. In the past, the wording of the proposals which were submitted for consideration caused some problems. We cannot demand that the board take action—we can only suggest.

Also any proposal that would require a change in the constitution cannot be considered without going through proper channels. You will have to inquire at AWI Central on the correct procedure to follow. I mention these things now so that your delegate may be well informed, and save us a lot of time and dickerings in June.

Congratulations to the Potomac Watchmakers Guild for their part in helping the D.C. police in their investigation. These are the types of things that will help the watchmaker gain recognition. If you are not now using your case mark, start using it today, and urge all others to do the same.

No one as yet has been able to come up with the solution to the watchmaker's woes, but some of you are certainly trying. I will compile these suggestions and present some of them in a future issue. Keep those letters coming, I enjoy hearing from you.

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Varta Awards \$1,000 Scholarship

NEW YORK

The Horological Society of New York held an election on Monday, December 7, 1981. Those present also witnessed an award ceremony given by Varta Batteries, Inc., and heard an exciting address by Henry B. Fried.

The election resulted in the following slate: President, Aaron Rennert; Vice-President, Dennis Tricarico; Executive Secretary, Alvin Rudnick; Recording Secretary, Victor Hull; Financial Secretary and Treasurer, Peter Davis; Sergeant at Arms, Seaford Williams; Trustees, Irving Albert and Howard Levy; Executive Committee, Ben Matz, Irving Feld, Henry Loeser, Paul Homburger, and Morton Silver.

The rest of the evening was devoted to a Special Student Night. Invitations had been extended to students of the George Washington Vocational High School and the Joseph Bulova School of Watchmaking. As part of the program, Varta Batteries, Inc., awarded a scholarship to Peter Benton for Parkland Institute. Peter's proud parents and the entire HSNY audience witnessed the ceremonial passing of the \$1,000 check from Arthur Muti, President of Varta, to Peter Benton. The two principals were flanked by Aaron Rennert, president of the HSNY and Tom Broderick, Vice-President of Varta. The Horological Society of New



Arthur Muti, President of Varta Batteries, Inc., giving the \$1,000 Scholarship Award to Peter Benton. Standing left to right are Tom Broderick, Vice-President of Varta; Peter Benton, award recipient; Arthur Muti, President of Varta; and Aaron Rennert, President of HSNY.

York, which hosted the ceremony, had previously established a special committee to select the recipient.

Among the dignitaries who attended the meeting, were Varta Executives, Frank Vignola, Director of Fi-

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nance; and Robert Errico, Manager. Also present, were Jean Pierre Savary, Director of WOSIC; and De Gregario, Assistant Principal of George Westinghouse Vocational High School.

The final event of the evening was an address by Henry B. Fried, one of America's well known horologist, who spoke on "The Present and Future of Watches and Watch Servicing, With Special Attention to Student Problems."

Since Mr. Fried had just returned from China, he included some of his travel experiences in his talk. He also exhibited a Chinese watch and reported that China, with its population of 900 million, is now manufacturing 26 million watches per year. Mr. Fried, always the spellbinder, concluded the formal program.

The evening ended with coffee and cake, provided by Varta.

NEW JERSEY

The featured speaker at the January meeting of Watchmakers Association of New Jersey was Steven O. Conover. Mr. Conover is a technical editor of *Horological Times* magazine. His specialty

is grandfather clocks, and his Eastern Clock Repair in Iselin, New Jersey holds warranty service contracts with major companies, such as Herschede, Ridgeway, Seth Thomas, and Pearl. In addition to writing magazine articles, Mr. Conover teaches clock repair in the Woodbridge Technical School. His talk, "Is Clock Repair Worthwhile Today?" is a presentation no one wanted to miss.

OREGON

The Oregon Watch and Clockmakers Guild held their January meeting in Wilsonville. Election of officers was held. This was also the first of a series of self-help meetings. During the year, various members will demonstrate some of their skills and methods of doing various operations. The topic was "How I Rebush a Worn Clock Pivot Hole."

OHIO

The next WAO-AWI seminar will be "Introduction to Solid State Watch Repair" with AWI instructor, Bob Nelson.

In this seminar, a five function LCD watch will be assembled. All who attend will receive seven Maxell cells, courtesy of Maxell Battery Corporation. This is an excellent seminar for those watchmakers who are not very experienced in quartz watches. This seminar will be held March 20 and 21 in New Philadelphia, Ohio at the Delphian Inn, I-77 and State Route 39, exit 81. Anyone wishing to attend this seminar should contact seminar chairman Larry Hilvers at 721 N. Perry Street, Napoleon, Ohio 43545. Phone (419) 592-5898.

ILLINOIS

The Central Illinois Watchmakers Association recently had a meeting on January 21 in Champaign, Illinois.

The first feature of the evening was a discussion of technical questions. Members were invited to bring their pet problems and ideas in order to swap answers and experiences. The second feature of the meeting was an exchange of equipment, brought in by members.

New officers of the Central Illinois Watchmakers Association are Charles Ramsey, president, Peoria, Illinois; and Ben Smith, vice-president, Decatur, Illinois; Mary Ann Bilyeu of Monticello and Gordon Robinson of Springfield return to the posts of secretary and treasurer.

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Book Review

Watchmaking, by George Daniels. 416 pages, Introduction with 8 color plates of 60 photographs, 669 figures, 10½ x 7 1/2 in., hard covers with colored dust jacket, published in 1981 by Southeby Publications.

This book is on watchmaking—not repairing. It discusses how to make complete watches, and all their parts including the dials, hands, and cases. The author, George Daniels, is considered to be one of this century's foremost watchmakers. His accomplishments and complicated watches (some illustrated in this book), have received universal attention with awards including the Tompion Gold Medal of the Worshipful Company of Clockmakers, the British Horological Institute's Gold Medal for Outstanding Horological Achievement, The Kulberg Medal for Horological Sciences and the Arts and Sciences and Learning Award. His books *Watches*, *The Art of Breguet*, *A Complete History of the Technical and Decorative Development of the Watch*, and others have already proven that he is a proficient writer.

To illustrate his methods, Mr. Daniels has been fortunate to obtain the services of David Penney, whose horological artwork has brought him great recognition. The book is illustrated with 669 excellent isometric drawings describing in detail his methods of making each part. Some of the watches made by the author, tourbillons with equation of time indications, and unusual escapements of his own invention, are shown completely assembled, as well as dismantled, in clear color photographs. There are also color plates of his workshop.

This volume is divided into sixteen instructional sections entitled: "Workshop and Equipment," "Hand Tools," "Finishing Steel and Brass," "Turning," "Wheels and Pinions,"

"Making Small Components," "Jewelling," "Escapements," "Mainsprings and Accessories," "Movement Design," "The Balance Spring," "Casemaking," and "Engine-Turned Cases and Dials."

While the book deals with detailed instruction in making parts for handmade watches, the same instructions are certainly useful in making the same type of parts needed for restoration or repairs of existing watches. Making a complete watch entails some engineering knowledge, although many of the old masters and factory model makers were practical watchmakers without formal engineering training. In this book, the author explains the engineering involved in simple, practical terms, using understandable mathematics. It includes methods of making large scale drawings, and from these, one can learn how to obtain the actual dimensions of the parts to be made.

Descriptions of lathes which can be used, include fine line drawings of small watchmaker's and bench lathes, and accessories such as, idler pulleys and shafts, slide rests, milling attachments, optical aids, centering and spotting devices, boring tools, face plates, various chucks, and other related materials. Measuring tools that are more familiar to watchmakers are discussed, as well as hand tools, pliers, files, hand vises, broaches, tweezers of special design, screwdriver shapes, and drills especially designed for small pivots. Hard steel finishing, as well as the methods he recommends for making these tools are also discussed. Methods of using the "fiddle" bow in accurate drilling are explained and illustrated. The making of certain taps and dies are included for the preparation of specialized work.

The chapters on turning and finishing steel and brass, cover the making of staffs, using various types of equipment to finish these parts. Here the Jacot tool, split, lathe chucks, shellac chucks, pivoting runners, and even how to make certain parts for the lathe to produce specifics and insure positive results, are covered. Turning and fitting pinions are shown in this book, including how to center them for ultra-precise mounting in their wheels. Also explained is the polishing of pinion leaves and shoulders. Wheel tooth forms are covered in a thorough and surprisingly easy-to-understand manner, aided with clear, progressive, line drawings. Even the epi-
(Continued on page 47)

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The Year of the Dog

Now that Halloween, Thanksgiving, and Christmas are over, let us turn our sights to the calendar year of 1982. As you know, people here have a zodiac symbol for every month of the year. In the Far East, however, they have a zodiac of their own which works like this: it takes twelve years to complete one cycle, and every year has a different animal symbol. According to the story as I remember, Buddha called the animals of the world to him, and only twelve responded. Those that came were given the honour that one year should be named after them. The animals came in order beginning with the rat, then the ox, followed by the tiger, rabbit, dragon, snake, horse, sheep, monkey, cock, dog, and boar.

The year of 1982 is symbolized by the dog. If you wish to find your own animal symbol, just count backward in blocks of twelve, and see what animal you come up with. For instance, if you are 24 years old, counting backward two blocks of twelve would bring you to the dog symbol. Dog year people are said to be very honest and quite loyal. Therefore, those born in this year are sought out for being big business managers. Dog year people are congenial to horse, tiger, and rabbit year people, and as such they would make good marriage partners. The next best marriages would be with those of the rat, snake, monkey, dog, or boar years, and the worst would be with people of the dragon or sheep year. In the East, this zodiac is almost always consulted prior to any undertaking.

Now, let's turn our attention to the Research and Education Council. The horological schools have not been exempted from the budget cuts occurring

all over the nation. I know cuts have been made, and now it is up to the instructors to look to the future with innovative ideas—like giving an extra helping hand by conducting a guild

seminar to help instructors meet expenses for the R.E.C.

If by chance you did not receive the itinerary of the R.E.C. meeting in the mail, it is reprinted here.

10-13

SCHEDULE FOR R.E.C. MEETING Drawbridge Motel and Convention Center Ft. Mitchell, Kentucky — (Near) Cincinnati, Ohio Airport June 22, 1982

8:00 A.M. — 12:00 P.M.	Les Smith, CEWS Certified Electronic Watch Service Course for Certification
12:00 P.M. — 1:00 P.M.	Lunch
1:00 P.M. — 5:00 P.M.	Certified Electronic Watch Service Course for Certification

June 23, 1982

8:00 A.M. — 12:00 P.M.	Certified Electronic Watch Service Course for Certification of CEWS
12:00 P.M. — 1:00 P.M.	Lunch
1:00 P.M. — 5:00 P.M.	Zantech—Louis Zanoni, instructor

June 24, 1982

8:00 A.M. — 12:00 P.M.	Citizen Watch Company
12:00 P.M. — 1:00 P.M.	Lunch
1:00 P.M. — 5:00 P.M.	Watchmakers of Switzerland Seminar

June 25, 1982

8:00 A.M. — 12:00 P.M.	Bulova Watch Company
12:00 P.M. — 1:00 P.M.	Lunch
1:00 P.M. — 5:00 P.M.	Seiko Watch Seminar

All instructors of the R.E.C. member schools are eligible to attend R.E.C. Seminars.

BOOK REVIEW

(Continued from page 45)

cycloidal and involute forms are easy to grasp. To make things even more understandable, tables for watch and clock trains are shown.

Mr. Daniels also shows how wheel and pinion cutters can be made by the watchmaker for a particular job. Wheel cutting, blanking, spoking, milling, and topping are also discussed in this section. The use of the Ingold Fraize, and actual wheel and pinion cutting, are covered in detail with many clear illustrations. They include the making of escape wheels of all types, and methods of heat treatment and precision finishing.

"Making Small Components" is the title of another chapter dealing with many items such as clicks, barrel arbors, stop works, barrels, and balance rollers for various escapements. Making lever pallets of various designs to precision finish and the spring detent for the chronometer is explained in detail, using progressive drawings for visual instruction. The explanation of making all types of hands, uses this same technique with over twenty drawings. For those who have examined a watch with a ruby cylinder, and wondered how these were made, this book gives the reader a complete understanding. An explanation of jewels for all types of watches is included, together with how to make the finished jewel from the rough gem.

The section on escapements explains and illustrates the verge, cylinder, virgule, duplex, and various lever escapement designs, as well as instructions to make them. Mr. Daniels even discusses the escapements of his own invention, their *raison d'être*, and how to duplicate them.

The chapters on mainsprings show the logical steps in selecting a mainspring, its proper dimensions for a barrel of any given size, and the work it must perform. The stackfreed, the author's form of modified stackfreed, and the fusee and how to plot its curve, are explained in this section. Cutting the fusee and using both the special fusee "engine" and available equipment, is shown here. In this same section, the author teaches how to construct the equation-of-time kidney-piece including layouts, designs, and tables for reference.

"How To Design A Movement" is a chapter which covers thirty-nine pages and uses eighty-two drawings to teach his methods of plate design and layout, dial templates, and bridge making. It also includes methods of constructing tourbillon carriages and their bridges. The spring-detent tourbillon is pictured isometrically, as are those of four-minute duration by Breguet, the twelve-second carriage by Albert Potter, and one by Benoit.

The chapter on "How To Make Balances and Hair-springs" suggests free-cutting stainless steel with hairsprings and short bimetallic affixes, supplying the temperature com-

pensation for the author's designs. For the traditional bimetallic balance, Mr. Daniels suggests the usual methods of melting the brass around an outer channel of the steel rim. Balance springs and the prior considerations before coiling them, are treated in the text together with the illustrations for making the winding boxes or forms for spiral, helical, and spherical hairsprings. The author has even included in these instructions the duo-in-uno hairspring form, including a nice little tool for manipulating the inner hairspring coil.

How to select the proper torches, fluxes, treatment, bonding, hinges, pendants, frames, joints, bezels, thumbpieces, planishing of the backs, and other details, make the chapter on engine turning a book within a book. For those who have always wondered how those intricate case designs and patterns were accomplished, this section shows how. The various engines which provide these embellishments, together with progressive stages of casemaking, reveal much of the casemaker's art of old. This reviewer remembers spending two days with Ted Crom (*Horological Shop Tools 1700-1900*), learning from him the rudiments of the century, plus old Holtzapfel lathe with its myriad cutters, and decorating possibilities. I remarked that it is a pity that literature on such equipment isn't readily available, but in this volume, Mr. Daniels and his artist-draftsman, David Penney, have provided an excellent book within a book on this type of equipment and its use.

The making of quality dials with the casemaker's lathe providing the decorations, and with the watchmaker's lathe doing the basics, completes this volume. An eleven page (Continued on page 50)

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Replacing The "O" Ring

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How do you replace the little

"donut," "O" ring on Seiko watch crowns?

If you try to unscrew the crown from the stem, most of the time it's been cemented on with aron alfa and you risk breaking the stem off in the crown. If you try to push the new "O" over the stem and into the crown slot, there is a great chance of nicking out a piece of the inside of the "O" ring on the sharp edges of the stem, or crown, and it would never seal. You can also damage the "O" ring trying to force it over the end of the crown.

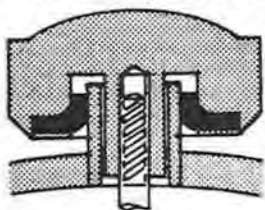
I thought that surely Seiko had a tool to insert these little "O" rings

on the crown slots, but I have not been able to find one. As a result, I came up with this tool that you can make in fifteen minutes or less.

The only material needed is a long thin spring bar, and a long regular spring bar. I used a 7/8 in. zebra 329 thin single shoulder spring bar, and a 7/8 in. zebra 332 regular shoulder spring bar. You need the length to fit over the stem to the crown slot and also allow for easy handling.

The thin spring bar has a 1 mm inside diameter and will fit over most Seiko stems, except the ones with ring

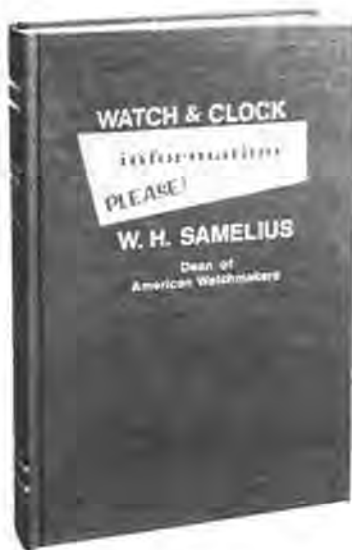
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More than 22 main categories of information appear, including: escapements; hairsprings; mainsprings; watch and clock and chronometer dismantling and assembly; striking and chiming clocks; pendulums; wheels; technical data; dials; tools; restoration and repair of clocks and watches; watch and clock adjusting; timing, as well as histories of many American clock and watch companies.

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gears between the stem and crown. It will also telescope inside the regular spring bar.

Cut off both ends of the two spring bars in the lathe with a jeweler's saw, and smooth the ends with a graver. Chuck up one end piece from the regular spring bar (Figure 1), and turn down the bearing surface to make a friction fit in the end of the thin spring bar (Figure 2). Use a little aron alfa, and drive the thin spring bar on the end piece (Figure 3). Chuck the thin spring bar in the lathe, turn down the tip to a small, rounded point, and polish out the side (Figure 4).

Anneal one end of the regular spring bar, and chuck up with 1 mm exposed from the end of the chuck. Flare out the end with an oval punch and use oil to burnish it back with a flat burnishing tool for a square shoulder. Broach out burrs on the inside until the thin spring bar will telescope inside with no friction. Dress the shoulder smooth with a graver (Figure 5).

To use, simply place the thin spring bar over the stem, and grease the pointed tip with silicone. Place the new "O" ring on the tip and push it over the thin spring bar, with the shoulder made on the regular spring bar, until it is seated in the crown slot.

Send your tips to: Jingle Joe, 265 N. Main St.,
Mooreville, North Carolina 28115.

PRESIDENT'S MESSAGE

(Continued from page 4)

purchased in the store's name. It has been difficult to match store names, which were on the original invoice, with the individual member's name. Most of our difficulties in this area have been ironed out. If you still have a voucher, please get it into AWI Central as soon as possible so we can finalize the processing of these rebates.

While on the subject of the microfiche system, Milt Stevens is moving ahead with plans to prepare quite a bit of technical information in AWI technical files for members who have microfiche capabilities. As we indicated when the system was first proposed, this is the only practical way we can consider distributing this volume of information to our members. Milt plans to reproduce on microfiche the bulletins that are most frequently asked for on the Hotline and through our technical information program. We will also include some of the name brands and interchangeability information that has been requested. You should be aware that Seiko presently has fiche available on their products, and the WMJDA has fiche available on the early American watches. We would welcome hearing from you, as to what additional material you would like to see reproduced at this time.

As a result of the popularity of our two clock repair programs, "Clock Restoration," instructed by Otto Benesh and "Introduction to Striking Clocks," instructed by Dr. Joseph Baier, we are planning a pilot course for beginners which will be the long awaited "Introduction to Clock Repair." Since there is so much involved to make the course meaningful for a beginner, it has been decided to develop a weeklong course which will be held this Summer at AWI Central. Otto Benesh and Marvin Whitney are presently writing the course curriculum. Complete details and dates will be forthcoming in the *Horological Times* in the very near future. This course should be of interest to watchmakers who have considered broadening the base of their skills to include that of clock repair.

Swiss Quality Watch Movements

New Mechanical Movements



AS 1977-2
(Replaces AS 1012)



FF 59-21



FHF 69N
(Replaces FF 60)

Quantity	Caliber	Size	Features	Cost
	FF 59-21	3 3/4 x 10	17 Jwl Incabloc	25.00
	AS 1977-5	5 1/2 x 6 3/4	17 Jwl Incabloc	22.50
	ETA 2442	6L Round	17 Jwl Incabloc	46.00
	ETA 2412	6 3/4 L Round	17 Jwl Incabloc	24.00
	FHF 69N	6 3/4 x 8	17 Jwl Incabloc	16.00
	ETA 2512-1	7 3/4 L Round	17 Jwl Incabloc	23.00
	FHF 371	8 3/4 L Round	17 Jwl Incabloc	18.95

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Qty.	Caliber	Size	Features	Cost
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	ESA 960.111	11 1/2 L Round	Date Quartz Analog	26.00
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BOOK REVIEW

(Continued from page 47)

index makes a most useful reference. This is the first book to thoroughly reveal the methods of producing a complete watch in a comprehensive and instructional manner.

This book is on watchmaking—that is, it contains instructions on making the complete watch, including the dial and the watch case. It is a book for anyone interested in horology, clocks, or watches. It is especially informative for the student, teacher, technician, and researcher. Even if the reader never intends to make a watch, he can visually do so learning the secrets from one of the foremost watchmakers of this century. Indeed it is a book for all time.

Henry B. Fried

A Deskbook of Business Management Terms, by Leon A. Wortman. 615 pages, 6½ x 9, hardbound. \$24.95. Amacom, 135 West 50th Street, New York, NY 10020.

Due to the proliferation of technical jargon and the increasing complexity of marketplace terms, this book fulfills a real need. Providing meanings for over 4,000 business words, phrases, and abbreviations, it spans accounting, data processing, quality control, forecasting, engineering, law, economics, marketing, transportation, government agencies and regulations, banking, associations, tax terms, finance, insurance, productivity, incentive systems, import/export, and a host of others. Very comprehensive and extremely useful.

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PROGRAMS		INSTRUCTORS
A	Basic Electricity & Use of Meters	Jaeger
B	AWI Certified Citizen Quartz Watch Technician	Carpenter
C (a)	Citizen LCD Multi-Alarm	Broughton
C (b)	ESA/ETA Quartz Analog	Broughton
D	AWI Certified Seiko Quartz Watch Technician	Smith
E	Intro. to Solid State Watch Repair	Nelson
F	Fundamentals of Solid State Watch Repair	Opp
G	Repairing the ESA 900.911 Digital/Analog	Biederman
H	Clock Restoration	Benesh
I	Introduction to Striking Clocks	Baier

MARCH

7	F	Nashville, TN	Opp
14	D	Chicago, IL	Smith
20-21	H	Lancaster, PA	Benesh
20-21	I	San Francisco, CA	Baier

APRIL

17-18	I	Phoenix, AZ	Baier
18	B	Boston, MA	Carpenter
18	C(b)	Wisconsin Convention	Broughton
18	E	Washington, DC	Nelson
24-25	H	Kansas City, MO	Benesh

MAY

8-9	H	Knoxville, TN	Benesh
16	A	Dallas, TX	Jaeger
16	B	Philadelphia, PA	Carpenter
16	C(a & b)	New York, NY	Broughton

JUNE

10-11	I	Rockford, IL	Baier
12-13	I	Houston, TX	Baier
13	B	Kansas City, MO	Carpenter
19-20	I	Baton Rouge, LA	Baier

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Is Your Life Worth More Than Money?

By Joseph Arkin

Seems like a foolish and unnecessary question to ask, doesn't it, to ask if the money in your cash register, cash drawer, or safe is worth more than your life? Yet sadly enough, newspapers are full of headlines such as "Merchant Fatally Shot By Hold-Up Man."

Many businessmen foolishly take such risks, and many turn out to be losers—risking life and limb to protect cash. And sometimes, more often than not, the cash is insured.

Robbery has become a more commonly committed offense in recent years because of the need of petty thieves and dope addicts to get their hands on cash quickly.

Latest FBI reports indicate that a robbery is committed every 4½ minutes: one burglary every 27 seconds; one aggravated assault every 2½ minutes; five serious crimes each minute and one murder each hour.

In the event you may become the victim of a hold up, would you know what to do, how to act? It is important to know what to do because what you do might mean your life!

Captain O.C. Woods of the City of Los Angeles Police Department offers these suggestions if you are a hold-up victim.

Remain calm. Robbers usually are excited and may be provoked easily or might be under the influence of drugs.

Avoid defending yourself with a firearm when you are already facing a weapon. The odds would be against you.

Take a good look at the thug(s). Notice any details which will aid you to describe him and his mannerisms. When trying to determine age, height, weight, and appearance, make comparisons between them and yourself or people you know.

(Continued on page 56)

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ELECTRICITY FOR THE HOROLOGIST (Continued from page 10)

lined in Figure 2. When we are in the 10 volt, the 50 volt, or the 250 volt selection ranges, it is a rather straightforward procedure, as the selections agree exactly with the readouts.

Let's assume we are measuring a 1.5 volt watch cell. The 10 volt selection range would handle this cell, but it would not be a good range to use, since the value of each increment on the readout line is 0.2 volts when the selector is set at 10 volts. We need to find a selection closer to the maximum voltage we expect to read. If we scan the selection ranges in Figure 1, we can find a 2.5 volt maximum voltage selection. But when we refer to the readout numbers in Figure 2, we do not find a 0 to 2.5 volt set of readout numbers. The three maximums in the readout are 10, 50, and 250, but there is a 2.5 volt maximum in the selection area of Figure 1. This indicates that there must be a 0 to 2.5 readout somewhere in the DC volt readout area. Here is where we must do some mental transposition. Suppose we look at the 0 to 250 set of numbers in Figure 2. Were we to drop the 0 from 250, we would have a 25. Now, if we place a decimal between the 2 and the 5, we would have a number 2.5 as a maximum on this set of numbers.

This is exactly what the volt meter has done when we rested the selector at 2.5 in the selector area. It has changed 250 to 2.5, and we must mentally do likewise. The readout numbers, as they appear in Figure 2, are 0, 50, 100, 150, 200, and 250. We must mentally transpose this line of numbers to read 0, 0.5, 1.0, 1.5, 2.0, and 2.5 volts. This selection and readout now become a maximum 2.5 volt meter. Each increment on the readout line now represents 0.05 volts. We can now get an extremely accurate reading using this selection and this set of numbers. Now, were we to measure a 1.5 volt cell, the indicator would rest as indicated at point "b" in Figure 2. Were we to measure a 1.35 volt cell the indicator would rest as indicated at point "c." The same concept applies to the 0.5 volt selection range. See Figure 1. When the selector rests on the 0.5 volt selection, this means we are in a meter area where the maximum, measurable voltage is 0.5 volts. Referring now to the readout numbers we are using, we are again faced with a similar problem. Even though we have a selection to make the meter a 0 to 0.5 volt meter, there is not a matching set of readout numbers, and we know there has to be readout numbers to match selection ranges. Once again, the transposition concept is applicable. We do have a 0 to 50 set of numbers on the readout. If we drop the 0 from 50, we

have a 5. If we place a decimal point before the 5, we have a 0.5 as the maximum for this set of numbers. Again, let me point out that when we rested the selector on the 0.5 selection range, the meter already accomplished this transposition within the meter. Instead of this row of numbers reading as it actually does in Figure 2, we must now see it as 0, 0.1, 0.2, 0.3, 0.4, and 0.5 volts. Using this concept, we can now handle five different selection ranges with only three sets of numbers. You will see the necessity for this kind of number rearrangement when you consider there are nineteen different selection ranges on the meter we are using. If we were to attempt to get nineteen different sets of numbers on a readout, the size of the readout would be as large as your kitchen table.

Your meter, or the meter you may purchase, may not have the same selections or the same value sets of readout numbers as the meter we are using for this series of articles. Do not be concerned. Upon close examination of your meter's selection area and readout area, you will find there will be a set of readout numbers to match your selection ranges. However, you may have to use the transposition method to accomplish this matching. We are using this meter only because its many ranges enable us to point out areas you will need to understand. If you are considering purchasing a meter, I would suggest purchasing one which is made specifically for use in watch repair. The basic meter concepts and uses discussed in this series will apply to all meters. I would discourage the purchase of a digital-type meter, unless you already have a good understanding of basic electricity and are already quite competent at meter reading.

You will not become an expert by reading a few articles. You will have to begin by measuring a few voltage sources. Step one is to adjust your meter pointer to 0 if it does not rest exactly on the 0s, on the left side of the scale. See (Continued on page 55)

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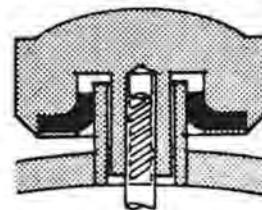
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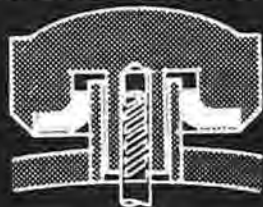
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| Lesson 12 | Electronic Principles of the Accutron |
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ELECTRICITY FOR THE HOROLOGIST

(Continued from page 52)

Figure 2, point "d." If your pointer needs adjustment, it can be accomplished by turning the screw in the lower center of the meter face. See Figure 2, point "e." When measuring voltage sources, and the approximate value is known, set the selector at a range above, but as close as possible to the expected voltage. If the expected voltage is not known, it is best to start at the highest range and work down. We could measure any voltage under 250 volts on the 250 volt range. Were we to measure a 9 volt battery at the 250 volt selection, it would barely move the pointer and the reading would be next to impossible to interpret. We want to have the meter set so we can obtain a reading in the upper one-half of the scale.

Read the instruction manual which came with your meter. Secure a few varied voltage sources and "happy measuring."

Next month, we will look at resistance and the Ohm meter.

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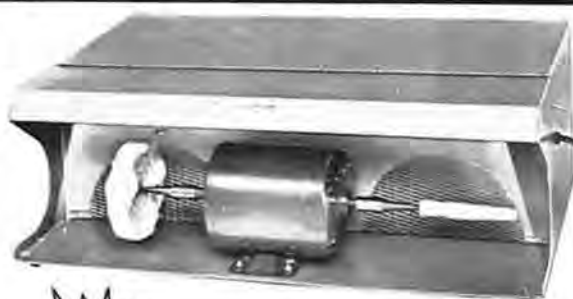
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IS YOUR LIFE WORTH MORE THAN MONEY?

(Continued from page 51)

Memorize peculiarities such as tattoos, scars, and prominent physical features.

Note type and color clothing worn, but keep in mind that clothes may be changed so try to concentrate on physical characteristics.

Be able to describe size, type, and color of guns or other weapons that are used.

Watch to see whether he touches anything so you can preserve it for evidence.

Observe direction of flight. Obtain description of any vehicles used and write down the license number immediately. Save this for the police.

After the robber(s) leave, you should notify the police immediately. Tell them that you have been held up, and be prepared to report the location of your premises, giving the exact address and the office or room number when necessary. Give a description of the hold-up man, the license number of any vehicles used, their description, and the direction taken.

Do not touch anything. Lock the doors until the arrival of the police. Preserve any items the robber might have touched. Don't allow your employees or customers to go into the areas where the robber may have been. Keep in mind that at the time of your call, the police will only have the information you give them—so be accurate.

It is also a wise policy to direct your employees not to discuss the crime among themselves or with other witnesses until they have been interviewed by the police. If there is a delay, suggest that they make notes while the crime is still fresh in their minds.

After the police arrive, answer their questions and tell them only what *you* know. If an estimate is necessary to supply an answer, tell them you are estimating.

There is a tendency to see things of great dramatic experience in an exaggerated light. Give an accurate description of what happened and what was taken.

After the initial interview, detectives will be assigned to the case, and it becomes your duty to make yourself, and your employees, available for interview. Be willing to identify the right suspect. Make it a duty to attend "show-ups" of suspects. And, be ready to testify in court when called upon to do so.

Of course this cooperating may not always result

in recovery of your losses, but you may be able to prevent other persons from becoming victims. This is the least you would expect someone else to do for you.

The thug who commits armed robbery faces a rather stiff penal sentence upon conviction, yet

it is usually the inexperienced novice who will hold up a merchant. The more sophisticated robbers set their sights on banks, finance companies, and similar establishments.

It takes nerve to pull a hold up and the inexperienced thug, often "nerved" with alcohol or drugs, is likely to panic and hurt you if either you or your employees hesitate in carrying out his order.

There are steps you can take in the operation of your business establishment to lessen the chances of being held up.

Do not keep large sums of cash in the register. Extra money should be placed in a locked safe or deposited in a bank. Do not store cash in a cigar box hidden under a counter. Even the amateur hold-up men know enough to look there.

If possible, keep some bait money handy. List the serial numbers of several bills and place the bills in the cash drawer, being careful not to use them in your regular transactions. Place the list of serial numbers in a place where they will not be taken in the event of a robbery. When a hold up does occur, the thug takes the bait money, and you then give the list of serial numbers to the police. If the thug is apprehended, the bills will link him directly to the robbery and be of great assistance in convicting him.

A television set or a radio playing (at a low tone level) in another room may suggest that someone else may be present.

Merchants with storefronts or loft windows should not cover them completely with signs as this blocks viewing from the street. Keep your premises well lighted.

How to get money to the bank safely is often a problem. Big business firms can afford the cost of having an armored car make regular pick ups, but for the average businessman this is too costly. The best plan is to have the person going to the bank travel with someone else. The route should be varied as well as the time schedule.

Discussions should be avoided with other persons standing in line at a bank—they may only be there to observe who makes large deposits or withdrawals in cash.

And, when making a night deposit, be careful not to approach when another person is lurking nearby. Wait for the person to leave, and if he doesn't, call the police and ask for an escort.

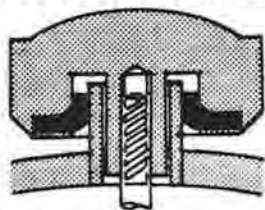
Your establishment should be equipped with alarm switches to set off an alarm in the event of a hold up. All employees should be familiar with their use and locations. Alarms should be examined periodically to insure they are functioning properly.

In the event that someone accidentally trips an alarm, be sure to telephone the police immediately so that emergency units will not have to rush to your premises.

Questions asked by strangers should not be answered if an interest is shown in the hours of operation, number of employees, or alarm systems. When suspicious persons are seen loitering around your premises, notify the police. This is especially so around opening and closing times, a favorite time for armed robbery.

No doubt the greatest single deterrent to the commission of a robbery is the presence of a police officer. However, it is common sense to realize that there are not enough police officers to go around. Therefore, some of the responsibility for the prevention of this crime lies with the businessman. Robbery is often encouraged by the victims' carelessness and neglect. This crime not only causes inconvenience,

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but it can also be expensive and extremely dangerous. A thug who takes the risk to enter a premises will resort to violence and sometimes kill in an effort to effect his escape.

Ray Girardin, former Commissioner of the City of Detroit's Police Department, concurs in the advice previously enumerated not to resist, to keep calm, and not provoke the thug to violence and panic.

"This may appear contrary to a natural inclination to protect your property, but the situation must be evaluated realistically. If a man walks into your premises, points a weapon at you and demands your money, he has the upper hand and is prepared for any defensive action you may undertake," says police officer Girardin.

He adds the following to assist the police in apprehending the culprits.

Try to ascertain the race, age, height of hold-up men, note anything unusual about facial characteristics, distinctive jewelry, etc.

Also note type and color of clothing, type of weapon used, and the mannerisms and actions of the thug.

Where possible, let the thug handle things in your establishment so that the possibility of fingerprints may help to identify him. And, when he leaves, if safety allows, attempt to see in which direction he escapes, and the method of transportation used.

While the aforementioned may help to apprehend

the criminal, you should take affirmative measures to prevent your establishment being a target of would-be hold up men.

In addition to items previously mentioned as preventive measures, Girardin suggests:

Keep the interior and front and rear entrances of your business establishment well lighted.

Keep the rear and/or side door locked at all times.

Be alert for persons attempting to hide on the premises near closing times.

Bank as often as possible and don't let cash pile up. Endorse checks immediately upon receipt with your bank endorsement stamp.

Become friendly with the police officers in your area. Arrange a secret signal to show that you are in trouble.

No matter what you do there always exists a possibility that you will be the victim of a hold up. How you react can mean the difference between life and death. So be calm—the worst that can happen is that you will lose money that is uninsured.

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"Our battery numbering system is designed so that dealers can tell at a glance the major features of each battery, its chemistry, its dimensions, and the type of drain it has," said Keith Sessler, Eastern Regional Sales Manager, Maxell Battery Products Division. Copies of the guide are available from Keith Sessler, Eastern Regional Sales Manager, Maxell Battery Products, Maxell Corporation of America, 60 Oxford Drive, Moonachie, NJ 07074.

1982 BOREL CATALOG READY FOR DISTRIBUTION

The 1982 Borel Jewelry, Findings, and Supplies Catalog is ready for distribution, according to Roger Borel, Marketing Director, Jules Borel and Company, Kansas City, Missouri.

"This year, we are supplying a loose leaf insert, which will fit the three-ring cover we furnished last season. In addition, we have added a Borel ring finding section," Borel stated.

"Also, we are offering a new edition of our Tool, Supplies, and Equipment Catalog including a special section of exclusive Borel materials and tools," Borel continued, "With these two catalogs our customers can take advantage of our toll free phone order service."

It is easy to obtain either or both, the 1982 Borel Jewelry Catalog and the new

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SR447P (G13)	1.4775	WIDE	AG16
*LR44P	1.475	—	SR44
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*LR44P	1.44	—	SR44
SR44P (G13)	1.44	FLAT	SR44
*LR44P	1.44	—	SR44
SR44P (G13)	1.44	FLAT	SR44
*LR44P	1.44	—	SR44
SR44P (G13)	1.44	FLAT	SR44
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*LR44P	1.44	—	SR44

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*LR44P	1.44	—	SR44
SR44P (G13)	1.44	FLAT	SR44
*LR44P	1.44	—	SR44
SR44P (G13)	1.44	FLAT	SR44
*LR44P	1.44	—	SR44
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1982 Borel catalog

Borel, Jules Borel & Company, 1110 Grand Avenue, Kansas City, MO 64106.



MICHIGAN REPAIR CHARGE CARDS

The Michigan Watchmakers' Guild, Inc. announces the availability of their new, 1982 Suggested Minimum Repair Charge Cards. The suggested charges are based on the results of a recent survey of Michigan watchmakers, clock repairmen, and jewelers.

The cards cover: watch repair; clock repair; digital watch repair; and jewelry repair. The cards are sold in sets only. Send check or money order for \$7.50 to: Michigan Watchmakers' Guild, Inc., 1202 Catalpa, Royal Oak, Michigan 48067.

POCKET WATCH BOWS FROM FROIDEVAUX—USA

Albert Froidevaux—USA, based in Kansas City, is now stocking a complete assortment of symmetrical, oval, round, and fancy pocket watch bows. The bows are manufactured in nickel and gold and are available through your local supply house. Froidevaux notes that wholesalers in the U.S. have experienced problems in getting pocket watch bows of high quality on a consistent basis.

Although the parent company of Albert Froidevaux et Fils has stocked bows for many years, the demand has greatly increased because of the popularity of restoring antique watches. Therefore, the company elected to stock bows, along with an array of tool items in the U.S. to meet the growing demand.

Contact your local jeweler's supply house for further information.

NEW MIDO MODELS

Mido introduces "His and Hers," stylish new models in their 1982 collection. As members of the Ocean Star family, with its famous Aquadura super water resistant system, Model 7015 (Ladies') and 8015 (Men's) have quartz movements, two-tone cases and bracelets.

The suggested retail price is \$575.00 K. Ask for the catalog. Distributed by Borel Watch Company, 1008 Walnut, Kansas City, MO 64106.



New Mido models

NEW CATALOGS FROM GESSWEIN

Two new catalogs are available, free, from Gesswein. A Mini Tool Catalog featuring new and useful items; and the new Jewelers Tool Catalog No.35 showing the complete line of fine quality tools and supplies.

Two stocking warehouses are maintained; one in Bridgeport, Connecticut and the other in Glendale, California.

For your free catalogs, call or write Paul H. Gesswein & Co., Inc., at 255 Hancock Avenue, Bridgeport, CT 06605, phone (203) 366-5400 and (800) 243-4466; or 676 West Wilson Avenue, Glendale, CA 91203, (213) 240-7113.

PRINCESS JEWELRY CLEANER

The Princess Jewelry Cleaner provides quick and easy in-home cleaning of bracelets, chains, earrings, charms, pins, and other fine jewelry items. Just place gems and jewelry in the basket, lower into the special cleaning solution and turn on the power. In seconds, the exclusive Electro-Sonic cleaning action and special gem cleaning solution safely removes dirt, body oils, grime, and tarnish from diamonds, colored stones, gold, silver, platinum, and even cultured pearls—the professional way! Jewelry and gems come out sparkling clean and ready to wear. Suggested retail price is \$29.95.

For more information, write McJaf Enterprises, Inc., Professional Products, 205 Paularino Avenue, Costa Mesa, California 92626.

Princess jewelry cleaner



New catalogs from Gesswein



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*Another example of Gesswein's
constant efforts to meet the growing demands of the
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SEIKO INTRODUCES WORLD'S FIRST ELECTROCHROMIC DISPLAY WATCH

Seiko has developed the world's first electrochromic display digital watch, representing a major technological breakthrough, and expects to begin test marketing it in limited quantity in the United States this Spring, it was announced recently by Robert Pliskin, President of Seiko Time Corporation.

To the digital watch wearer, electrochromic display (ECD) means outstanding digital clarity and sharpness when viewed from any angle of sight and in situations where only marginal light exists. This significant advancement in the state of the art of watchmaking constitutes decided improvement over LED (light emitting diode display) and LCD (liquid crystal display) watches.

Although ECD and its great potential have been known for many years, certain defects, until now, have prevented its commercial marketing. These shortcomings—namely short life, slow response, and fragility—have now been eliminated by Seiko, through its development of an exclusive oblique ECD element evaporating process and new driving system. In actual operation, the new Seiko ECD F623 calibre watch display changes color momentarily via an oxidation process activated by an electrical charge (a charge transfer system).

Seiko electrochromic



BULOVA SCHOOL CERTIFIES FIRST JEWELRY REPAIRER

Instructor David Peyton (left, center) congratulates Christopher Martin, the first student to graduate from the school's newly expanded Jewelry Repair Program. Director James M. Devaney (left) and Chairman of the Board of Trustees Harry B. Henshel (right) participated in the graduation ceremonies.

The Joseph Bulova School is an internationally recognized vocational rehabilitation facility in New York City, founded in 1945 by Arde Bulova of the Bulova Watch Family. The school specializes in the training of people with disabilities for the fields of watchmaking, watch repair, precision technology, and jewelry repair. It is considered one of the finest facilities of its kind in the country.



Christopher Martin, first student to graduate from the Bulova School's Jewelry Repair Program, flanked by David Peyton, James M. Devaney, and Harry B. Henshel. Photo by Peter Duss.

marketing, pointed out that across the country the retail jewelry and department stores are enjoying very strong sell-through with the Pulsar brand. "This reaffirms our marketing position," he stated, "to offer a high quality all quartz men's and ladies' product line in the moderate retail price range of \$50 to \$160, and strongly support the brand with intensive advertising."

GIA READIES 1982 TRAVEL SEMINARS

The Gemological Institute of America will host two touring seminars this year. One travels to Switzerland, Italy, and Israel in spring, and the fall tour will visit the major European gem centers, plus Russia.

April 22, the first group will depart from New York City and fly to Switzerland,

where participants may attend the Swiss Industries Fair with the Tenth European Watch and Jewelry Fair in Basel.

From Switzerland, the tour will proceed to Milan, then Valenza Po for visits to the School of Goldsmiths and the Gemological Laboratory, stopping also at workshops and the permanent show of gold jewelry.

Florence and Rome are next on the itinerary. The group will then fly to Tel Aviv, Israel, to visit Ramat Gan, the home of the Israel Diamond Institute. There will be time for sightseeing in Jerusalem before the return trip to New York City.

Accompanying this seminar will be Tom Yonelunas, resident program supervisor of GIA's New York facility.

GIA's second travel seminar is planned to depart from New York City on Wednesday, September 8.

The first stop will be Antwerp, where the group will see a bourse in the Diamond

World Center; then they will go on to London and visit De-Beers' Diamond Trading Company.

From London, there will be a flight to Moscow, where stops will include the Kremlin and the Bolshoi Theatre. If permission is granted, there will be a special visit to the crown jewels in the Kremlin. The group will travel from Moscow to Leningrad by train.

Leaving Russia, the seminar will go to Idar Oberstein, Germany, the world's colored stone center. Three full days there will allow participants to visit the gem museum and various showrooms. From Idar Oberstein, the tour will proceed to Wiesbaden, Bonn and return to New York from Brussels.

These tours are of particular interest to current and former students of GIA.

For complete itineraries and further detailed information about GIA's Travel Seminar Program, write to the Gemological Institute of America, P.O. Box 2110, Santa Monica, CA 90406.

PULSAR'S 1981 SALES UP 50% OVER LAST YEAR

Pulsar Time, Inc. increased its unit sales in 1981 by 50% over last year, a new record high for the watch brand, it was recently announced by Arthur Schwartz, president.

"Our sales in 1981 exceeded 1.5 million units for the first time," he stated.

Pulsar, the fastest growing brand in the history of the U.S. watch industry, began marketing in the U.S. for the first time in the Spring of 1978. It claims to be the leading high quality all-quartz men's and ladies' watch brand in the \$50 to \$160 popular price range.

Arthur J. Cohen, executive vice-president of sales and

TIMEX APPOINTS NEW MARKETING AND SALES DIRECTOR

Siegfried W. Rippe has been named Director, Marketing and Sales, U.S. for Timex Corporation, it was recently announced by C. Michael Jacobi, Vice-President, Marketing and Sales, Worldwide. Mr. Rippe succeeds Fred L. Nelson, who will remain with the company as a consultant for an additional three years.

Mr. Rippe joined Timex in 1964 as a Field Sales Representative and since 1977, has served as Central Regional Sales Manager with responsibility for nineteen states. In his newly appointed position, Mr. Rippe will oversee national accounts, field sales, sales promotion, trade advertising, sales administration, market data, product planning, and the premium and incentive division.

Fred Nelson began his career at Timex in 1950, and remained with the company until 1977. Following a three year absence, Mr. Nelson rejoined Timex as Vice-President, Marketing and Sales, U.S.

Nelson states, "I came back with specific programs and goals in mind which are well under way to being implemented. I can now lighten my work load, feeling completely assured that Sig Rippe will successfully see these plans through. His long association with Timex and his proven capabilities will greatly benefit our company as we meet the sales and marketing challenges of the '80's."

JA's MEMBER INTEREST SURVEY

The results of Jewelers of America's (JA) 1981 Member Interest Survey, conducted in October 1981, have been tabulated and the analysis of the returns will result in expanding some current JA member programs, according to JA Chairman Michael D. Roman.

"We purposely divided the returns into three categories," explained Roman. "The 'small' store (1-5 employees), the medium (6-15 employees), and the large (over 16 employees). We then tabulated the responses according to category, and also combined the results to achieve an overview."

JA's questionnaire listed eight topics that members might want JA to pursue. The members were then asked to rate their



Pictured above are Mr. and Mrs. James J. Lazarus at the 50th anniversary celebration of L & R Manufacturing Company.

interest in each topic.

"From the overview perspective," Roman comments, "Our members showed the highest interest in sales training programs . . . an indication of the conscious need for better trained personnel. We at JA have been, for several years, sponsoring programs across the country, because we have long felt that the jewelry store of the Eighties will best survive with well-trained personnel."

The next topic of high concern showed up to be "image." Upgrading the JA Jeweler's Image and Consumer Advertising and Publicity both emerged with top priorities. "Our image programs are right on target," Roman added. "It pleases me to see

that our members are aware of the need and importance of upgrading and maintaining the image of professionalism and integrity necessary to reinforce customers' confidence."

An interesting footnote to the results was the fact that diamond investment companies which a few years ago were a thorn in the industry's side, now ranked as least important of the eight topics listed for JA members. "Obviously," Roman concluded, "That unfortunate era of wheeler-dealers tarnishing our industry has come to its inevitable end, and, as expected, the professional jeweler has prevailed."

Close to 500 responses were tabulated on this survey.

Pictured below is Elizabeth Cocucci, Miss New York, accepting watch from Charles Smith, President of Lucien Piccard/Arnex.



L & R HOSTS GALA EVENING

L & R, the world's leading manufacturer of ultrasonic and mechanical cleaning equipment, chemicals, and accessories, is celebrating their 50th Anniversary and three generations of Lazarus family management this year. In honor of this occasion, the president of the firm, James J. Lazarus and his wife Ellie, entertained 200 of their long-time employees and spouses one evening last month.

Mr. Lazarus, a trustee of the Whole Theatre Company in Montclair, New Jersey, a professional regional theatre, thought it fitting that he combine his vocation and avocation and subsequently treated his company members to cocktails, dinner, and an evening at the theatre. Kleig lights lit up the sky, and hors d'oeuvres were served before the performance. A revue, "The USO Show" followed. "The USO Show," which played a six week run at the Whole Theatre Company is an original revue commissioned by them in honor of the 40th Anniversary of the USO, of which Mr. Lazarus is National Vice-President.

The evening's activities came to a conclusion with a buffet dinner, served on the stage after the performance and an awards ceremony honoring staff members employed by the company five years or longer.

MISS NEW YORK WINS AWARD

Charles Smith, President of Lucien Piccard/Arnex, presented one of the company's exquisite 14K solid gold quartz timepieces to newly crowned Miss New York, Elizabeth Cocucci. The presentation was made in New York recently.

THE

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Restoration of antique watches and clocks. Gear and pinion cutting; cylinder staffing; repeaters and chronometer repair. Jean Fischer, 3920 Greenpoint Ave., Sunnyside, Long Island, NY 11104. Phone (212) 729-1785.

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Large trade shop in Cleveland, Ohio is looking for 2 watchmakers. \$15,000-\$25,000 salary per year depending upon ability and desire. Many fringe benefits. Call or write J. Pollak, P.W.S., Inc., 2132 E. 9th Street, Cleveland, Ohio 44115. (216) 241-4413.

Wanted To Buy

WANTED: USED WATERPROOF TESTER FOR WATCHES. (319) 583-9015. (Jim)

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STERLING FLATWARE STOCKS-New or used needed. Call us before you sell for scrap. Also wanted: silver, diamonds, gold scrap, coins and coin collections. Call or write: Mr. Neff, HT, WFN Enterprises, 2300 Henderson Mill Rd., N.E., Suite 318, Atlanta, GA 30345. Ph. 404/938-0744.

IMMEDIATE CASH PAID!!! Old Mine and Old European cut diamonds. Especially needed: Stones over 1 carat. Ship with phone number for highest offer, or call Mr. Neff, (404) 938-0744. W. F. N. Enterprises, Inc., HT, 2300 Henderson Mill Rd., NE, Suite 318, Atlanta, GA 30345.

For Sale

CLOCK SHOP—"SUNNY ARIZONA." Excellent retail sales and repair department. Well advertised and active. Sales in excess of \$300,000. Ideal opportunity for right person. Write Owner, Box FS282, *Horological Times*, 3700 Harrison Avenue, Cincinnati, Ohio 45211.

For Sale: Watch Craft jewelers lathe. In new condition. Bruce Bittner, Route 3, Catawissa, Pennsylvania. 17820.

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QUARTZ BATTERY CLOCK MOVEMENTS: Regular or Mini; \$7.95 each, 3 for \$22.65, 6 for \$42.90. Hands included. \$2.50 handling. CALDAK TIME, Box 3181, Camarillo, CA 93010.

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Dates To Remember

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- 6-14—GLDA Tucson Gem Show; Marriott Hotel; Tucson, AZ
- 7—Diamond Council of America buffet dinner-meeting; New York, NY
- 7-9—Houston Housewares, Gift, Jewelry and General Merchandise Show, Albert Thomas Convention Center; Houston, TX
- 7-10—Jewelers of America International Jewelry Trade Show and Conference, New York Hilton and Sheraton Centre Hotels, New York, NY
- 7-11—International Spring Fair, National Exhibition Centre; Birmingham, England
- 11-14—Tucson Gem & Mineral Society Show; Tucson Community Center, Tucson, AZ
- 12-15—GIA First International Gemological Symposium, Century Plaza Hotel, Los Angeles, CA
- 12-17—Milano, Italy; MACEF—International Gift Accessories and Silverware Show
- 13-16—Inghorgenta '82; Jewelry, Watch, Precious Stone and Silverware Trade Fair; Munich Germany
- 14-20—Independent Jewelers Organization Buying Show; Bermuda, Southampton Princess
- 17-19—First Italian Jewelry Show; Houston, TX
- 20—Golden Roosters winter formal, Continental Plaza Hotel; Chicago, IL
- 20-22—Gift and Jewelry Show; Minneapolis Civic Center; Minneapolis, MN
- 20-23—Gift Mart; Florence, Italy
- 20-23—Variety Merchandise Show; Coliseum; New York, NY
- 21-23—Gift Show, MECCA; Milwaukee, WI
- 21-26—Spring Jewelry and Gift Show; Hotel Anatole, Market Hall, World Trade Center; Dallas, TX
- 27-28—Jewelers Association Annual Convention and Upper Midwest Jewelers Show; Radisson South Hotel, Bloomington, MN

- 27-Mar.1—Spring Pacific Jewelry Show; Hyatt Regency; San Francisco, CA
- 28-Mar.2—Manufacturing Jewelers and Silversmiths of America Expo/East; Sheraton Centre; New York, NY
- 28-Mar.2—Gift Show; Longs Convention Center; Lansing, MI
- 28-Mar.5—Gift Show; Sheraton and Coliseum; New York, NY

MARCH

- 2-7—Watch Material & Jewelry Distributors Association Annual Meeting; The Greenbrier; White Sulphur Springs, WV
- 6-7—Jewelers Association Convention and Trade Show; Holiday Inn East; Springfield, IL
- 6-7—Jewelers Association Trade Show; Olympia Resort; Oconomowoc, WI
- 6-9—Gift & Jewelry Show; Denver Merchandise Mart and Exposition Center; Denver, CO
- 7-9—Gift Show; Ramada Inn Blue Grass Convention Center; Louisville, KY
- 13-16—Gift & Jewelry Show; Cook Convention Center; Memphis, TN
- 14-17—Gift Show; Veterans Memorial Building; Columbus, OH
- 16—Jewelers & Silversmiths Management Association meeting; Top of the Court; Seekonk, MA
- 19-21—Jewelers Association Convention; South Padre Hilton Resort; Padre, TX
- 20—Jewelers Association Banquet; Ilikai Hotel; Honolulu, HI
- 20-21—Jewelers Association Convention and Trade Show; Hyatt Regency; Dearborn, MI
- 20-21—Watchmakers Association of Ohio; Seminar, "Introduction to Solid State Watch Repair," Robert Nelson, Instructor; New Philadelphia, OH

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