MAY 1983

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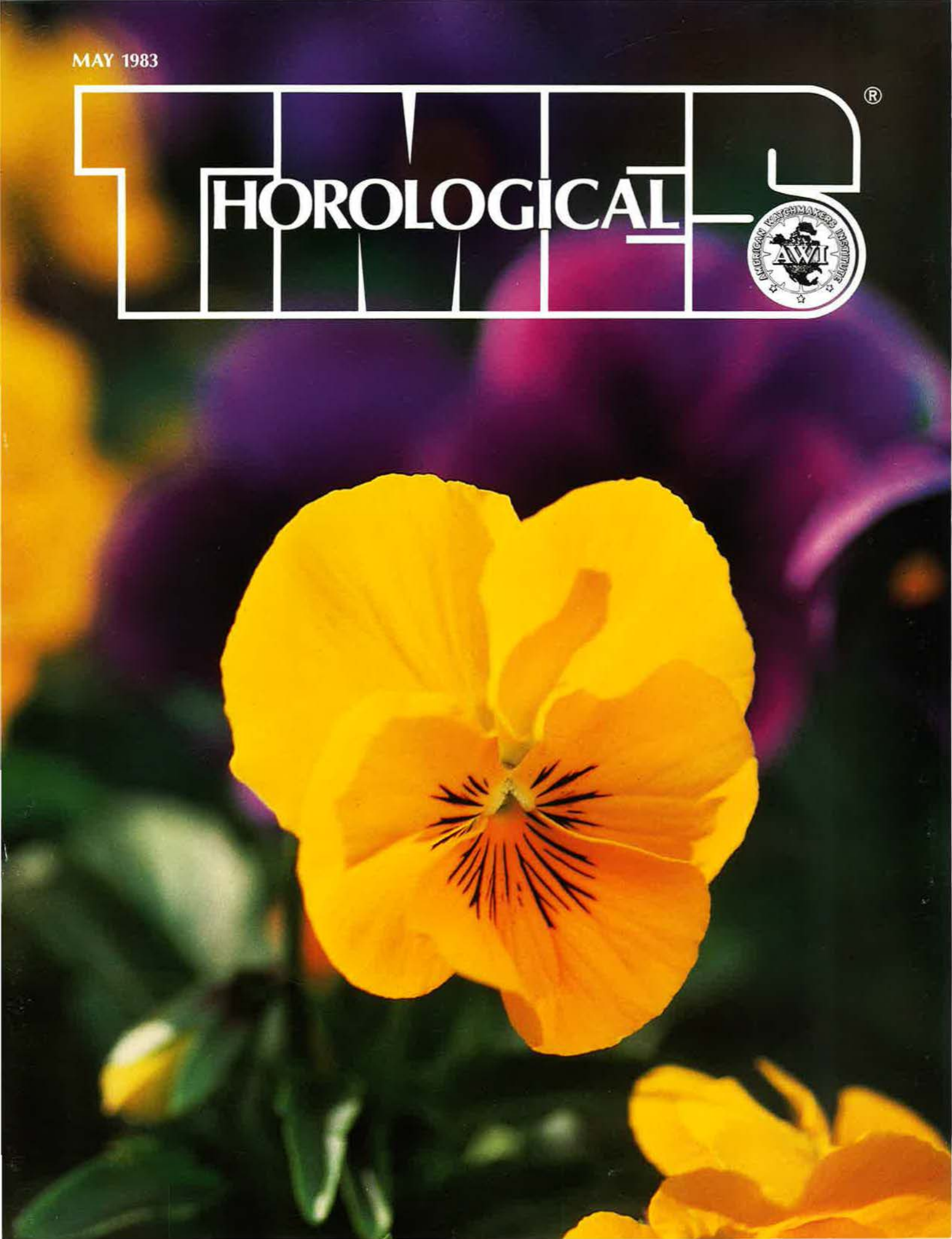

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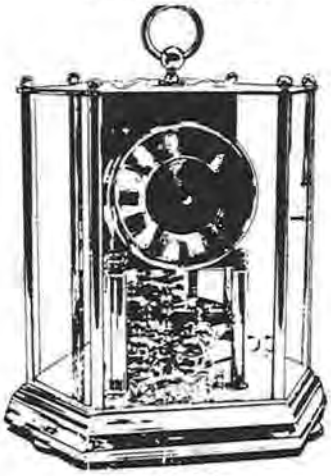

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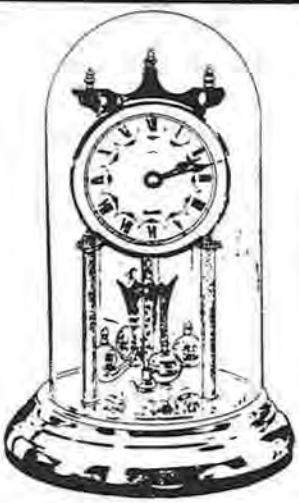

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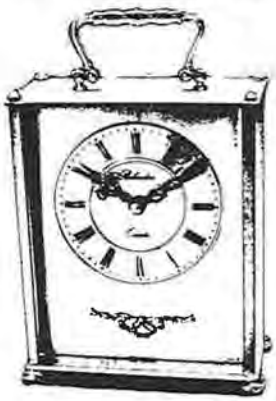

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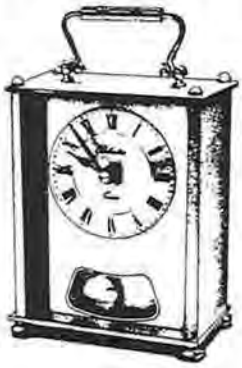

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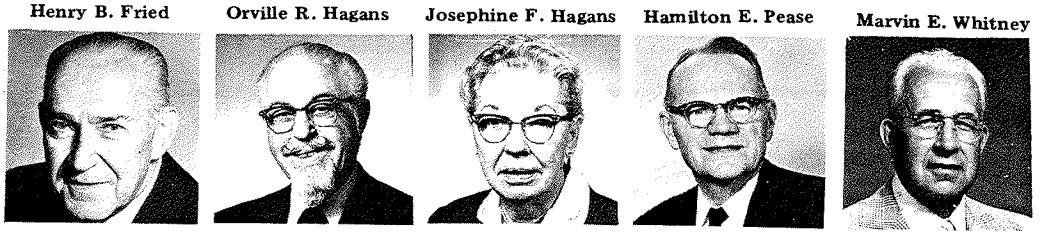

Editorial

Many watchmakers and clockmakers have completed their schooling and apprenticeship and have added additional years of experience to their knowledge. Some believe that since they have reached their zenith, all they need do is hang their sign and be inundated with the onslaught of customers begging for expert services. To a point they are correct, for word of mouth advertising ranks among the finest known. But only rarely is it enough to sustain a highly profitable business.

It takes more than a little discipline to dip into meager profits to begin advertising. When you do, results are seldom immediate. Rather, a program of continued advertising that keeps your name and your service before the customer is necessary.

Advertising pertains not only to the retailer. The tradesman can obtain mailing lists as close as the business directory and plan not only one, but several mailings.

Whatever your category in the industry, advertising *does* work. Take the time to look and you will almost always see some form of it. It must work—look in this magazine.

On the Front

The month of May exhibits the renewal of life that comes with the Springtime. The velvety petals of a pansy symbolize nature's wonder on our front cover.

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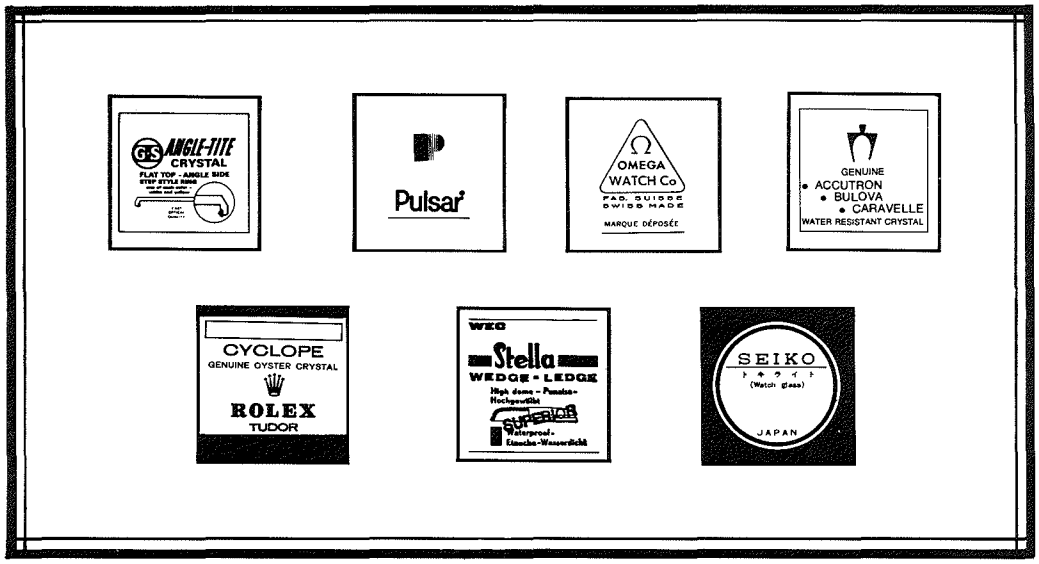
OUR CRYSTAL DEPARTMENT HAS EXPERIENCED PERSONNEL TO HANDLE ALL YOUR WATCH CRYSTAL NEEDS FROM FITTING TO REFILLS. TRY US - YOU WON'T BE DISAPPOINTED.



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President's Message/Marshall Richmond

Appearances Are Often Deceitful

Probably the best example of the fact that appearances are deceitful is that most watchmakers are familiar with counterfeit watches. These are marketed in the most unusual ways and the name on the dial is in itself a gross misrepresentation. We have inspected watches with all the fine names in watches on the dial, but a watchmaker can usually spot a counterfeit by just picking it up. The weight will be a dead giveaway in these watches as they are much lighter in weight than a fine watch. Most purchasers are not aware that they were "took" until some time after the purchase. Many do not realize it until the watch proves unsatisfactory by stopping, keeping erratic time or turning their arm green. When taken to a watchmaker they have to be informed of what they own in the way of a watch.

In dealing with people we are faced with the same problem. We talk professionalism and try to practice it, but it doesn't work in all areas. I opened shop in a small community with a population of 1200 people and had ideas of what kind of image to get across to customers, so I would go to work wearing a white shirt, necktie and cuff links with a business suit. In a short while the message came to me that my reputation was aloof or stuck-up. At the bank I noticed that the male bank employees wore sport shirts and slacks, seldom a necktie! This gave me the answer I needed, so from then on that was the way I always dressed. It was a compromise.

Customers came into my shop dressed in most any manner possible. I well remember one incident where my son, who was waiting on the counter while I was in the back room working at the bench, looked up to see a scroungy male customer come in wanting to look at diamond rings. My son, who was in high school at the time, came back to me about it and said he didn't think the man could buy a cup of coffee. I then went out and waited on the customer, all the time conversing with him and learning all I could about him. He purchased a very nice engagement/wedding set, paying for it by check. Later that same day his wife came in and bought him a fine watch. It turned out it was a wedding anniversary, and by our

(Continued on page 6)

Our Readers Write

I have been a member since November 1981 and am very pleased with the information that comes my way with each issue of the *Horological Times*. I look forward to every issue.

Donald H. House
Syracuse, New York

I am enclosing a check for my '83 dues. This is the only organization that works for the welfare of watchmakers. I am a charter member, and I attended the meeting on AWI's 15th Birthday. I have worked at the bench for 62 years.

Good luck to you all who work so hard to keep AWI going. The magazine is great. Carry on!

Cay S. Smith
Springfield, Missouri

Thank you for sending the packet of materials I sent for. I already have used one *Horlogical Times* article on the Vernier caliper. . . . it gave an easy explanation to new help.

Ralph C. Buyer
Freeport, Illinois

The Tooth Collector

By

Ken Law, CMC, CMBHI

Some tips on arbor "dentistry" are shared here with H.T. readers by Ken Law, CMC, CMBHI.

1 Here is the pallet gathering or fourth wheel arbor from a typical French movement broken in two places, the pallet and wheel removed.

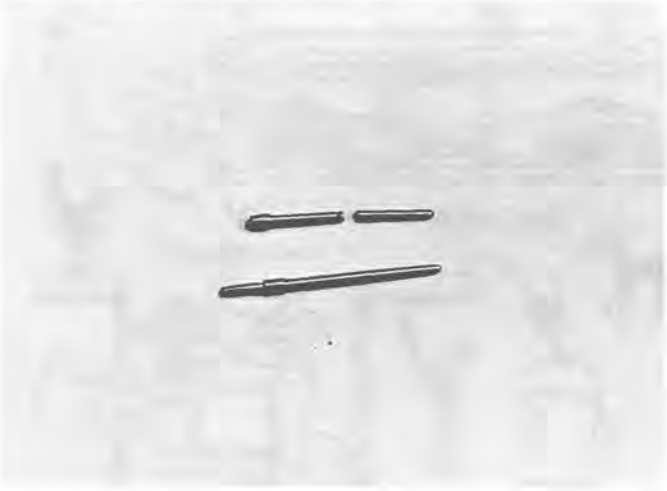
2 Anneal and center drill your arbor for new plug. Reharden and temper it.

(Continued on page 6)

KEN LAW
(Continued from page 5)

3 Take your measurements from original and file your new pivot from a drill rod leaving diameter at least 1/10 mm oversize for finishing. Reverse in pin vise and file your plug a little oversize.

4 Chuck in lathe and finish pivot end to final dimensions. Reverse the workpiece and finish plug end until it fits previously drilled hole in arbor for your favorite repivoting method.



5 Here is the finished hardened and tempered pivot with plug next to the original broken pieces. This particular pivot is 12 mm long and tapered.

6 Fit the new plug to drilled arbor by your favorite method. Put the wheel on and it's ready to spend the rest of its life collecting teeth!

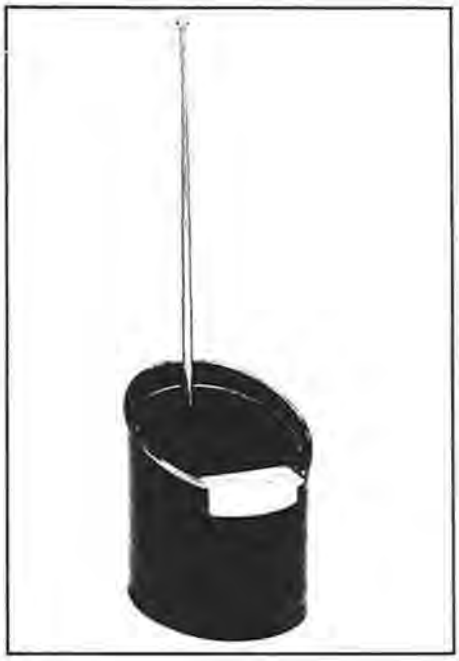
PRESIDENT'S MESSAGE *(Continued from page 4)*

treating him with courtesy and respect, two sales were made instead of one. He was a prosperous farmer who had to interrupt his working day to buy an anniversary present.

This can also work in reverse when the smooth talking, immaculately dressed individual can come in and take advantage of us if we are not on our toes. The moral is not to make hasty judgements or decisions and your chance of being correct increases greatly.

When having technical difficulties THINK AWI, ask for help! This is POSITIVE THINKING!

What do you get when you purchase Eveready batteries from The E. & J. Swigart Co.?



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354	.67 "	
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357	.95 "	
362	.65 "	
364	.60 "	
366	.65 "	
370	.65 "	
371	.65 "	
377	.67 "	
381	.65 "	
384	.55 "	
386	.75 "	
387	.97 "	
388	.67 "	
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Technically
WATCHES

By Archie B. Perkins, CMW, FNAWCC

HOW TO USE The Modern Watchmaker's Lathe

Part IX

After practicing the six basic cuts on brass rod which were shown in the February, 1983 issue of *Horological Times*, the basic cuts should be further practiced by making some useful tools that can be used in watch or clock repair. This helps the beginner to master the basic cuts. A good project to select is to make a set of three jewel pushers. This requires one to make square shoulders, beveled corners, female centers, and tapered straight surfaces, as well as facing the material. Making tools also requires the maker to practice measuring with the Vernier caliper and micrometer.

Figure 1 shows a set of jewel pushers which can be made for practice. When repairing pocket watches, these can be used to push jewel settings in and out of watch plates. Since these are made of brass, they are less likely to mar the brass jewel settings. These pushers can also be used to push broken jewels from the settings in watch plates, as well as friction jewels from the plates. View A in Figure 1 shows the largest of the three double-ended pushers. Point "a" shows a cross section of the largest end which shows the internal shape of the ends of all three pushers. Note that the end has a female center which has a 60 degree angle. The purpose of the female center is to clear the jewel when a metal jewel setting is pushed in or out of the watch plate. Also note that the female center does not extend all the way to the edge of the end. This allows for a flat area around the outside of the end. The ends of pushers are turned with a two degree taper which leaves the pusher slightly larger at the end than at the shoulder. Table I shows the dimensions of all three pushers. Note that as the diameter of the end decreases, its length also decreases. This gives the pusher more strength. All of the pushers should be made from 5/32 brass rod.

Figure 2 shows the steps and graver positions used to make the set of jewel pushers. View A shows the graver position used to turn the diameter of the ends of the pushers. View B shows how the shoulders are turned flat. A right hand shouldering graver can also be used to turn the diameter and shoulder of the pusher. View C, Point "a" shows how the female center is turned in the end of the pusher. The graver used for this operation must have a sharp point. The lathe is reversed for this operation. View C, Point "b" shows how the end of the pusher is turned flat on its end. View D shows how the corner of the shoulder is beveled. The bevel is made at a 45 degree angle. After the pushers are completed, their bodies are knurled if a knurling tool is available. If one is not available, the bodies of the pushers can be rolled between two coarse double cut files. This will rough up the bodies so they will not slip in the fingers when being used. The knurling should be in the center of the body of the pusher and should

Figure 1

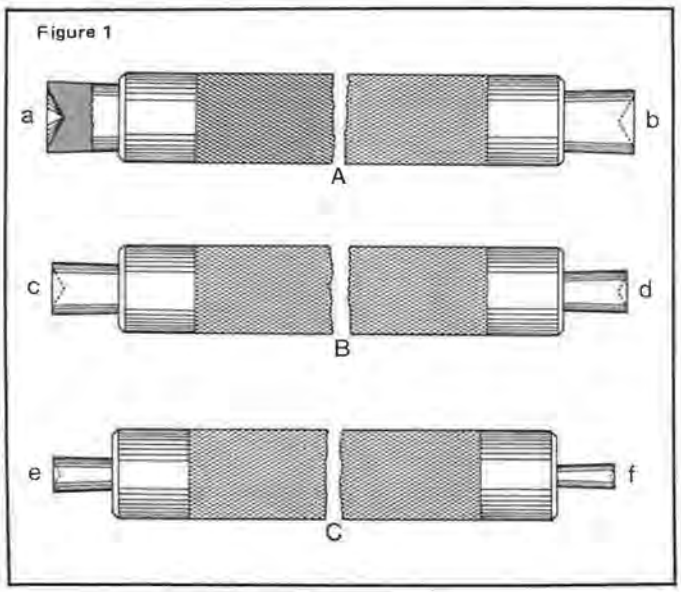


Figure 2

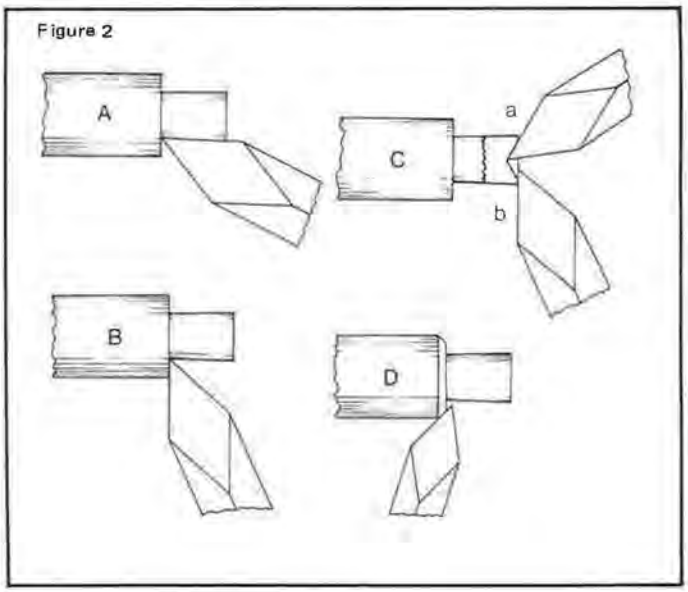
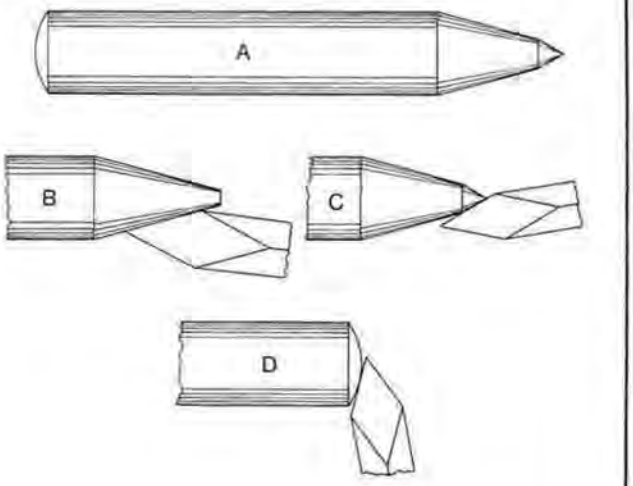


Figure 3



be kept at least 5.00 mm back of each shoulder.

After mastering the basic cuts on brass, one should practice the basic cuts on soft carbon steel rod. A good project to do is to make a center punch. A center punch is useful in both watch and clock work. A center punch can be bought, but the idea of making one is to get the turning practice.

Figure 3 shows how a center punch is made. View A shows a completed center punch. The diameter of the body should be about 3/16 inch. View B shows the first taper being cut, which is the first step in making the center punch. The length of this taper is 10.00 mm. The diameter at the end of this taper should be 2.00 mm. The surface of the taper should be cut straight and smooth. A straight edge can be used to check the straightness of the surface. View C shows how the tapered point is turned. The length of this taper is 2.00 mm. This angle should also be turned straight until the point is extremely sharp. The last step in making the center punch is shown at D. This operation consists of rounding off the other end of the punch. The reason the end of the punch that is hit with the hammer should be rounded off is so that the impact of the hammer will be directed on the center of the axis of the punch in case the hammer does not strike the end of the punch on the center of the end.

After the punch is finished, it should then be hardened and tempered. It is not necessary to harden all of the punch; only the tapered part needs to be hardened. To harden the punch, a propane torch can be used. The whole punch is first warmed in the flame of the torch. Then the punch is rolled in powdered boric acid. This forms a coating on the punch to keep its surface from turning dark during the hardening process. If the punch hasn't been warmed enough, the boric acid powder will not adhere to its surface. On the other hand, if the punch has been heated too hot before placing in the powdered boric acid, the powder will melt and ball up on the punch and will be hard to remove after the punch has been heated and quenched. After the boric acid powder has been applied evenly to the surface of the punch, the sharp end of the punch is heated uniformly to a medium cherry red. Then it is quenched end first into a container of cold water. This process hardens the punch. After the punch has been hardened, it should be checked with a fine file to see if it is hard. The file will not bite into the punch if it is hard. Next, the punch is chucked in the lathe and its surface is cleaned with fine emery paper. Then the punch is placed on top of some clean sand in a pan. The pan and sand are heated until the end of the punch reaches a very pale straw color. Then the punch is removed from the sand and allowed to cool slowly on a piece of metal or a glass slab. This completes the center punch.

Another useful project is to make a set of pivot drills.

Figure 4

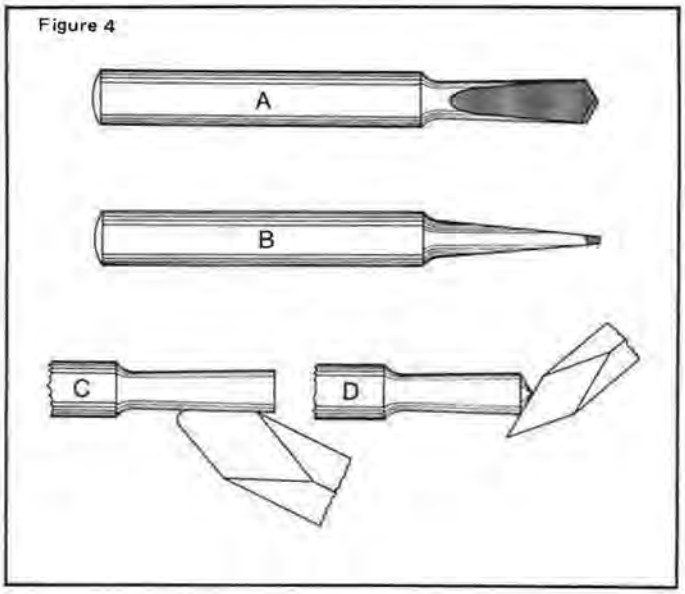
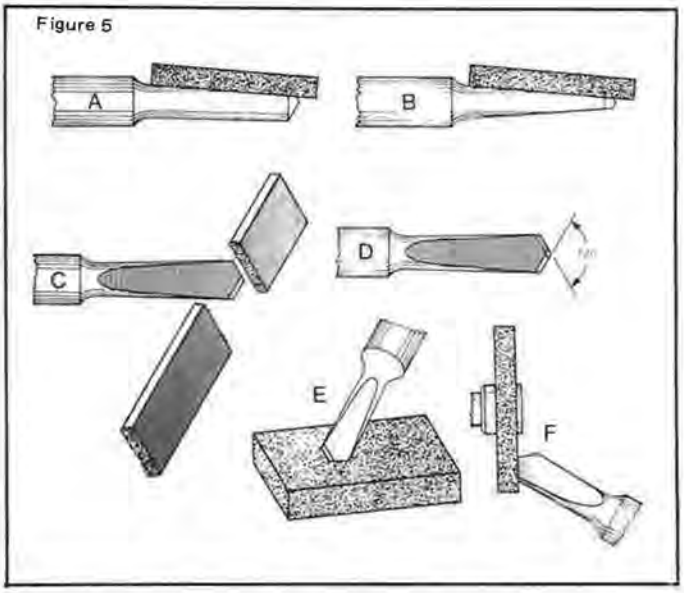


Figure 5



Figures 4 and 5 show how to make pivot drills. View A in Figure 4 shows a pivot drill and View B shows an edge view of the same drill.

To make pivot drills, select some high carbon drill rod 2.50 mm diameter. Cut this into 12 pieces, each 60.00 mm long. Chuck one of the pieces up in the lathe and turn to the shape shown in Figure 4, View C. Note that there is a slight taper being turned on the rod. This taper is about two degrees. This means that the drill blank should be turned about 0.10 mm smaller at the shoulder than at the end. This 0.10 mm taper is needed to prevent the drill from binding in the hole being drilled. This is called relief. If the drill blank is given too much taper, it will be weak and is more likely to break when being used. A round-nosed graver can be used to turn the blank. This makes it easy to turn a conical shoulder at the base of the drill blank. Another method would be to use a sharp-pointed, diamond-shaped graver to turn the taper and later use a round-pointed graver to turn the conical shoulder. It is best to have a conical shoulder on drills because this gives them more strength than if they have square shoulders. After the taper is turned on the drill blank, then the end of the blank is turned to a 60 degree angle to form the point of the blank. This is shown being done in View D, Figure 4. See Table 2 for the dimensions of the drills in the set being made.

(Continued Next Page)

After a drill blank has been formed, it is then filed on two opposite sides at a taper to form the drill. This is shown being done in Figure 5, Views A and B. When the filing is being done, the drill blank should be chucked in the lathe. The index pin is used in the index plate on the pulley to index for the two positions of the drill blank. It is very important that the same amount be filed off of both sides of the drill blank. Also, the same amount of taper should be given each side of the drill blank. The thickness of the drill at the point should be about ¼ of the diameter of the drill blank at its end. It is also very important that the two sides be filed flat and parallel to each other when viewed at the tip of the drill. Next, the cutting lips are filed to form the point and cutting edges of the drill. This is shown being done in View C, Figure 5. The lips are filed at a 60 degree angle with a center line going through the center of the drill. There should be a total angle of 120 degrees between the two lips. This is shown in View D, Figure 5. The lips should be filed at a 10 degree to 12 degree angle to provide a clearance for the cutting edges of the drill. This clearance angle is called rake. The two lips must be filed to the same angle so the point of the drill is exactly on center; otherwise, the drill will not drill a hole that is on center.

View E, Figure 5 shows how a drill can be shaped or sharpened on an India or Arkansas stone. The drill is held in a pin vise and moved back and forth on the stone at the proper angle. The drill can be shaped or sharpened on an India or Arkansas wheel as well. This is shown being done in View F, Figure 5. The two flat sides of the drill can also be ground on the India or Arkansas wheel.

After all of the drills are correctly shaped, they should be hardened and tempered to a pale straw color.

"How To Use The Modern Watchmaker's Lathe" will continue next month.

TABLE 1

Pusher	End	Diameter	Length	Length of Body
A	a	2.75 mm	4.00 mm	60.00 mm
	b	2.50 mm	3.50 mm	60.00 mm
B	c	2.10 mm	3.00 mm	60.00 mm
	d	1.75 mm	2.75 mm	60.00 mm
C	e	1.50 mm	2.50 mm	60.00 mm
	f	1.00 mm	2.25 mm	60.00 mm

TABLE 2
PIVOT DRILLS

Number	Diameter of Point	Length To Turn Blank	Total Length of Drill
1	2.20 mm	11.00 mm	30.00 mm
2	2.10 mm	10.50 mm	30.00 mm
3	2.00 mm	10.00 mm	30.00 mm
4	1.90 mm	9.50 mm	30.00 mm
5	1.80 mm	9.00 mm	30.00 mm
6	1.70 mm	8.50 mm	30.00 mm
7	1.60 mm	8.00 mm	30.00 mm
8	1.50 mm	7.50 mm	30.00 mm
9	1.40 mm	7.00 mm	30.00 mm
10	1.30 mm	6.50 mm	30.00 mm
11	1.20 mm	6.00 mm	30.00 mm
12	1.10 mm	5.50 mm	30.00 mm

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SR721W	361	.83	
SR726W	396	.83	
SR754W	393	.83	
SR920W	370	1.20	
SR926W	399	.83	
SR1120W	391	.83	
SR1130W	389	.86	
SR41SW	384	.69	
SR43SW	301	.99	
SR44SW	303	1.29	
SR527SW	319	1.25	
SR616SW	321	.83	
SR621SW	364	.83	
SR626SW	377	.83	
SR721SW	362	.83	
SR726SW	397	.83	
SR916SW	373	1.23	
SR920SW	371	.92	
SR926SW	395	.83	
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THE PICKLE BARREL

Marshall F. Richmond, CMW

DEVICES USED FOR HOLDING WORK

In the repair of jewelry no holds are barred in how we may devise to hold a piece securely while we perform whatever tasks need be such as filing, drilling, soldering or engraving. The same concern applies to many facets of watch and clock repair.

The most used holding devices that I know of are our two hands. All the manufactured devices invented will not operate without the use of the hands. As much as possible I use my hands for holding while sawing or filing instead of a vise or pliers because of the feel and control I have with my hands. The fingers of the hands grow very sensitive with use in holding many of the pieces we have to handle. In handling very delicate pieces we are able to develop the dexterity to hold the pieces while we work on them without their being damaged. For instance, a pearl ring can be held by the pearl while soldering the bottom of the shank. We can feel if the pearl starts to get warm and we know to stop applying heat before the pearl is damaged. We can then shield the stone with wet tissue and hold it in the heavy-duty tweezers or sink it in wet sand leaving the shank protruding to complete the solder joint.

Pliers and **tweezers** can be used as holding devices. The heavy-duty tweezers are used on most every job we solder. Tweezers are used to handle anything small that we cannot hold with our fingers. Diamonds and small stones are handled with diamond tweezers which have rough insides in their tips. I use a pair of discarded 3-C watchmakers' tweezers to handle small pieces of solder or metal on the jewelers' bench and they get quite rusty. This proves a plus in handling mêlee stones since the insides of the tips being so rusty make a surface that does not slip on the girdle of the stones and greatly lessens the chances of the stones flipping out. I use this system for handling stones rather than using beeswax on a piece of pegwood. This is more time consuming, but works well.

Tweezers come in a multitude of sizes and shapes because they can be used for many different applications. **Pliers** likewise come in a great variety of sizes and types. In watch and jewelry work, the most used and necessary pliers are the **flat nose, chain nose, round nose, end cutters, side cutters, bow closing,** and **parallel pliers.** The **parallel, chain nose** and **flat nose** can be obtained in smooth jaws or rough jaws. The **rough jaws** hold much better, but when handling smooth surfaces they bite into the metal and leave marks that are difficult to remove. This is why the smooth jaw pliers are used much more in jewelry work. **Rough jaw parallel pliers** are excellent for holding small pieces of gold or silver while sawing or filing on the filing block; **smooth jaw pliers** can be used in straightening or bending polished surfaces. I have even gone one step further with my smooth **jaw parallel pliers** by soldering some thin strips of copper inside the jaws. These lessen the chance of marking polished surfaces, as the copper is usually softer than the metal being grasped. **Bow closing pliers** have many uses and are particularly helpful in rounding a piece of metal to form a ring, or for closing the gap in a ring after removing a piece of metal to make the size smaller. The **small round nose pliers** are especially useful in holding a piece of wire when making a single jump ring. Although the material and tool catalogues show several pages of pliers, many which are sophisticated and made for a single usage, it is not practical to have tools that will be used only a few times in a lifespan. The pliers mentioned here are necessary and will handle almost any holding or bending need we encounter if a little ingenuity is used. **Flat nose, chain nose** and **parallel pliers** are shown in Figure 1.

Figure 1

Vises are also necessary holding devices. Like pliers and tweezers, vises are available in many types and sizes. Generally when we think of a vise we think of a bench vise. The dictionary describes a vise as any of various devices usually having two jaws which may be brought together or separated by means of a screw, lever or the like used to hold an object firmly while work is being done. This is true with the **bench vise,** the **hand vise** and the **ring clamp,** but we use **pin vises** which have four jaws to hold tubing or round objects which are actually chucks (as used in the watchmakers' lathe or flex shaft tool). **Bench vises** come in all sizes and are usually described by the width of the jaws, but this can be deceptive because some are very lightweight and some heavy duty. I have two in my jewelry repair shop. One of these is quite small with 1¼ inch jaws (shown in Figure 1, Item 7), and the other is a lightweight swivel-based with 3½ inch jaws. The small one is not mounted to the bench and can be used for many holding jobs anywhere by holding it steady

with one hand, or it can be mounted if the need arises. The large vise is mounted solid, and being a swivel base it can be used to hold larger items for sawing or filing. The swivel will allow a turn of up to 360 degrees which allows any item to be held at almost any needed angle. Being solid, it is especially useful when using a drawplate to reduce the size of gold or silver wire.

The **hand vise** also comes in many sizes. The one I have is quite small, with ¾ inch jaws (Figure 1, Item 2). It is especially helpful in filing out small gold or silver parts used to make or repair jewelry. I have also found it very useful in making setting parts for antique watches.

The **ring clamp** is in fact a vise but uses a wedge to hold the work firm. The jaws are leather so a polished surface can be held firmly without marking or damaging the polished surface (Figure 1, Item 9). This is excellent for holding while filing or sawing, and also for setting stones or engraving around stones in flat settings. I also find it useful for clamping an eight-day clock key while releasing the power from the mainspring.

Pin vises are available with double ends, single end and in all sizes. The very small one is fine for holding pivot broaches or needles used as punches, scribes or for aligning small hinges on jewelry or watch cases. The double end can handle a larger variety of sizes of wire or tubing since one end has a larger opening when the jaws are closed. This is probably the most often used pin vise as it is used by watchmakers to hold stems for crown changes, to cut off new stems and finish the cut end, or to hold drills while drilling holes when using the lathe (Figure 1, Item 4). The one that I use the most in jewelry repair is one with a wooden handle—it will chuck up anything to ¼ inch (Figure 1, Item 1). I use this a lot when setting stones to hold setting burs rather than the flex shaft tool because I have better control over the cutting bur. Plus, I can elongate or enlarge the seats rather than the size of the bur. It is also excellent for holding beading tools when forming beads on flat settings or for tightening beads on a loose stone. I use it with a **center** or **shaped punch** to tighten the tube rivets on emblems. Due to its size and the excellent grip on the handle, it permits great pressure to be exerted on the work, yet gives complete control.

The **ring mandrel** (Figure 1, Item 8) is also a tool of many uses, for it is calibrated for ring sizes and is harder steel than in a file. Therefore even filing on it will not mar it because a file will only slip over it. Standard ring mandrels are calibrated in ring sizes from 1 to 13 by ¼ sizes. In sizing rings I always make them at least ¼ size smaller than requested and then put it on the mandrel and tap it in the solder joint until it stretches to the size needed. This assures of a strong solder joint if it does not break. If it *does* break, it is not the quality of work I would care to give to my customer. With a tapered hole in the edge of the bench, a ring can be put on the mandrel with the small end inserted in the hole until tight. Then with it leaving both hands free, where tapping, peening or punching is necessary, these operations can be performed with ease. Mandrels can be purchased with a groove for stone-set rings so that when the stone protrudes under the inside surface of the ring and aligning it in the groove there is no danger of damaging it or pushing it out of its setting. A smooth mandrel with no groove can be used to stretch a non-stone ring by tapping it with a rawhide mallet toward the large end of the mandrel.

The **engraver's block** (Figure 2) is a vise made on a ball which rotates with the bottom of the ball setting in a doughnut-shaped leather pad which will allow it to be tilted at an angle of at least 45 degrees. Being capable of rotating will allow a piece of work held in the jaws to be put in almost any position desired. It has a locking pin to lock the rotation and a key which is removable to tighten or loosen the jaws. With a variety of attachments for holding various shapes of articles, most any small object can be chucked in it for engraving, sawing, filing, burnishing or stone setting. Although it was designed primarily to be used for hand-lettered engraving, to me it has proved to be a very useful tool for other uses in making or repairing jewelry.

Small steel blocks can be used as weights by improvising with steel rods or file points to hold work on the asbestos pad while making heat applications. Watchmakers' bench blocks can be used, but because they are tempered and fine-finished tools, it is not recommended to use them. Around a jewelers' bench too many things could cause rust and corrosion. Heat could even draw some of the temper from them. Figure 3 shows a steel block holding a ring job in the heavy duty tweezers on the asbestos pad. Also, jewelry staples can be stuck in the asbestos pad straddling a ring shank or a small part of a piece of jewelry to hold it in place while heating or soldering. Binding wire is also a disposable holding tool. For many soldering operations that require pinpoint accuracy, good results can be obtained by wrapping and tying with binding wire which is a mild steel and dead soft. Being steel it will not adhere to gold or silver when using Batons or a borax flux. However, if Aircosil® is used, the wire can be soldered to the gold or silver object being soldered.

The third hand tool is a heavy metal disc base with a double universal joint protruding upward from the center with a slot and thumb screw to hold heavy duty tweezers (Figure 4). This tool can be used for holding and aligning a second piece of metal to the first located on the asbestos pad for soldering. It can be used to align the wire when replacing prongs or in replacing a head or ring setting. It can hold the shank with the head on the asbestos pad, and then aligning the shank on the head to pinpoint precision while making the solder joints. If a person's hand is steady enough, it is time-saving *not* to use this tool, but despite that, it is almost foolproof for those people with less steady hands.

There is also another model that holds two pair of heavy duty tweezers that has advantages in holding both pieces of a job in suspension while the soldering is done. This method allows heat to be moved around a joint and making a perfect solder joint without having to reheat it if the solder has not flowed all around.

A new holder for rings on the market is Door's **ring holder** (Figure 5). It consists simply of wire about 1½ mm in diameter with a plastic tubing handle, but its design makes it work well for many holding applications in doing ring work. The way the angles are made in the jaws allow it to hold a ring securely while making soldering applications. It can be used for putting on full shanks, half shanks, new top plates, simple sizing jobs or even for putting two rings together so they can be soldered at the bottom of the shank. I have even used it to solder together an engagement ring and wedding band that had a size difference. Even a **saw frame** can be used

(Continued on page 14)

Figure 2

Figure 3

Figure 4

Figure 5

PICKLE BARREL

(Continued from page 13)

as a holding tool as it is really a holding tool for the saw blade. I have used it to hold a piece of cotton cord charged with tripoli for hand polishing inside places where no rotary tool could possibly reach. For a final finish the cord was changed and charged with rouge.

All watchmakers should be familiar with the **staking tool**. This is undoubtedly one of the most clever holding devices ever dreamed up. Watchmakers know its value but I use it a great deal in jewelry repair for its added value in both removing and riveting rivets. I also use it to punch out small gold discs when making pearl pierced earrings. Discs can be punched out either flat with a **flat bottom punch** or domed using a **round bottom punch**. In riveting it will hold a piece in place, freeing both hands to use the punch and hammer.

There are no doubt holding devices that we have never seen or even heard about, but the ones mentioned in this article are primarily for watchmakers doing jewelry repair work. Many of the tools we use in jewelry repair we already have in our collection of watchmaking tools. Let's be practical and keep our tools well maintained, buying replacements or new tools when we see a practical need for them.

The next article will be on tool maintenance and replacement.

Sam Greenglass, 1909-1983

Sam Greenglass, former partner of the John A. Poltock Co. and a noted master horologist, died on March 27, 1983. Mr. Greenglass started in the watch parts business as an apprentice with the Pennant Corp. in 1926 in downtown New York. Later when that company combined with the Hammel-Riglander Company, importers of watch materials and watchmakers and jewelers' tools and supplies, Mr. Greenglass became head watchmaker and material man. He later assumed the same position with the New Jersey Jewelers Supply Company until his venture with the Poltock Company as a partner. During that time he was considered the leading authority of watch and clock parts in this country with an uncanny sense of recognizing any movement's origin and which parts from other makes would interchange.

Mr. Greenglass devised many systems of interchangeability and cataloging which made parts selection and matching easier for others to follow. He was also known for his ability to make or alter parts when parts for a model were no longer available and probably made more balance staffs to custom order than any other person in this country. He joined the prestigious Horological Society of New York with certification in 1936 and served as an officer in various capacities. He was also a member of the National Association of Watch and Clock Collectors and of the American Watchmakers Institute.

Mr. Greenglass retired from the Poltock Company in 1981, devoting his time to the restoration of antique watches and lecturing to horological groups. He leaves a wife, Helen, a daughter, and four grandchildren.

Henry B. Fried

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- Front controls—can be mounted to wall.
- Operates on a single "C" cell. (4 "C" cells for chime mechanism.)
- High precision quartz crystal
- Kienzle transducer system. Bi-polar 180° step-angle
- Pendulum length: up to 42½" from center shaft to tip of pendulum
- Self-starting and service-free

In the Spotlight © 1983
by Orville R. Hagans

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THE BROCOT ESCAPEMENT

Part III

By A. L. Rawlings and J. E. Coleman

Sternfeld Translation

The Brocot escapement differs from ordinary anchor escapements only in the shape of the pallets, which are steel or ruby hemicylinders. The teeth of the wheel are cut to permit a large arc of oscillation. The pallets soften the shock of the escapement and permit a certain amount of recoil without fear of an adverse effect. The arrangement of the escapement's striking parts, moreover, is such that the oil is kept (in place) for a very long time. It is called the roller (= pin) escapement.

In this system, locking takes place when one tooth rests on the arc of the hemicylinder, and the impulse results from the pressure which the point of the tooth exerts against the rounded flank of the pin (flank is a typo for flanc).

The angles of impulse are made on each side by the roundness of the pins. Although it appears to be a dead escapement, it nevertheless offers a slight recoil during the wide oscillations. This recoil corrects in part the irregularities of the driving force, which the generally short and light pendulum cannot compensate.

The teeth of the wheel in the elder Brocot's escapement do not meet the angle in passing from locking to impulse, but the younger Brocot, 1846-1852, modified his father's design, transforming the circular part of the impulse into an inclined plane, like that of Graham. This modification made in 1849 did not take hold, though.

The Brocot escapement has been used most generally as a visible escapement on clock dials, where it thus constitutes a functional ornament. In this case, the pallets are of red stone.

In order to obtain the automatic leveling (= setting in beat) it is necessary:

1. To eliminate the pins on the back plate whose very purpose is to limit the course of the crutch.

2. To adjust the crutch on the anchor arbor so that it is easily movable, usually by threading the arbor and the hole of the copper collar. The repeated shocks of this threaded arbor in the collar reduce the shock to a minimum, just enough so that the pressure of the wheel upon the pallets does not push the anchor back. It is a matter of trial and error.

In order to be sure that the automatic leveling works, the shocks must be very soft. I insist upon this point. It is obvious that the anchor pallets, if the balance (anchor, I think) moves too violently, will come to rest at the bottom of the escape wheel teeth. This movement is repeated on the other side with less force and accordingly in the following oscillations. After five or six oscillations, automatic leveling has occurred.

Almost all the modern treatises on horology speak of the Brocot escapement.

"Le Roret," an excellent popular book, treating all the different trades, speaks of it in Volume I, page 213 ff.; Le Gros' book, "Watch and Clock Escapements"; Saunier's Treatise, pages 554-600 and 802 (French edition); and other widely used books.

Brocot Family

Brocot, Louis Gabriel, res. in 1827 Bourtibourg street in Paris. Died at 36.

Paul Brocot, his son, invented the Brocot suspension and pin escapement. In 1849 he lived on Chovilot street in Paris.

Achille Brocot modified the pin escapement, then returned to the old way. He is perhaps the originator of the automatic leveler. Invented a perpetual calendar that is very ingenious (see Britten Dicty, p. 70) depending on the workman using it, makes it possible to make some very fine clocks. Futhermore, an attempt to perfect the remontoir of constant force (an arrangement that gives constant force to the escapement). A year clock.

First class medal at the expositions of 1849, 1851, 1855, 1862, 1867.

Trademark: A.B. in a five-pointed star.

Lived at 6 Parc Royal Street in Paris in 1868.

Excellent workman in addition to a capable business man whose products were exported in great quantitites.

(s) N. de Woyna.

In addition, Mr. Sternfeld did some research and wrote this letter:

Dear Mr. Coleman:

I have looked at a number of books, but don't find any more about Brocot. The principal French encyclopedias do not list him, nor do the German or Swiss. I give you a few scraps here for whatever they may be worth, on the chance that you have not seen them.

Britten: See Watchmakers Handbook, which I suppose you have.

Saunier: Watchmakers Handbook, speaks of Brocot method of hardening brass.

Ungerer: Les horloges d'edifice (Brocot) escapement is generally used in room clocks, and only rarely in structure clocks (that is, tower clocks).

Reutebach (1951): Der Uhrmacher. The Brocot movement was newly discovered, called after its inventor, Achille Brocot, 1817-1878.

Rawlings: Science of Clocks and Watches, 2nd edition. The Brocot escapement is practically confined to French mantel clocks. This is a pity, for it is the cheapest form of jeweled escapement and its performance is nearly equal to that of any other.

Booth: Clock and Watchmakers Manual. Patent of invention for five years for improved movement of clockwork by M. Brocot of Paris, dated October 9, 1840. First patent for addition and improvement November 14, 1840. Second patent for addition and improvement June 20, 1842. Too long to quote here, but assume you have the book.

Baillie gives Achille dates as 1817-1878. Schulte,

Lexikon, says Achille's son, Paul, died in 1882, aged 36. This would make Paul's birthdate 1846. Mr. de Woyna's quotation says, "Paul invented, etc., and living in 1849." At the age of three, he wasn't doing much inventing. Who is mistaken? Who was Louis Gabriel Brocot, living in 1827, and also dead at 36? Something is not keeping time.

In "L'art de l'horlogerie," 2nd edition, 1844, anonymous author, I find a notation that a Brocot, address at Rue Bourgthibourt, subscribed to one copy of the book. First name not given, and note variation in spelling of street.

Catalogue du Musse, Horlogerie 1949, page 188: Calendar clock by Brocot in 1839, described and dial work and arrangement illustrated. This was exhibited at Paris Exposition of 1839. Stated that nearly all of Paris clocks made after 1850 used the Brocot suspension, replacing former one of silk thread. Escapement was a Brocot invention derived from Graham's. It had an adjustable complication to make variable recoil, which feature, however, had not any posterity. (I am not much good at technical details. I suppose what is meant is that the complication either wasn't successful, or didn't find favor.)

I think I have exhausted the possibilities of the New York Public Library and my own collection. If much more is discovered in the way of biographical details, it will be found in some magazine article.

Joseph Sternfeld.

While the search for Brocot data was in progress, we had an inquiry which combined an attack upon Ward L. Goodrich's suggestion for flattening the impulse surface of Brocot semi-circular pallets, page 127 "The Modern Clock," and there was included with the effort a desire to determine whether or not the "flattening" idea was original with Mr. Goodrich or, like so many other horological ideas, had been presented at an earlier date by other horologists. Letters were dispatched to Mr. Donald deCarle (London) and to Dr. David Torrens (County Derry, North Ireland). Both were familiar with the Goodrich passage and neither could recall ever having heard of it any other place.

In a small volume published at Leipzig by F. W. Ruffert in 1885 titled "Katechismus der Uhmacherkunst," we located the same identical suggestion (Fig. 10), and Prof. Fredrick Whitsell (Sewanee, TN) did this translation of sections 216 and 217.

Part IV of "The Brocot Escapement" will continue with the Whitsell Translation in the July issue of Horological Times.

Essence of Clock Repair© 1983

By Sean C. (Pat) Monk, CMW

The Eureka Clock *(Part III)*

A SUMMATION

We had not intended to dwell further on this unique and interesting clock except that our articles, which were published in *Horological Times* (January and March, 1983), have resulted in a number of additional enquiries from readers. Mostly, these were requests for even more information. With this in mind we went over our notes once again and decided that a summation of the subject was in order.

Sometime after the Eureka Company Ltd. was established in 1908, on City Road, in the East End of London, Mr. B.S.T. Wallace conducted the first tests on the clock. There were some who had proposed that the Eureka was no more than a "horological entertainer." It was a poor timekeeper, some said. However, it is interesting to note that the late Malcolm Gardner apparently did not hold these viewpoints and considered that five minutes per month, which the clock was found to be capable of, was a reasonable rate. As previously mentioned, one minute per month, between 1906-1917 was considered by the manufacturers as very good timekeeping for a domestic clock.

Did the Eurekas continue to maintain the accuracy proposed? The accuracy of the clock, of course, was and is dependent upon the efficiency of the contacts as we have emphasized. This also means that with good circuitry, the maximum arc of motion of the balance wheel should be achieved and maintained at 360 degrees. In the general maintenance of the clock, of course, these requirements are entirely in the hands of the repairman.

Also, unfortunately, due to the lack of supplied instructions as well as lack of skill, the timekeeping propensities of the clock were varied and therefore the clock was not a practical success. In addition, it was expensive to manufacture and, all things considered, its patent was allowed to lapse in 1917. Nevertheless, we are informed that these clocks were still being sold in the "horological quarter" (Clerkenwell) London, prior to the outbreak of World War II. However, as Mr. Aked relates, there were few takers. From the practical benchman's point of view it should be noted that much material previously available for the Eureka was undoubtedly destroyed as German bombing took a heavy toll on this entire area.

We did not dwell on the original report made by Mr. B.S.T. Wallace other than to specify the opening and closing of the contacts as being established as about 1/80th of a second, and the fact that the distance between the fixed and moving contacts should be about the thickness of a cigarette paper, the latter being adjustable by the insertion of a small brass wedge fitted under the fixed contact.

The original makers provided a fundamental test for the Eureka: with the 1.5 volt battery disconnected and the balance wheel at rest (the contacts should be closed) the balance was expected to commence rotation upon battery hookup. No manual impulse was to be used. It is important to remember that the magnetic poles of the clock are set 30 degrees from the vertical and the timing of the impulse must be such that the circuit is broken slightly before the balance electromagnet reaches the vertical position; as mentioned, this is for flux drainage and to eliminate sparking. The balance spring collet may be turned slightly to adjust the balance position when at rest.

In Part II of our *Horological Times* article on the Eureka, we described the reconstruction of the two contacts as performed by Mr. R.H. Miles of Saffron Walden in Essex, England. However, perhaps it is important at this time (and before concluding the "contacts" problem) for us to ruminate on the words of Mr. B.S.T. Wallace, the original tester of the clock. It is, in fact, divided into two parts, one half being "alive" and the other half being "dead." Moreover, upon examination of Mr. Miles' reconstructed sketch, we will see that

Figure 1. The rear of a "short" model Eureka, with a view of the rating star, dial removed.

Essence of Clock Repair

this is in fact true. The live pin is connected to one end of the electromagnet winding by 18 SWG silver wire and passes through a fine fiber tube. This tube, with its silver pin and fiber tube are then inserted into a thin tube of phosphor bronze. The whole is then itself inserted into the short red fiber insulating bush, which is itself fixed to the balance in a split brass section.

Mr. Wallace continues his description: "For a distance of about 1/8- inch from the tip of this multiple contact, half the phosphor bronze tube is cut away together with half the inner fiber tube, so that one side of the pin is silver and the other, or insulated half, is of phosphor bronze, with an insulating path of only a few thousandths of an inch separating them. **It is this tiny insulating path which is at the bottom of all the trouble in Eureka clocks."**

It is not necessary for the balance wheel to be poised. In fact, according to Mr. Wallace, the performance of the Eureka clock can actually be improved by deliberately impoising the balance in a certain way. As the clock does not register seconds, however, there is no point in striving for seconds-accuracy.

Again, regarding the timekeeping, Mr. Wallace has made what may be considered (in the light of our earlier remarks) a rather remarkable statement. He says that plus, or minus, a minute a year is good enough for any domestic clock and **that is what a good Eureka clock is capable of through the widest extremes of temperature variation**—*provided it is in the care of someone who understands it.*

Well, there you have it! Opinions regarding timekeeping are variant according to who is doing the talking. The one thing we will all agree on is that it all rests with the "someone who understands it."

The Eureka Clock Company, who finally closed their production in 1914, originally supplied a 1.5 volt dry Eveready battery with their clocks. This battery was usually housed in a base compartment of the clock. This standard dry cell was expected to last about three years. However, an old report states that "a battery cell will easily last for five years in a Eureka clock." However, judging by the quality of some of the dry cells issued for electronic clocks today, one wonders about the modern truth of this.

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Battery News

By Ewell Hartman, CMW

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Refer to your BNS booklet to make the following monthly up-date:

Corrections:
S32 (AWI): change TR626SW (Toshiba) to SR626SW
M01 (AWI): change PX625 (Duracell) to RPX625

Additions:
S05 (AWI): add SR44W (Toshiba)
S21 (AWI): add Z (Timex)
S23 (AWI): add X (Timex)
S23 (AWI): add SR721W (Toshiba)
S18 (AWI): add SR920SW (Toshiba)
S34 (AWI): add SR616SW (Toshiba)
S38 (AWI): add SR716SW (Toshiba)
S52 (AWI): add SR516SW (Toshiba)
S54 (AWI): add SR527SW (Toshiba)
S56 (AWI): add SR521SW (Maxell)
S56 (AWI): add SR521SW (Toshiba)
A01 (AWI): add *LR44 (Toshiba)
A09 (AWI): add *92A (Gold Peak)

New Listing:
A11 (follows A09, AWI): 1.50 (voltage), 7.9 (diameter), 5.4 (height), *193 (Eveready), *93A (Gold Peak)

This month's up-date information is courtesy Eveready.

"ENTHUSIASM MAKES THE DIFFERENCE"

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

SOME FORMULAS TO GO BY

DeWitt Fowler writes on the formulas used in finding thickness and length of a spring that is to be put in a barrel.

First of all, I should like to thank you for all the things that you have done for us watchmakers. Your talents and untiring efforts are appreciated by all of us.

The following formulas are for finding the thickness and length of a spring to be put in a barrel. It is assumed that there is no problem in finding the width of the mainspring. In working out the formulas, certain principles were taken into consideration—that the area taken up in the barrel would be one-half of the available space, and that the difference between the number of turns in the wound-up and let-down positions would determine the running time of the clock or watch.

We need two measurements and a calculation. "A" = the radius of the barrel (half the inside diameter); "B"= the radius of the arbor (half the outside diameter); "C" = the number of turns of the barrel needed to run the watch for the desired length of time, plus 2. This can be done by counting teeth, or by taking out the escapement and turning the barrel.

Thickness of spring =

$$\frac{\sqrt{2A^2+2B^2}-A-B}{C}$$

Length of spring =

$$\frac{(A^2-B^2)\,\pi\,C}{2\sqrt{2A^2+2B^2}-2A-2B}$$

For those who have forgotten some of their algebra: To get the thickness of the spring, multiply 2 x A x A, then add 2 x B x B. Take the square root of this number and subtract A, then subtract B. Divide this answer by C. Now you have the thickness of the spring.

To get the length of the spring, multiply B x B and subtract that from A x A, multiply this result by C and then by 3.1416 (pi). This is the numerator, save it for a minute.

Now multiply 2 x A x A, and add it to 2 x B x B. Take the square root of this number, multiply it by 2, then subtract 2 x A and then subtract 2 x B. Now divide this number into the numerator that you saved and you have the length of the spring. You can do all this on a calculator in a few minutes.

For an illustration, take an AS1194 barrel. Measuring, the barrel is 9mm and the arbor is 3mm. There are 70 teeth in the barrel and 10 in the center wheel pinion. 5 turns would run the watch for a desired 35 hours. Add 2 to this 5 to allow for the inner coil of the spring.

Now:

A = 4.5
B = 1.5
C = 7

Calculating: 2 x 4.5 x 4.5 plus 2 x 1.5 x 1.5 = 45. The square root of 45 is 6.7; 6.7 minus 4.5 minus 1.5 = 0.7; 0.7 divided by 7 = 0.10mm which is the thickness of the spring.

Calculating: 7 x 3.1416 x (4.5 x 4.5 minus 1.5 x 1.5) = 395.8. 2 x the square root of (2 x 4.5 x 4.5 plus 2 x 1.5 x 1.5) = 13.4; 13.4 minus 2 x 4.5 = 4.4; 4.4 minus 2 x 1.5 = 1.4; 395.8 divided by 1.4 = 282.7mm or 11.13 inches, which is the length of the spring.

These formulas work on any size barrel and can be helpful where the mainspring is missing or questionable.

DeWitt Fowler

Q I am sending you photographs of a clock movement which came to me for repair. The movement measures approximately 1-11/16" x 15/16". The only markings to be found are "Will m Halsall No. 2007 Bristol." It is a chain-driven movement.

I have cleaned it and I had to make a new winding arbor as the original was broken off.

Could you please tell me how long this clock should run when fully wound? Could you also give me some information about Mr. Halsall and when this clock was made? Thank you.

Robert P. Waytena
Fort Erie, Ontario Canada

A *I have examined the photos and they reveal an English One-Day verge fusee movement of the early 19th century. William Halsall of Bristol is listed as having operated between 1811 and 1812. However, the movment is similar to those made at the turn of the eighteenth and nineteenth centuries.*

From the appearance, this is a one-day timepiece made to run about thirty hours. From the side-view of your photographs, I see no extra train wheel that would multiply the train by eight times. The barrel doesn't appear large enough to house a spring to run this for more than thirty hours.

There is little about Mr. Halsall except the short listing probably being one of the many journeymen working there without any distinguishing masterpieces or inventions.

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WMJDA HOLDS ANNUAL CONVENTION

The 37th Annual Convention of the Watch Material and Jewelry Distributors Association was held March 1-6 at The Pointe in Phoenix, AZ. A business program, designed to be educational as well as motivational, highlighted the program.

Richard I. Lehr, labor relations authority, opened the business sessions with a discussion on wage and hour disputes, occupational safety, health matters and other labor relations issues affecting the distributors businesses.

First Lady Carolyn and President Dominic Priore

Jean Pierre Savary, President of the Watchmakers of Switzerland Information Center, outlined the status of the Swiss Watch Industry in the U. S. today. Talks on tax changes, insurance and computer applications rounded out the business portion of the program.

Friday featured the traditional "Associate's Tables" Day. Members held individual conferences with Associate Member Companies to discuss areas of common interest.

John Cassedy, Cas-Ker Co. in Cincinnati, OH was the recipient of the 1983 Man of the Year Award.

A banquet and entertainment on Saturday night culminated the event. The 1984 meeting is scheduled to be held at The Cloister, Sea Island, GA.

Retiring President, Karl Esslinger

Executive Committee—Front row (left to right): Karl Esslinger, Dominic Priore; Back row (left to right): Bob Mahar, Bob Moengen, Dennis Gaber, Roger Borel.

WMJDA Directors—Front row (left to right): Charles Berris, Karl Esslinger, Dominic Priore, Saul Cobrin, George Guyer, Ed Mira. Back row (left to right): Bob Mahar, Roger Borel, Bob Moengen, Leon Tulper, Dennis Gaber, Rich Isphording.

Glenn Bostrom, Executive Secretary of WMJDA celebrating the anniversary of his birthday, bottom left. At right, Jean Pierre Savary, President of the Watchmakers of Switzerland Information Center and Chairman of the Board of ETA Industries, Inc.

Head Table at

ASSOCIATE'S TABLES DAY

Friday, March 4 was devoted to "Thirty-Plus Ways to Improve Business." WMJDA met with representatives of Associate Member Companies to discuss areas of common interest. Pictures of the day's activities follow.

(Continued on page 28)

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Production Repairing of Mechanical Watches

By

Milton C. Stevens

The mechanical watch still accounts for a large percentage of repairs crossing the watchmaker's bench. The increasing short supply of fully qualified mechanical watch repairers and the escalating costs of doing business dictate that each repairer attain maximum productivity for the hours spent at the repair bench.

From a practical standpoint there is a limit to the charge that can be made for a watch repair which will make it economically sound for the consumer. This is even more true today, with the availability of quite dependable quartz watches at bargain basement prices than it was five years ago. Maximum productivity is the obvious answer to provide enough revenue to insure an adequate income for the watchmaker. Old habits must be re-examined and often modified or abandoned. Any watch that must be repaired on an "individual" basis must be considered a "special" repair and priced accordingly.

Unless a shop devotes its time exclusively to restoration jobs, it must decide to employ the production repair system. Once the decision for production repairs has been made, the shop must experiment and find the routine that best suits their unique situation. No one method is best for everyone. Some shops do as few as four or five mechanical watches in a repair cycle, whereas others have as many as 35 to 40 watches in work at the same time. A work cycle begins with the first contact with the customer at the take-in desk and ends when the repair has been completed and the watch is returned to the customer.

Sorting your work is a most important factor in the successful operation of a production oriented repair department. "Specials" should be placed in a group until they can be handled on an individual basis. The straight overhaul jobs or those with minor repairs involved in combination with the overhaul should be grouped together. Watches needing major repair should be grouped together and handled on a semi-individual basis.

There are two methods which I have used successfully in production watch repairing. One method lubricates the entire watch using a lubricant immersed in the rinse solution; the other employs the more traditional method of lubrication. For many years I used the second method exclusively, however, since the "immersed" lubricants have stood the test of time and have proven to be completely reliable. I strongly recommend the first method for today's shops.

Regardless of which method is used, it is imperative that all watch movements be absolutely clean before any lubrication is applied. The safest way to insure cleanliness is to limit the number of watches which a given amount of cleaning solution and rinse is required to clean. My experience has shown that no more than 35 to 40 movements should be cleaned and rinsed in any one container of solution.

A "double run-through" method which consumes no additional solutions, yet insures absolute cleanliness, works very well for me. In using this method, I have two groups of solutions. Group "A" solutions are used for the first run-through of watches. The group "A" solutions remove most all of the soil in the movements. Another group of solutions, group "B", is used to run the watches through a second time. This "B" group of solutions contains almost pure cleaner and rinse because most of the soil has already been deposited in the "A" solutions. Since I use a lubricant which is in the final jar only, I have my lubricant in the last jar of the "B" group of solutions. Others using a different kind of lubricant may find it necessary to use additional jars containing the lubricants in the extra jars. Once the maximum number of watches have been cleaned (35-40) and lubricated, the "A" solution is discarded and the "B" solution takes its place. Fresh new solutions are then installed as the "B" group solutions, and the process begins all over again.

All of the necessary repairs should be made to the watch movement before it is run through the cleaning process. The method that I find works best for me is as follows:

1. Assemble all the watches to be serviced in this group in a straight line on the repair desk; snap cases should be on one end of the line, water resistant cases on the other.

   Proceed to open all the case backs at one time. For water resistant cases, one of the better universal case openers available today is a must. A watchmaker cannot afford the time involved fumbling through many different styles of wrenches to find one to fit a specific case.

2. Working down the line again, remove all movements from their cases using an automatic demagnetizer—demagnetize each movement. Place all movements dial-up in front of their case and repair envelope. You must develop your own identifying system for the case and crystal while it is separated from the dial and hands for the purpose of buffing and cleaning. Your shop's method of labeling jobs will govern the system you will use.

3. Using a hand remover, and again going down the line of repairs, remove all the hands in one operation. You can place them on the repair tag or you may elect to use a small container such as a tin material box.

4. Again working in order, down the line of repairs—remove all dials. Place them with the hands. Be sure

to tighten all dial screws once the dial has been removed.

5. Remove all hour wheels*. Most watchmakers become proficient at recognizing hour wheels by sight so they place them loose in one compartment of the cleaning basket. Some prefer to mark the wheel in some way for identification while others leave the hour wheel on the movement. They hold it in place by pressing the minute hand onto the cannon pinion.

   *If the hour wheel is visually clean it may not be necessary to wash it at all. If this is the case, merely place it with the dial and hands.

6. If the movement contains a self-winding device, it is best to separate the self-winding assembly from the basic movement. Both components can be cleaned while each is assembled but separated from each other.

   If the movement has a calendar device, it too should be disassembled enough to permit the removal of any disks which contain the day, date or month printed on them. These disks should be placed with the dial and hands; there is too great a risk of damage to the printing if these disks are allowed to be cleaned with the rest of the mechanism. Screws and small parts from these assemblies can be placed in especially designed small parts containers.

7. The movements and their other components are now ready for cleaning. The movements should be placed in the movement clips provided by some machines or arranged in the cleaning basket of others so as to impede their movement in the basket. Self-winding and calendar devices should be placed in the bottom of the basket or held in place by "spacers" which can be easily fabricated from thin gauge metal.

   Some prefer to let some, or all, of the power off of the mainspring in preparation for the cleaning process. If you choose to do this, the operation should be accomplished in a production line fashion before the movements are placed into the cleaning baskets.

8. Run the watches through the cleaning cycle prescribed by the manufacturer of your cleaning machine. It is during this cycle that you use the "A" group of solutions if you are using this method described earlier.

9. Remove the balance and balance cock from the cleaned movements; screw the balance cock screw back into the movement plate. Place the movements into their clip or basket once again. The balance assemblies should be lined up in front of you on your work area.

   Begin the cleaning cycle again. If you are using the "A" and "B" solutions method, it is at this point that the "B" solutions would be used. The rinse should contain the lubricant for this final cycle. If your cleaning machine doesn't provide enough containers for this, substitute jars containing the lubricant for jars containing rinse only at the end of the cycle.

10. While the second cleaning cycle is taking place, oil the upper balance hole jewels using a Bergeon automatic oiler (or equivalent) using the method shown below. I find it best to hold the balance cock in place on the work area with the little finger of the same hand I use to grasp the balance wheel. Others prefer to let the cock free to move. With practice you will quickly master the technique that is best for you, and you will not distort the hairspring!

11. Remove the lubricated movements from the cleaning machine and line them up on your work area Examine the movement trains for any dirt, rust, lint, etc. that might still be present. Take any corrective action that might be indicated. Using the automatic oiler, oil the lower balance hole jewel.

12. Install the balance assembly into the movement. Wind and make a visual inspection to determine the condition of the hairspring in the regulator key. Tighten the stud screw. If the watch has a self-winding assembly, it should be installed at this time.

(Continued on next page)

13. Using conventional lubricants, lubricate areas on the dial side where steel is frictioned against steel. These areas usually include the cannon pinion and center wheel post, the setting levers and the intermediate wheel and post. If there is a calendar assembly, it should be installed at this time.

14. Replace the hour wheel, dial washers, dial and hands.

15. Rate the running movement on the timing machine.

16. Recase and hold for a 24-hour run-in period.

17. The watch is ready for delivery.

NOTE: When "immersed" lubricants are used in the rinse, it is imperative that excess rinse be removed from the movement. A vigorous spin-off is necessary. It may be necessary for you to adjust your cleaning machine to accomplish this. In some cases, shops have built their own auxiliary spin-off system.

This system of servicing is not recommended for watches which have been dormant for a long period of time, or for those movements which require a number of repairs or are unusually dirty. These kinds of watches should be treated as "specials" and repaired on an individual basis. Most shops find that they can successfully and profitably apply this method to about 70-80% of their mechanical watch repairs.

The second method of servicing watches – using conventional lubricants – will be continued in the July issue of *Horological Times*.

THE

WMJDA CONVENTION

(Continued from page 23)

Associate's Tables Day (WMJDA Annual Convention) continued in the following photos.

THE

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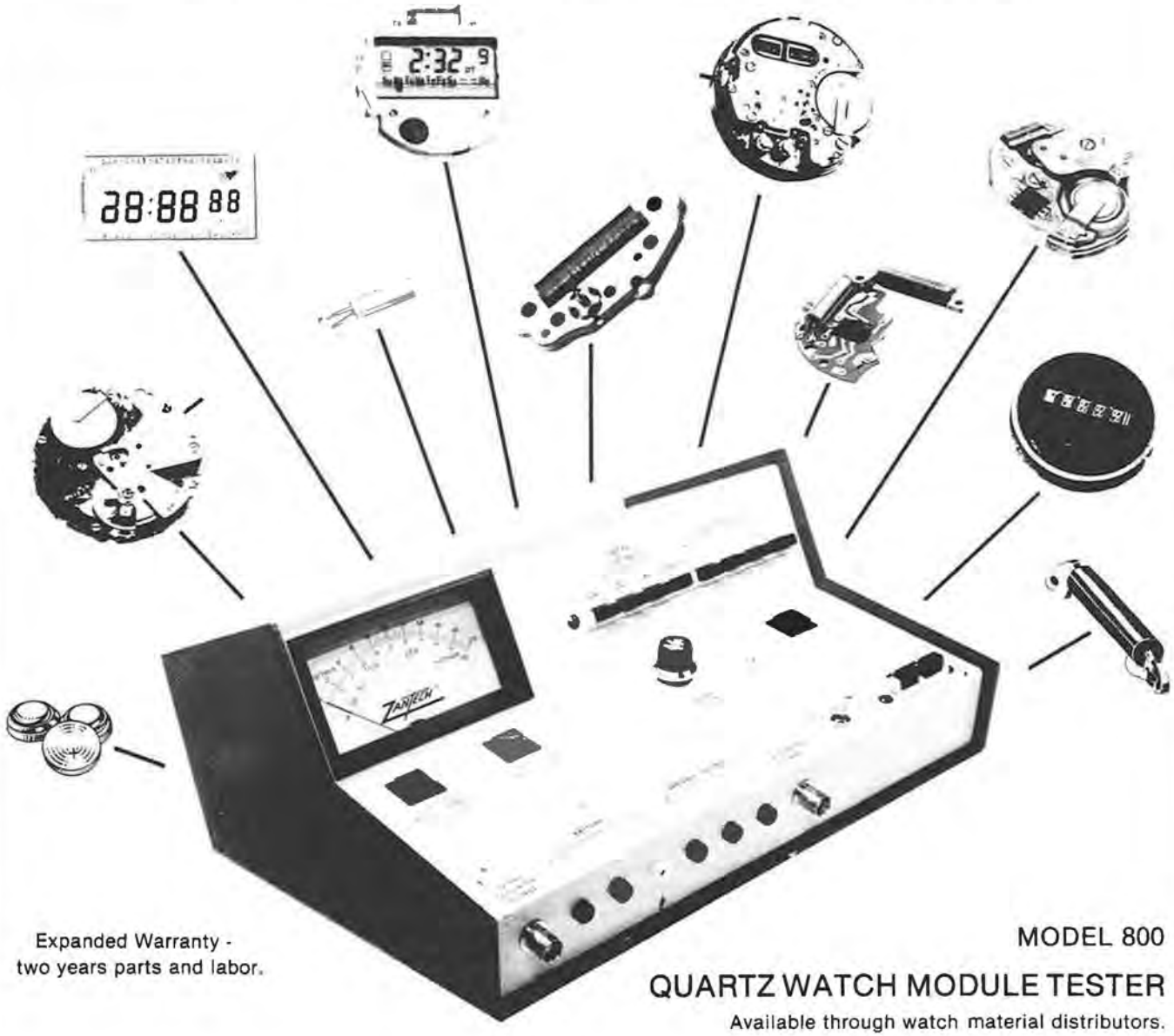

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THE ROCK QUARRY

By Fred S. Burckhardt

How To Succeed?

There are some people who never seem to get ahead in this business. They work hard and try to do their best, but they never advance. Others just breeze along and become very successful. What is their magic formula? Lucky for you, I've made a thorough study over the past few years and now I'm going to let you in on the secret.

There are two sure ways to advance rapidly. One, have parents who own the store; or two, marry the boss's daughter. If you are not lucky enough to have parents who own the store, or if the boss's daughter is a real dog, you'll have to do it the hard way.

First, we will study the characteristics of a person who has attained success in the jewelry business.

1. KNOWLEDGE. You can't expect to get ahead without aquiring some knowledge of the business. How do you go about getting this knowledge? It's very simple. Read through the trade magazines. You will find that you can become a watchmaker in nine months, a gemologist in six months, and a jewelry repairman and diamond setter in five days. Or, if you want to start at the top, attend a two-day management seminar and become the boss. You see, if you will just apply yourself, in less than two years you can learn all there is to know about the jewelry business.

2. FORTITUDE. More commonly known as "stick-to-itiveness." This is something that is lacking in many of the younger jewelers. The old timers never gave up. I remember one store owner who hung on for three years with a "going out of business sale." Try as he may, he finally had to let go and close his doors; but this didn't stop him. The very next day he opened in a new location and continued with his "going out of business sale." You hardly see people like this anymore.

3. SACRIFICE. There will be many times when you will have to give a little extra effort or do things you really don't have to do. A good example of this is when the boss tells you to take an hour for lunch, take two. Regardless of how much you want to get back to work, you'll have to learn how to resist temptation. Try hard. You'll find that it will become much easier to take more time off. If you'll learn to do this, later on you'll be able to do without the things you don't need—food, clothing, shelter and money. This will be shortly after your employer realizes how much you have been sacrificing yourself.

4. PERSONALITY. This is the most important characteristic of any successful person. It may require a little more effort than some of the others. If you now have the personality of a dead whale that's been lying in the sun for three weeks, don't despair. With a little practice, you can develop a personality that will take you right to the top. Put a smile on your face and greet everybody with a hearty handshake and a slap on the back. This goes over big with the people, like the customer who's bringing back his watch for the fourth time, or the lady who has lost the diamond you reset the day before, or the customer you sold a "diamond" that turned out to be a Cubic Zirconia stone. Your shining personality will make them forget their troubles.

5. LUCK. Look around and you'll see the most successful jewelers are those who have had lady luck on their side. They didn't have to bother with hard work, study, sacrifice, worry or fortitude. All they had to do was open the front door and the customers came pouring in.

So you see, all you really need to get ahead in this business is the heart of a lion, the eyes of an eagle, the speed of a gazelle and some very rich relatives!

TIMES

Book Review

The Watchmaker and His Lathe by H. Jendritzkie with Marcel Bergeon. 10½ x 8 inches, 86 pages, hard cover with color illustration, over 160 illustrations. Pub. by Editions Scriptar, 1982, Lausanne, Switzerland at $25.00. Available from W.O.S.I.C., 608 Fifth Ave., New York, NY 10020.

This book was first published in 1959 and has now been updated. According to the author and publishers, this newer edition includes the latest in watchmakers' lathes and attachments. The assistance of Mr. Bergeon with this book is evident. When one thumbs through this book, one initially gets the impression that it is a formalized Bergeon lathe tool catalogue, well illustrated with both black and white drawings and photographs of that company's lathe products and attachments and accessories. With its 86 pages containing over 160 large photos and drawings, the first impression is that more text should be included.

A subjective reading, however, shows that there is a good instruction included with these figures. There are token illustrations of some other makes of lathes, but none of an American-made or American-style headstock, lathe bed nor are the English Myford type lathes and attachments illustrated. To picture the comprehensive line of accessories is instructive in what can be done with good equipment. Although many of these accessories will not fit the American-made W.W. style lathes and beds or headstocks, their collets are of the 8 mm variety and internationally interchangeable.

The familiar German and Swiss type of removable flat-sided rod beds featured with milling and wheel and pinion cutting attachments, pivoting, polishing, special gap-beds (for large diameter turning) lapping devices, drilling and indexing, are fully pictured with other lathe fixtures.

The uses of the eight-screw box chuck, cement plate and brasses for bridge and plate making are illustrated as well as the use of the various eccentric runners, gravers, graver-sharpeners and milling cutters for all purposes included with terse, to-the-point texts.

Wheel cutting and pinion cutting take up three pages and staff turning takes up four additional pages of illustrations and text. Other chapters show the turning of a pinion, making a stem, jewel-settings and bushings, pivot replacements and screw making. The lathe motor, countershaft and idler pulleys show the Bergeon and Favorite set-ups.

This equipment is indeed versatile although less familiar to the American watchmaker who may have been following the superbly illustrated text and instructions by Archie Perkins in the *Horological Times* of the American Watchmakers Institute. This book should make a nice companion piece to Mr. Perkin's writings and drawings since it illustrates and describes the methods used with the manipulation of these Swiss devices.

(Continued on page 36)

AWI To Offer Quartz Analog Watch Repair Course

Requests during the past year indicate a growing need for a basic training course in the repair of quartz analog watches. These requests come from two specific groups: (a) those who are long-time mechanical watchmakers who have little or no experience with quartz watches, and (b) solid state digital watch repairers who have little or no experience with mechanical watches. The latter group needs to develop skills in handling small gear trains, setting mechanisms and calendar devices; the first group needs to learn the fundamentals of electricity as it applies to watches and the use of electronic test equipment to diagnose watch malfunctions. Both groups need experience with the various types of step-motor watches.

One of the major obstacles in presenting such a course for the non-mechanical watchmaker is the question of how long it will take to teach the mechanical skills required to handle these kinds of watches. AWI already has considerable experience in training mechanical watchmakers in the fundamentals of handling the electronic portions of these watches. To obtain clues to the mechanical skills question, we arranged a research project at Milwaukee Area Technical College with the cooperation of Calvin Sustacheck and Gerald Jaeger. "Cal" Sustacheck will be the instructor of this new course; Jerry Jaeger is the instructor at MATC in watch repair and is cooperating in the development of the AWI program.

On the weekend of March 12-13 I traveled to Milwaukee where Sustacheck and Jaeger joined me. Prior to our arrival, instructors from various units of MATC's electronics courses had recommended second year electronics students who would be willing to participate in an experiment to be held in the MATC lab on Saturday, March 12. We secured the services of male and female students and none were considered by their instructors to be above average in intelligence and ability.

During the experiment we presented the students with three mechanical watches: a pocket watch and two wrist watches, one of medium size (10½ ligne) and one smaller calibre (8¾ ligne). These watches were presented to the students with just the train and setting mechanisms in place. At the conclusion of the experiment a calendar mechanism was used. The students disassembled the trains on the watches and reassembled them three times each while we timed them. We were impressed to see how they steadily improved each time on the train assemblies. It was a different story, though, with the setting mechanisms. The improvements in time were not as dramatic, and on the smaller calibre watches frustration set in on a few of the attempts with the setting mechanisms, and in some cases time actually increased. The calendar mechanisms were fairly simple ones and did not pose any great problem.

As a result of Saturday's events, we concluded that teaching the mechanical portion of quartz analog watches will be a difficult task, but not an impossible one. Armed with our training experiences of recent years and the findings of our MATC experiment, Cal Sustacheck, Jerry Jaeger and I spent the next day formulating plans for workshops to teach the repair of quartz analog watches to individuals who are already in the trade, but who do not possess all of the skills and knowledge required. We have tentatively designed a ten-day course. The first five days will be devoted to instruction and skill development for the mechanical portion of quartz analog watches. Following a two-day break for the weekend the course will resume for another five days and deal with the electronics of such timepieces as well as with specific repairs to various calibres of quartz analog movements. Students who own test equipment such as Reno Test, Zantech, Quartz Analyzer QWA-4, etc. will be encouraged to bring such equipment to the course with them.

During the first week we will work with: (a) eye/hand coordination under magnification; (b) mechanical trains; (c) setting mechanisms; (d) calendar mechanisms; and (e) casing, adjusting of hands and fitting of crystals. At the conclusion of the first five days we do not expect the participants to be totally proficient in these skills. We hope to provide them with the basic knowledge and skill so that upon returning to their homes they will be able to continue to teach themselves in this phase of skill development. Each student will be supplied with practice materials to accomplish this continued study at home.

During the second week's session we plan to cover: (a) basic electricity as it applies to watches; (b) the use of the multi-meter in watch repairs; (c) training on a variety of step-motor analog watches; (d) diagnostic techniques for both the mechanical and electrical portion of quartz analog watches; and (e) use of the various kinds of testing equipment for quartz watches. At the conclusion of the second five-day session we would expect each student to have an understanding of the various components of quartz analog watches and to be able to make proper checks using the multi-meter as well as other types of test equipment. The students should be familiar with a variety of quartz analog movements and have the knowledge to return home and continue their education in this field.

It should be clearly understood that in this short period of ten days we do not propose to make fully qualified repairers out of all of the students. Most will have to continue with their training upon their return home armed with the knowledge, skills and materials furnished by the AWI program.

A pilot course is planned for July 18-29. The course

will be limited in enrollment, preference being given to AWI members. We hope to secure enough students for this first course to have them attend both five-day sessions. In future courses, we plan to offer the option of attending both, or just one of the five-day sessions, depending on the individual's need. If we do not receive enough enrollments for the ten days of instruction in this pilot program, we may offer the five-day option for it.

Since the first program will be an untried experimental program, the tuition will be considerably less than the anticipated fee of $500 for ten days and $300 for each of the regular five-day sessions. Individuals who are interested in participating in this first course should contact me at once at AWI Central. We will place you on the preferred list with no obligation and send you all of the details of the course as they become available.

TDJES

Colorado Police Seek Help In Identifying Stolen Watches

Police in Arvada, Colorado, a suburb of Denver, are asking for help in identifying a number of watches. The watches, and numerous jewelry items, were recovered after two burglars were arrested recently.

The watches are described in the chart below, along with their scratch marks. HT readers are asked to contact the police if they have information regarding any of the items on the list. Contact: Police Dept., 8101 Ralston Road, City of Arvada, CO 80002. Telephone Number (303) 421-2550; Attention: R. Mickelson, Detective, Investigation Bureau.

MAKE	MODEL	MOVEMENT NUMBER	JEWELER SCRATCH MARKS	CASE
Waltham	UNK (pocketwatch)	24612853	L 81 C M 490 C 8 141 X 39 NK △ X-38 A 1-1-73 CR E 98 A 68 0477154-5000	Gold (10K) Filled J. Boss Keystone
Perfection	(pocketwatch)	4881851	HO 0-69D MY1274-70 H	Dueber Silverine Initials "J. S. P."
Elgin	(pocketwatch)	15367458	R13304120 43 P 5600K-3375K 581 K - NYLE A 1-1-73 CR	Silver with a hair chain
Waltham	(pocketwatch) Colonial	23740213	15266-16681 B6384 G 15182 470851	14 K (silver) Gold Filled Wadsworth Quality
Benrus	Woman's wristwatch Model D220	622814	CW 5276 4K-1184-61 4K-2004-61	(silver) 10K R. G. P.
Bulova	Woman's wristwatch	H055968	B94-303 15407 2278 tg AL 08830 (6-73)	10K Rolled Plate
Waltham	Woman's wristwatch	UNK	# 11032 375	SS Back
Elgin	Woman's wristwatch "Starlite"	UNK	6-12-73 ≪V o8828	Steel Back

Affiliate Chapter Column/Robert Allis

When Retail Business Drops Off...

What Then?

A few weeks ago, I was attending one of our bench seminars and one of our members brought something to my attention that had never occurred to me. This was at our Saturday night hospitality room gab session.

It seems that the person is employed by a small retail jewelry store and repair business has dropped off considerably and he gets the feeling at times that the owners are eyeing him and thinking, "With repair business what it is today, why do we need him?" He is beginning to show some anxiety over this and feels that perhaps, in the not too distant future, his services may be terminated. Does this sound familiar to any of you? So, if it does happen, what choices are open to you?

I have been turning this over in my mind and have been giving it quite a lot of thought because I find myself in the same kettle. A person could probably find another place of employment because there is still a shortage of competent watchmakers, but many of us would find our age against us. Besides, we do not want to move and we are still a couple of years away from retirement. This leaves but one alternative, trade work. Now don't get me wrong, there is nothing wrong with doing trade work, but are you equipped to handle it? Do you own your bench, lamp, tools, cleaning machine, timing machine, buff, etc.? If you do not have this equipment, you had better consider the cost involved. If you do have all the necessary equipment, then all you need are the accounts to get started.

Of course, for my part, I will not worry about it until it happens. It is just a little thing that was brought to my attention and I thought I would pass it along to you. If any of you find yourself in this position, it might be wise to start considering what options are open to you. I personally feel that repair work will begin to pick up with an end to the recession and, from all indications, prospects seem to be brighter. However, I doubt that watch repair will ever regain the volume that it once had, if only for the reason that more and more people are purchasing quartz watches which require less maintainence. Just remember that there will always be room for a few good men and women at the top.

Incidentally, if you do not now precede your Sunday seminars with a Saturday night hospitality room, I would strongly recommend that you try it. I honestly feel that there is almost as much to be gained from these get-togethers as from the seminar itself, and it's a lot more fun.

By the time this article reaches you, all of you should have received your packet for delegates to the annual meeting. If you are a delegate and have not yet received this packet, contact your secretary or president to ascertain where it is or what has happened to it. Your report form will shortly be due, so be sure to fill it out and return it at your earliest opportunity as we need to send this to all other delegates.

I know that for many of you this will be your first meeting, but fear not, for it is not something to view with awe. We are all regular people just like you. We still put our trousers on one foot at a time. I am looking forward to seeing each of you.

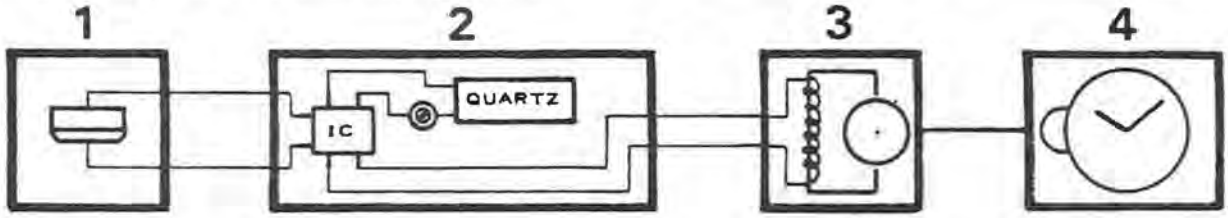
NEWS ...from all around the ASSOCIATION...

OMEGA PRESENTS A PROGRAM AT THE HOROLOGICAL SOCIETY OF NEW YORK

Putting a "new twist" on an old theme, the top technical staff from Omega–Daniel Anselmi, Technical Adviser (World Service), Willem Van Kempen, Director of Technical Operations (New York), and Martin Berzon, Manager After-Sales Services (New York)–captivated the Horological Society of New York audience at its recent March meeting.

Mr. Van Kempen opened the meeting and introduced the other speakers. Mr. Anselmi gave a chalkboard talk. His

diagram shown below was the basis for the entire presentation.



He stated that the basic procedure for all SMQ watches were the same and submitted the following outline of the steps to follow:

1. Test battery and replace, if defective with the battery in the watch.
2. Check frequency-quartz (adjust with trimmer if necessary).
3. Check impulse (alternating)

With battery out of the watch, check:

4. Coil resistance
5. Consumption
6. Lower working limit (lowest voltage at which the variable tension voltage, movement will run)

1.35 - 1.10 V
1.55 - 1.25 V

This explanation of basic testing procedures was followed by a color slide presentation of many Omega models such as 1330, 1340, 1342, 1343, 1345, 1346, 1350, 1351, 1352, 1353. This part of the program was conducted by Martin Berzon who explained many of the special details of the Omega product, such as electronic hand setting systems.

A question and answer period which involved all the speakers concluded an exciting and informative meeting.

From left to right: Martin Berzon, Manager After Sales Service; Daniel Anselmi, Technical Adviser World Service; Willem Van Kempen, Director of Technical Operations (NY). This technical staff from Omega is shown during a Question and Answer period at the March meeting of the Horological Society of New York, Inc.

FLORIDA

The Florida State Watchmakers Association and the American Watchmakers Institute presented a two-day workshop: "Common Sense Quartz Repair." The course is designed to teach the watchmaker who has had some training in quartz repair and the use of the multimeter, to quickly and accurately determine the malfunction, parts needed, and repairs needed for a wide variety of quartz analog and digital watches on the market today.

Each individual participating studied up to fifteen different watches, including several different models with specific malfunctions. They learned how to determine these malfunctions using a test meter, external power supply and the quartz timing machine. Modern "problem" cases were included with "common sense," not sophisticated electronic knowledge, as most important in becoming proficient in this new field of watch repair. AWI Instructor, Bob Bishop has had the opportunity to repair literally thousands of quartz watches and know the common problems and their solutions.

TEXAS

President Earl Bailes welcomed twelve members and three guests to the recent meeting of the Capital Area Watchmakers Guild No. 5 in Austin, Texas.

George Kiser, program chairman, continued the series "How, Now 1983?" which is designed to show watchmakers new ways to increase income. Three key factors were highlighted: a) SKILL must be continually developed by the craftsman. The more work produced, the more income for the repairmen; b) DEMAND for the craftsman's service can be improved if each repair job is done thoroughly and efficiently at a fair price; c) TIME must be organized to produce the maximum amount of work in any given period. The "How To . . . " theme will be continued in future meetings.

OHIO

With the arrival of spring comes the planning of more seminars and the Watchmakers Association of Ohio Convention. In April, 22 watchmakers made their way to New Philadelphia and the Delphian Inn for a seminar on the repair of the new Swiss Quartz Analog/LCD Alarm, Calibre 900911. William Biederman was the AWI instructor for this seminar.

Watchmakers of Ohio will sponsor a seminar with Jacques Reymond as instructor on the repair of the new Swiss Quartz Analog, Alarm, Calibre 926.311. This seminar will be held at the Holiday Inn – I-90 at Crocker Rd., Westlake, OH on June 5, at 8:30 am. There will be a hospitality room on June 4 from 8:00 pm until midnight. Anyone interested in attending should contact Norman Basch, 14600 Grapeland Ave., Cleveland, OH 44111. There is a limit of 30 – by preregistration only – and there is no registration at the door.

Things are beginning to shape up for the WAO Convention, to be held July 29-31 at the Marriott Inn, Columbus, OH. Registration begins at 1:00 pm on July 29. This convention will include a buffet style dinner, Hawaiian motif with entertainment, two speakers on gems – one from Media Digital, Inc., and a representative from a large watch company. There will also be a Saturday night banquet and President's Ball.

President Al Brehl urges all members to attend the convention.

NEW YORK

The Executive Committee of the Horological Society of New York has found a new meeting place in one of the spacious, luxurious conference rooms at the North American Watch Corporation.

(Continued on page 48)

BOOK REVIEW
(Continued from page 31)

Designing and Building a Grandfather Clock by Gary Williams. 6½ x 9½ in., hard cover with dust jacket, 144 pages, 253 line drawings. Pub. 1980 by A. S. Barnes at $12.95.

This is a book on how to build a tall clock case from "scratch" and no kits. It does not include making the movement but does tell how to select, fit and stabilize it to the case. For those who like to build their own clock case, this book is recommended. The instructions are first-rate as are the line drawings, which are bold and easy to see and quickly comprehend what is meant in the simple text.

Mr. Williams is a professional cabinetmaker and from the text has had much experience with clocks and with teaching the art of woodworking. The author, like a good teacher, includes the important safety precautions, the shop layout, benches, gluing jigs and equipment needed, adjusting power tools and conditioning cutting tools, all amply illustrated.

The author also has a chapter on selecting the proper movement, mounting it and fitting the dial. He also instructs on adjusting the pendulum, its bob, the crutch, suspension spring and synchronizing the chimes, tubes or rods and oiling.

A chapter is devoted to designing the case and another on the construction including the making of patterns, doors, graining, assembling and the various parts of the case. "Gingerbreading" or decoration work is described and illustrated. Finishing includes sanding, polishing and oiling. There

(Continued on page 40)

AWI Bench Courses 1983

	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)	FHF 965	Broughton
C (c)	Pulsar	Broughton
D	Seiko Quartz Analog and LCD	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
J	Common Sense Quartz Watch Repair	Bishop
K	Introduction to Clock Repair	Benesh & Whitney
L	Bulova Quartz 262 and 2500	Sustachek
M	Striking Clocks–Advanced Seminar	Baier

MAY

1	B	Marion, VA	Carpenter
15	C	Toronto, Canada	Broughton
15	A	Chicago, IL	Jaeger
20	L	Texas Watchmaker Convention	Sustachek

JUNE

6-10	K	Cincinnati, OH	Benesh & Whitney

SEPTEMBER

17-18	J	Huntsville, AL	Bishop
18	F	Columbia, MO	Opp
19-22	M	Cincinnati, OH	Baier

OCTOBER

1-2	J	Toronto, Canada	Bishop
23	C	Kansas City, MO	Broughton

I AM INTERESTED IN YOUR BENCH COURSE TO BE PRESENTED ON _____ AT _____. PLEASE SEND ME MORE INFORMATION.

NAME: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

We Salute These New Members!

ABBOT, Alden P.– Chatham, MA
ADDINGTON, David–Mableton, GA
AINSLIE, Stephen R.–Fort Worth, TX
ALEXANDER, Donald E.–Napa, CA
ALEXANDER, H.–St. Thomas, VI
ANDERSON, R. J.–Osoyoos, B.C., Canada
ANDERSON, Virgil M.–Chattanooga, TN
ARBOGAST, Allen R.– Knoxville, TN
ATIK, Abdulaziz–Arleta, CA
BACHELDER, Joseph L.–Milford, MA
BAKER, Richard A.–Georgetown, IN
BARKHYMER, David J.–Johnstown, PA
BENNETT, Dale–Alexandria, VA
BENNETTI, Louis V.–Sligo, PA
BETTS, John J.–Columbus, OH
BETZ, Donald J.–Evansville, IN
BINSFELD, Robert E.–Clear Lake, MN
BISHOP, Michael B.–Livonia, MI
BLANCHARD, Edmund M., Jr–Lancaster, PA
BOLUIJT, M. J.–Netherlands
BOYICE, Lester–Kansas City, KS
BOYICE, William C., Jr.–Kansas City, KS
BRANDENBURG, Joseph M.–Basehor, KS
BRANDT, Michael S.–Lebanon, PA
BRANNAN, William E.–Columbus, OH
BRIDGES, Bonnie J.–Wills Point, TX
BROWN, Richard–Norton AFB, CA
BRUGGINK, Jay L.–Sheboygan, WI
BURNETT, Wallace L.–Fort Payne, AL
BURTLESS, Bruce E.–Adrian, MI
BUTLER, Robert B.–Memphis, TN
BUYER, Ralph C.–Freeport, IL
BYRNE, Michael–Taylors, SC
CALLAHAN, Chris–Aurora, CO
CALVEY, David A.–Pittsfield, IL
CAMARATA, Jerry L.–Waterloo, IA
CAMPBELL, Doug–Tacoma, WA
CARBONNEAU, Robert–Metairie, LA
CARLSON, Earl–Alvarado, MN
CARVER, E. C.–El Dorado Hills, CA
CAUST, Richard–South Norwalk, CT
CISTOLA, Anthony B.–Vestal, NY
COLLUM, Thomas E. Marietta, GA
COOK, Kenneth B.–Laconia, NH
CORSALE, Nick–Quincy, IL
CROWL, Jerry–Okmulgee, OK
DIGIUSEPPE, William–Johnston, RI
DONNELLY, Catherine–Brooklyn, NY
DOOR, Jim–Kennewick, WA
DOWELL, Carl W.–Meridian, ID
DUCKETT, Kermit E.–Knoxville, TN
EARL, Thad R.–Paw Paw, MI
EASTER, Kenneth W.–Huntsville, AL
EDWARDS, Lathan S.–Crystal, MN
ENGLISH, Elwood V.–Verona, PA
ESTOLAS, Manuel F.–San Jose, CA
FERRER, Roland–St. Petersburg, FL
FIELD, Howard W.–Naperville, IL
FIGUEROA, J. J.–Richmond Hill, NY
FRANK, Maurice W.–Newfoundland, Canada
FREELAND, John R.–Jacksonville, FL
GARRISON, Joseph A.–Columbus, OH
GARSTANG, Thomas M.–Henning, TN
GILBERT, Chester C.–Sunnymead, CA
GOLDMAN, Ernest M.– New York, NY
GREEN, Leo A., Jr.–Newton, IA
GRIFFIN, Gerald F.–Quincy, IL
HAASE, Thomas L.–Tenino, WA
HAGELBERG, Robert–Okmulgee, OK
HALL, Jim–Sacramento, CA
HAMPTON, Warren E.–Walnut Creek, CA
HARREL, Maggie–Okmulgee, OK
HEATH, William T.–Knoxville, TN
HEATON, James A.–Panama City, FL
HENDRYCHOWSKI, M. R.–Milwaukee, WI
HERRON, R. W.–Hudson, OH
HOEL, David A.–Arcadia, IN
HORBELT, Gene–Granite City, IL
HOWE, Duane R.–Des Moines, IA
HOWLAND, W. B.–Denver, CO
HULTENGREN, Steven R.–Westport, OR
HUNTINGTON, Dale E.–Greensburg, IN
JANUARY, Marie–Okmulgee, OK
JENT, Paul C.–Jackson, MS
JOHNSON, Harry–San Bernardino, CA
KAUFMAN, Stanley J.–Painesville, OH
KAWASHIMA, Vita–Wayne, MI
KENNEDY, Freddy, Jr.–Sassafras, KY
KENNEDY, James R.–Independence, MO
KOLB, Robert P.–Brookville, IN
KORNGOOT, Raymond–Chicago, IL
KOVATCH, Thomas M.–Parma, OH
KRONSTAT, Stanley–Coral Springs, FL
KUHNS, Edgar M., Jr.–Poland, OH
LANDVATER, Dennis–Hanover, PA
LANGERHOLC, Leo–Pittsburgh, PA
LEE, Ernest J.–Terre Haute, IN
LEMASTER, John–Amarillo, TX
LEVINE, Joel–Lilburn, GA
LYNN, Bernard–East Islip, NY
MARKOVITS, Terrance A.–Tacoma, WA
MARTIN, Cecil B.–Myrtle Beach, SC
MASTEN, Patrick D.–Independence, MO
MCQUIRE, Derek–Logansport, IN
MCMICHAEL, Jesse P.–Quincy, FL
MCPHEE, Jack C.–Aurora, CO
MEDAWAR, Pierre–Lansing, MI
MEER, Frank C.–Bellevue, WA
MEYER, Julius J.–Wichita, KS
MILLER, R. 'Mitch'–Hemet, CA
MINGRONE, Bruno J.–West Haven, CT
MINOR, J. B. Cleo–Nashville, TN
MULLEN, Chelsie C.–Farmland, IN
MURAKAMI, H.–Chuo-Ku Tokyo Japan
MURPHY, Roland James–Jarrettsville, MD
MURRAY, Michael P.–West Los Angeles, CA
MYERS, Patrick–Lake Forest, IL
NEWTON, Steven H.–Terre Haute, IN
NICHOLSON, David M.–Enid, OK
NIX, Lowell E., Jr.–Brenham, TX
NOBLE, Joseph P.–Mahwah, NJ
PEPIN, Richard–Joliette, Quebec Canada
PETERSON, Carl M.–Red Bank, NJ
POLLOCK, Howard S.–N. Caldwell, NJ
RAUSCH, Julius C.–Belleville, IL
REDDING, K. B.–Garden City, SC
REYNOLDS, Bruce–Delavan, WI
RICKETSON, Johnny–Cornelia, CA
RISCH, Craig–Agoura, CA
RIVERA, Manuel–New York, NY
RYAN, Richard E.–South Bend, IN
SABBATH, Albert L.–Denver, CO
SCHMIDT, Andrew W.–Crivitz, WI
SCHWEGLER, Gunter–Chesterland, OH
SCOTT, Robert L.–Tacoma, WA
SELEM, Orestes–Atlanta, GA
SENSOLI, Girard–Dearborn Heights, MI
SHARBUNO, Thomas J.–Port Washington, WI
SHERMAN, James E.–Endicott, NY
SILVA, Richard J.–Rialto, CA
SILVER, Arthur I.–Melville, NY
SIMPSON, Date H.–Montgomery, TX
SITLER, John A.–Livonia, MI
SLAYTON, Charles W.–Manchester, NH
SMITH, Barbara J.–Elk Grove, CA
SMITH, Ron–Ocala, FL
SMITH, Roy G.–Newman Lake, WA
SPILOVE, Robert B.–Sunrise, FL
SPIVEY, Paul M.–Archer, FL
SPLICHAL, Vincent J.–Garrison, ND
STENE, Lawrence–Sterling, IL
STEVENSON, F. H.–Potomac, IL
SUMMERS, Daniel C.–Atlanta, GA
SWAISSI, Jason S.–Tulsa, OK
TAYLOR, Gregory A.–Picayune, MS
TAZUMA, Elmer–Seattle, WA
TOMS, Charles W.–Allentown, PA
TRICARICO, Dennis A.–Maspeth, NY
VAN DYK, John–Saratoga Springs, NY
WALSH, James P.–Cincinnati, OH
WARREN, A. Galen–Springfield,IL
WARTH, Paul–Pocatello, ID
WILKE, Glenn F.–San Gabriel, CA
WILLIAMS, Seaford–Bronx, NY
WILSON, Charles R.–Milwaukee, WI
WILSON, David A.–Durango, CO
WITTY, E. J.–Englewood, CO
ZOOK, Erick M.–Tacoma, WA

SHOP TALK

By Wes Door, CMW

Repairing Watch Bands

In this article we will discuss repairing the most common types of bands that can be repaired without special tools and soldering. There are many bands, like mesh types, that do require soldering on to the watch case, but we will not discuss them here.

Many watch bands today are the expansion type, the most common of which is the "flex" type. These expansion band repairs consist of adding or removing links. We will remove some links to explain a rather easy method to assure ending with an equal number of "top" and "bottom" links. Let's suppose we decide to make the band three links shorter. This means we must remove three links from the bottom and three links from the top.

Observe Figure 1 and follow these steps: **Step 1.** Open one lower link cap tab and we will call this link "0." **Step 2.** From this "0" link count three links to the right and open this end cap tab shown at "3." (Note: From this point forward it is not necessary to count links, as all future references are made from these two "open" tabs.) **Step 3.** Open the other end of the lower cap tab across from the "0." **Step 4.** Open the other end of the lower cap tab across from the "3." **Step 5.** Open the top cap tab to the left of the "0" cap marked "0" in Figure 1. (Note: This is one of the two caps that is the closest to the "0" lower cap. We could have used the right cap but since we started with the left one, we must continue *"to the left"* as we proceed to the next step.) **Step 6.** Open the upper cap tab to the left of "3," marked "3" in Figure 1. **Step 7.** Remove the three link section. It should appear as in Figure 2-A, not 2-B. **Step 8.** Now put the band together making sure the "U" springs are placed over the "leaf" spring. **Step 9.** Finish the job by closing all cap tabs using a smooth tool such as the back of a pair of tweezers or smooth paralleled jaw pliers. The total time to do these jobs is about one minute on new bands and a little longer on old bands.

Some of us can remember when all expansion bands were made as shown in Figure 3. Remembering these does not necessarily show our age since a few of these are still on the market. Some of these styles of expansion bands are used as a center section on semi-expansion bands such as turquoise bands. Generally the solid turquoise sections are so long that the maximum center expansion area is needed and this "scissor" type seems to expand a little more than the "flex" type.

To repair these is generally a matter of either adding or removing links and the following method of removing links can be accomplished quite easily by the following method: First turn the band over and observe the back links. If several of these back links are different than the rest, they're probably removable by following the arrows or by the obvious appearance of elongated holes which may indicate the sliding and lifting or other link removals.

Presuming there are no removable links or they have previously been removed, we must proceed to remove with what some "old timers" call "the hard way." It is really not hard and should be accomplished in about five minutes by following these steps: **Step 1.** Observe Figure 3 and notice we have numbered our links 0, 1, 2, and 3 since we want to remove three links. First we remove the top caps 0-1 and X-0. **Step 2.** Always counting the first links as "0," we will count (to the right) over to the number we want to remove, in this case, three links. Now remove the two top caps that cover our number "3" link, that is link 3-4 and link 2-3. Notice that we now have exposed both numbers "0" and "0" and both numbers "3" and "3." We also have exposed the spring, the ends of which are hooked under tabs. **Step 3.** Unlock these springs to reduce spring tension to zero to ease our work. These springs fit through a hollow center rivet and we do not remove this center rivet. This hollow center rivet holds this coil spring, one end of which extends along the upper and one along the lower

Figure 1

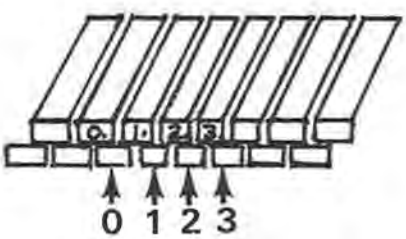


Figure 2-A

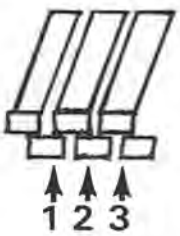
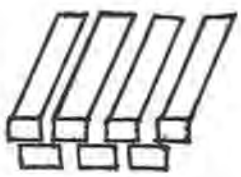
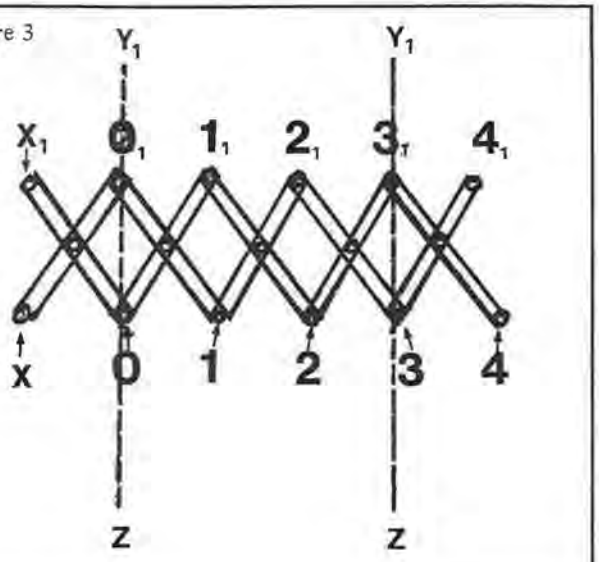


Figure 2-B



WRONG

Figure 3



link. **Step 4.** Before removing the bottom caps look again at our "top view" in Figure 3. Notice the dotted line Y-Z which indicates the amount of band (three links) that we are going to remove. Naturally we must disconnect points "0" and "0" plus points "3" and "3." We have already removed the upper (top) caps that touch these points. **Step 5.** Now we must remove the bottom caps that touch these points, that is, remove caps X-0, 0-1, 2-3, and 3-4. **Step 6.** Now we have exposed the other ends of the springs which may (or may not) be connected to a tab. It is not too important to have a tab on this bottom side since we will replace this bottom cap first and then "spring load" by hooking up the top spring end behind the tap.

Now we must open one end of each of the rivets and remove the three links, then re-rivet and re-assemble the band caps. To open the rivets and still re-use them, it is necessary to use care and a pair of old pliers (the ends of which have been cut to form a concave radius will help). To re-assemble the band links a round end stake set punch could be used, or another pair of old pliers could be converted by inserting a round shaped piece of hard metal in one jaw and filing the other jaw to a smooth surface.

Sometimes a new rivet may be needed if it's an old band and they can be replaced as explained above. We must remember not to actually rivet but just rivet over the head of the rivet. Otherwise, there must be sufficient space between the band link parts.

Occasionally we do need to repair these and usually it will take about five minutes; maybe longer if a coffee break is needed after breaking off a rivet.

THE

Bench Tips / Joe Crooks

PULL a Chain, Don't Push It!

Frank Halsey, watchmaker for Ben Riddish Jewelers of Edenton, NC sends us this tip.

This may be old stuff to you but I have just discovered an easy way to thread the chain through a gold bead necklace (I'm about one million beads late since Christmas).

Select a sewing needle, less than ½ mm in diameter. Blunt round the point and file a hook in the eye to hold the chain. This sure beats trying to stuff the chain through the gold beads.

For the watchmaker who does not know where Edenton, NC is, it's an historic town, snug in a harbor on the Albemarle Sound, which lies East of Kitty Hawk on the Outer Banks and the Atlantic Ocean.

Their Chamber of Commerce states that this was the favorite port for Black Beard in his "hey days" and he has much loot stashed around Edenton just waiting to be found. Frank will be glad to show you where to dig. I would go hunt some of those doubloons myself, but I have a bad back.

Back to Frank's tip. It's a good one. All watchmakers have to kill some time now and then stringing some gold beads for a friend or the boss.

It seems like the manufacturer's delight, making jagged burrs inside the holes to make it impossible to drop the chain through. Also, I found out a long time ago that you can pull a chain where you want it to go, and it's lots easier than if your have to push it.

The sketch below shows how to make a chain puller.

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

TIMES

BOOK REVIEW
(Continued from page 36)

is even a chapter on leaded glass and instructions on how to cut glass of various shapes and curves. Wood carving techniques cover a dozen pages with different designs and ideas and methods.

A final chapter is devoted to sources for clock movements, dials, kits, hardware and other "goodies." This book is a visual excellent instruction in cabinetmaking for clockmakers.

The Complete Guide to American Pocket Watches, by Cooksey Shugart and Tom Engle. 5½x8¼ inches, 304 pages, 660 plus illustrations, soft covers. Pub. 1983 at $9.95.

This third edition is a much improved but not yet perfect revision of the first edition. The format however, is commendable and for comprehensiveness is superior to other volumes on this subject.

The authors have not done any great original research but they have done much collecting of available material, at times carelessly. Many of the misstatements of facts, definitions and omissions which were rife in the first edition have been corrected although some remain. However, the overall effect has resulted in the best available single reference for the amateur or professional dealing or collecting American watches.

The book contains information on appraising, starting a collection, history, lists to aid determining makers and age, watch cases, movement identification, how to discover a Swiss fake of an American product, watch sizes, prestige watches, rare American watches, case trademarks, dial types, serial production numbers, lists of current values by factory models, jewels, illustrations galore of many makers, methods of determining quality, rarity and value.

The section on terminology has been somewhat refined but many of the original terms have remained with their errors. Terms such as "balance spring which allows the balance wheel to spiral," Elvinar to be a hairspring, the "balance gives impulse to the escapement," "chronograph which can be stopped," champleve being different colors, endstone's purpose to keep out dust, chronometer having a dent [sic] escapement, overcoil which prevents the spring from twisting and many, many others need change and improvement. Also, the lists of current museums and trade periodicals need updating. Despite this lack of scholarship, the overall product is still worthwhile.

Henry B. Fried

The Wealth Transfer of Inflation, by Harry Hansen. 250 pages, 7¼x9½ inches, hardbound, $34.50. Institute for Business Planning, IBP Plaza, Englewood Cliffs, NJ 07632.

Many businesses lose money because inflation is not taken into consideration in their financial statements and cash flow accounting systems. Inflation subtly transfers wealth from the unsuspecting taxpayer to the shrewd government, and from those who do not understand inflation to those who do. This book explains how inflation can rob or benefit your business, and shows how to compute the inflation factor in all areas of accounting. Strategies are provided that can be used to make inflation work for you, not against you. The book reveals how inflation eats away at your capital and earnings, and how it distorts a company's sales figures. It tells how to use debt as an inflation strategy, and how to compute and prevent losses on the monetary assets held by your firm. The book is an important guide for managers, consultants, investors and creditors desiring to implement an inflation-adjusted accounting system, and willing to take steps to capitalize on, rather than be victimized by inflation.

Busyman's Book Review Service

Introducing The New Custom-Built Workbench

John Frei workbench

Otto Frei & Jules Borel announce a new John Frei-designed custom workbench made of all hardwood construction and featuring a solid maple top with arm rests and a 4"x 4" steel work block.

The new John Frei workbench has a steel lined catch-all tray, locking door with built-in burr tray, two concealed security drawers, and six drawers for parts, supplies and tools.

Measuring 38" tall by 26" deep by 48" wide, the workbench weighs approximately 125 pounds, and is priced at $650.00, plus applicable sales tax and freight. It is available from stock. More information can be obtained from John Frei, Otto Frei & Jules Borel, 347 13th Street, Oakland, CA 94604.

LITERATURE ON WEIGHING JEWELRY & PRECIOUS METALS

Literature covering a full line of easy-to-operate Brainweigh® electronic balances especially designed for weighing jewelry and precious metals is available from Ohaus Scale Corporation.

Ideal for jewelry and precious metals weighing, the balances are designed for constant use with all controls clearly marked and positioned. A large pan and choice of scoops permit weighing of a wide range of different sized objects. Compact in size, the balances can be used on sales counters, workbenches or packed for use in buying trips. Literature covering the Brainweigh® line is available from Ohaus Scale Corporation, 29 Hanover Road, Florham Park, NJ 07932. Phone: (201) 377-9000.

LATEST CLOCK CATALOG FROM BULOVA

The 1983 full-color, 75 page Bulova clock catalog unites the latest developments in quartz timekeeping technology with today's stylings in full lines of kitchen, wall, mantel, anniversary, desk, travel, chimes and time-weather clocks. Suggested retail prices range from $20 to $800. Retailers should see their Bulova representative for a copy of the full-color 1983 catalog.

1983 Bulova clock catalog

JEWELERS' SAW BLADES FROM OLSON

The Olson Saw Company has just introduced a new family line of Metal Piercing (Jewelers') saw blades for hand-held frames and power-driven scroll saw machines. These blades are indispensable when cutting extremely thin sheet materials and precious metals such as gold, silver and platinum, as well as ferrous and non-ferrous metals.

Olson's new blades have curved backs for cutting rounded corners and intricate designs. Craftsmen can choose from a wide variety of widths, thicknesses and up to 96 teeth per inch. The blades are premium quality, made of hardened and tempered steel. They directly cross reference with universal numbers—from the extremely fine #8/0 to the heavier duty #12.

The metal piercing blades are the latest addition to Olson's extensive line of top-quality blades including: scroll, fret, saber, coping, band saw and steel rule die blades. For specifications and pricing ask for catalog sheet #OL-29. Write The Olson Saw Company, Route 6, Bethel, CT 06801. Or call (203) 792-8622.

BULOVA'S NEW MICROFICHE SYSTEM

A new microfiche system providing interchangeability information and a complete movement parts list for 520 Bulova models dating from the mid-1950's to the present has been made available by the Bulova Watch Company, Ben Matz recently announced.

A time, space and money saver, the system puts in sequential order all Accutron®, Bulova and Caravelle® calibers. A master index and columnar headings provide "at-a-glance" reference capability.

Mechanical, tuning fork, stepping motor quartz and solid state movements are covered in the system, which also features: hundreds of unpublished interchangeability cards, explanations of Bulova's reference systems, the previously published, revised and corrected 1971 Bulova ABC Interchangeable Parts Catalogue with 208 pages and its 1974 Supplement with 64 pages, table of male and female stems, and cross reference Power Cell listings by number and model.

The system is in 48X magnification, making it compatible with all current standard microfiche systems. A two-part set of microfiche on movement parts is available for $8 from the Technical Information Services Department, Bulova Watch Company, Bulova Park, Flushing, NY 11370. Phone: (212) 565-4707.

KASSOY'S NEW MYLAR COMPUTER TAGS

The second generation Compu-Tag™ made of metalized mylar is now available in gold or silver matte finish. Strong and attractive, these new colorful tags are intended to complement a dealer's merchandise.

Compu-Tags ™ were introduced last year to eliminate costly and time-consuming hand marking. They can be used by computer printers and word processors alike. Their adhesive-free center portion means no sticky mess on merchandise, and the tags are tough to protect against tag switching.

Minimum order is 10,000, fan folded; # CT 201—gold or silver finish—and cost $19.95 per M. Contact: Rocky Robinson, c/o KASSOY, 32 W. 47th St., New York, NY 10036; Phone 1-800-223-5530.

Below: Kassoy's mylar Compu-Tags

TECHNICIANS SCREWDRIVERS

These screwdrivers originally were designed for optical work by an optical instrument maker. Four of the most needed blade sizes and an awl are permanently set in individual holders, and the holders are designed to fit the hand in any of the three most commonly used positions.

The holder measures 4½" long with a three eighths diameter, knurled aluminum body and freely rotating palm rest. Hardened tool steel blades come in sizes 1.5 mm, 2 mm, 2.5 mm, and Phillips plus awl.

The screwdrivers are priced at $8.00 each or $35.00 for the set of five. Add $2.50 to cover postage and handling. Contact: HL Instrument Co., Inc., P.O. Box 556, Hayden Lake, Idaho 83835.

Technicians Screwdrivers

NEW JEWELRY BOXES WITH "THE VELVET TOUCH" FROM MASON

"Velvety smooth, prestigious" are the words used to describe the Mason Box Company's new UltraVel line of jewelry boxes. The UltraVel line includes six popularly sized metal boxes from 1¾" x 2 1/8" to 8" x 2" which are covered with a handsome, velvety acrylic material that looks and feels like real velvet. Soft and smooth to the touch, richly handsome in appearance, the material won't scuff or mark. Three colors, dark blue, brown or camel are available with color matched base pads and complementary satin puff pads inserted. The boxes may be personalized by hot stamping with your company's name and logo in gold, silver or other colors. Write to: Mason Box Company, 521 Mount Hope St., Attleboro Falls, MA 02763, or call toll free 1-800-225-2708.

UltraVel jewelry boxes

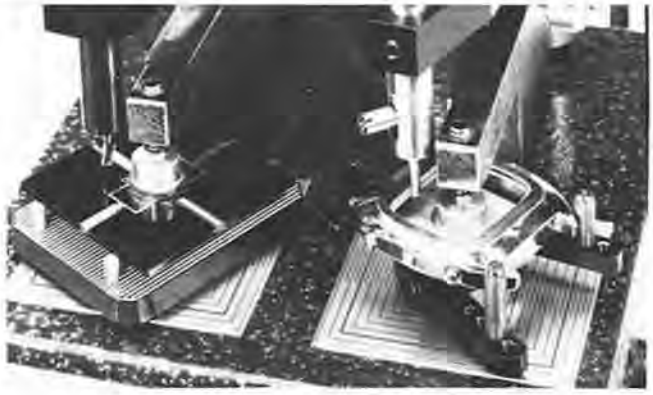
CASIO'S "TIMEPIECE TECHNICAL LITERATURE PACKAGE"

This 1983 package from Casio consists of the following:

1. Service manuals of all Casio watches marketed in the United States,
2. Parts lists (with dealer price codes) of all the Casio watches marketed in the United States,
3. Presentation in two large three-ring binders.

The cost of this package is $50, including postage. Through purchase of this package a customer will be automatically placed on Casio's Timepiece Technical Literature Mailing List. This enables them to receive all Timepiece manuals and parts lists that are printed in the same calendar year at no additional charge.

To obtain this package, send $50 to: Casio, Inc., 175-10 Route 46, Fairfield, NJ 07006; attention: Steve Eddy. Be sure to request the "1983 Timepiece Technical Literature Package."



Albert Froidevaux & Sons, USA has introduced a new Crystal Cutter designed for flat lenses now popular in many watches. This cutter can cut new crystals from the inside of the bezel of the watch, as shown in the picture above. After the initial cut is made, an adjustment will allow for the cutter to bevel the face of the lens slightly. This cutter enables the jeweler or watchmaker to cut crystals in a fraction of the time it normally takes to cut flat crystals.

The Crystal Cutter may be used with lenses for both LCD and analog watches. Both the crystal cutting machine and blanks are available through authorized wholesalers throughout the United States. Suggested retail price is $750.00. For more information, contact: Albert Froidevaux & Sons, USA, 11718 W. 91 St., Overland Park, KS 66214; Phone (913) 888-3131.

Certificate of Merit For Paris Junior College

A certificate of merit for having the outstanding vocational education program in Texas was presented to Paris Junior College's gemology instructors by representatives from the U.S. Department of Education recently. From the left are James Overstreet and Malcolm Heuser, gemology instructors; Dr. Scott Tuxhorn of Dallas, regional representative of the U.S. education department; Orlando Paddock, former gemology director who assisted in establishing the program; and Herbert Mackey of the regional U. S. education department in Dallas.

This Pennsylvania Pillar & Scroll clock was made in the Allentown area about 1830 by a group of immigrant clockmakers from the Black Forest of Germany. This is one of a series of maverick shelf clocks with very unusual movements on display at the National Association of Watch and Clock Collectors Museum, Columbia, PA, April 1 through October 31, 1983. (Private Collection - NAWCC Museum Photo)

4,500 BUYERS ATTEND "BEST EVER" TOUR IN UNITED STATES

More than 4,500 United States, Canadian, Carribean and Latin American department, chain and specialty store buyers attended and in many cases placed orders at the three city American "Made in Hong Kong 83" tour, sponsored by the Hong Kong Trade Development Council.

"It was the best attended and most extensive exhibition of Hong Kong specialty wares ever staged in the United States," according to Alan Wong, the Council's Senior Representative in North America. Thirty-seven leading Hong Kong exporters and manufacturers of home electronics, giftwares, housewares, watches, auto accessories and a host of other products, participated in the recent exhibition in New York, Miami and Los Angeles.

SWIGART DISTRIBUTOR FOR PULSAR

The E. & J. Swigart Co., a Cincinnati, Ohio based supplier to jewelers, watchmakers and clockmakers, has recently been named as an authorized distributor for Pulsar, according to Rich Isphording, Vice President and General Manager. Swigart will carry an extensive inventory of watch parts, crystals and casing parts.

TIMEX ANNOUNCES CO-OP ADVERTISING PLAN

Timex Corporation announced the introduction of Cooperative Advertising for watches. C. Michael Jacobi, Vice President Marketing and Sales Worldwide, explained: "Our new program is designed to increase retailer sales and profits, is simple to implement, and is equally attractive to all channels of distribution. This increase in retailer advertising, coupled with our national print and television campaign, should create an even greater demand for our products."

A basic accrual of 3% will be effective on all watch purchases, including character and Sports-Quartz™ products, from May 1, 1983 through December, 1983. Timex is also announcing two special co-op bonus programs which allow retailers to increase their 3% accrual percentage to 5%, if certain conditions are met. Advertising must take place between July 1 and December 31 of this year.

Claims for advertising reimbursement will be audited and processed by Pinpoint Marketing, Inc., New York, N.Y.

GEMPRINT USED TO IDENTIFY STOLEN DIAMONDS

The Las Vegas police department recently identified a stolen 1.08 carat diamond worth more than $15,000 and other stolen merchandise because the diamond had been registered with Gemprint, Ltd. of Chicago, IL. A second diamond from the same robbery weighing 1.01 carats was recovered by the El Cajon, CA police department two weeks later and was also identified using the Gemprint process. The recoveries have led to the arrest of five people in connection with a burglary from an El Cajon businessman, which involved more than $150,000 in diamonds and coins. The recovered diamonds had been registered with Gemprint, Ltd. in December of 1979.

According to Sgt. James Davis of the El Cajon police department, the burglary victim notified his department that two of the stolen diamonds had been registered with Gemprint, Ltd.'s Central Registry. When the first diamond was recovered, it was taken to Slavick's Jewelers in Las Vegas. They took a Gemprint Photo and sent it to Chicago, where the Gemprint computer identified the stone as one of the diamonds taken in the El Cajon burglary. "The Gemprint diamond identification tied the other property to the burglary in El Cajon, and was the key to our breaking open the case," said Davis.

Gemprint is a safe, simple process of diamond "fingerprinting" that is provided by many fine jewelers and appraisers for their customers' protection. Many insurance companies offer premium discounts of 10% if a diamond is registered with Gemprint, Ltd. A Gemprint is a Polaroid photo of the unique light reflections from a diamond. It is less likely that two diamonds will have the same Gemprint photo than two people will have the same fingerprint. The process takes less than a minute and can be done in front of the customer. A Certificate of Registration is given to the customer and one copy is filed with the Gemprint Central Registry in Chicago.

The second diamond recovered by the El Cajon police department was taken to Ed Benjamin & Sons Jewelers in San Diego where a Gemprint photo was taken and sent to Chicago. On March 4, 1983 verification of the identity of the second diamond stolen in the El Cajon burglary was made by the Gemprint computer.

The Gemprint computer system includes a video digitizer and Digital Equipment computer that analyzes the diamond "fingerprints." Over $1 million worth of stolen diamonds have been identified by the Gemprint computer.

L&R MANUFACTURING ESTABLISHES SPEAKER'S BUREAU FOR INDUSTRY

Mr. James Lazarus, President of L&R Manufacturing Company, one of the leading manufacturers of ultrasonic cleaning machines and chemicals, announced the introduction of a speaker's bureau designed to provide industry meetings, sales workshops, seminars and conventions with experienced, professional speakers. Topics range from current trends in the industry to economic realities of doing business in the eighties as they impact on our fields.

Mr. Lazarus, himself, travels to various parts of the world speaking on a wide range of topics. In addition to Mr. Lazarus, the speakers include experts in the fields of finance, sales, marketing export relations and technical training.

Anyone wishing to contact Mr. Lazarus to arrange for a speaker should call Joan Smith at (201) 991-5330.

Mr. James Lazarus

JA'S "CRIME PREVENTION & DEFENSE" SEMINAR

Continuing its program to bring timely and important information to the Sunbelt jewelers, Jewelers of America (JA) will present a special seminar, "Crime Prevention & Defense" at 9:00 a.m. on Monday, August 29, in the Hyatt Regency Hotel, New Orleans. The seminar has been developed through the cooperative efforts of JA and Jewelers Security Alliance (JSA).

James B. White, President and General Counsel of JSA, will moderate a panel of experts who will offer the latest information on key aspects of jewelers' protection, including:

- Up-to-date facts on crimes being committed against jewelers.
- Tips and guidelines.
- Information on security equipment.
- Checklist of crime prevention procedures for retailers.

There will be no charge for attending this seminar. However, since space is limited, jewelers interested in attending should write to Karen Morris, Jewelers of America, 1271 Avenue of the Americas, New York, NY 10020. They should indicate how many people from their firm will be attending.

Classified Ads

Regulations and Rates

Ads are payable in advance $.50 per word, $.60 per word in bold type. Ads are not commissionable or discountable. The publisher reserves the right to edit all copy. Price lists of services will not be accepted. Confidential ads are $4.00 additional for postage and handling. The first of the month is issue date. Copy must be received 30 days in advance. (e.g. February issue closes for copy on January 1st.)

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

Tradesman

CLOCK and **MUSIC BOX** parts, mainsprings, material and tools. Custom made to order or repair of gears, pinions and parts catalog $2.00 Tani Engineering, Box 338, Atwater, Ohio 44201; (216) 947-2268.

Pearl and Bead Restringing. All types. Fast service. Jean A. Gruenig, P.O. Box 12007, 1279 Inglis Ave., Columbus, Ohio 43212.

Wheels, pinions, barrels or whatever, repaired or made new. Repivot arbors. No watch parts. Ken Leeseberg, Ken-Way Inc., 19 W. 672 Army Trail, P.O. Box 219, Addison, Illinois 60101.

DIAL REFINISHING, CRYSTAL FITTING & WATCH REPAIR. Fast Services on Dial Refinishing & Crystal Fitting. Finest Quality. Quantity works welcome. Send your works to: Kirk Dial & Crystal Co., 4th & Pike Bldg., Suite 625, Seattle, WA 98101.

THE QUARTZ SPECIALISTS. All services on analog, LCD, LED, Accutron. Lowest prices on batteries. Free information packet. McBee Laboratories, 302-D So. 16th, Bozeman, MT 59715.

PULSAR WATCH REPAIRS. Complete repairs on all L.E.D. PULSARS except calculators. Prompt service. Leo G. Kozlowski, 55 E. Washington Street, Chicago, IL 60602. (312) 236-8052.

CLOCK SERVICES wheels, gears, barrels, retoothing, repivoting, mainspring winding, bushing, jeweling. Send sample for estimate. SASE. Roy H. Niegel, CMC, CMW, 21837 Woodbury, Cupertino, CA 95014. (408) 253-4927.

CLOCK WHEEL AND PINION CUTTING, repivoting, retoothing, escapement work. J.C. Van Dyke, CMW, CMC, CMBHI, 1039 Rt. 163, Oakdale, CT 06370.

Superior Tweezer Resharpening. $2.50 each, including return first class postage. Minimum of three tweezers. Advance payment required. Harvey C. Watkins, CMW, P.O. Box 1738, 1204 West Cason Street, Plant City, FL 33566.

Quality Crystal Fitting–All types– Glass – Plastic – Mineral – GS – Perfit and Genuine refills. Spring Bars and Crowns at good prices. Send for catalog and mailing label. Send work to: Crystal Fitters Inc., 21 North Street, Middletown, New York 10940. Phone 914-343-4434.

LED & LCD MODULE REPAIRS complete module repairs on all Bulova, Pulsar, Hamilton, Gruen, Elgin & Waltham, Benrus, and non-brand name modules. E. & M. Associates, 109 Bank St., Waterbury, CT 06702. (203) 753-5715

Custom made Horological Parts and Tool repair by: Precision Instrument, P. O. Box 70004, Charleston, SC 29405, Phone: 803-553-1198.

Clock Repair–Restoration, Wheel and Pinion Cutting, etc. Free Estimates, Fast Service. No watch parts. David G. Arnold CMC, CMBHI, 556 Ann St., Elgin, IL 60120; (312) 695-1689.

EXPERT WATCHMAKER––45 years experience. Makes parts for watches and clocks. Repeaters, antiques, all others. Also, tradework, all makes, all models. Phone (602) 986-6150 or write D.E. Simpson, 7726 E. Garnet Ave., Mesa, Arizona 85208.

CUSTOM BALANCE STAFFS, cut and fitted. Since 1922. Certified Master Watchmaker # 6766R. James Bourne Co., P. O. Box 215, Ladysmith, WI 54848. 715-532-3166.

HIGH GRADE SPECIALIST–Any repairs of Rolex, Patek, Omega, Accutron, also Swiss & Seiko quartz. Quartz movements fitted to obsolete watches. Restoring of ANTIQUE & RAILROAD, REPEATERS & MARINE CHRONOMETERS, even if we have to make parts. 24 hour shipping to Virginia, Washington, D.C., N. Carolina. 35 years experience watchmaking, clockmaking, AWI certified electronics technician. Fully insured. D.C. Almquist c/o Treasury of Time, Rt. 612, P.O. Box 60, Crimora, VA 24431; 1-703-943-5559.

WATCH WHEEL CUTTING, REPIVOTING AND STAFFING CO. There are 3 of us. One for wheels, one for balance staffs and repivoting and one for complicated parts. All together we have over **100 years experience** including teaching, museum training, making countless number of parts and actual chronometer making. **We can make any part for any timepiece.** We knew each other back in Europe and when two of us retired we decided to get together and offer our skills to the Horological Community. If you think you can use our services please send your watch or part for a free estimate by returned mail (SASE for price list): P.O. Box 1314, Highland Park, NJ 08904. Tel. (201) 985-0685.

Balance Staffs Custom Made and Fitted Call or write Lucian L. Lynch & Co., 1148 Brookside Dr., Hanahan, SC 29406; Tel. (803) 747-2586.

Help Wanted

CLOCK REPAIR PERSON – Career opportunity. Experienced only. Much work, good pay, bonus, EOE. Send resume in confidence to Ron, Rocky Mountain Clocks, 2739 So. Broadway, Englewood, CO 80110.

WATCHMAKER WITH KNOWLEDGE OF QUARTZ AT FT. DIX, N.J. CONTACT MR. RIEGLER. (609) 723-8414.

For Sale

For Sale–Timing Machines, Watchmaster Timers, Vibrograf Timers. Factory rebuilt. All machines guaranteed. Terms available. Also available Ultrasonic Watch Cleaning Machines. Write Vibrograf sales representative Robert Swensgard, 2630-A Jett Hill Road, New Richmond Ohio 45157. Or phone (513) 553-2113. Territory: Kentucky, Michigan, Ohio, Tennessee, and Western Pennsylvania.

U.S. HEADQUARTERS FOR ALL SCHATZ PARTS. PARTS FOR THE NEW 400-DAY ELECTRONICS. ALSO FOR KUNDO ELECTRONIC. GREENHILL CLOCK SERVICE, P.O. Box 172, Santee, CA 92071.

ESEMBL-O-GRAF LIBRARY in 28 volumes, Pittsburgh, 1955. Chronograph repairing is made easy by step-by-step procedure. Each small step of removing and replacing each part and making adjustments is clearly illustrated. No concentrated study is necessary. $200. Write EOG, P.O. Box 1101, Cincinnati, Ohio 45211.

CLOCK TIMER. Regulate your clocks electronically with the new C.T.I. Clock Timer. Can be used on almost any clock with mechanical escapement. Pendulum clocks large and small, lever or cylinder escapements, anniversary clocks, etc. For information write: Can Tho Instruments, P.O. Box 80113, San Diego, CA 92138.

For Sale: Portescap Mark V ultrasonic watch cleaning machine. Brand new; used very little. Discontinuing watch repair, reason for selling. $875.00. Barfoot Jewelry, 436 Mt. Rushmore Rd., Custer, SD 57730. (605) 673-4121.

Vigor inside ring engraving machine. Used only six times. Best offer. (303) 842-2265.

MICROFICHE READERS, used $100. New $220. Guaranteed. Smith's Watch & Clock Shop, 11 Mechanic Street, Bradford, PA 16701. (814) 362-4322.

Pocket Watches Bought & Sold. Railroads, Repeaters, all kinds. Finders Fees paid regularly for leads on collections or individual watches. Estates, jewelry stores, watchmakers–total buy-outs a specialty! Sell to a willing and able investor/collector. Call Miles Sandler at (913) 383-2880 or write 9071 Metcalf Suite 108H, Overland Park, KS 66212. Have Watches Will Travel!

BE ALL THE CLOCKMAKER YOU CAN BE WITH CHRONOS TOOLS. Wheel cutting engines start at $409.00, $2 for catalog. KEN LAW, CMC, Camp Wood Star Route, Prescott, AZ 86301.

For Sale - L & R Tempo 400 Watch Cleaning Machine. No Hydraulics, fully atuomatic. Clean up to 16 watch movements at one time. Machine is three years old. Further information, write or call: Mundey Jewelers, Grant Bair, 36 N. Potomac St., Hagerstown, MD 21740. Phone (301) 739-2770.

Metal Cutting Lathes, Bench Mills, Drillpresses, Unimats (accessories also) Maximats, Sherline, Cowells, Enco the Maximat Super Eleven. Lathe Catalog $1.00. Precision tools inch or metric, aluminum, brass, steel, all shapes, miniature screws, taps, drills, saws, collets. Tool catalog $1.00. Campbell Tools, 2100M Selma Rd., Springfield, Ohio, 45505. Phone (513) 322-8562.

We have purchased all 400-Day Domes formerly owned by Horolovar. Send SASE for price list to: C. A. Zimmerman, Box 3562, Littleton, CO 80161-3562.

LEATHER STRAPS. @ $1.30 each–RING GUARDS–SPRING BARS–ETC. WRITE: FLORO DISTRIBUTOR 12-08, 151 PLACE WHITESTONE, NY 11357.

Situations Wanted

Watchmaker, jeweler, sober. Dependable. Seventeen years experience. Has own tools and equipment for complete shop. 2236 Cornell Ave., Columbus, GA 31903.

15 years experience in watch and clock making. 34-years-old, seeking a better job position in Oregon. May travel. Please write: Robert Bucholtz, 6223 N.E. Roselawn, Portland, OR 97218.

Wanted To Buy

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, Georgia 30345. Phone 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.

IMMEDIATE CASH PAID for Gold, Silver, Platinum, any form! Jewelry scrap, filings, gold filled, sterling! Immediate top dollar cash offer return mail! Satisfaction guaranteed. Ship insured/registered mail to: American Metals Co., St. Andrews Branch, P.O. Box 30009H, Charleston, SC 29407.

Good used vacuum unit, for use in casting. Also interested in burnout oven (at least 9"x9"x9"). Patrick Snyder, 116 E. Walnut, Watseka, IL 60970. Ph. (815) 432-3053.

Schools

Correspondence courses in Quartz-Accutron-Watchmaking-Jewelry. Free folders. Watchmaking Institute of Canada, 1012 Mt.-Royal East, Montreal, H2J 1X6. Telephone (514) 523-7623.

Parkland College one year clock repair program to begin August 29, 1983. Brochure on request. 2400 W. Bradley, Champaign, IL 61821. 217-351-2288 Attention: W. O. Smith Jr.

Miscellaneous

DIGITAL, QUARTZ TRAINING – Learn the Zantech 60 second method of testing quartz analog watches. Zantech, the originator of the Two Day Digital Watch Service Program, is now also offering a Two Day Quartz Analog Repair Course with expert instructors, Louis A. Zanoni and Anne Louise Brackbill. For application or information call or write to Zantech, Inc., 77 Shady Lane, Trenton, NJ 08619; (609) 586-5088.

Dates To Remember

MAY

15—Citizen LCD Multi-Alarm Bench Course (AWI); Jim Broughton, instructor; Toronto, Canada

20-22—AWI Bench Course, Bulova Quartz 262 and 2500; Texas Watchmaker Convention; Green Oaks Inn; Fort Worth,TX

28—Johnson Matthey/GIA Platinum Workshop, Richmond, VA

JUNE

6-10—Introduction to Clock Repair Bench Course (AWI); Whitney & Benesh, instructors; Cincinnati, OH

20-23—AWI Research and Education Committee meeting; Drawbridge Inn and Convention Center; Ft. Mitchell, KY

24—AWI Affiliate Chapter meeting; Drawbridge Inn and Convention Center; Ft. Mitchell, KY

25-26—AWI Board of Directors meeting; Drawbridge Inn and Convention Center; Ft. Mitchell, KY

JULY

17-20—Canadian Jewellery Trade Fair; Hilton Harbour Castle Hotel Convention Centre; Toronto, Canada

19—Oregon Watch & Clock Makers Guild Meeting; Portland, OR

27-30—Franklin Area Chamber of Commerce 18th Annual Gemboree; Community Facilities Bldg., Franklin, NC

30-Aug. 3—Jewelers of America Fall International Jewelry Trade Show and Conference; Hilton and Sheraton Centre Hotels, NY

31-Aug. 2—International Gem Show; Waldorf Astoria Hotel, New York, NY

AUGUST

6-8—Heart of America Jewelry Show; Inn at Executive Park; Kansas City, MO. Information: Claudia Roth, 7416 Larsen St., Shawnee Mission, KS 66203

13-15—Fall Pacific Jewelry Show; Century Plaza Hotel; Los Angeles, CA

15-21—JEWELTIME '83; World Trade Centre, Singapore, for Jewelry, Watches and Clocks; Additional inf. from: Kallman Associates, 5 Maple Ct., Ridgewood, NJ 07450; (201) 652-7070

SEPTEMBER

15-18—Gemological Institute of America Doorstep Course; Memphis, TN

17-18—Common Sense Quartz Watch Repair Bench Course (AWI); Bishop, instructor; Huntsville, AL

18—Fundamentals of Solid State Watch Repair B. C. (AWI); Opp instructor; Columbia, MO

19-22—Striking Clocks-Advanced Seminar Bench Course (AWI); Baier, instructor; Cincinnati, OH

OCTOBER

1-2—Common Sense Quartz Watch Repair Bench Course (AWI); Bishop, instructor; Toronto, Canada

1-2—Iowa Jewelers and Watchmakers Assn. Fall Convention & Trade Show; Des Moines Marriott Hotel; Des Moines,IA

18—Oregon Watch & Clock Makers Guild Meeting; Portland, OR

18-23—BARNAJOYA '83, the First International Jewellery, Clock And Watchmaking and Silversmithery Show; Barcelona, Spain

Advertisers' Index

ASSOCIATION NEWS

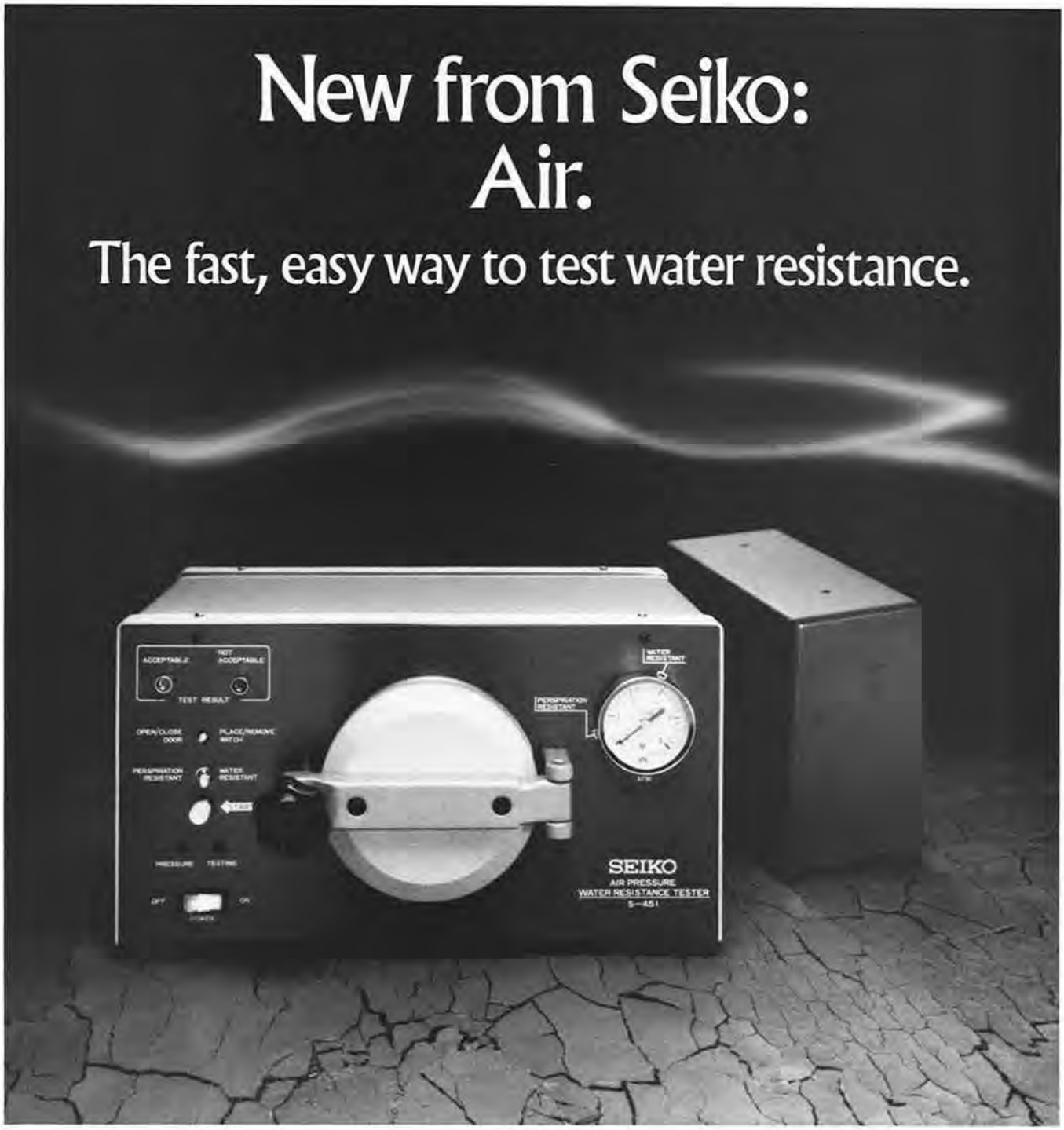
(Continued from page 35)

Horological Society of New York Executive Committee member, Irv Feld, who is also Manager of Quality Control at North American, requested the use of the facility. It received unhesitating approval from President Gerry Grinberg, despite the increased maintenance and security costs that are involved.

Dennis Tricarico, President of the Horological Society of New York, said, "This wonderful meeting place in the heart of town is of great benefit to our society. It is warming to receive this kind of corporation and support from industry. On behalf of the Horological Society of New York I want to thank Mr. Grinberg and the North American Watch Corporation for providing us with these new quarters."

New from Seiko: Air.

The fast, easy way to test water resistance.



Introducing S-451. It uses air pressure, not water. It's Seiko's small advance—you can fit it anywhere—that's a tremendous improvement. No more removing tags, bands, modules, movements. No more drying down afterward, no water seeping into watches. You get accurate answers, and an added function—it tests perspiration resistance. At a reasonable $513, S-451 quickly pays for itself.

How does S-451 work? Easily.

1. Put the watch in. Close the door.
2. Select 'Water Resistant' or 'Perspiration Resistant.'
3. Press start button.

Electronically, S-451 evaluates water resistance by the way the case-back and crystal 'give' toward each other under air pressure. In seconds, a tone sounds. A light goes on: green/acceptable or red/unacceptable.

Contact the Materials Sales Department. We'll be glad to air all the facts for you. Seiko Material Department, 555 West 57th Street, N.Y., N.Y. 10016.

SEIKO

Setting the standard for the world, for the future.

Maxell vs. the big-name battery.

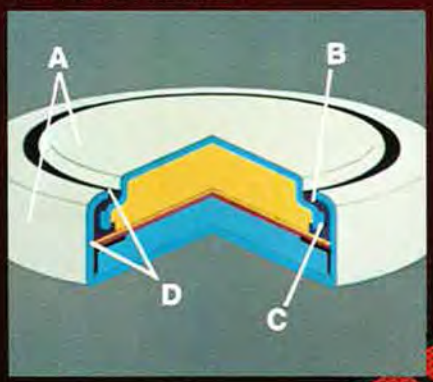
In leakage tests, only Maxell proved 100% resistant.

A test of leakage resistance at 45°C, 90% relative humidity. Conditions so severe, 40 days simulate 2 years of storage. Maxell's design integrity was unaffected. Not one batch, not one Maxell silver oxide battery leaked. But the effect on the leading silver oxide battery was undeniable. Of the tested battery types, the failure rate approached 70%.

Here's how Maxell isolated and controlled causes of leakage:
A. Unique design prevents excess internal pressure. **B.** Self-molding gasket of highly crystallized nylon impedes deterioration. **C.** Chemically polished edge made mirror-smooth seals off liquid pathway between gasket and can. **D.** Specially treated surface inhibits micropaths, retards creepage.

A persuasive argument for using Maxell batteries 100% of the time. The advantages are considerable.

Low Temperature Performance
Even at -10°C Maxell delivers 100% functional power. A 1.33 voltage rating the leading silver oxide battery never once achieved.



Superior Shelf Life
Under conditions simulating 2 years of storage, Maxell surged ahead with service life as much as 60% over the leading silver oxide battery.

The Professional Edge
Maxell's advanced technology is available only to watchmakers. If you want your business to grow, we're behind you, 100%.

For a white paper on test conditions and results, write Dept. R-20.
Maxell Battery Products Division
Maxell Corporation of America,
60 Oxford Drive, Moonachie, N.J. 07074
201-440-8020

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