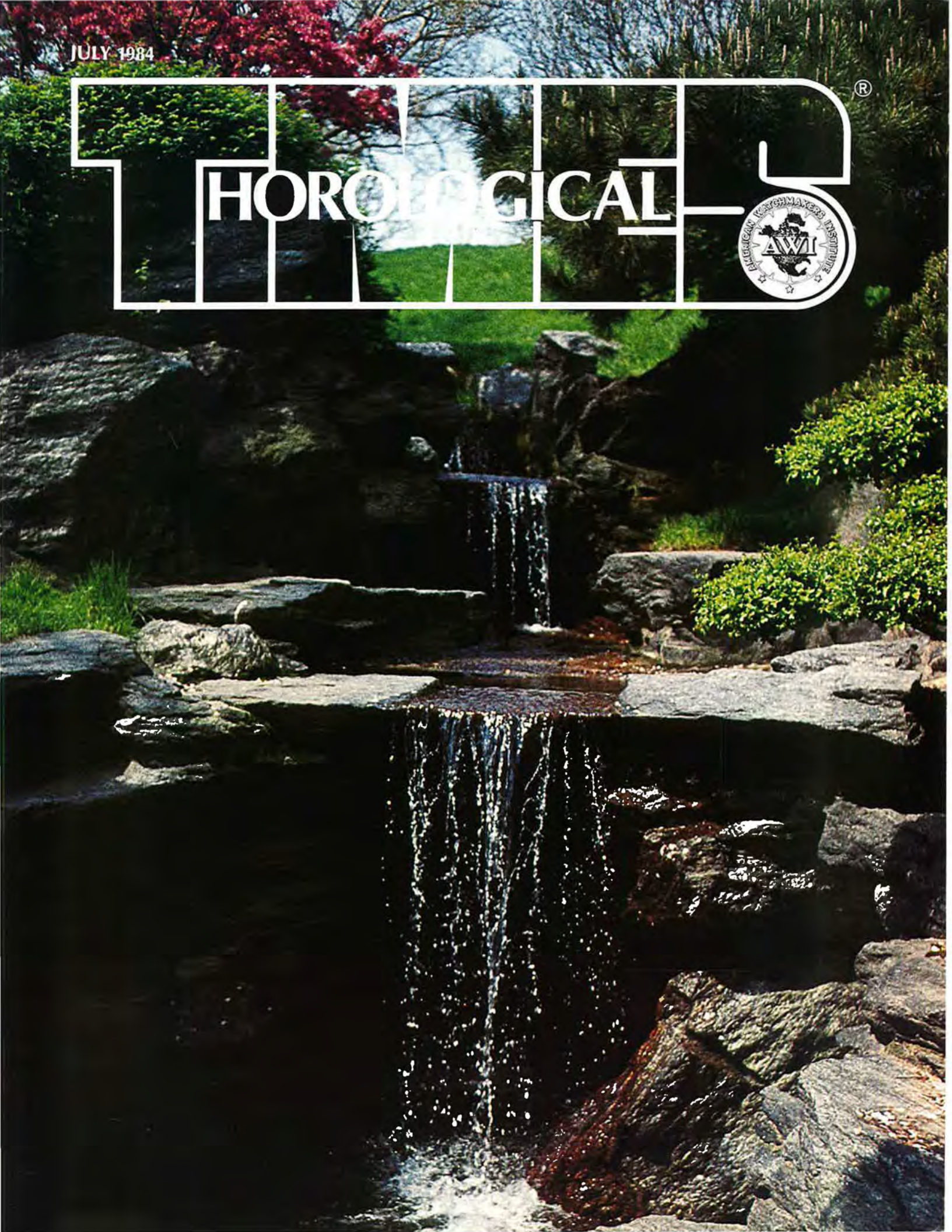
JULY 1984

HOROLOGICAL TIMES®



QUARTZ MOVEMENTS

FACTORY FRESH! IN STOCK FOR IMMEDIATE SHIPMENT!

6¾ x 8L

961.001

REPLACES FF60 & ST69

And most 6¾ x 8 movements. Dial feet must be shortened.

$11.95
5@$11.00
Including cell

6¾ x 8L

Y481

SWEEP SECOND VERSION OF Y480.

$15.00
5@$14.00
Including cell

3¾ x 10

102.001

REPLACES FF59.21

Give your customers quartz accuracy. Replaces mechanical movements in baguette watches.

$27.00
5@$25.00
Including cell

5½ L

RONDA 3572

FITS BULOVA 5AH CASES

Requires re-positioning of dial feet, popular thinline genuine Swiss movement.

$15.95
5@$15.00
Including cell

5½ L

Y590

USED BY MAJOR BRAND NAMES

$16.95
5@$16.00
Including cell

5½ L

2500.10

REPLACES BULOVA 2500.10 AND ARMITRON 32002

Complete movement costs less than circuit. Save time & money

$17.95
5@$17.00
Including cell

Y480

ORIGINAL ELECTRONIC SETTING

ACCEPT NO SUBSTITUTES!

$14.00
5@$13.00
Including cell

FE6820

REPLACES 301.001

FITS MANY DIAMOND CASES. REPLACES AS1977.

$12.95
5@$12.00
Including cell

IN STOCK: **COMPLETE LINE OF QUARTZ AND MECHANICAL MOVEMENTS FOR EBAUCHES AND ESA MODELS. COMPLETE LINE OF REPAIR PARTS FOR *ALL* QUARTZ MOVEMENTS, INCLUDING CIRCUITS AND COILS.**

PHONE YOUR ORDER TOLL FREE 1-800-543-0408

IN OHIO CALL 1-800-582-8027 $15 MINIMUM WATS LINE ORDER.

OVER 20 YEARS EXPERIENCE WITH ELECTRONIC WATCHES

COILS — CIRCUITS — MOVEMENTS — CELLS
CALL US FOR ALL OF YOUR ELECTRONIC WATCH REPAIR NEEDS.
WE WILL RUSH YOUR ORDER FROM OUR HUGE INVENTORIES.

IN STOCK! FAST SERVICE!

Cas-Ker Co.

P.O. BOX 2347
DRAWER A
CINCINNATI, OHIO 45201

TELEPHONE:
All calls from Ohio: (513) 241-7073
All calls for information & inquiries: (513) 241-7075

ORDERS ONLY ($15 MINIMUM): (800) 543-0408

IMPORTERS & DISTRIBUTORS: *WATCH MATERIAL, TOOLS AND SUPPLIES*

Prices subject to change without notice

VOLUME 8, NUMBER 7 JULY 1984

HOROLOGICAL TIMES®

Official Publication of the American Watchmakers Institute

HOROLOGICAL TIMES (ISSNO145-9546) is published monthly and copyrighted by the American Watchmakers Institute, 3700 Harrison Avenue, Cincinnati, Ohio 45211, for $35.00 per year ($4.50 per copy in the United States and $45.00 per year; $5.50 per copy outside the U.S.). Second class postage paid at Cincinnati, Ohio. POSTMASTER: Send address changes to HOROLOGICAL TIMES, P.O. Box 11011, Cincinnati, Ohio 45211.

A Popular Clock Series Ends With This Issue

12

Here Are Some HOT Solder Tips!

14

A Dearly Loved Tradition Lives On...

32

DEPARTMENTS

HOROLOGICAL TIMES

Executive and Editorial Offices

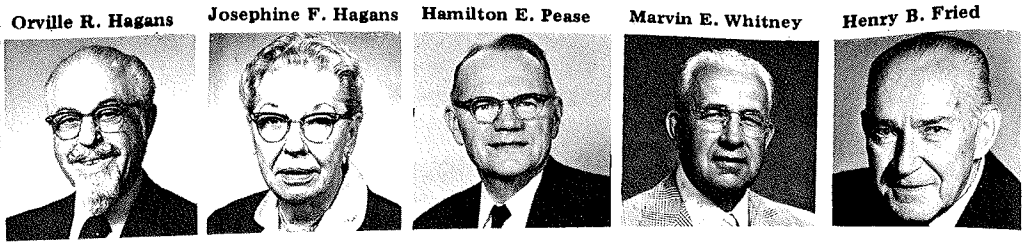
AWI Central
P.O Box 11011
3700 Harrison Avenue
Cincinnati, Ohio 45211
Telephone: (513) 661-3838

Harold J. Herman: *Editor*
Maury Norrell: *Managing Editor/Advertising*

Donna Baas: *Production Director*
Regina G. Stenger: *Art Director*
Sue Scott: *Business Manager*

Mildred Howard: *Circulation Manager*
Margie M. Brater: *Circulation*

FELLOWS OF THE AMERICAN WATCHMAKERS INSTITUTE



Orville R. Hagans | **Josephine F. Hagans** | **Hamilton E. Pease** | **Marvin E. Whitney** | **Henry B. Fried**

Editorial

Quartz analog battery replacement is more popular than ever before. The legitimate sellers of the movements do not make claims as to the simplicity of making the change. And, indeed, it is an operation that needs the skills of a watchmaker.

Somehow, and somewhere along the line, those unskilled as watchmakers were led to believe that this was an operation that anyone could handle quite easily. Unfortunately, hand-eye co-ordination in this delicate trade takes quite some time to develop. Consequently, the results of having people with inadequate skills working on these movements were and are disastrous in far too many instances. Consumers, many of them believing a 'bona fide' watchmaker ruined their watch, lowered their estimation of us as members of the American Watchmakers Institute.

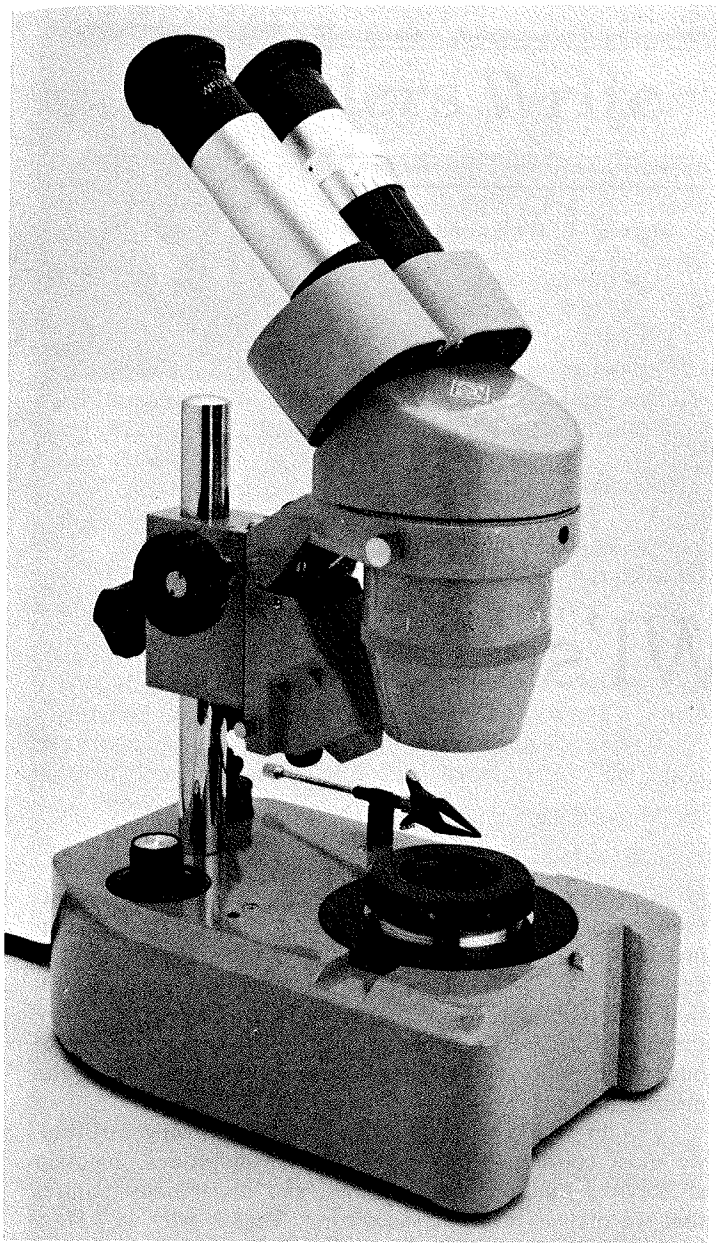
The losers in this debacle were and are the AWI members and the consumer. There is no need to name the winners.

On the Front

Cool water flowing gently down a green hillside . . . our July front cover offers a scenic oasis in which to escape the Summer's sun!

Photo by Mervin Levenberg

CORRECTION—Last month's cover was inadvertently credited to Mr. Levenberg. June's beautiful photo was by Laurence R. King.



JEWELERS STEREO MICROSCOPE

$570^{00}

TERMS AVAILABLE

Indispensable For

- **Gem Identification-Grading**
- **Electronic Watch Repair**

• 10x and 30x magnification • Binocular Stereo - 360° rotating head. • Built in four position illuminator with darkfield and reflected light. • Stone holder with two position mount. • Large convenient focus controls on either side. • Five year limited warranty.

For years there has been a need for a reasonably priced microscope that fits the needs of the Jewelry Industry. We are pleased to offer this Gemscope which meets or exceeds the quality of microscopes costing much more. Take advantage of our free 15 day trial offer and judge for yourself!

ALL IN POST STYLE

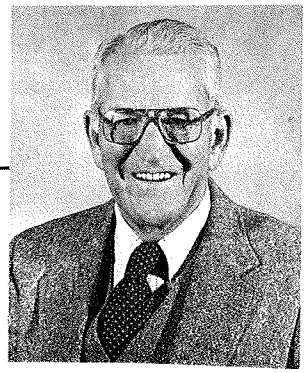
- Inclined binocular stereo with 360 degree rotatable head with locking screw.
- Head interocular and interpupillary adjustable.
- Built in illuminator with four position switch. To provide either incident, transmitted, incident and transmitted illumination or both off.
- Illuminator base furnished with 90mm. diameter glass stage plate, reversible black and white stage plate, blue filter, and two chrome stage clips.
- Head removable to mount on pillar stand or universal arm.
- Head adjustable on post to different heights for additional working area, with locking screw.
- Course focus via diagonal-cut rack and pinion with large convenient focus controls on either side of stand.
- Furnished with rotatable nosepiece turret with two pair of objectives. 1X and 3X = 10x - 30X utilizing widefield eyepiece.

Esslinger & Co.

P.O. BOX 43561 ST. PAUL, MN 55164
NATIONAL WATS-ORDERS ONLY — 800-328-0205
MINNESOTA WATS-ORDERS ONLY — 800-392-0334
INQUIRIES-INFORMATION — 612-452-7180

PRESIDENT'S MESSAGE...

Marshall F. Richmond, CMW



Maintaining AWI's Growth

As my second year as president of the American Watchmakers Institute has ended, I look back over these past two years with a good deal of satisfaction. It is an honor and privilege to have served such a fine organization and to work with such a fine group of people: the officers, directors, affiliate chapter officers, and delegates; the committees and their chairmen and chairlady; the executive secretary; the executive director, the office staff and the staff of the *Horological Times.* I did not forget the most important people of all–the members. The cooperation and response from all of these people has made this a wonderful and enjoyable experience for me.

As president, I have been given credit for many accomplishments that have been made in the last two years, but the credit should be put where it belongs. They were made possible by the advice of many much wiser than I and with the implementation of the committees and administration of the office staff.

Two years ago, when I took office, this country was in an economic pinch. Some called it a recession, but whatever it was it also had some impact on the American Watchmakers Institute as we were also in a financial bind to a slight degree. Due to the foresight, positive thinking, and administration of our affairs, we pulled through with flying colors by the end of last year and have expanded the services offered to our membership, as well as shown a gain in numbers in the membership.

In order to maintain a healthy, growing institute, we must continue to set goals that are ambitious, maintain all services that are working well, and discard any failures that we may have in our possession. That is why we have a board of directors and it seems that they are quick to recognize the changes that have to be made.

Let's all pitch in with our ideas and input to make the next fiscal year, starting July 1, one of the biggest and best we have ever had in the American Watchmakers Institute.

Many thanks for your help during the past two years!

MFR

Our Readers Write

I'd just like to thank you for your fine magazine and the most helpful information that it contains. I would still like to see more shop hints and field problems covered.

One area that has been worth the annual dues alone is the Technical Library. Twice in the past year my requests for information have solved repair problems that I had encountered. Without AWI, this information probably would not have been available.

Thanks for the great service. Keep up the good work.

E.G. Shumway
Kenosha, WI

I do enjoy the *Horological Times* and I don't know what could be improved on it. I particularly enjoyed the articles "Ingraham Striking Clock" by Steven Conover, and those of "Seth Thomas." I would like to see more of the Early American Clocks.

Robert G. Brendel
Buckner, MO

I would like to thank the AWI Library for the uncommonly fast and efficient replies to several recent inquiries.

Wayne R. Botz
Hopkins, MN

Let me take my hat off to Mr. Fried. I just bought the book *Repairing Quartz Watches* [by Henry Fried], and it is so easy to understand–I am simply crazy about it!

The older watchmakers should buy this quartz book as it would give them a lift again in learning to repair quartz watches . . . I used to feel like this quartz business was too much for me to learn at my age (60 yrs.), but I found from just buying this book, I'm back in business again. My thanks to you, Mr. Fried–you've done a wonderful job!

John T. DeAngelis
Miami, Florida

It is certainly an honor and a privilege to be a member of the AWI. Thank you for all the information in my new member packet.

Larry J. DeMaar
Crown Point, IN

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

A TICKLESS CLOCK

Among the many experiments to construct a silent and noiseless clock, the writer found among his files an interesting experiment.

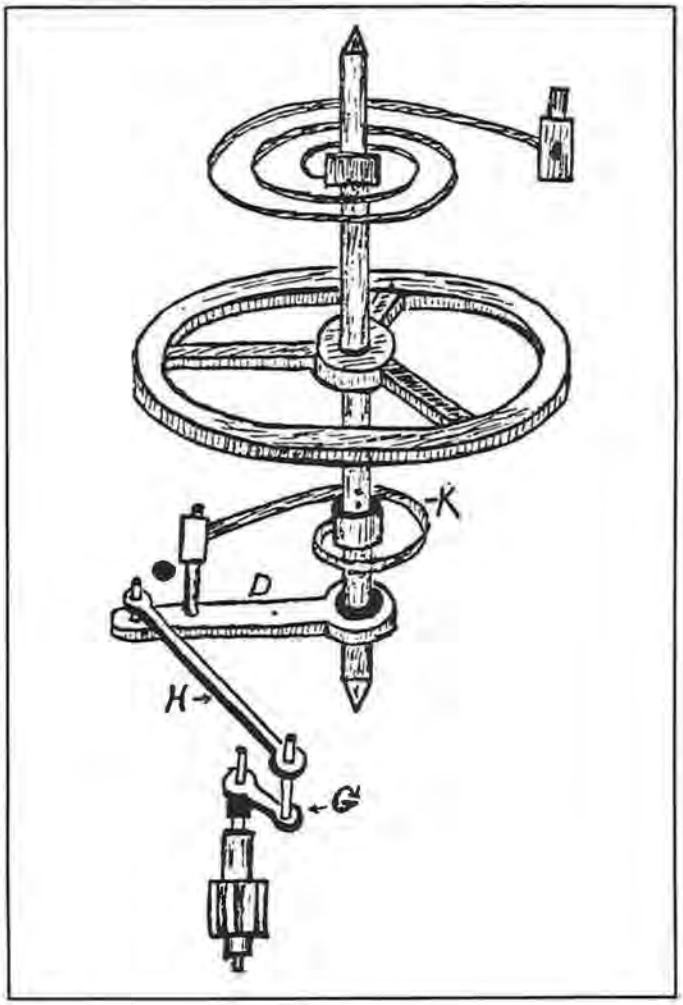
Heinrich Schieferstein, a German engineer, invented a tickless clock some years ago. He found that wherever reciprocating motion occurred, power might be saved, or the speed increased by the addition of a suitable spring.

For example, take the case of a mowing machine. Its knife shucks back and forth at an extremely rapid rate and much power is lost by starting and stopping each time the direction of movement is reversed. By attaching a heavy semicircular leaf spring to the connecting rod operating the knife, the pull required of the horses drawing the mowing machine is cut in half. The gain is really due to elimination of a variety of losses caused by friction and impact.

Similarly, in the tickless clock or watch, the escapement mechanism is replaced by a small spring, the balance wheel and hairspring being retained. Not only is such an instrument noiseless, but the inventor claimed it to be accurate, cheap to build, and he said it would run a long time on a single winding because the tickless escapement conserves energy.

In the tickless clock shown in the diagram, the ordinary escapement mechanism is replaced by a spring, which is in addition to the usual hairspring. The gear train in the clock or watch drives the crank *G*, which transmits its motion to arm *D* through the rod *H*. The arm *D* is pivoted on the balance wheel shaft and the spring *K* is so proportioned that the balance wheel oscillates at a uniform rate and their oscillation is maintained by power supplies from the mainspring via crank key.

As far as the writer knows, this improvement or idea was never put into production.



STEAM CLEANER

with Solenoid Valve

High pressure steam removes dirt, soil, soap, rouge in seconds. Diamonds and jewelry are dazzlingly clean in a single operation; no wiping or drying is necessary. You can clean stock jewelry and rings right in their display trays.

- Fully automatic Steam Pressure Regulation: Select the recovery rate and the electric heating element turns on and off as required.

- Simple Operation: Plug into 110 volt outlet, fill with water, and turn the machine on. Within minutes the gauge will register operating steam pressure. Merely place items to be cleaned under the steam nozzle in a tray, a basket, or hold in tweezers to clean and dry in seconds.

CAS-KER STEAM CLEANER FEATURES:

- Two gallon capacity
- Compact cabinet, 15½" high, 11" deep, 13½" wide
- No plumbing installation
- Factory with over 50 years experience manufacturing steam machines
- Heavy duty construction
- Fast heat-up
- Sight water gauge with shield
- Convenient filling funnel
- A.S.M.E. and U.L. listed
- Blow down or drain valve on left side of machine, aimed away from operator

STEAM CLEANER with Solenoid Valve

$675.00

TIME PAY PLAN Cash with order $100.

3 monthly Payments @ $200. 600.

$700.

ALSO AVAILABLE IN PULL CHAIN MODEL FOR $595.00

UL, CSA and ASME National Board Approval.

Call Toll Free 1(800)543-0408 ***($15 minimum WATS order)***

In Ohio Dial 1(800)582-8027

Cas-Ker Co.

Box 2347A, Cincinnati, OH 45201

Archie B. Perkins, CMW, FNAWCC

The Staking Tool © 1984

AND HOW TO USE IT

PART VII

One very important use for the staking tool is the removal and staking of roller tables. The staking tool is also useful for tightening roller tables. The method used to remove a roller table varies with the size and style of balance wheel. The tools used to repair the large pocket watches that were made years ago cannot always be used to repair the small delicate watches made in later years. The stump used for removing the roller table from a pocket watch balance wheel cannot always be used for removing the roller table from delicate wrist watch balance wheels; also, a stump used to remove the roller table from a two arm balance wheel cannot be used to remove the roller table from a three arm balance wheel.

Figure 1 shows a roller table removing stump being used to remove a roller table from a two arm balance wheel. This roller table is a single roller type which was used on some of the older watches made years ago. This style of stump was designed for removing this type of roller table but can sometimes be used to remove roller tables of the double roller and two piece double roller type, especially if the impulse roller has a large enough diameter to rest on top of the stump after the balance wheel arm has entered the slot in the stump. The cross slot in one of the jaws of the stump allows clearance for the end of the roller jewel in case it should protrude through the roller table. This slot would also allow clearance for any shellac that should be on the end of the roller jewel on the back side of the roller table which, if disturbed, could cause the roller jewel to become loosened in its hole in the table. The punch used to stake the balance staff out of the roller table is a roller removing punch with a cross hole. This

Figure 1

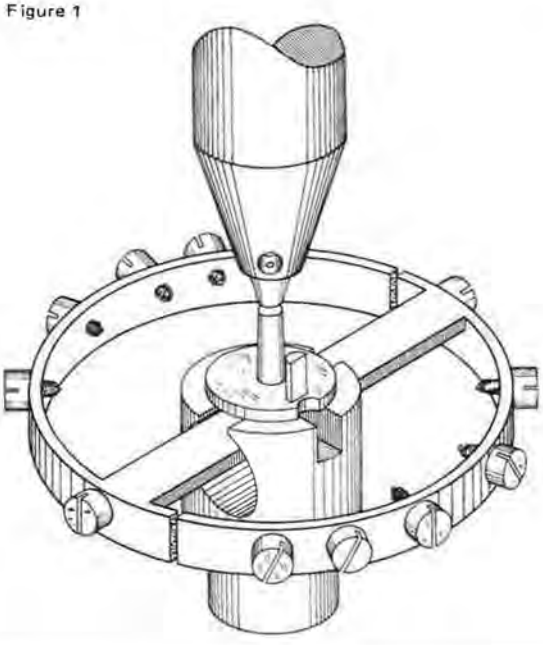


Figure 2

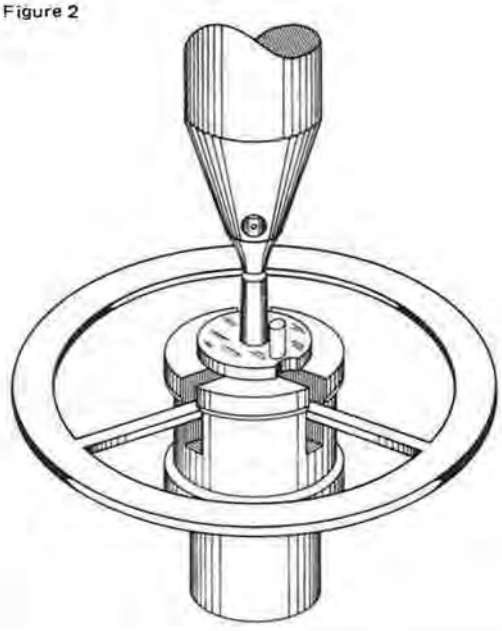


Figure 3

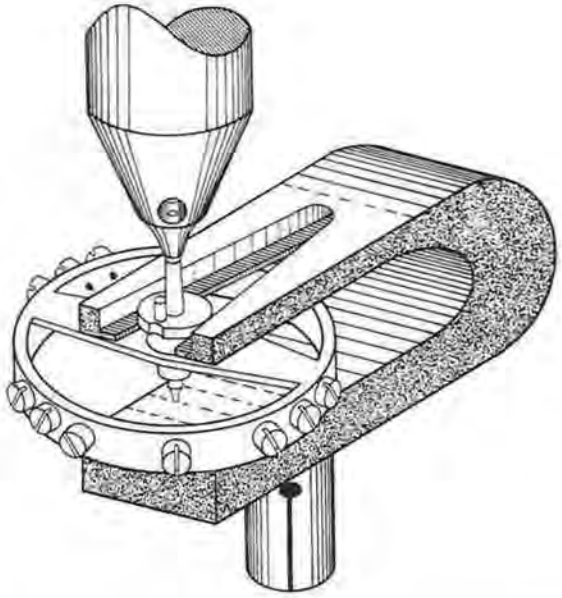
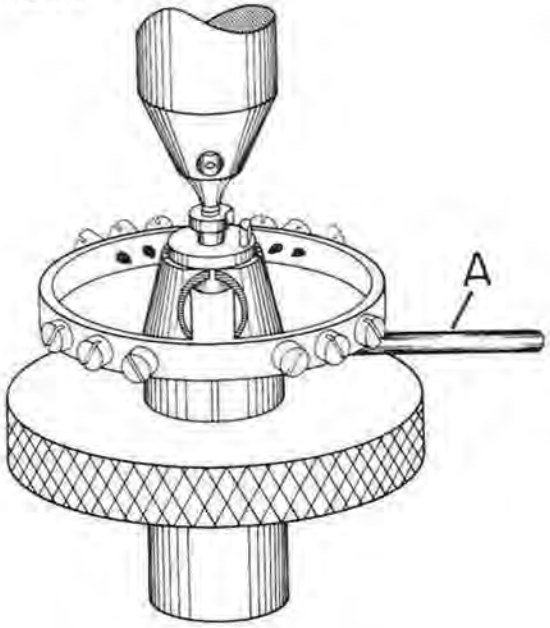


Figure 4



punch fits over the pivot on the balance staff and rests on the cone of the pivot.

Figure 2 shows the roller table being removed from a three arm balance wheel. This stump has three equally spaced slots which accommodate the arms of the balance wheel and allow the roller table to rest flat on top of the stump. The three arm balance wheel was used on some of the early pocket watches. Most of these watches had single roller tables. This stump was designed specially for these watches. These stumps have been made in different sizes for different sizes of balance wheels. This style of stump is no longer furnished in staking tool sets, but it would be desirable to have when repairing antique watches.

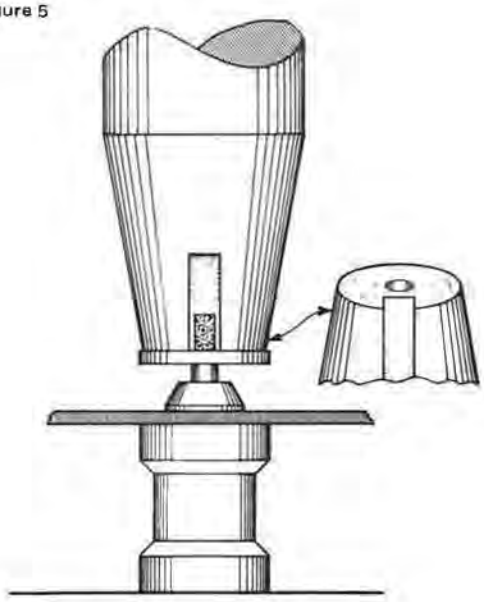
Figure 3 shows a roller table removing stump which can be used for removing roller tables from balance wheels of different sizes. This stump can be used for balance wheels which have two or three arms and for single or double rollers. This is one of the most versatile roller table removing stumps that has been made for the staking tool. The V-slot is one part of the design which allows the stump to accommodate different sizes of balance wheels. Other features of the design allow for roller tables to be removed from balance wheels with any number of arms or a wheel without any arms.

Figure 4 shows an adjustable roller table removing stump. This stump usually comes with three different size jaws for different size balance wheels. This tool also has three different size roller removing punches. This roller removing stump can be used in a bench anvil. Roller tables can be removed from two arm balance wheels only with this tool which makes it less versatile than some other roller table removers. Figure 4 shows a balance wheel in place prior to removing the roller table. The balance wheel arm goes between the jaws of the tool and the roller table rests on top of the two jaws. The wrench shown in View A goes into a hole in one of the jaws and is used to tighten the jaws under the roller table. The two jaws are made in one piece which is threaded into the base of the tool. The jaws have a beveled shoulder which fits a bevel in the base of the tool. As the jaws are screwed deeper into the base, they are caused to close similar to tightening a chuck in the spindle of a lathe.

Figure 5 shows one method of replacing a single roller table onto the balance staff. A flat face hole stump is used to support the balance wheel arm while a slotted roller punch is used to press the roller table down against the hub of the balance staff. This method and style of punch is also used when replacing the impulse roller prior to replacing the safety roller on a two piece double roller. NOTE: The proper fit of a roller table on the balance staff is when the distance be-

(Continued on next page)

Figure 5



tween the roller table and the hub of the staff is equal to the thickness of the impulse roller table before the table is pressed on. This distance can be slightly less but should never be more. If there is more space than this, there is danger of damaging the roller table when it is pressed on.

Figure 6 shows a reversed method of replacing a single roller table. In this method, the roller table is supported on a slotted roller stump while the balance staff is pressed into the roller table with a flat face hole punch. When replacing a single roller table, it is only a matter of preference whether the method in Figure 5 or the method in Figure 6 is used. The most important point is in the selection of the roller punch or the roller stump. The hole in the punch or stump should be of the correct size with a close fit on the staff with very little side shake. (A punch that is too tight on the staff could be caught on the staff.) The slot in the punch or stump must be wide enough to clear the roller jewel sufficiently; otherwise, the roller jewel could become broken as the table is pressed onto the staff. Another important point is that the slot be cut deep enough so as to clear the roller jewel sufficiently to prevent breaking the roller jewel. NOTE: If a slotted roller stump is not available, a roller punch can be inverted and used as a stump.

Figure 6

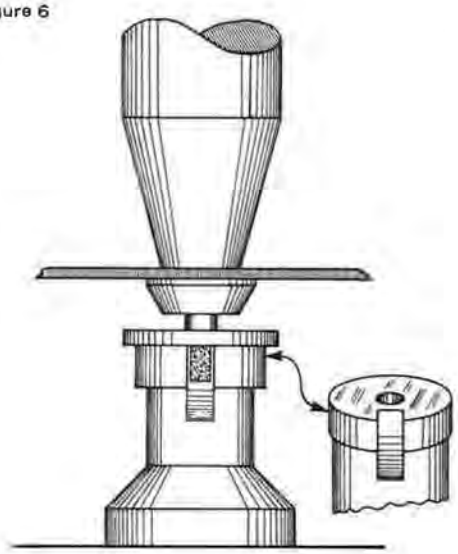


Figure 7

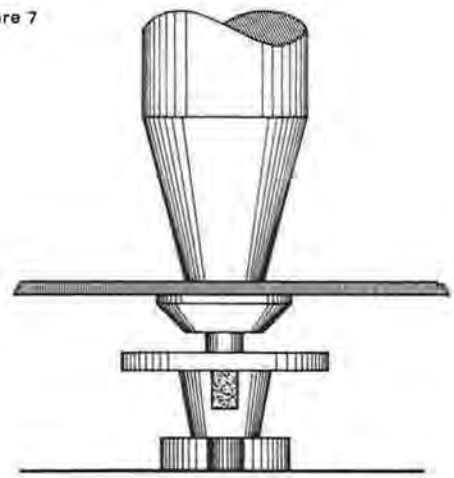
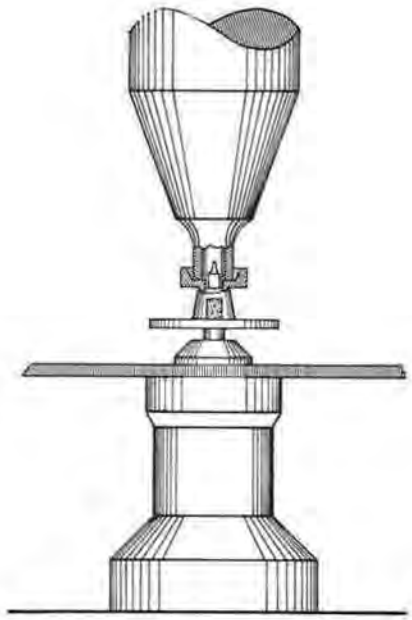


Figure 7 shows the method generally used when replacing a combination double roller table. The die plate is used to support the roller table while a flat face hole punch is used to press the balance staff into the roller table. The hole in the die plate should be a close but free fit on the lower end of the balance staff. It is very important that the hole used in the die plate be centered up exactly and locked into position and that the hole punch used be a close fit on the hairspring shoulder. This is to help prevent the lower staff pivot from becoming damaged as the staff is pressed into the roller table.

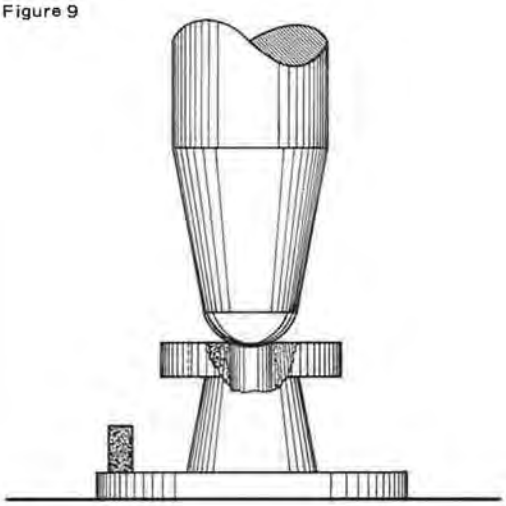
Figure 8 shows how an Incabloc roller table is pressed onto the balance staff. It is very important to use this method because Incabloc roller tables are very fragile and can easily become damaged if an improper method is used to replace them. The end of the safety roller part of the Incabloc roller table is hollowed out to clear the projection on the Incabloc assembly. This makes the wall on the safety roller very thin and fragile which leaves it subject to being crushed if an improper method is used in installing it on the balance staff. A special Incabloc punch is used for this operation. The punches are small enough at their ends to fit inside the hollow in the safety roller and the holes in the punches are just large enough to clear the roller shoulder on the staff. A special stump is also used to support the balance wheel. These stumps have extra small holes so they will fit the hairspring shoulder of the balance staff closely and the diameter of the top of the stump is small enough to go inside the sink in the balance wheel. These punches and stumps are part of the larger staking tool sets and can also be bought separately in a set. There are three punches and two stumps in a set for both wrist watches and pocket watches.

Figure 8



Sometimes it is found that a roller table will not be tight enough when it is replaced on the balance staff. In most cases, they can be closed so they will be tight on the balance staff if they need to be closed only slightly. Usually a roller table can be closed for .01 mm to .02 mm. One method that can be used to close the hole in a roller table, whether it be a single roller or of the combination type, is shown in Figure 9. To do this, the roller table is rested on the die plate of the staking tool and a round end solid punch is used to close the hole. This method is similar to closing a pivot hole. The

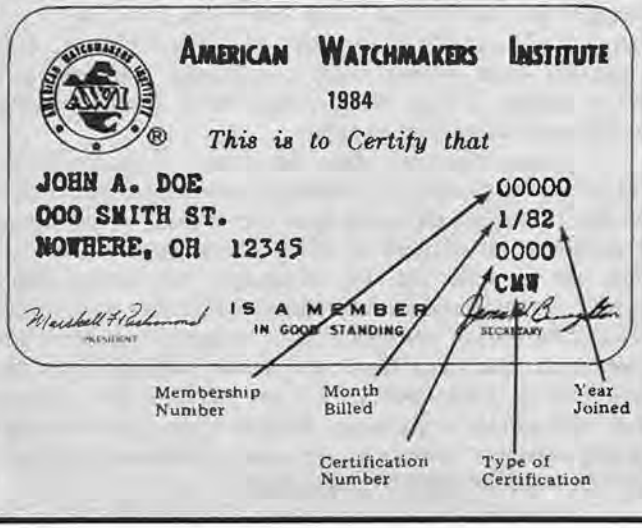
Figure 9



(Continued on page 18)

Your AWI membership card signifies that you are entitled to the many services offered by your association. However, we must have the correct information from your card to be able to serve you most efficiently.

The illustration below points out the important, coded information on the right side of your membership card. Always use your AWI membership number when corresponding or ordering from AWI.



Essence of Clock Repair © 1984

Sean C. Monk, CMW

Estimating Antique Clock Repairs

A GENERAL SUMMARY

This summation will probably end the long line of discussions we've had on clocks, their fundamentals and histories. "The Essence of Clock Repair" will therefore end with this discourse on "estimating."

So, without further ado, let us begin by stating that the importance of good customer service is dependent upon the estimator's technical knowledge combined with good historical observations. As stated in our previous article (on antiques), *knowledge is power*. And, of course, when it comes to quoting the cost of a repair, the service to be performed must be almost pontifically described.

Perhaps at this point when the customer brings the clock to you, one should watch out for marks on the item in question. Chips, scratches, other defacements, or missing parts, can cause chagrin and money. Also, don't accept keys with repairs: use your own. Keys can get lost or misplaced, and if the particular missing key is an original, one could get into trouble again.

Such introductory precautions having been taken, it should now be remembered that nearly all mechanical clocks over a certain age need bushings. Many chiming clocks will need bushings on the chime side before the going or strike side. This seems to persist with those models having the strongest spring on the chime side.

In bushing clockwork, use bronze bushings. Explain to the customer that where these bushings are used, the clock can be expected to run much longer (years maybe) than the original. As mentioned in our previous article, worn plate holes can usually be observed and can be shown to the customer in most cases. Also, one should remember that the worn hole in the plate usually means two bushings, for the opposite plate hole is also usually worn.

Clocks coming in with Brocot escapements (outside pallets) should be examined to make sure that the pallets are not missing, damaged, or incorrectly replaced, or incorrectly repositioned. We recently had one come in with the pallets put in reverse; the curved faces should meet with the escape wheel at the correct angles. If you are unsure of the angles, we suggest reference to a competent textbook.

Ormolu French clocks with porcelain plaques or with champevé enamelling should be carefully examined to make sure that exterior damage is not present, as refinishing these treasures is nearly impossible. Also, if French clocks fitted with silk suspensions are brought in, do not suggest changing the silk thread for some other material. Good timekeeping will not be obtainable.

Yes, marble clocks can be refinished using tin oxide (putty) powder, or oxalic acid crystals, mixed with water to form a paste. First, make sure your case is marble–not soapstone, or some other.

We have mentioned in previous articles the necessity of having knowledge of antiques, but perhaps more important is having access to the knowledge so that when the customer arrives with a specific article we can immediately go to a reference. Insofar as American clocks are concerned we have probably used Carl Dreppard's *American Clocks & Clockmakers* as much as anyone. And, of course, G.H. Baillie's *Watchmakers & Clockmakers of the World*. There are certainly many other references and it behooves the clockmaker to gather a library of such. The latter, of course, can be obatined through the well-known horological booksellers.

For an example of clock recognition, one might turn to the NAWCC Bulletin, April 1984, in which the E. Ingraham Co., founded in 1860, shortly thereafter produced a number of new clock case designs and the following patents were granted: Basic Venetian, Doric, Ionic wall clock, Tuscan, Venetian gilt column and block front base Venetian. The E. Ingraham Co., in 1868, also made the round Gallery clock, a popular clock among today's collectors. This represents just a sample of one old American clock company whose products still seem to be popular.

Many clockmen shun the repair of cuckoo clocks. Yet this field is open to successful restoration inasmuch as (to date) complete units can be obtained from certain material suppliers and changed at relatively low prices. Music box units are separate and are obtainable very inexpensively. In real old models where interchange with a new movement is not possible, worn holes can nearly always be observed and, once again, one must figure on double bushings (front and back plates). These jobs are for the highly-skilled mechanic and, with proper explanation, demand a good price for satisfactory servicing: these jobs are usually heirlooms and therefore the work is desired by the customer.

Another clock which seems to invite the ire of the

average clockman is the Anniversary, or 400-day clock. We have found that the reason why so many are returned after service is that the clockman has not fully explained the set-up of the clock. This should include the locking and unlocking of the balance, the leveling procedure, and the timing adjustment. We have also found that taking these clocks in for "suspension spring only" is inadvisable, inasmuch as the springs are often broken by someone trying to start the clock because it is stopping, or not running correctly. Therefore, one should take the job in for a general overhaul (which includes cleaning) plus replacement of the suspension spring, if necessary. Another factor to remember: if the clock has vintage (say over ten or twelve years) change the mainspring, as they are likely to be set.

Regarding "set" springs, it must also be remembered that old French mantel clocks, the carriages and ormolus, having vintage without proper service, need new springs. The old springs in so many of these clocks are so badly set that one wonders how they ever ran, let alone kept good time. So estimate to include a new spring, in addition to the general work to be done.

The ship's bell clock is one of the more complicated timepieces. The best, of course, is the Chelsea. The Chelsea Clock Company, of Chelsea, Massachusetts, is the only American company making ship's bell clocks. Chelsea today is also the only company in America that manufactures springwound movements, then handcrafts and assembles its own clocks. These facts should be passed on to the owner of a Chelsea. It is also a repairable clock, the plates being substantial, the wheels, springs and levers well-made. We do not advise moving the hands backwards (in spite of instructions written to the contrary). In addition, the clock must be vertical if the striking mechanism is to function normally. There are other ship's bell clocks which, after a number of years of wear and because of their (in our opinion) substandard quality, we do not advise repairing.

The Atmos Clock, or "perpetual motion" (so-called) is probably the one clock which will exist and hopefully will still be manufactured, long after all others have been eliminated in this electronic age. It runs on both temperature and atmospheric pressure changes. These things should be explained to the customer. The mainspring tension can be ascertained by feeling the tension on the center train wheel. It is unfortunate that the clock's bellows are sometimes found to be leaking. This can be tested if the clock is placed in a refrigerator for a brief period. Mark the mainspring barrel first so that the amount of wind, if any, can be determined.

The Jefferson Golden Hour: motors can be obtained from most material houses at fair prices. One should charge extra for a new cord if the old one is worn, especially where it passes through the back of the clock base. Explain this as a possible fire hazard.

Conversion jobs: Many clocks come in today, both mechanical and electronic (or electric) where the existing unit does not warrant repair. There are a number of excellent mini-quartz movements obtainable today from the material houses for relatively few dollars, making "conversion" fairly inexpensive. Check the hands as it may be necessary to keep the original pattern. Old hand bushings must be carefully removed and new bushings riveted into place.

We must close this brief treatise because almost a separate book could be written on it. So, let us close with a comment on our favorite topic: the grandfather clock. As we have told everyone we have ever lectured on this subject, when you enter the home of a customer on a grandfather clock call, you should be able to walk across the room and start talking *history*. This is not only important, it is *most* important. The technical details you can explain after you have examined the clock, but your knowledge of the *history* of the clock is what people want to hear.

Why should this knowledge of history be so important? In finality, you will discover that nearly all the people who own a grandfather clock, be it antique, just old, or brand-spanking new, are appreciative people—appreciative of their clock, oftimes a family heirloom and certainly appreciative of *you*, the expert whose knowledge and dexterity has endeared them to you, forever.

OUR THANKS TO MR. MONK WHO HAS GIVEN THE READERS OF THE "HOROLOGICAL TIMES" MANY HOURS OF INFORMATIVE AND EDUCATIONAL READING. BEST WISHES, PAT!

—H.T.

THE PICKLE BARREL

Marshall F. Richmond, CMW

APPLICATION OF HEAT FOR SOLDERING

Most repairs of jewelry involve the use of heat in some form or another. It is wise to have a good understanding of heat to be able to use it properly in making these repairs. Not only is heat used in soldering but also in pickling, drying, and in hastening the curing of epoxy-type cements and enamels.

In the use of heat, probably the most problems arise from using too much heat. Too much used in soldering can cause pitted joints from boiling the solder or even melt the gold or other metal that is being soldered. The flowing point of solders is only slightly less than the temperature required to melt some metal being soldered. Too much heat on epoxy cement for fast curing can weaken or destroy the adhesive power of the cement. In fact, I use heat to remove objects that have been cemented with epoxy cement or Aaron Alpha® cement.

SOURCES OF HEAT

There are several sources of heat that can be used for soldering. For soft soldering using lead base solders, the melting point is very low; in many cases, a soldering iron or gun is adequate and even more practical than using a torch or soldering machine. For hard soldering with gold, silver, brass, or nickel solder, a torch or electric soldering machine is no doubt best. Some of the jewelers before my time used a blowpipe and an alcohol lamp and could produce enough heat to make the solder flow.

To better understand how solder works, I will try and explain why solder will flow without melting the metal being soldered. Solders are made of an alloy usually using the metal to be soldered with a metal that has a lower melting point. This makes it melt at a lower melting point than the metal to be soldered. A good example of this is using brass to bond steel together. As brass flows at a much lower melting point than steel, if the metal is properly fluxed, the brass will flow and make a good strong bond. This is generally called "brazing," most likely because brass is used for the solder.

Welding employs using the same metal which require both the metal to be welded and the metal to be added to reach the melting point, and it flows together to make a good strong repair. A weld can often be as strong or stronger than the original metal.

Solders are available in different melt and flow temperatures. Silver solders are available in easy-flow, flowing at a temperature of 1350 degrees Fahrenheit, or extra easy-flow, which flows at 1175 degrees Fahrenheit. Gold solders are usually available in hard or soft, with the hard-flowing at 1485 degrees Fahrenheit, and the soft at 1330 degrees, for 14K. Hard-flow solder is often referred to as manufacturing solder and soft-flow is referred to as repair solder. The reason for this is that a repair can be made close to a hard-flow solder joint using less heat so the original hard-solder joint will not melt and come loose.

The alloys used in solders vary to obtain the color as well as the melt and flow temperatures. Solders are available in different karats of gold as well as yellow, white, green, or pink. Solders, if tested for gold content, will not test the same karat as they are marked but are lower in gold content. Often the karat is stamped in the piece of solder as the actual gold content with a decimal point and three digits (14K yel easy-flow .457 or 10.968K).

Solder follows heat, so if the heat is moved away as soon as the solder starts flowing, the solder will follow the heat; it can be pulled a little in any direction from the point of application. This is advantageous to know because when the solder is applied to one side of a piece of metal and the metal turned over, it probably has not flowed through, so when heat is applied to this side it will pull the solder through making a perfect joint on each side.

There are many sources of heat that can be used in soldering. Probably the most used for jewelry repair is a torch and the next is the electric soldering machine. Of course, there is some soft soldering done in the manufacture and repair of jewelry, so soldering irons and soldering guns are a necessary tool to have. Some soft soldering operations will not stand the spread-out heat of a torch. The heat can be confined to a smaller area with a soldering iron and an even smaller area with a soldering gun.

TORCHES

There are many good torches available today. The one most predominately used by manufacturers and jewelry repairmen was the Hoke torch. This torch can be purchased set up to use natural gas or propane with oxygen. Another model can be used with acetyline and oxygen. Acetyline gas with oxygen produces a hotter flame than propane and oxygen, which produces a hotter flame than natural gas and oxygen. Most manufacturing jewelers claim that natural gas and oxygen is the best suited for jewelry work. This torch is available with three tips that cover a wide variety of size flames. The large tip produces

enough heat (even with natural gas) to repair heavy silver stone-set rings with the stone shielded. The small tip produces a small enough flame to put prongs on prong-set rings.

The little torch or mini-torch is probably the most popular with individual jewelers today because of the very tiny hot flame it produces with the smallest tip. It is excellent for prong, tip, or bead replacement, and works well in repairing some of the fine chains that are so popular today. It comes with five tips, the largest of which can size heavy gold rings. However, I have not found it to produce enough heat to size heavy silver rings, even when using acetyline and oxygen. It can be hooked up to an MC Prest-O-Lite (acetyline tank) and a very small oxygen tank, both with regulators. It will work also with natural gas without a regulator, using the line pressure or on propane using the same regulator without gauges that is used for domestic hookup. It is no doubt the most economical to use of any torch made.

Prest-O-Lite makes a small torch that operates on Prest-O-Lite (acetyline) gas without oxygen, since it gets its oxygen from the air. It produces a hot enough flame to do most light ring repairs, but the large tip produces a flame that is so large it is difficult to control. It is economical, but limited in its use.

The electric soldering machine can probably do anything that can be done with a torch. I have only known one person that could produce this kind of work with it. The machine is a transformer that converts house current into a low voltage and high amperage current which will produce heat without the danger of electric shock. It produces a dead short circuit when the two terminal leads close together on each side of the solder. The heat is confined to the area between the two contacts and builds up until the solder flows. Contact is controlled by a foot-operated switch which leaves both hands free to manipulate the placement of the contacts. The maximum amount of heat can be controlled by a rheostat on the soldering machine.

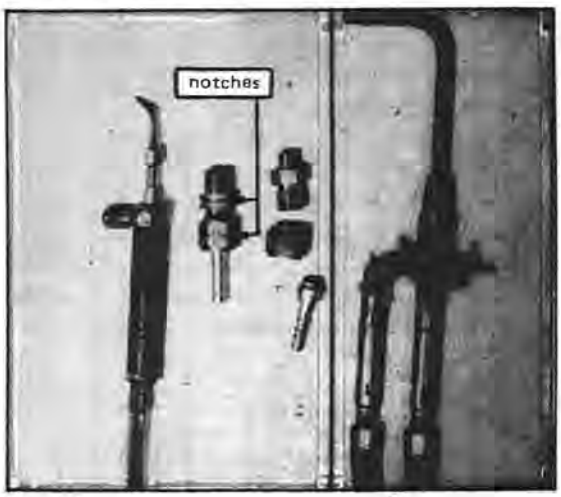


Figure 1 **a** **b**

REGULATING THE HEAT

Using heat supplied by either a torch or an electric soldering machine requires some knowledge of how to regulate the heat. When using a torch that operates on oxygen and acetyline, a good starting point at which to set the regulators is three to five pounds pressure. For light soldering on small pieces, three pounds pressure is usually adequate, but on heavy massive pieces sometimes five pounds is not enough. This can only be learned by trial and error, so experimenting should be done on practice materials. Even with the regulators set with a given pressure, there is still a broad field of adjustment that can be made to the flame by using the two valves on the torch. When either valve is fully open and not enough heat is produced, the regulator pressure can be increased. When this causes the flame to burn away from the tip or go out, it's time to change to a larger tip. After a few days, weeks, or months of using a torch, you should be able to settle on one size tip that you use most of the time, changing it only when soldering exceptionally heavy pieces or extra fine pieces (such as fine chain).

When using the electric soldering machine, trial and error is also the method for learning how to set the rheostat. When a satisfactory setting is obtained for normal work, it will need changing only for heavier or lighter-than-normal soldering operations.

TWO IMPORTANT POINTS:

 # 1. Before applying the heat to make solder flow, there are two points important to know. In putting two pieces together or soldering a ring together where the two ends come together, they should come *completely* together. If a small gap shows, the solder will probably flow to one side or the other, even if you manage to bring both ends to the flowing temperature simultaneously.

 # 2. Another very important point to remember is that heat is used in tempering metals as well as for annealing them. Nonferrous metals (with which you will work most of the time in jewelry repair) tempers with time and vibration from wear. Before making any bends in these metals, they can be annealed (rendered dead soft) by heating to a cherry red. Then they can be either slow-cooled on an asbestos pad or charcoal block, or if no stones are involved, quenched in water. With the metal in its softest state it can be bent or shaped with little or no danger of cracking or breaking. To re-temper and make it harder again in ring work, you can put it on the ring mandrel and tap it with the rawhide mallet or steel chasers hammer to obtain the round shape, or stretch slightly for size. Any tapping or bending will temper most nonferrous metals.

In using torches, there are a few things to know, since someone using the torch usually has to change tanks, set the regulators, change tips, and do any maintenance on them. Figure 1a shows the mini-torch and Figure 1b shows the Hoke torch. Between them are fittings. Note the fitting on the left

(Continued on next page)

PICKLE BARREL

(Continued from previous page)

is notched on both the fitting and the nut, while the one on the right is smooth. The notch signifies that this fitting and nut have a left hand (counterclockwise) thread and is used for gas hookup. The smooth fitting is a right hand (clockwise) thread and is used for air or oxygen. With the two different threads it is not possible to get the hoses switched creating a dangerous situation.

Figure 2a shows an oxygen regulator with smooth fittings, and Figure 2b shows an acetyline regulator with notched fittings and an adaptor with smooth fittings to fit a Prest-O-Lite "B" tank. Prest-O-Lite tanks have right hand (clockwise) threads, but the adaptor converting to a left hand thread removes the danger of getting hoses crossed. Oxygen regulators will not fit on Prest-O-Lite tanks.

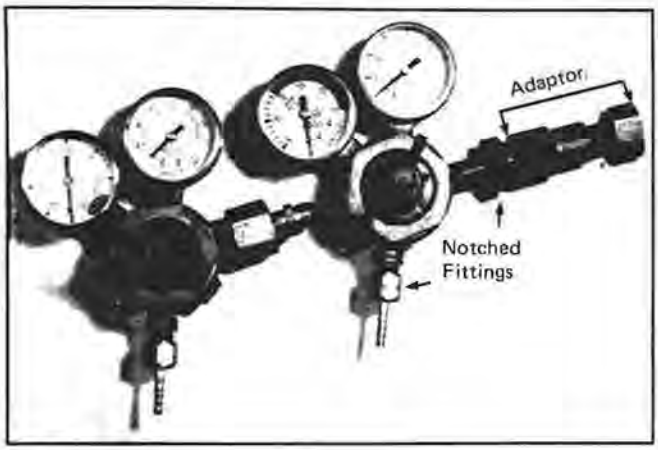


Figure 2

Another safety factor in the regulators is that the center of the main body beneath the diaphram regulating handle the color is RED for acetyline and GREEN for oxygen. The same applies to hoses that are supplied in RED for gas or acetyline and GREEN for air or oxygen.

After a torch has been hooked up, a check for leaks is in order. This can be done with a sudsy soap solution which will show bubbles wherever there is a leak if applied to all the fittings.

There is another way which may seem complex but is relatively simple and quick when you become familiar with it. Turn the tank on with the diaphram adjusting handle turned counterclockwise, and no gas reaches the torch. The low pressure gauge will read zero and the other gauge will show a high reading if it is a full tank. Next, turn the tank valve off and watch the high pressure gauge. If it holds, there is no leak. If it drops, the leak will be in the tank connection. If no drop, then again open the tank valve and set the regulator by turning clockwise until a reading shows on the low pressure gauge. Close the tank valve and watch both gauges, and if there is a leak it will show by the high pressure gauge dropping. If this happens, the leak is in one of the regulator connections, the torch, or its connections, or even a leak in the hose. To find the leak, you will probably have to use the soap solution. This test will work on either oxygen or acetyline regulators.

In the next article we will further discuss solder repairs.

PULSAR DONATES WATCH MOVEMENTS TO AWI

Pulsar Time, Inc. of Mahwah, NJ recently donated a number of quartz watch movements to the American Watchmakers Institute (AWI). These calibre Y112 movements will be used in AWI bench repair courses throughout the United States. The program is supervised by the Research and Educational Council of the AWI. AWI instructors James Broughton and Robert Bishop conduct the courses on Pulsar repair.

Milton Stevens, Executive Secretary of the AWI, acknowledged receipt of the donation in a letter to Mr. Frank Salzano of Pulsar Watch Company. "The AWI Board of Directors joins with me in expressing gratitude for your support of these training programs. It is through your contribution that we can continue to train the watchmakers of this country to properly service your product, so that it will give complete satisfactory service to the consumer," Stevens stated.

AWI bench courses can be organized in almost any part of the country in which a total of 24 students can be enrolled. Contact: AWI Central, 3700 Harrison Avenue, Cincinnati, Ohio for further information.

TECHNICALLY WATCHES

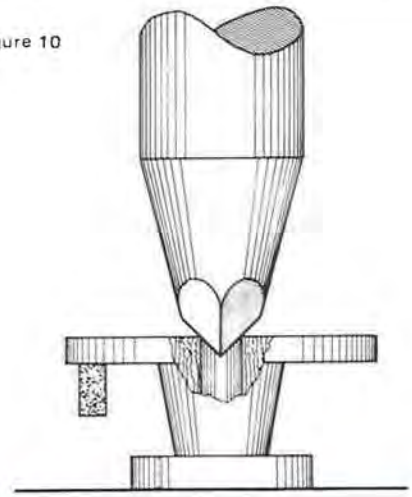
(Continued from page 11)

diameter of the end of the punch should be two times the diameter of the hole in the roller table. For more effect, the hole can be closed from both ends. If the hole is closed correctly, it will be difficult to detect that it has been closed. NOTE: Some discretion must be used by the watchmaker when closing the hole in different roller tables. For example, some roller tables are made of brass and then nickel plated. These tables are soft. When the hole is closed in a table of this type, the punch must be tapped very lightly; otherwise, the table could be smashed which would cause it to be damaged beyond use. On the other hand, some roller tables are made of tempered steel and can stand more punishment. If the roller is made of steel and is very hard, it could break as the hole is being closed, so use caution when closing the hole in a roller table.

Another method that can be used to close the hole in a roller table is to use a three or four cornered punch. This is shown being done in Figure 10. This is a very effective method. The idea of this method is that the punch places three or four equally spaced burrs inside the hole which keeps the roller table centered on the staff and at the same time tightens the roller table on the balance staff. NOTE: If the hole in the roller should be too small for the balance staff, it *should not* be broached out to fit the staff but the staff should be turned down or ground down to fit the hole in the roller table.

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

Figure 10



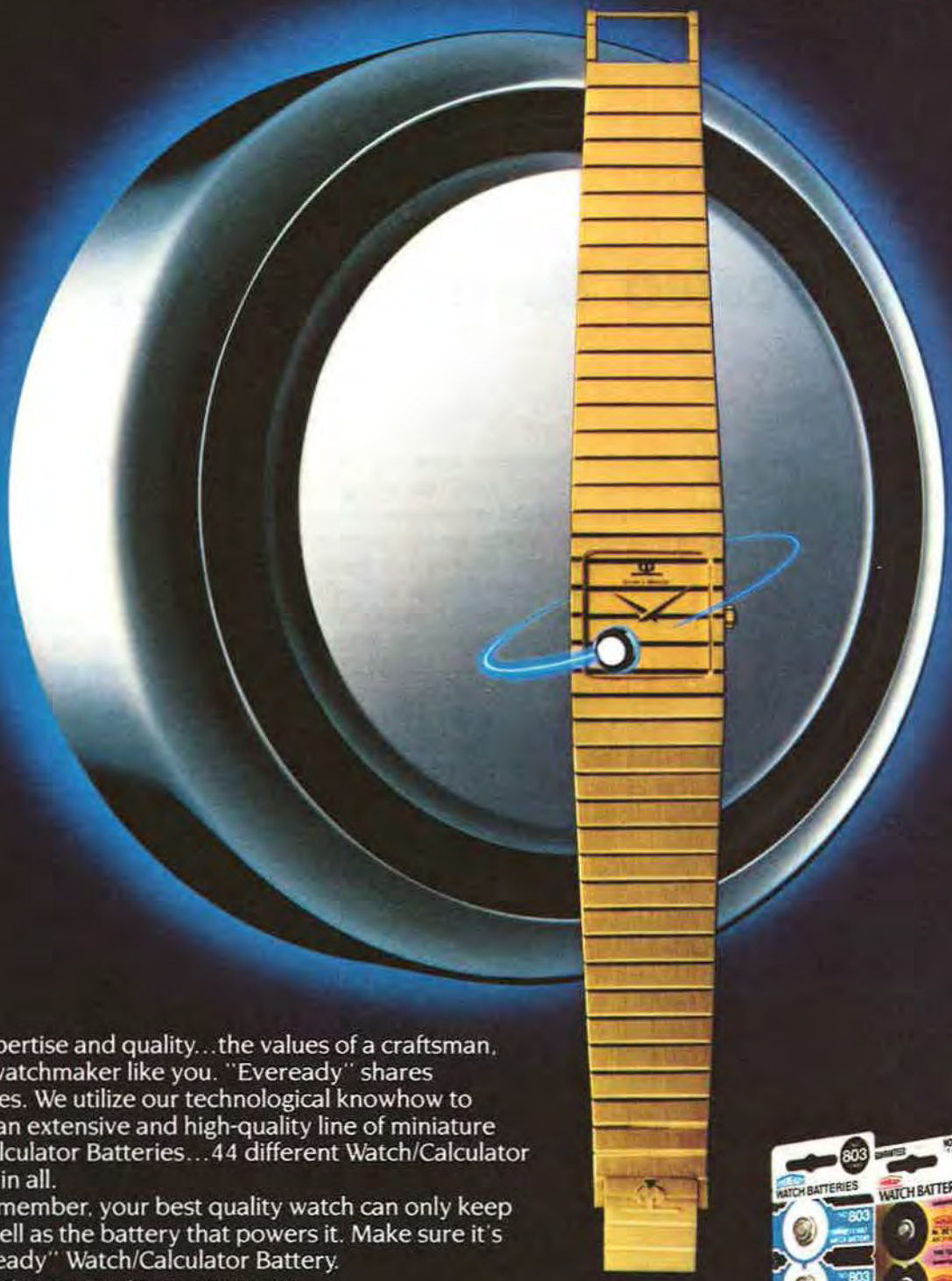
IMPORTANT NOTICE!!

In the June 1984 issue of "Horological Times" in the article "Technically Watches" by Archie Perkins, a paragraph was misprinted on page 17. The corrected paragraph is printed below. Our apologies to Mr. Perkins and the "HT" readers.

When closing the hole in the barrel or its cover, it is quite possible that the endshake will be changed at the same time. If this should be the case, it can be corrected by the following methods. Example: It has been determined that there is too much endshake of the barrel on its arbor. Next, it should be determined whether the fault lies in the barrel or its cover. a straight edge is used on the bottom of the barrel and on the top of the cover to determine if one or the other is cupped outward or out of flat. If it is determined that the cover is cupped outward, then it can be corrected by the method shown in Figure 4. The cover is supported on a large stump which has a large hole. Then a round ended solid punch is used over the hole in the barrel cover to press the cover downward until the cover shows to be level when checked with the straight edge. If it is determined that the barrel is cupped outward, then it can be corrected by the method shown in Figure 5. The open end of the barrel is supported on the die plate of the staking tool and a round ended solid punch is used to press the bottom of the barrel inward to remove the cupped condition. The straight edge is used again to check for the flatness of the barrel bottom.

E·V·E·R·E·A·D·Y' W·A·T·C·H B·A·T·T·E·R·I·E·S

KEEPS TIME WITH THE BEST



Expertise and quality...the values of a craftsman, jeweler, watchmaker like you. "Eveready" shares your values. We utilize our technological knowhow to produce an extensive and high-quality line of miniature Watch/Calculator Batteries...44 different Watch/Calculator Batteries in all.

Remember, your best quality watch can only keep time as well as the battery that powers it. Make sure it's an "Eveready" Watch/Calculator Battery.

Watch Courtesy of Baume & Mercier.

EVEREADY®

The #1 Name In Batteries

Questions & Answers

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

Sealed Barrels Go In...

Perhaps you could render your view regarding a difference of opinion I have been having with other watchmakers. There are two questions that I have.

(1) Is it a good practice to routinely put the sealed mainspring barrel through the ultrasonic cleaning machine?, and (2) Should the step-motor (rotor) be included in the basket that goes through the ultrasonic cleaning machine?

Since there is a difference of opinion, your recommendations will be highly respected.

Manny Teitch
Atlanta, GA

The sealed barrel can go into the ultrasonic if it is really a sealed barrel without the opening for the tweezer to pry off the back. After cleaning, the arbor bearings must be lubricated with special oils, heavier than that supplied by the so-called one or two step liquid lubricants.

Step motors should not be included in the ultrasonics, not because of the magnetism, but because all of the metallic shredding due to ultrasonic cavitation will cause the microscopic bits of metallic ferrous dust to cling to the rotor. It really should be cleaned separately. Almost all the importers of all grades of analog movements and watches state this. Some trade watchmakers claim otherwise and probably get away with 80% no comebacks due to this. They claim that the one in five returns still are, timesaver-wise, faster than taking all the rotors out of the movement. When I do repairs or do special investigative work for the importers, I TAKE OUT the rotors. Incidentally, some rotors are troublesome in getting them to stay upright when trying to fit their upper pivot into its bearing. A pinhead of Rodico® helps station them until they are positioned in their bearing. Afterwards always remove the Rodico®.

I recently acquired a Marco Clutch & Pinion Gauge as a door prize at our local chapter meeting of the NAWCC. The gauge, which is simply a flat rectangular aluminum strip having rows of punched holes of decreasing sizes, numbered from 1 to 41, is obviously intended for determining, for ordering purposes, the diameter of a clutch or winding pinion.

What puzzles me is the gauge system used. The largest hole, Number 1, will just accept a Number 15 drill, and the smallest hole, numbered 41, will just accept a Number 56 drill.

Is this gauge system Swiss, and does it have a name?

Willard Halsted
Omaha, Nebraska

The Marco gauge was made by the C. & E. Marshal Company of Chicago. I have checked your comments regarding the 15 drill (0.1800") against any other gauge (Birmingham, millimeter, Stubbs, Wite, etc.) and find no corelations with any of the known gauges used in our industry.

It might very well be an arbitrary set of holes, graduated for matching purposes only. I have seen gauges like that. When I was a young watchmaker before good dial micrometers and quick matching was needed, we used a copper plate graduated in eighths of a millimeter for winding wheels and winding pinions and train wheels and dial train wheels. We had jewel gauges and many others that didn't make sense except for comparison with a sample. Being made of aluminum, yours must be comparatively of the later, more recent periods. Perhaps it might have been an exclusive "Marshal" system of winding pinions, etc. Have fun with it!

I purchased your book on electronic watches and it was very informative. However, I have a question about the operation of certain dials of electronic watches. I have a Casio watch which has digital readouts and on command it turns to electronic analog hands. There are no mechanical gears of any kind. I saw a watch where the readout operated similar to the sign on the News Building in New York where the time progressed across the face of the dial. Is this type of face readout explained in your book? If so, please let me know which pages to review so I will be able to understand it. If this is not covered in your book, can you advise me as to how or where I can get this information?

(Continued on page 31)

More Great Borel Buys!

These popular quartz analog movements are used by many of the major watch manufacturers, at a price about the same or less than you'd pay for just the coil. These movements have good parts availability and are repairable. In many cases you'll find it more practical and more profitable to replace, rather than repair a malfunctioning movement.

ESA 961.001
Quartz Analog Movement

6¾ x 8L size
3.5mm thickness

$11.95
Battery included

(Dial foot has to be shortened, before installation.)
Replaces Font 60 and Font 69

Other available movements:

102.001	3¾ x 10L	**$27.00**
FE 6820	(For ESA 301) 5½ x 6¾L	**12.95**
950.001	7¾L	**32.00**

Y 480 A
Quartz Analog Movement

6¾ x 8L size
2.8mm thickness

$14.00
Battery included

This movement used by Pulsar

Other available movements:

Y481	6¾ x 8L, sweep second	**$16.50**
Y590	5½ x 6¾L	**16.95**
Y561/571	11½ L, sweep second	**17.50**
Y572	11½ L, date	**20.00**
Y573	11½ L, day/date	**20.00**

Write or call for complete Replacement Movement Guide

BEST QUALITY — **New Tools from Bergeon** — **SWISS MADE**

Adjustable Module Holder

Adjustable and reversible watch movement holder. Well made with beautiful finish.

For Caliber Sizes

4039	3¾ to 11 ligne	**$6.70**
4040	8¾ to 19 ligne	**7.25**
30211	Pocket watches	**15.95**

Ultra-thin Scratch Pen

Thin scratch brush is perfect for those hard to get areas to remove rust or clean contacts. Fiberglass brush is only 1.7mm in diameter and 4 in. long. The handy pen-shaped holder feeds out brush as needed. Refills are available.

6240 Ultra-thin Scratch Pen **$4.85**

Module Observing Mirror

When using this work surface you are able to see the operation of the digital display or movement of the hands while module is being worked on. Diameter - 66mm, Height - 26 mm.

Module Observing Mirror
6483 **$5.80**

Quartz Hand Setting Tool

Hands used on today's analog watches are very thin and fragile. This tool is designed for refitting these hands after removal. Both ends fitted with DELRIN plastic pieces with holes of .5 and 1.0 mm.

6404 Quartz Hand Setting Tool **$4.90**

Quartz Test Pencil

An inexpensive tool for testing quartz watch crystals without having to unsolder or remove crystal from the watch, to by-pass the quartz crystal position points. If the watch then functions properly, you have determined that the crystal is bad and should be replaced.

6437 Quartz Test Pencil **$12.50**

Adjustable Module Holder

Unique sliding telescopic mechanism adjusts to hold any size movement. Plastic posts will not harm electronic movements. Smooth action and beautifully Swiss made.

6515 Adjustable Module Holder **$24.15**

Black Marking Pen

Ultra fine point, permanent black ink for marking price tags, installation dates on watch batteries, repair dates on watch cases and to color watch hands, black.

SC-UF - Marking Pen **$1.00**

Case Opening Lever

This handy little tool makes opening press-on back cases a snap! A tool anyone who changes batteries shouldn't be without, from storeclerk to watchmaker. Lever action requires little effort to open even the most stubborn cases.

4755 Case Opening Lever **$7.20**

Borel

NATIONAL TOLL-FREE ORDER SERVICE · 1-800/821-5686
In Missouri 1-800/892-5818

Borel, 1110 Grand, Kansas City, MO 64106

Distribution Centers in KANSAS CITY, LOS ANGELES OAKLAND

Borel

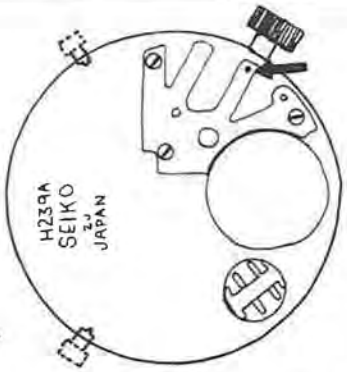
Stem Removal & Battery Replacement on Quartz Watches

PART 3 OF A SERIES

This is a continuation of a series on correct stem removal and correct battery replacement on quartz watches. Two Bulova technical experts, Irving Albert and Dennis Tricarico, have supplied to the readers of H.T. this information.

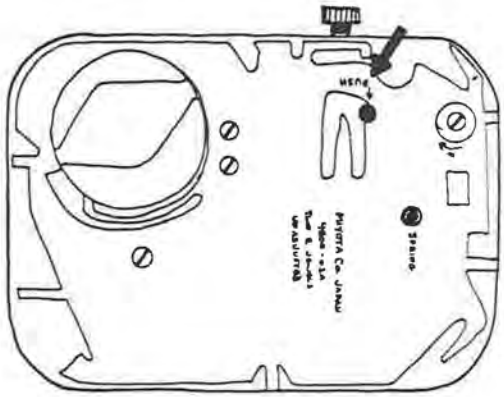
Irving H. Albert

Dennis Tricarico



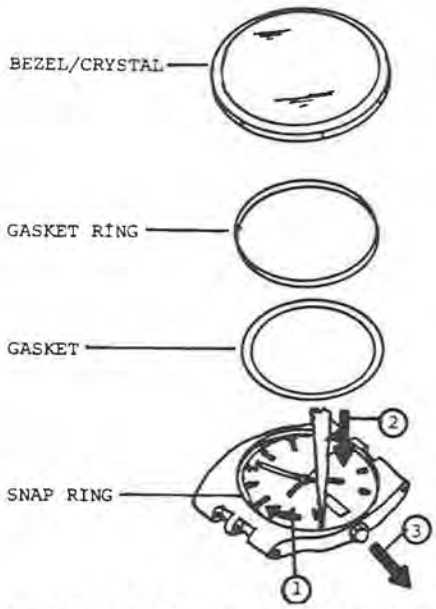
Press down to remove stem.

SEIKO H239A (JAPAN)



CITIZEN 4800-02A (JAPAN)

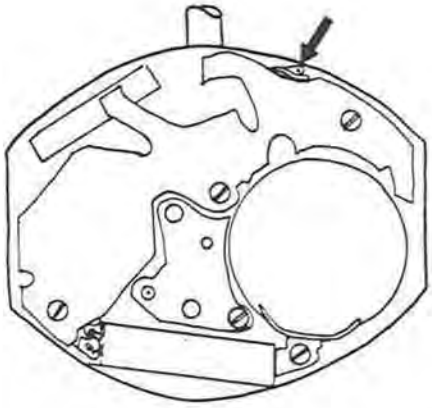
Stem release is located DEEPLY in the hole indicated by the word "PUSH" printed on the P.C. Board.



SEIKO 99 SERIES B (JAPAN)

REMOVE BEZEL/CRYSTAL, GASKET RING, GASKET, and:

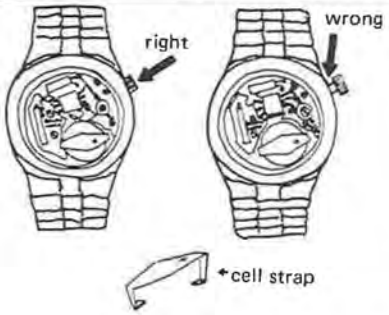
1. Turn snap ring clockwise.
2. Push down on stem release post.
3. Pull out stem and crown.



3N20 (CITIZEN)

5½ x 6¾'''

1. To remove stem, press tab indicated by upper arrow.
2. Stem MUST be in the "IN" position during removal.



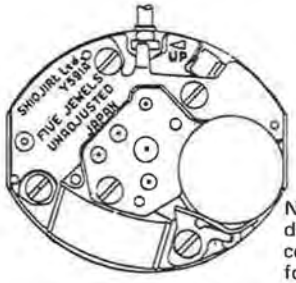
To remove stem the stem must be in the running or "IN" position.
Removing the stem while it is in the setting position may cause the sliding pinion, setting lever, or clutch (yoke) to disengage.

NOTE: THE CELL STRAP CLAMPS TO THE MAIN PLATE.

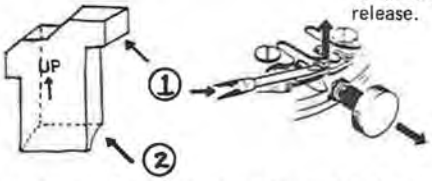
A.S.-536.121 - BUL. 2783.10 11½'''

Next month's issue will conclude this series when we feature:

* ESA 927.001 (Swiss)
* ESA 928.411 (Swiss)
* ESA 944.121 (Swiss)
* ESA 947.111 (Swiss)
* ESA 951.111 (Swiss)
* ESA 963 (Swiss)
* ETA 924.001 (Swiss)

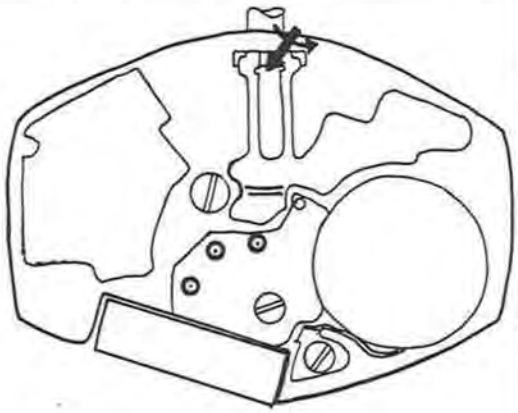


NOTE: Withdraw the stem completely before releasing the pressure on the stem release.



1. Place screwdriver as shown and twist, thereby lifting tab to release stem.
2. If removed, tab must be reassembled with knife edge facing center of movement.

Y591A (SPD)
5½ x 6¾'''



Y480A (SPD)
6¾ x 8'''

Place a 1.10 mm screwdriver blade between tines of stem retaining plate and twist screwdriver to spread tines sufficiently to release stem.

MARSHALL-SWARTCHILD

MOVEMENT EXCHANGE

Number	Description	Price with trade-in	Price w/out trade-in
9154	12½ S.S. Calendar	18.50	
9157	13L Electronic Analog Date	18.50	26.50
9158	12½ S.S. Day-Date	18.50	29.00
9162	13 S.S. Calendar Tuning Fork	26.50	58.50
9164	13 S.S. Day-Date Tuning Fork	26.50	65.00
9182	13 S.S. Calendar	26.50	45.00
9183	13L Quartz Analog Day-Date	26.50	48.50
9200	6 3/4 x 8 S.S.	18.50	33.50
9222	6 3/4 x 8 Quartz Analog	19.50	24.00
9315	29mm Quartz LCD	20.00	33.00
9362	11½ S.S. Day-Date	25.00	32.00
102.001	3 3/4 x 10 (FF59-21)	19.50	25.00
588.001	5½ x 6 3/4 thin (977.001) replaces AS1980 use RQ572		17.50
900.231	Digi-Ana Alarm	23.50	34.00
934.611	29mm Quartz LCD 7½ digits	18.50	26.00
934.711	29mm Quartz LCD 7½ digits chrome	18.50	28.50
934.832	29mm Quartz LCD 3½ digits	18.50	26.00
935.112	8 3/4 S.S. Calendar	19.50	28.00
940.111	12½ S.S. Calendar	25.00	57.50
950.001	7 3/4 same size as Eta 2512	25.00	35.00
955.111	11½ S.S. Calendar	25.00	44.00
955.121	11½ S.S. Day-Date	25.00	45.00
956.111	7 3/4 S.S. Calendar	25.00	46.00
961.001	6 3/4 x 8 (FF69-21) use FE6320		11.95
978.001	5½ x 6 3/4 thin	25.00	45.00

RONDA-ANALOG QUARTS MOVEMENTS

RQ373/372	11½L	22.50
RQ375	Calendar	22.50
RQ377	11½ Day-Date	17.50
RQ572	5½ thin	17.50
RQ672	6 3/4 x 8 (shorten legs for 60-69	17.00
RQ872	8 3/4L	22.50
RQ873	8 3/4 S.S.	17.50
RQ875	8 3/4 Calendar	22.50

OTHER QUARTZ MOVEMENTS

Y480 6 x 8 (Japan)	14.00
Y481 6 x 8 Sw. sec.	16.50
Y561 11½ S.S.	17.50
Y572 11½ Day	19.00
Y573 11½ Day-Date	19.00
Y590 5½L	17.50
Int. 301.002 5½L replaces AS1012-1977	16.00

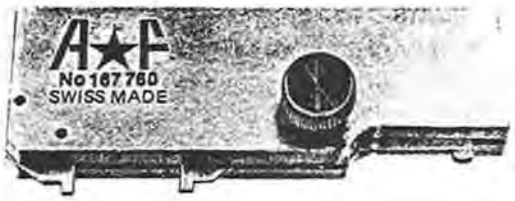
NEW SWISS QUALITY MECHANICAL MOVEMENTS

59-21	3 3/4 x 10L, 17J Inca	25.00
69-21	6 3/4 x 8 17J Inca	15.95
AS1980	5½L 17J Inca	14.95
ETA2512	7 3/4 RD. 17J Inca	23.00
ETA925	Dry - 10½L thin	13.95
FF63	Dry - 8 3/4 thin	13.95
D7525/2	11½L Auto Cal.	14.95
D7526/2	11½L Auto D.D.	14.95
P7040	10½L	14.95
ETA2833	11½L Auto D.D.	14.95
3 new 17J Swiss - our choice		21.00
5 new Pin Levers - our choice		15.00

AS1890/92	17.50
AS1287	18.50
Lanco 2401 replaces Hlt.	29.95
Russian 5¼ - 821 - 21J	19.95
Russian 7L Round	19.95
AS1726 8 3/4L replaces AS970	22.50
Buren 1001 replaces Hlt. Thin-o-matic	29.95

IMPORTANT TOOLS FOR QUARTZ WATCH REPAIRS

CASE WRENCH New item, simple type in blue-coloured aluminium, can be used with both hands thanks to the knurled screw that can be fitted on either side of the wrench.



$12.50

No 167.760

IMPORTANT TOOL
Special plier for closing backs.
A MUST for snap backs and digital watches.
53003 Reg. $6.95, NOW $4.95

PHILIPS SCREWDRIVERS

Allow fast dismantling and assembly of modules joined together with Phillips screws. Set of 4 pieces.

No 18983.4 **$12.50 set**

Ideal for gripping and inserting small screws (for 0.5 to 1.00 mm)

No 240.208

$11.55

SCRATCH BRUSH

With pen-shaped handle, glass bristles

No 17294 **$4.60**

CASE KNIFE

No 350.156 **$6.75**

No 117.440 **$7.50**

Tool with replaceable tips for fitting and removing spring bars.
Spare tip : **No 117.440.1** **$1.20**
Fork : **No 117.440.2** **$.60**

In rubber with plastic-sheathed nozzle.
Length 130mm Ø 58 mm

Pocket case knife 4" long with hard plastic handle and tempered blade—Swiss-made.

No 18666 **$3.50**

NYLON TWEEZER

TW-379 **$1.00 each**

TOLL-FREE PHONE ORDERS (except — sorry! — Alaska and Hawaii) 9 till 4 C. D. T., WEEKDAYS. ILLINOIS: 800/972-3776 OTHER STATES: 800/621-4767

SEND MAIL ORDERS TO:
Dept. W, Box 726, Chicago, IL 60690.

MARSHALL-SWARTCHILD

2040 Milwaukee Ave., Chicago, IL 60647—312/278-2300
109 North Akard, Dallas, TX 75201—214/741-1454
1212 Main St., Houston, TX 77001—713/759-9009
1425 Fourth Ave., Seattle, WA 98101—206/682-6158

Quick credit to accounts well-rated by Dun & Bradstreet or Jewelers Board of Trade.

Name _____

Firm _____

Address _____

City/State/Zip _____

THE ROCK QUARRY

Fred S. Burckhardt

What Is The Future Of Watchmakers?

There has been so much written and said about the future of the watchmakers, that I thought I would delve into the subject and come up with the right answers.

The place to start, I thought, would be with someone in authority who is aware of the many problems of the horological industry, and especially those of the watchmaker. After a careful study and going over the list of candidates, I boiled it down to the one person who would have all the answers. I called for an appointment and drove across town to meet with this "all knowing" individual. She was a gypsy fortune teller named Madame Allnoing.

As we sat gazing at a crystal ball, she asked, "What is it you would like to know?" I answered, "What is the future of the watchmaker?" She stared at me with great intensity to the point where I began to feel very uncomfortable. I knew she would come up with some very prophetic answer. Finally she uttered those seven little words which will remain with me always—"Are you crazy or something? Get out!"

After what turned out to be a great disappointment, I continued my quest. The next stop was at a watch repair shop a few blocks away. I introduced myself to the elderly gentleman and asked him the same question. Another profound answer followed. "Who cares. I'm going to retire in a couple of years. All I can say for those that are left is 'tough apples'!" He reluctantly gave me permission to quote his exact words.

I then realized I was going about this in the wrong way. It suddenly became clear to me that if you wanted an answer to a deep question, you had to ask a deep thinker. Who would be more suited for deep thinking than a person with monastical tendencies. I couldn't wait to get to a phone book to look up monasteries. There was quite a list so I chose the closest one. It was located in a valley. These guys never make it to the big time—on top of a hill. The head monk's name was Brother Celi. He was one of the Bate boys. His office consisted of a bare room except for a small table and a couple of stools. As we sipped on a bowl of cool water, I told him about my ventures and how important it was to find the answer to my question. He said, "I'm sorry my son, but I can't help you. You see, we have no timepieces here. We rise with the sun and return when the sun sets."

"How come you toll the bell every hour if you don't have a watch or clock to tell what time it is?" I asked. "It's all done by computer," he answered. "Saves us a bundle not having to have a couple of monks to watch the time and ring the bell. These electronic gadgets are great. Why don't they start making electronic watches and clocks?"

I could see this was just a waste of time. I thanked him for his hospitality, crummy as it was, and started to leave. "Wait a minute," he said. "Please sign our guest book. Each time we have a visitor, the bell is rung in their honor. Your name will be posted on the bulletin board. This way, everyone will know for whom the bell tolls."

As I was walking down the dark passageway to the front door, I heard a hissing sound. There, hidden in a dark alcove, was a short monk who said his name was Brother Sam, the monastery tailor. He looked the part as he was wearing a custom made burlap cloak. After looking around to make sure we were alone, he said, "If you want your question answered go to the remotest place in the country. There you will find your answer." "At last," I thought to myself, "My journey is almost over!"

It didn't take long to decide whereof Brother Sam spoke. It is about a quarter of a mile north of Clare, Michigan. It was here, sitting among the birch trees, that a vision appeared. At first it was in the form of a mist with a turbulent center. After what seemed to be an eternity, the mist began to slowly clear and little by little I could discern an outline of a human figure taking shape within the center of the mist.

(To be continued next month.)

Roll Out the Barrel... *QUICKLY—AGAIN!*

By Ken Law, CMC, CMBHI

EDITOR'S NOTE: Ken Law presents these steps on repairing damaged teeth on a spring barrel. This repair is for a non-soldered type spring barrel.

1. *Look at what a well-meaning welder did to this spring barrel.*

2. *Turn a new back.*

3. *Fit the old barrel ring to it.*

(Continued on page 29)

Bench Tips

Joe Crooks

How Does This Sound?

This tip is from Mr. Philip Miller of San Anselmo, California.

Moving along at 72 years of age, I find the tocks of clocks fading along with the ticks. I seem to strain a lot while adjusting clock beats.

With the help of a $30 Beat Amplifier from a large supplier, the problem of errant sounds seemed to be resolved except that the total amplification left me wishing the sounds would be just a little louder.

At my local Radio Shack I found part of the solution in the 1984 Catalog on page 102, "Budget Priced Portable Phone Listener (No. 43-231)." At a cost of $9.95 it comes with a suction cup pickup. It's great for acquiring sounds from induction coils in telephones, but it doesn't pick up a thing acoustically such as clock beats.

So, on page 51 of that same catalog, one will find "Tie Clip Microphone No. 33-1058," also at $9.95; and all our local stores are out of stock.

Eager to solve this problem, I took home the "Phone Listener" and a 9-volt battery, and plugged in the hand-held dynamic microphone from my cassette tape recorder. This worked just fine, except that the assembly squealed alot. Pulling the mike plug to subdue the noise, thinking that I could try once more, I accidentally plugged into the "Phone Listener," the earpiece from the tape recorder, the same kind used for private listening to a portable radio. On picking up this little plastic button, I was surprised to hear loud noises, rustling, and bumps emitting from the speaker in the "Phone Listener." Quite by chance, I learned that my pocket radio earpiece was also a microphone or a "pickup" (at a price considerably less than $9.95 [and up] for the "real McCoy").

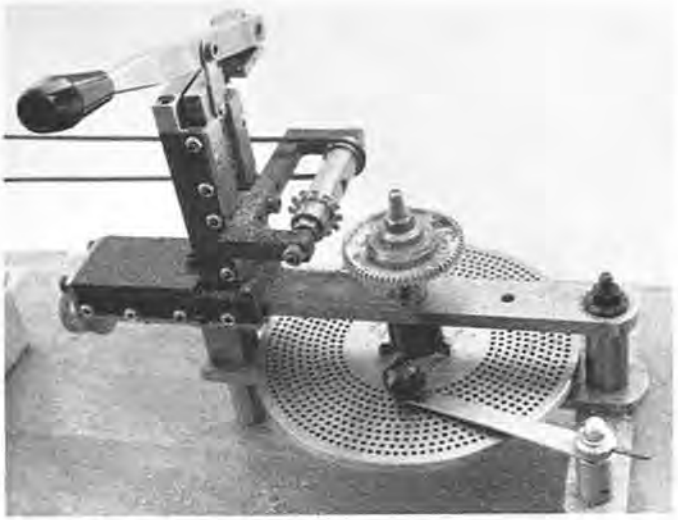
Thinking to refine my discovery, I carefully pushed a length of round toothpick into the hole molded in the earpiece. Upon touching this probe to the handle in the case of a running French carriage clock, I was amazed to hear loud clock beats, something my $30 beat amplifier at the same location outside the case could not duplicate.

The finale of this is: I exchanged for the wooden toothpick a small machine screw 1-½" long to which on the head end, I press-fitted a 2" alligator clip, screwing the threads of the other end into the hole in the earpiece until the end bottomed gently. Then I backed off a ½ turn. Clipped to almost any part of a running watch or clock, this inexpensive device performs better than my $30 commercial unit.

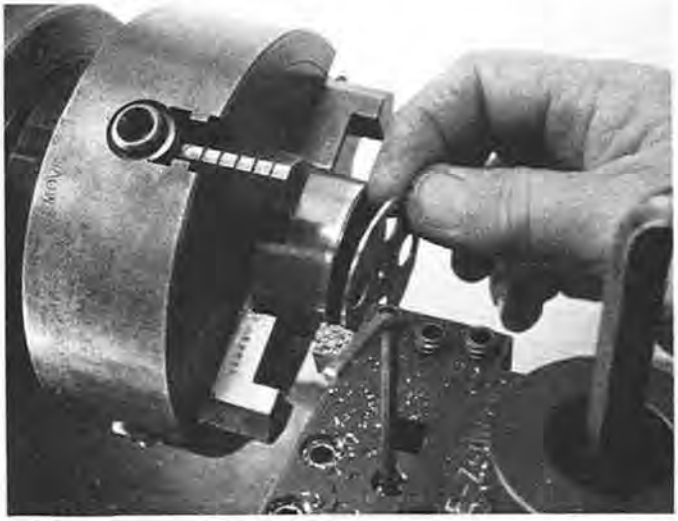
Philip, I use a little Radio Shack Amplifier also, but it's not a telephone listener. It's called a Microsonic Speaker-Amplifier, size 3½" high x 2-3/16" wide x 1-3/8" deep. The pickup is an electric guitar mike with a small alligator clip belted to the mike pickup. This little mike is so sensitive that you can hear a gnat stomping around on it. I think the amplifier was $8.50 and the pickup mike was $2.98 when I bought it 10 or 12 years ago. It's bound to be higher now.

My hearing is not too good now either. My wife has a word for it–she calls it "convenient hearing"!

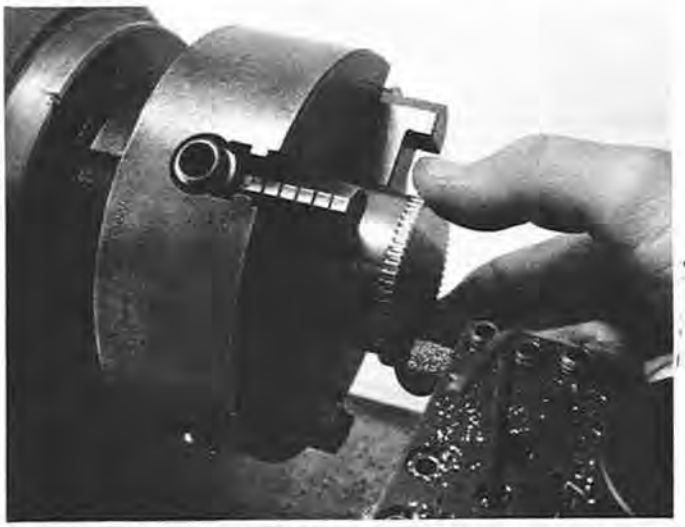
KEN LAW
(Continued from page 27)



4. Cut the new teeth.



5. Chuck the old ring, turn off the old teeth and back.



6. Fit the new back to the old ring, solder it, and it's ready to roll.

SHOP TALK

Wes Door, CMW

Appraisals: YES or NO?

THE FOUR C's
Part IX

Clarity, color, cut, and carat weight are the four C's and they are most important especially in our appraisal of diamonds. Even the insurance company representatives seem to know their importance and insist on having these detailed for them on the appraisal form. Today we will discuss clarity and color.

CLARITY

One of the 4 C's of diamond grading is clarity. Since a diamond must be flawless under ten power magnification, the lens of which is corrected for spherical and chromatic aberrations, our scope allows us to observe inclusions under much power. Then by reducing to a ten power setting, if the inclusions disappear, the diamond may be marked as "flawless" on our form. Also, whether flawless or not, we may want to indicate on our form certain inclusions observed at this higher power for future stone identity. For instance, if an inclusion of any sort is observed, let's say at 30 power, we might want to indicate this on our form by marking it on our sketch with a footnote saying, "under 30 X". Actually, very few diamonds are flawless under the 10 power law and we must be positive before we mark them as such.

Most stones are flawed to some degree. If they have internal imperfections, we refer to these as "inclusions," where as if they are on the surface, they are called "surface blemishes" or just "blemishes." Probably the most common of the surface blemishes is the natural, and since it is generally found on the girdle (the stones diameter) it is referred to as *a natural on the girdle.* It is interesting to note that this blemish is the purposeful desire of the cutter's bosses to leave a small natural (uncut area) on the girdle, to readily prove that their cutters are getting the maximum finished stone size. If they left no natural uncut area, they could not prove that they got the maximum stone that was possible from the rough. A small amount reduced from the diameter would result in a smaller diamond and, of course, a smaller price tag. Other surface blemishes include nicks, cuts, cavities, chips, etc.

Inclusions that are cleavages or fractures are called "feathers." Other inclusions are "included crystals" (diamonds or other gems) and "clouds" which means a hazy appearance. Hairline feathers, especially on the girdle, are called "bearded girdles." One of the newest types of inclusion is the "laser hole." These man-made laser holes appear as very small tube-shaped holes and are used to help to clean up or partially remove darker inclusions. Recently I had this done to a trade-in diamond and it appreciably increased its value although it still remained as an imperfect grade.

Many diamond grading systems are used to classify the less than flawless stones. Terms like VVSI (meaning Very Very Slightly Imperfect), VSI, SI, and Imperfect are used. Some break these down such as VVSI-1 and VVSI-2, etc. The degrees to which each appraiser places a value for each quality and the degree of agreement (and or disagreement) between appraisers are often too far apart. Therefore, we have numerous figures on our appraisals, depending on the individual doing the appraisal. Two qualified appraisers, working separately, should come out with relatively close figures. But many times either greed, higher than normal mark-up, jealousy (because the item was purchased elsewhere), or—last but not least—lack of knowledge, produces these inaccurate results.

COLOR

Blues, reds, greens, etc. are colors of fancy diamonds, and are not what is generally referred to when we speak of diamond colors. The white, or more correctly called colorless, is the ideal color on the normal scale between colorless and yellow. Since most diamonds have some trace of yellow, we generally say the lack of yellow is the best or *the whiter the better.* As we said, it's really not white we are looking for—it's colorless. Diamonds will disperse many colors, and together with their high refractivity, even reflections from surrounding metals and other stones display nice color. It's actually the body color that is important from our appraisal standpoint.

By placing our customer's diamond near one of the various pre-graded master diamonds and putting these into a controlled instrument like a Diamondlite, we can decide, with reasonable accuracy, the color grade from white to yellow. Each grade down the scale may reduce the value by 10 to 20% depending on the number of grades we are using and the size and quality of the stone. Our eyes are the last word in making this decision, and should we be fooled by the addition of a blue fluorescence, the reflections from the metal or a mounted stone, or other conditions, then our answers may be off.

Next month will complete our Four C's.

QUESTIONS & ANSWERS
(Continued from page 20)

Also, in the March 1984 issue of *Horological Times*, in the New Products section Casio Model #AT550GS has a touch-sensitive crystal that you "write" on with your finger and it is a calculator. Can you advise me how or where I can get any information regarding this?

I have spoken to several people about the efficiency of the light in digital watches. The people I have spoken with cannot read the dial using the light. I was thinking that the old mechanical repeater duplicated by electronics would be better. With the fantastic things being done by electronics today I don't think they would have any difficulty in incorporating this feature in the watches instead of using the light.

Milton Shopnick
Oak Park, Michigan

The various watches with the new heat-sensitive digital displays are quite new and these merely activate switches which will supply the various services rendered.

The "analog" digital displays are display panel onto which are printed the various positions of the hands and at the edges of the display are the gold wire leads leading into the I.C. which indexes the display in the form of the profile of an hour and minute and seconds hand to appear. While this watch had made its appearance some time ago by Timex and earlier by Texas Instruments, I didn't see much future into it, and I did not think it would justify the ten more pages with a sharp rise in the book's cost. No, it is not in my book. While some watches have appeared again with this feature, I haven't changed my opinion. The process is not overly complicated, but in my opinion is in the same corner as the watches with the "TV" type of games.

The light in digital watches is not as efficient as it might be if fibre optics were used, but that would require more space, thickness, and a larger cell. As for Casio, try writing to them at: 15 Gardner Rd., Fairfield, NJ 07006.

I am repairing a watch for a customer who would like to know something about its history. The watch is 18½ ligne, 15 jewels, in a 18K hunting case. On the dial is inscribed: "Borel & Courvoisier, Neuchatel," and the same working is on the works with N58122 and shield (as in my sketch) with the words "trade mark" over it. The watch is key-wind and set.

Alex Tobey
Chevy Chase, MD

I have seen a number of the Borel & Courvoisier watches in my time. They were well made, sturdy timepieces. My notes also show they had the same trademark and had silver finished plates. Sometimes, however, the balances remained uncut despite their being bimetallic. The production number shows that they produced quite a large number in the year before automatic machinery when Swiss watches, unlike those in America, were mass produced.

Borel & Courvoisier had a large business exporting to the United States. These date from the 1860 to 1890 period, and yours is closer to about 1875. They also produced repeating watches, using LePhare and LeCoultre ebauches, which they finished.

I hope you can tell me where I can find a 16 size Ball Watch 19J Standard Serial No. B204617 Safety Roller for table. I have written every watch parts company and every company listed specializing in antique watches.

Martha Williams
El Paso, Texas

My records show that your Ball watch is a Waltham, made for the Ball Watch Company in 1904 (B204301 to 206000). It is listed in the 13 million series by Waltham and Ball, finished with 17 to 19 jewels, open faced, and lever set. Yours is an official railroad watch of which Waltham supplied 56,650 watches. You can obtain your part by ordering it under the Waltham label as Waltham's serialized production number 13,204617.

Henry B. Fried

AWI NEWS

Milton C. Stevens

AWI Serves In Many Ways

The February *Horological Times* featured an article by Alice Carpenter, Chairman of AWI's Research & Education Council, "A Tribute To A Friend I Never Met." The article related the story of Joseph Zettel, who, after learning of the seriousness of his illness, decided to present his entire collection of watchmaking tools to a worthy student just beginning a career in watch repair.

Joseph Zettel had written AWI of his intentions shortly before his death. We forwarded the letter to Alice Carpenter, REC Chairman, to begin the search for the proper person for this gift. Unfortunately, Joseph Zettel died before that person was found. However, with the help of Mrs. Zettel, Leon Martin, and Alice Carpenter, the story came to a happy conclusion.

Mrs. Zettel and her late husband, Joseph, teamed with AWI's Research & Education Council to help a young man launch his watchmaking career. The Zettel's retirement home was in Landrum, SC, where Joseph practiced watch repair after retiring as a chemical engineer. It's fitting that a young man, also residing in South Carolina, is now carrying on the watch repair tradition that Joseph Zettel so dearly loved.

Leon Martin, Instructor at Orangeburg-Calhoun Technical College in Orangeburg, SC, felt he had just the right person in his watch repair program. Terry Romanus was just completing his training under Martin when Martin learned of Zettel's desire to help a deserving young man. Terry Romanus has completed his training and is in the process of establishing a business in Charleston, South Carolina.

Terry Romanus of Charleston, SC (right) is shown with his instructor, Leon Martin, of the watchmaking department at Orangeburg-Calhoun Technical College, Orangeburg, South Carolina. Shown with Romanus and Martin is part of the collection of tools from the estate of the late Joseph Zettel.

The collection of tools which belonged to Zettel and his watchmaker father before him included a lathe, bench, ultrasonic cleaning machines, small hand tools, staking set, crystals, mainsprings, technical bulletins, and books. The elder Zettel had been head watchmaker at the Gruen Watch Factory when it was located at Time Hill in Cincinnati, Ohio.

About the same time we were searching for a student to receive the Zettel tools, a technical request crossed my desk from Ted Busch, an AWI member in El Paso, Texas. At the end of the technical request was a note that Busch's young son, Nelson, was preparing an entry for this school's science fair. Nelson wanted to do something on watches, but he needed information and some display material.

Fortunately, the request came just at the time we were preparing to distribute a large quantity of watch movements to the schools who belong to AWI's Research & Education Council. We didn't think the schools would mind sharing a conventional wind, auto-wind, electro-mechanical, quartz analog, and quartz digital movement with young Nelson. We sent these movements along with some historical information to Nelson Busch.

We recently learned that Nelson's science fair project won in the school's competition and this qualified him to enter the City Fair. The project won 2nd Place in the city competition.

Nelson Busch of El Paso, Texas and his prize-winning science fair display on watches.

Nelson was able to name all of the parts in a watch and explain what their function is in the movement. He also told the judges, "If a watchmaker isn't an AWI member, and certified, don't go to him; he probably doesn't know what he is doing."

We congratulate Nelson Busch on his success in the science fair and fully subscribe to his philosophy about AWI membership.

Battery News

By Ewell Hartman, CMW

BATTERY NUMBER SYSTEM

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

Section II—Specifications and Cross-Reference

AWI, A01:	Add to Ray-O-Vac. *A76-1
AWI, A03:	Add to Ray-O-Vac. *186-1
AWI, A05:	Add to Ray-O-Vac. *189-1
AWI, L09:	(New listing, following L07) Voltage - 3.00; Diameter - 12.0; Height - 2.5. Add to Panasonic BR1225
AWI, L11:	(New listing, following L09) Voltage - 3.00; Diameter - 16.0; Height - 1.6. Add to Panasonic BR1616

Industry News and Comments

Most lithium batteries for watches have a prefix of "BR" or "CR", with the exception of the Eveready 801 and 803. Generally, the 3.0-volt "BR" and "CR" series can be interchanged. The "BR" chemistry has a slightly lower internal resistance and a more constant voltage during its service life.

You will also notice that all "BR" and "CR" series batteries have a four-digit number following the prefix letters. In all cases, the first two numbers indicate the diameter in full millimeters and the last two indicate the height in tenths of a millimeter. For example, the new BR1225, listed above, is 12 millimeters in diameter and 2.5 millimeters in height.

Service Ideas

AWI has prepared a professional ad which may help establish you as the battery expert in you community. It is pictured on page 18 of the February issue of *Horological Times* and will cost you only $1.50. Remember, "Batteries Are Big Business!"

"ENTHUSIASM MAKES THE DIFFERENCE"

SCHOLASTICALLY SPEAKING

Alice Carpenter, CEWS

An Endangered Species?

There are some things on my mind that I'd like to share with you this month. First, our watchmaking schools are plagued with low enrollment. Why is this?

I know that the "cheap" quartz watch has hurt us. It just isn't practical to repair those $3 and $4 watches that have flooded the market. I know watch repair has fallen off, perhaps drastically. I also know that better quality watches are still being sold, even if sales are off. This means that those better quality, repairable watches are going to need servicing in the years to come. If we are not training new watchmakers now, who is going to be qualified to service these watches?

Did I hear someone reply to this question with, "The same man who has always done my repair work?"

OK, let's take a look at the man who has always done your repair work. How old would you say he is? In my local guild, one third of the watchmakers are under the age of 55. I don't mean to be offensive to anyone, but those figures mean that within the next ten years, two-thirds of us will be retirement age or better. My own feeling is that the pinch is going to be felt within the next five years.

It's possible the salary isn't attractive enough. Minimum wage is $3.35 an hour, or $134 a week. Now, to my way of thinking, minimum wage is for unskilled labor. Yet there have been those who have offered barely more than minimum wage to students just coming out of school.

I know the newly graduated student is not experienced in "on-the-job" training, but that student has learned the skills needed. All that student needs is a little investment of time on a job to become the experienced watch repairman everyone wants.

Let's look at the argument that the new student won't earn his salary right away. Most businesses recognize that fact. Many businesses publish the fact that a new employee will not begin to earn his salary for four, six, or even eight months. I can only counter with my feeling that to pass the course at my school, a student is capable of earning his salary within four months or less. That means to me that if that student is paid a salary of $200 a week, he will earn $400 in retail repair sales.

Let me share with you a salary arrangement made with one of my students that I approve of. He was offered $150 a week, guaranteed, with 75% of all retail repair income of over $300 a week. That gave the student an incentive to do his best and at the same time, feel a bit of salary security.

I have had requests for students to fill vacant jobs in our field of endeavor every week. I have been at Wayne Community College for three years. That means roughly 150 jobs are available. The unfortunate fact is I have had only four students who came on their own and were not sent by a store or sponsored by one. Those sent or sponsored by a store go back to that store upon graduation. Those jobs they go back to are not counted in my estimate of 50 jobs a year. According to the law of supply and demand, the salaries should be better. Perhaps the persons in the position of hiring haven't awakened to the fact that we have so few to fill the available jobs. But there are those who are farsighted enough to see the shortage of trained repairmen. They have gone out and found themselves someone who looked promising and have helped them to go to school to get the proper training. That help has ranged from a promise of a job upon graduation to fully subsidizing the expenses of living and schooling for the required period in exchange for a promise to work for X number of years for the benefactor.

I see our occupation as an honored and skilled profession. But I almost see the watchmaker as an endangered species unless we can find some way to let the general public know that there are jobs available contingent on proper training, of course.

How do we do that? Very few if any jobs available in the horology field (watch, clock, and jewelry repair) are ever listed with the Employment Security Commission. Most of our schools of horology have a very limited advertising budget. And have you investigated the cost of running an ad in a good-sized newspaper lately? Knowing the size of the advertising budget at my own school, my fair portion of that budget might run to one ad being run for two days. And unless there is more than one instructor, it's a physical impossibility to hold classes and get out to the public schools to recruit students from the high schools.

What is working at my school, on a limited basis, is being sponsored or sent by a retail store.

Let me leave you with a thought and a challenge. Those individuals who will be hurting most because of a shortage of watchmakers, jewelers, etc., will be the retail jewelry stores. The stores who have the jobs available could sponsor more students, or offer sizeable scholarships to their local high schools for proper training, or list the jobs with the Employment Security Commission. In general, they should let the public know that there are jobs available.

I challenge you, the retail jeweler, to do this.

STUMPED?!

QUARTZ WATCH PROBLEMS??!

Call (609) 586-5088

ZANTECH Inc., THE COMPLETE QUARTZ WATCH SPECIALIST CAN PROVIDE YOU WITH QUARTZ WATCH TRAINING, TEST INSTRUMENTS, TOOLS, AND REPLACEMENT PARTS.

TRAINING • *Our **personalized** three day Quartz Watch Repair Class provides the necessary knowledge to understand and repair **all** types of Quartz Analog and Digital watches. Unlimited telephone consultation available to all students.*

• *Video tape describing Model 800AV Analyzer and Troubleshooting procedures is the latest innovation from Zantech.*

TROUBLESHOOTING *Make faster analysis with Zantech's proven Troubleshooting Manuals, Test Equipment, and Video Tapes.*

- Digital Watch Repair Manual, Vol. I
- Quartz Watch Repair Manual, Vol. II
- Quartz Watch Module Tester, Model 800AV
- Universal Battery Substitute Fixture, Model 840
- Quartz Watch Timer, Model 1100
- Quartz Crystal Tester, Q32
- Battery Tester-810 • Alarm Tester-930
- Quartz Motor Drive-QA27
- Microscope M85/BH

REPAIRING *Zantech can teach you repair techniques and supply the tools to do the job right!*

- Conductive Epoxy Kit
- Soldering Irons
- Ultrasonic Cleaners
- Quartz Watch Tools of All Types.

REPLACING *Zantech supplies all replacement parts necessary for your repair service, we have a large variety of Quartz Analog Movements, LCD and LED Modules, Crystals (lenses), Quartz Crystals, Backlights, etc.*

(Armitron, Seiko, Citizen, Casio, Elgin & Miscellaneous)

Write or call for our catalogs — Quartz Modules and Movements
Quartz Watch Test Equipment and Tools
Quartz Watch Repair Course Application

ZANTECH *INC* **77 SHADY LANE • TRENTON, NEW JERSEY 08619 • (609) 586-5088**

Affiliate Chapter Column

Walter Riegler, CMW

1984: A DECISIVE YEAR FOR THE WATCH REPAIR BUSINESS

At the time of this writing a great number of events are about to happen and at the time of your reading this article will have already happened. I am referring to the election of five new members of the Board of Directors, the Affiliate Chapter Meetings, and the AWI directors meetings–with lots on the agenda, many new ideas. There is a two-month time span between my writing and your reading of this column.

Those of you that have had some contact with your delegate know quite a bit of what has transpired. Most chapters, even those that have monthly meetings, do not usually meet during July and August, so some of the very recent events may be delayed. You will be reading about a great deal of what has happened in the *Horological Times* next month because their turnaround time is not as long as mine.

Incidently, the *Horological Times* is our best vehicle of communication, nationally and worldwide. We are able to speak and listen to others through our Affiliate Chapter Column. We constantly read of current events in many other columns and in these changing times all information is important. Since I listed my phone number and mailing address at the end of the column, I have had much contact with our members, who have voiced their opinions or asked questions requesting more information about recent events and the AWI committee proposals. Remember to send your chapter news directly to AWI *Horological Times.*

We are indeed fortunate in having such talented watchmakers as part of our association who can teach us through their writing of technical articles in the *Horological Times.* It is not that easy to do. Much can be said of those with such informative columns on clock repair, gemology, jewelry repair, and just plain chitchat with tips on conducting business.

The 1984 election of directors was indeed a difficult choice to make, five out of fifteen with all having so much to offer. I know that there were disappointments among those that ran as well as those that voted. Did you know that a number of years ago some of the local guilds had a problem in finding someone to run for office and when they were elected, they were burdened with all the work? Not so with the AWI elections where all are eager to give of their time and talents.

The affiliate chapters are a very important ingredient in the structure of AWI. The individual member can make recommendations that are discussed at chapter level and the results are taken to the Affiliate Chapter meeting. Here they are able to acquaint themselves with other delegates and the various committees to assist in some way for the betterment of all the watchmakers. The programs are all planned by volunteers, members, and directors alike and are usually sponsored by the chapters.

We have seen more changes in the last 25 years than in the last century. It would have been difficult to maintain the communications we have held, were it not for the AWI and its chapters, and yes, industry also. As has been said so often before: *the help is there–we need only to make use of it.*

As we enter our 25th year, (our Silver Jubilee will be in June 1985), it is a good idea to make resolutions about working habits and techniques with the quartz revolution upon us. It might not be a "sink or swim" situation for those not prepared, but it certainly will be a "need help" situation, for those that have procrastinated. Remember the old adage, "Better late than never." No one knows for sure what lies ahead, but I believe that this year will tell us a lot about the future of the watch repair business. Hopefully Bob Leach's Economic Study Survey will provide us with some answers and shed some light on the future, based on comparisons of the past and present work surveys. One needs only two points to draw a straight line, but at least three to draw a graph to have an indication of a trend. We know the trend, but we do not know the severity of it as yet. Be prepared.

This is the month that was. By the time this is printed and you read it, most of the events will have already happened. Welcome to all the new board members of the AWI, and good luck to all the recommendations that were approved by the "board" from proposals that were made by our chapter delegates and committees.

NEWS

NEW JERSEY

At the spring meeting of the New Jersey Watchmakers Association, Sam Schwartz of B. Jadow & Sons, distributors of watch material to wholesalers, was the Guest Speaker. Mr. Schwartz mentioned the closing of many Swiss plants dealing in the manufacture of mechanical watch parts. "The older models will be even more difficult to get parts for," commented Mr. Schwartz. His main topic for the evening was the 300MF Microfiche systems, designed to replace the parts catalogs mainly because of easy annual updating of all new models. This makes it possible for the watchmaker to phone in for almost any part using the part and position numbers.

NORTH CAROLINA

Charles R. Smith of Fayetteville, NC was unanimously elected Chairman of the Board of the North Carolina Watchmakers Association at their recent convention held in Fayetteville, NC.

Members of the Cape Fear Watchmakers Guild and the North Carolina Watchmakers Association will continue to strive to gather information for the advancement of the horological profession. Another directive of this guild and association is to better inform the public on this profession.

Charles R. Smith, Chairman of the Board of the North Carolina Watchmakers Association.

NEW YORK

At the May meeting of the Horological Society of New York, Inc., "Mr. Solid State," Louis A. Zanoni of Zantech, gave an illustrated talk on "Quartz Watch Troubleshooting."

His talk covered the whole gamut of Quartz watches from solid state to analog. It included repair hints, retrofitting information and the demonstration of equipment. The micro-photography used to take the color slides provided an extraordinarily vivid, illustrative accompaniment to the talk. Each member received two catalogs, one on Test Equipment and another on Modules and Movements.

Mr. James J. Lazarus, President of L&R Manufacturing Company, was the Guest Speaker at the June meeting of the Horological Society of New York, Inc. He presented "L&R's Contribution to Advancing Technology in the Watch & Jewelry Industry." The meeting was held at the Loews Summit Hotel, New York.

Mr. Lazarus is well known in the watch and jewelry industry, as are his products. He is active in many industry and civic organizations.

Lou Zanoni, of Zantech Inc., during his talk "Quartz Watch Troubleshooting" at the Horological Society of New York.

We Salute These New Members!

ADLER, Cornelia—Mobile, AL
ALLERT, Charles H.—St. Paul Park, MN
ANDERSON, Glen R.—Abilene, TX
ARNOLD, Lawrence F.—Merced, CA
ASA, Carl W.—Charleston, MO
AUERBACK, S. Pearson, M.D.—Louisville, KY
AWIZA, Richard A.—Lancaster, PA
BAASE, Michael J.—Saginaw, MI
BAKER, Patrick D.—Broussard, LA
BARRS, John N.—Arlington, WA
BAXTER, Sunday—Isle of Palms, SC
BEINHARDT, Lawrence—Farrell, PA
BENKERT, Joe—Monroe, WI
BERNSTEIN, Richard A.—Cincinnati, OH
BOESPFLUG, Joe A.—Dickinson, ND
BONNER, Michael A.—Tullahoma, TN
BOOKS, Robert J.—Clearwater, FL
BOOP, Roger W.—Indianapolis, IN
BOUCHER, G. Rick—Arlington Heights, IL
BOX, Debra L.—Seattle, WA
BROCCOLINO, Arnold D.—Baltimore, MD
BROUILLETTE, Andre—Hallandale, FL
BUCHAN, Larry S.—Calgary, Alberta, CANADA
BUCK, David—Lafayette, LA
BUCKINGHAM, John—Erina, AUSTRALIA
BURFORD, William J.—River Edge, NJ
BURGER, Joseph J.—San Francisco, CA
BURNHAM, Dale F.—Tualatin, OR
BURROWS, Thomas A.—Wheaton, IL
BUSER, Peter—Houston, TX
CAHILL, Andrew J.—Farmers Branch, TX
CALVERT, Norman J.—Alberta, CANADA
CAMPBELL, Ruth N.—Newark, DE
CAO, Nghi Van—Wichita Falls, TX
CASHIN, John T., Jr.—North Olmsted, OH
CARR, Lawrence A.—Kingwood, TX
CHAMBERS, Milton W.—Hollister, CA
CHIMEL, Michael—Freeport, NY
CHIMENTO, Joseph M.—Buffalo, NY
CHUPICK, William—El Paso, TX
CLARK, John B.—Dothan, AL
COLI, Raymond J.—El Paso, TX
CONLON, Thomas R.—Honolulu, HI
COOK, J.T.—Rockwall, TX
COOK, W.F.—Tallapoosa, GA
CORN, William L., Jr.—Gainesville, GA
DAHN, Robert L.—Binghamton, NY
DAVID, Gerald M.—Independence, KS
DAVIS, Richard—Gahanna, OH
DAVIS, Robert J.—Lowell, MI
DEAL, C.R., Jr.—Hearne, TX
DeMAAR, Larry J.—Crown Point, IN
DeVILLERS, Christopher E.—Mt. Vernon, OH
DICKERSON, Kent—Abilene, TX
DITTRICH, C. Wayne—Philadelphia, PA
DOMKOWSKI, Ray—Boston, MA
DORION, R.D., Sr.—Poughkeepsie, NY
DUNHAM, Richard H.—Harahan, LA
DURAN, Leonardo E.—Briarwood, NY
EADS, Hal H.—Danville, CA
EDGAR, Pete—Ada, OK
EDWARDS, James—Bronx, NY
ELCOCK, Horace—St. Croix, VI
ENGLISH, Billy Joe, Sr.—Florence, AL
FAUGNO, Jose A.—FPO San Francisco, CA
FINN, L.G.—Baton Rouge, LA
GABRIEL, Clifford W.—Jersey City, NJ
GAGNON, Thomas J.—Two Rivers, WI
GALLOWAY, Donald—Greenbush, WI
GEORGE, Geoffrey H.—Fort Wayne, IN
GJERSTAD, Pete—Seattle, WA
GONZALES, Ascension—Mobile, AL
GRAFFEO, Daniel M.—Topeka, KS
GRAHAM, Vernon E.—Cheyenne, WY
GRAMCKO, James V.—Sepulveda, CA
GREENBERG, Al B.—Brooklyn, NY
GREER, Clarence C.—Alpena, MI
GRIEB, George—Carrollton, TX
GOSCINSKY, John—Cranford, NJ
GUIDO, Michael J.—Loomis, CA
HALL, Donald P.—Paris, TX
HATTOX, Bob—Sandpoint, ID
HAZELMAN, Dennis—Visalia, CA
HENSEL, James R.—Speedway, IN
HERMENZE, Stephen—Salem, OR
HERPICK, William H.—Corpus Christi, TX
HESS, Kenneth—Webster, NY
HILL, John R.—Seguin, TX
HOFFMAN, Duane F.—Slidell, LA
HOLLAND, Virginia B.—Brusly, LA
HRUBY, Peter A.—Elkhart, IN
HUFFMAN, David—Hendersonville, TN
HUGHES, Max A.—San Diego, CA
HUNG, Eddie Wong Koon—Woodside, NY
HUNT, Christopher B.—Lexington, NC
INGRAM, Bobby G., Jr.—Shreveport, LA
JAGOW, Gregory A.—Sacramento, CA
JAHR, Armin N., II—Gig Harbor, WA
JAMES, Lee R.—Nashville, TN
JEPSON, Lowell E.—Saratoga, CA
KELLY, Edward D., Jr.—Santa Rosa, CA
KINKLE, Karl R.—Kensington, MD
KNAPP, David K.—Ballston Lake, NY
KNOBLOCH, E. William—Palm Springs, CA
KOCH, Bernard C.—Wilmington, DE
KOWSEMA, Weber—Lowell, IN
KOLENBURG, John A.—Chicago, IL
LA BELLE, Hector J.—Vernon, CT
LAINING, Jack—Sandston, VA
LANDON, Joseph—Winston-Salem, NC
LANDON, Steven—Wichita Falls, TX
LANDSMANN, Tibor—San Francisco, CA
LAVILLA, Eddie—Woodside, NY
LEARN, John R.—Staten Island, NY
LEAVITT, Robert G.—Miami, FL
LEE, Robin—Humble, TX
LEETH, Carolyn D.—Somerville, AL
LEGAULT, Jean G.—Quebec, CANADA
LESTER, Russell G.—Benton, LA
LEWBEL, Mayer R.—Kendall, FL
LEWIS, Joseph E.—Great Bend, KS
LINDROTH, Gene D.—Boring, OR
LINN, Rodney S.—Mitchellville, IA
LITTLE, Charles R.—Houston, TX
LITTLEFIELD, Dell W.—Fort Walton Beach, FL
LOPEZ, Alexander—Brooklyn, NY
LOPEZ, Ricardo—Miami, FL
LORD, Elizabeth G.—Pullman, WA
LORGE, Gary T.—Santa Ana, CA
LUBENSKY, Gennady, Manchester, NH
LUU, Jonathan—Dover AFB, DE
MABASO, Ezekiel—Woodside, NY
MacQUITHY, Norman—Austin, TX
MAI, Hung Van—Houson, TX
MAIUTTO, Hugo—Buenos Aires, ARGENTINA
MARLER, Kenneth W.—Watertown, TN
MARTIN, William L.—Tampa, FL
MAYERSDORF, Assa—Whitefish Bay, WI
McANDREW, W. Peter—Greenbrae, CA
McDUFFIE, Ted—Sarasota, FL
MERCURIO, Ronald—Whippany, NJ
MERTSCHING, Michael—Burlingame, CA
METZ, Chuck—Petaluma, CA
METZLER, Hugh E.—Richardson, TX
MEYER, John H., Jr.—Los Altos, CA
MEYER, Martin N.—Buffalo, NY
MILLER, Charles K.—York, PA
MILLER, Clay V.—Springfield, MO
MILLER, Lee J.—Littleton, CO
MONK, Robert E.—Zionsville, PA
MONTGOMERY, Theodore—Piedmont, CA
MOORE, George E.—Louisville, KY
MUELLER, Francis W.—Athens, GA
MURPHY, Gerald R.—Encinitas, CA
NGIRMANG, Philip—CAROLINE ISLANDS
NICHOLLS, Martin R.—Tustin, CA
NOLL, Harry J.—Linden, NJ
NORTON, Harry—Whitefish Bay, WI
OBERMAN, Monte R.—Marine, IL
OETTERLI, Peter W.—Melbourne, AUSTRALIA
OLSEN, John H.—Long Island City, NY
PAHLAS, Clark J.—Muscoda, WI
PALMER, Victor J.—San Francisco, CA
PARK, Floyd J., Jr.—Fairfield, CA
PARTINGTON, Joe—Oaklawn, IL
PASQUINE, Arthur—Richmond, VA
PEMBLETON, Robert W.—Willingboro, NJ
PERKINS, Richard A.—Lakeland, FL
PETROCY, Tracy W.—Cheektowaga, NY
PIMM, Rat—Paris, TX
PITTMAN, J.—North Miami, FL
PITTS, Mark P.—Mayport Naval Station, FL
PLUMMER, William R.—Columbia, MO
QUICK, James T.—Hopkinsville, KY
QUINN, Eric R.—Port Costa, CA
REID, James E.—Brevard, NC
RIDDELL, Margaret—Yellowknife, CANADA
RITENOUR, H. Steven—Stephens City, VA
ROBERTSON, James G.—Waverly, TN
ROCCA, Michael S.—Chicago, IL
ROLFS, Allen—Vallejo, CA
ROMANUS, Terry—Charleston Heights, SC
ROZIER, Clifford W.—Jersey City, NJ
RUPERT, Clarence W.—Casselberry, FL
RUSZEL, Beverly—Passaic, NJ
SA, Jose Antonio—Danbury, CT
SARNELLE, Dean S.—Craigsville, VA
SAULER, Ralph R.—Glassboro, NJ
SAVAGE, James K., Jr.—Fayetteville, NY
SCHARP, Vernon—Greenville, NY
SCHAUBER, Gregory—Island Lake, IL
SCHMIDT, Jonathan B.—Monterey, CA
SCHROEDER, Kenneth A.—Lac Du Flambeau, WI
SEIBERT, Richard L.—Davenport, IA
SEITZ, Thomas S.—Barnstable, MA
SHAFFER, Victor E.—Jacksonville, FL
SHEPPARD, Julia L.—Gresham, OR
SIEBENTHAL, Brian—Peoria, IL

James Broughton--AWI Instructor

EDITOR'S NOTE: An ongoing educational program is one of the prime benefits available to members of the American Watchmakers Institute. Horological experts share their knowledge and experience by conducting seminars throughout the country. (See BENCH COURSES listing elsewhere in this issue for current subjects and dates.) HOROLOGICAL TIMES will feature a brief background sketch of each of these instructors in future issues.

James Broughton is a career watchmaker. He is a graduate of the Kansas City School of Watchmaking and holds Certificates of Achievement from Seiko, Citizen and Bulova for successfully completing their technical instruction programs. He has the Certified Electronic Watch Specialist (CEWS) title from AWI. As an AWI instructor, he specializes in conducting seminars on Pulsar and Citizen quartz watches throughout the U.S. They always draw capacity enrollments.

Broughton readily donates his time and efforts to groups which work to improve the horological profession. He is a past-president of AWI. He also serves on the Board of Directors, as well as being a Trustee of AWI's Education, Library and Museum Trust (ELM). He holds life memberships in AWI, the Florida State Watchmakers Association, Southern Arizona Watchmakers Guild, and he is an Honorary Member of the Michigan Watchmakers Association. He is a past-president of the Watchmakers Association of Ohio.

Broughton was born in Ashland, Kentucky. His present address is Columbus, Ohio. In his spare time, he can be found wherever the fish are biting in that area!

Broughton acknowledges the value of bench course training in his successful watchmaking career. He is particularly impressed with the advances in electronic technology. He states that, "All watchmakers who plan on making a living from the repair of watches, and all students of watch repair, should attend all seminars on electronics that are related to the field of horology."

"While the industry is rapidly changing each day, AWI and its bench course instructors are doing their best to bring the most up-to-date information to you—the watchmaker. They will continue to do so!"

A complete listing of forthcoming AWI seminars is featured on page 40 of this issue.

SIMMONS, Michael J.—Valdosta, GA
SKARZENSKI, Charles—Morgantown, WV
SKEA, Ralph E.—Buffalo, NY
SKILLMAN, Robert J.—Windber, PA
SKINNER, Curtis J.—Marana, AZ
SMITH, Eugenie—Seattle, WA
SMITH, Ralph D.—Evansville, IN
SMITH, Shari—Yuba City, CA
SMOTHERS, Richard K.—Pensacola, FL
SNYDER, Bill—Dallas, TX
SONES, James—Vidor, TX
STADLER, Richard H.—Rocky River, OH
STANNARD, Lester C.—Loma Linda, CA
STEINKE, Ronald—Bridgman, MI
STERNE, Richard L.—Orem, UT
STEVENSON, Allen L.—Grand Junction, CO
STILLMAN, Robert A.—Coeur D'Alene, ID
SUMPTER, W. Brian—Lithonia, GA
THERIEN, Gilles—San Diego, CA
THOMAS, Henry W., Jr.—Wantagh, NY
THOMPSON, William S.—Buchanan, VA
TIERNEY, Edward J.—Harbor City, CA
TORRACA, Nicholas—Lighthouse Point, FL
TUERO, Luis E.—Miami, FL
TUOHY, Michael—Woodside, NY
TURNBEAUGH, Dale—Matteson, IL
VAHABZADEGAN, Amir—Woodside, NY
VALIQUETTE, M. Jean-Francois—Quebec
VANARSDALL, Dan—Graham, TX
VAZQUEZ, Eroildo—Mobile, AL
VILLANUEVA, Leonard—Houston, TX
VIMOS, Cornelio—Bronx, NY
VOJNOVIC, Stevan N.—Monroeville, PA
WARD, Aubrey E.—Indianapolis, IN
WARD, Morgan N., Mrs.—Washington, DC
WARD, William J.—Springfield, OH
WEBB, Lynn H.—Hendersonville, NC
WELLS, Stephen—Poughkeepsie, NY
WEST, Michael—Eagle, ID
WHITTLE, Peter—Woodside, NY
WILSON, O.G.—Riviera Beach, FL
WINING, Thomas V.—Akron, OH
WOLFF, Jerry—Orlando, FL
WUESTHOFF, Herbert O.—Richmond, CA
YEAGER, John C.—Tacoma, WA
YOUNG, Walter J.—Pittsburgh, PA
ZACHARCZYK, Edward—Linden, NJ
ZELLEN, Larry—Downey, CA

Welcome To AWI

YOUR FELLOW MEMBERS WANT TO KNOW.

SEND IN THE NEWS . . . AS FAST AS IT HAPPENS.

AWI Bench Courses 1984

PROGRAMS		INSTRUCTORS
A	Basic Electricity & Use of Meters	Jaeger
B	AWI Certified Citizen Quartz Watch Technician	Carpenter
C	Pulsar	Broughton
D	Seiko Quartz Analog and LCD	Smith
G	Repairing the ESA 900.911 Digital/Analog	Biederman
I	Introduction to Striking Clocks	Baier
J	Common Sense Quartz Watch Repair	Bishop
K	Introduction to Clock Repair	Arnold & Whitney
L	Bulova Quartz 262 and 2500	Sustachek
M	Striking Clocks—Advanced Seminar	Baier
N	ESA Analog Quartz Repair	Adams
P	Using the Watchmakers Lathe	Perkins

AUGUST

6-10. . . .K . . .Cincinnati, OH . . .ARNOLD & WHITNEY
13-15. . .P . . .Cincinnati, OH . . .PERKINS
18-19. . .J. . . .Toronto, Canada . .BISHOP
19. . . . .A . . .Plantation, FL. . . .JAEGER

SEPTEMBER

15. . . . .C . . .Mandan, ND. . . . .BROUGHTON
17-20. . .M . . .Cincinnati, OH . . .BAIER
23. . . . .G . . .Chicago, IL . . . . .BIEDERMAN

OCTOBER

7 . . . . .B . . .Hutchinson, KS . . .CARPENTER
13-14. . .J. . . .Greensboro, NC. . .BISHOP
26. . . . .C . . .Tampa, FL. . . . .BROUGHTON

NOVEMBER

18. . . . .C . . .Chicago, IL . . . . .BROUGHTON

SEND INQUIRIES OR RESERVATIONS TO:
AWI, P.O. BOX 11011, CINCINNATI, OH 45211

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

NAME: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

Book Review

THE TIME MUSEUM, An Introduction, by Seth G. Atwood and William Andrewes. 7 x 10", 32 pages, 80 photos in color. Pub. 1983 by The Time Museum, Rockford, IL, 7801 E. State St., Rockford, IL 61125.

The Time Museum in Rockford, Illinios must rank with the very few top collections of timepieces in the world.

This booklet is a crystallization of the contents of the museum and tries to convey to the reader an idea and the philosophy of this collection. No one volume, however large, could possibly cover that museum's contents or describe its quality. Rather, this publication serves as an introduction to those who intend to visit or read about the museum.

Mr. Atwood, founder and director, and William Andrewes, curator of the museum, have selected representative items and views which best convey the museum to its readers. The photos are of the finest quality and the text, terse of necessity, expertly conveys that message.

Fourteen sections of the museum are depicted in text and the photographs. For example, the first area contains the earliest instruments of time measurement: sundials, waterclocks, astrolabes, as well as other ancient horological devices. A model of Stonehenge, an authentic Mayan stela, dated A.D. 702, a fifth century Greco-Byzantine sundial, and an excellent model of Su Sung's escapemented waterwheel astronomical clock make up the representation of the museum's entry section.

Area two describes the advent and evolution of the mechanical clock with photos of the very early large clocks. The third area covers the age of extravagance in which timepieces in the mid-16th and 17th centuries brought their opulent adornment to a peak when a technological plateau introduced no new practical improvements. The fourth section of the museum pictures and describes "The Leap to Precision"–1640 to 1740, with examples of the earliest pendulum clocks, English tall case and German astronomical clocks, night clocks, bracket clocks. Other areas show chronometers and early precision floor regulators; domestic clocks and watches, French dominance and influence in design, beautiful clocks and watches, a Breguet "Pendule Sympathetique," French Revolutionary influence on timetelling, The Far East and timetelling, America's emergence and mass-production of watches and clocks, the standardization of time, massive automated astronomical clocks, wrist watches, precision watches and clocks. The (Graves) most complicated watch made by Patek Philippe, a Daniel's modern double wheel chronometer, first production models of a quartz clock, cesium atomic clock and a hydrogen maser clock are pictured as are unusual tourbillon timepieces to represent the very large collection. A view of the Norwegian Rasmus Sornes' clock, claimed to be the world's most complicated astronomical clock, is skeletonized with exquisite taste.

The short text describes the history and progress of each period covered in the pages of this short exposition. For those who contemplate a visit to this American horological "Mecca," this booklet can serve as a very fine introduction and preparation. For others, its excellent photos and text are a too short but appetizing reference to that collection.

Henry B. Fried

A New President for the JIC

Mickey Low, Chairman of the Board of the Jewelry Industry Council recently announced the appointment of Gerry Hansen to the post of President of the Council to fill the position vacated in January by Morton Sarett, long-time Council head.

"I wish to thank those in the industry for referring candidates to our Search Committee, and I particularly want to thank the Committee, headed up by Mel Cohen for their diligence in screening the many applicants."

"In Gerry Hansen, I feel we have the ideal person to carry on and to expand the Council's efforts on behalf of the industry in the years ahead," Low stated.

Hansen, formerly President of Girard Perregaux Corp., and prior to that, President of Movado Time Corporation, is well-known in the industry and comes with an impressive background in publicity and market development.

Before entering the jewelry industry, Hansen served successively with Yardley Cosmetics as District Sales Manager, Regional Sales Manager and finally Product Manager. Graduated from the University of Omaha, Omaha, Nebraska, he attended the Wharton School of Finance Extension for CEO's in 1981.

Gerry Hansen, President
Jewelry Industry Council

CONSUMER PRESS RESPONDS TO JA'S "ALERT"

Jewelers of America (JA) recently issued a consumer alert regarding "bargain" gemstones being promoted across the country. Within the first week of the alert being mailed to 2,000 consumer media, JA's Consumer Information Department was being flooded with phone calls from reporters across the country. Within that same period of time, 26 JA member-jewelers were placed in 30 local interviews to explain the perils and problems of buying a $4.00 stone. Calls continued to come in and interviews were still being arranged.

"When a consumer is disappointed in a purchase relating to fine jewelry," JA Chairman Mike Roman explains, "the image of the entire industry is tarnished. It's JA's function to educate and inform the consumer to deal with local jewelers and to understand more about our products when contemplating a purchase.

"The media's overwhelming response to the kind of information we offered in our consumer-alert proves that JA's Consumer Information Program is performing a much-needed service for the industry. We must reinforce consumer confidence which has been battered by self-serving out-of-the-industry promoters. JA will continue to offer information and advice on a periodic basis."

DAVID GRAN NAMED GENERAL MANAGER MARKET RESEARCH

David Gran was named general manager of market research for Hattori Corporation of America, it was announced by Mort Gershman, executive vice president.

In making the announcement, Mr. Gershman said, "I am confident that David will provide an added dimension to our marketing effort and will be available to assist and counsel with our various divisions and subsidiaries."

Mr. Gran joins Hattori following 15 years with Speidel Textron, Inc., as director/market research and sales planning and eight years at Maidenform, Inc. as manager, sales forecasting and analysis.

The new Hattori general manager of market research is a graduate of Brooklyn College and holds an MBA degree from New York University.

David Gran

U.S. JEWELER AMONG NEW CFH GRADUATES

The only participant from the United States, Richard H. Michaels, of New Haven, Connecticut, received the CFH Diploma in Jewelery Store Management at the end of the two-month course held in Lausanne, Switzerland recently this year. Mr. Michaels received a Diploma with a special mention "with distinction."

This was the first session of a new program which focuses exclusively on management and marketing subjects specifically adapted to the jewelry trade.

The next such program will be held in 1985, from February 4 to March 29.

Information can be obtained by writing to: The Watchmakers of Switzerland, Information Center, Inc.; 608 Fifth Avenue, New York, NY 10020.

INTERNATIONAL VAULT MOVES TO NEW HEADQUARTERS

International Vault, Inc., manufacturer of lightweight modular vault systems, has moved its headquarters to a larger facility at 1110 Leggett Avenue, New York, NY 10474, 212-842-6300. The expanded headquarters and production facility is needed to accommodate the company's increased growth.

Known as the innovators of lightweight modular vault panels, the product line has been expanded to include two new related products: lightweight vault doors and lightweight micro-vaults.

NEW APPOINTMENTS WITHIN OMEGA WATCH CORPORATION

Mr. Walter Lehmann, President of Omega Watch Corporation, recently announced key changes in Omega's executive staff that will improve the marketing and sales functions of the entire corporation with innovative concepts.

Alfred Castorina, formerly New York metropolitan area sales representative for Omega, has been promoted to Vice President Sales. A veteran of the watch industry, Mr. Castorina's selling

background prior to joining Omega in February 1983, includes positions at Longines-Wittnauer, Universal Geneve and 13 years at Movado, where he spent two years as National Sales Manager.

Sue Ann Newberg has become Director of Marketing Services, expanding her responsibilities in merchandising to include Omega's advertising, public relations and display functions. According to Mr. Lehmann, "Ms. Newberg's strong background in retailing will greatly benefit her in directing these additional areas." Joel Jacobson will continue as Advertising Manager.

Tighe Jesperson assumes the position of Director of Finance and Administration.

Alfred Castorina
Vice President Sales
Omega Watch Corporation

Sue Ann Newberg
Director of Marketing
Omega Watch Corporation

CAS-KER EXPANDS TOLL FREE ORDERING

Effective June 18, 1984 the Cas-Ker Company expanded its toll free ordering service to include the state of Ohio, according to an announcement by Patrick Cassedy, Vice President. They now offer WATS ordering service in all 48 continental states, plus the Virgin Islands and Puerto Rico. The new Ohio WATS number is 1-800-582-8027. All other customers should call 1-800-543-0408.

They ask that all customers observe their $15.00 minimum WATS order requirement when using the WATS lines. Any other calls should be placed at 513-241-7073.

The new expanded service is part of their continuing expansion program.

HEUER TIME NAMES SCHULTHESS AS PRESIDENT

Rodolphe M. Schulthess has been appointed President of Heuer Time and Electronics Corporation, in Springfield, New Jersey.

Mr. Schulthess fills the newly-created position of President after six months as Executive Vice President and General Manager of Heuer Time and Electronics Corporation.

Prior to joining Heuer, Mr. Schulthess was Vice President of the Watchmakers of Switzerland Information Center in New York. He has also served as a specialist on Middle Eastern and African markets for the industry trade association, FH, in Bienne, Switzerland.

Heuer Time & Electronics Corporation is a subsidiary of Heuer-Leonidas, SA of Bienne, Switzerland.

NEW APPOINTMENTS ANNOUNCED AT JAZ NORTH AMERICA

Major new appointments at JAZ North America, distributors of JAZ Paris watches, were announced recently by Ron Klass, general manager.

Robert Haslach, Douglas Clemens and Ronald Jackson have joined JAZ as district sales managers. Mr. Haslach will be responsible for the New York/New Jersey area; Mr. Clemens will cover the southern California and Arizona area; and Mr. Jackson will handle the Illinois area. They will each be responsible for the sales and marketing of JAZ in their specific territory.

Frank Rogers has been named manager of National Sales Development. He will be responsible for the development of watch sales through the independent sales representative networks.

JAZ North America is headquartered at 2 Pearl Court, Allendale Park, Allendale Park, New Jersey. JAZ Paris is one of Europes' most popular fashion watch and clock brands available at leading department specialty stores nationally.

CHINESE DELEGATION AT LONGINES

The President of the Chinese Council for the Promotion of International Commerce, Mr. Wang Yaoting and his close colleagues devoted a day of their recent stay in Switzerland to visiting the Longines Watch Company.

The program suggested by the management of the company, represented by Messrs. Manfred H. Laumann, managing director and Walter Van Kaenel, marketing director, concluded a visit to the watch manufacturing and finishing operations where the representatives of the Chinese authorities showed particular interest in the many quality controls carried out at each stage of production. They were even more interested by their visit to the department making watch cases, an integral part of the company, where the computer made a spectacular breakthrough recently.

It was on the initiative of the Fédération de l'Industrie Horlogère Suisse (FIH) that the Chinese delegation visited St. Imier, from where the watches produced by Longines have been exported to China for nearly a hundred years. Mr. Daniel Kellerhals, director general of the FIH, referred to this at the end of the visit, and also mentioned the excellent spirit of collaboration which had been noticeable during the talks which took place in the course of the day.

In the middle of the Chinese delegation, Mr. Wang Yaoting attentively following the machining stages in the production of bridges and plates in the movement blank department.

LEAD-FREE SILVER SOLDER FROM MULTICORE

Multicore Solders has introduced a new pure tin/silver eutectic flux-cored wire solder with the highest strength of any of the soft solders. Designated Silver Solder 96S, it is specifically formulated for use in the manufacture and repair of jewelry, novelties, stainless steel and generally where a lead-free, non-toxic solder is required.

Depending on specific applications, Multicore Silver Solder 96S can be furnished either as a four-core, Arax flux wire solder or as a solder cream. It can be positioned with pin-point accuracy in any shape prior to heating. In either form it can achieve substantial cost and labor savings over conventional solders. On special order Multicore 96S can be furnished as a solid wire or bar solder.

Literature and samples are available from Multicore Solders, Cantiague Rock Road, Westbury, NY 11590. Or call direct: (516) 334-7997.

Multicore Silver Solder 96S

SWISS NEEDLE FILES NOW AVAILABLE

A complete line of Swiss needle files has just been announced by Falcon Tool Company, Inc. Included are 12 shapes for die profilers, 12 shapes with round handles, and 17 with round knurled handles, in a variety of lengths and cuts. Prices per dozen or assorted sets are $54.45 for die profiler files, from $42.70 to $63.05 for round handle files, and from $48.45 to $71.45 for round knurled handle files. Contact: Falcon Tool Co., Inc., 4523 Brookpark Rd., Cleveland, OH 44134.

Swiss needle files from Falcon Tool Company, Inc.

NEW PULSAR LADIES' DRESS ANALOG QUARTZ--"DIAMOND COLLECTION"

A new ladies' dress analog quartz "Diamond Collection," model # EX024, has sophisticated ingredients. It has a rectangular gold-tone case, studded with sparkling genuine diamonds along the case at six and 12 o'clock. Gilt delfine hands and hour markers at three, six, nine, and 12 o' clock on a gilt dial enrich this graceful timepiece. A matching easily adjustable gold-tone bracelet accents its styling. It has a suggested retail price of $225, and an approximate three-year battery life. The Pulsar line is entirely quartz. For further information, contact: Pulsar Time, Inc., 1111 McArthur Blvd., Mahwah, NJ 07403.

The "Diamond Collection" dress analog quartz for Her

PORTESCAP INTRODUCES NEW RING STAR ENGRAVING MACHINE

Portescap U.S. has just introduced a new ring engraver to compliment their recently introduced Ringmatic engraving machine.

Joseph Presti, Vice President of Portescap U.S., stated that, "Ring Star is the only inside diamond tool engraving machine (besides their Ringmatic) which offers the jeweler continuous italic script without the need to strip, make adjustments, or rotate dials when engraving individual letters. And, no spacing lever is required to depress after each letter is engraved."

Among the other advantages of the new Ring Star, continued Presti, are " . . . the engraved letter height is adjustable from 1 to 2 mm, and any setting in between. The diamond tool's pressure on the ring is adjustable to handle harder alloy rings, and it provides a highly polished end result."

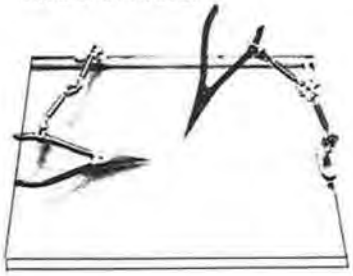
Ring Star is compact, all-metal machine, and measures only 15" high x 9½" wide x 9" deep, and weighs 15 pounds. It can be seen by contacting a Portescap U.S. salesman, or writing Portescap U.S., 6 Ohio Drive, Lake Success, NY 11042; or phoning 1-516-437-8700.

Portescap's new Ring Star Engraving Machine

SOLDERING BASE WITH CLAMPS

Cas-Ker's new non-toxic silica Soldering Base has two spring-loaded clamps with five joints each for maximum agility. The clamps slide back and forth in tracks on the edge of the base.

The base provides stability in positioning soldering work and is especially helpful when more than two hands are needed. The silica material is heat-resistant and very clean, especially when compared to charcoal soldering blocks. Price is $39.75. Contact the Cas-Ker Co., 128 E. 6th St., P.O. Box 2347, Cincinnati, OH 45201; 1-513-241-7073 or 241-7076.



AMERICAN PERFIT ANNOUNCES NEW REPLACEMENT GLASSES

The American Perfit Crystal Corporation announced another assortment in its 1984 series. This is an assortment of 48 new BB-Perfit glass replacement glasses. The majority of these carefully crafted glass crystals are flat (top and bottom) replacements for popular new quartz watches.

As always, these finished crystals are replacements for models sold in quantity in the U.S. market. Your regular watch material wholesaler will supply these crystals.

For additional information, contact the American Perfit Crystal Corp., BB Crystal Company Division, 653 11th Ave., New York, NY 10036.

BOREL'S NEW MODELS FOR FALL SHOWS

Among the new models to be introduced during the fall shows, Ernest Borel presents these His and Hers quartz watches, from $120 K. They will be distributed through fine jewelry stores only by Borel Watch Company, 818 Grand, Kansas City, MO 64106. Write for their catalogs.

Borel's new His and Hers quartz watch models

REPLACEMENT BATTERIES FROM BATT-TRONIC CORPORATION

A complete line of lithium replacement batteries is available from the Batt-tronic Corporation, Battery Park, P.O. Box 10, Orangeburg, NY 10962. Orders are shipped the same day. Their nationwide toll-free line is 1-800-431-2828; in New York state call 1-800-942-1944. Batt-tronic Corp. also distributes a full line of silver oxide and mercury batteries. For further information contact William Hillson, President.

(Right): Batt-tronic's line of replacement batteries

NEW WATCHES FROM BULOVA

Fiery diamonds sparkle from the black enamel dials of these wristwatches by Bulova. Each features a gold-tone case and bracelet with center catch, accurate quartz movement and Dura-Crystal®. The watch on the right (92K50) has diamonds set at 6 and 12 o'clock on its textured black dial. The other has a single diamond at 12 o'clock on its two-tone black dial. Suggested retail price is $225 for the model shown at left (92K53), and $295 for model 92K50 (right). Contact: Bulova Watch Company, Bulova Park, Flushing, NY 11370. Phone: (212) 565-4707.

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

Watch Repair–Quality service on all your watch needs. Send for price list and guarantee. Richard Mazza, Box 76316, Atlanta, GA 30358

REPIVOTING Wheels for all watches. Custom made balance staffs, pallet arbors, stems, center wheels, cannon pinions. Send SASE for price list. J. D. WATCHWORKS, Juliusz Dabrowski, 210 Post St. Suite 507, San Francisco, CA 94108; Tel. (415) 397-0310.

EXPERT WATCHMAKER–47 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, AR 85208.

Analog–Mechanical Watch Repair–Also Pearl Restringing. Free Information Packet. Thomas Rhoades, 7000 Fern, Apt. 230, Shreveport, Louisiana 71105.

CLOCK SERVICES–Wheels, gears, barrels, retoothing, repivoting, mainspring winding, bushing, jeweling. Send sample for estimate. SASE. NIEGEL'S HOROLOGY, Roy H. Niegel CMC, CMW, 101 East St. Joe Drive, Spirit Lake, ID 83869.

AUSTRIAN WATCHMAKER IN PUERTO RICO. Repairs all types of watches. Mechanical, Accutron, Analog quartz. All work guaranteed. Relojeria Helmut, Calle Font Martelo 205, Humacao, Puerto Rico 00661.

WATCH REPAIR–Mechanical, Electronic, Accutron, Quartz. All makes. **THE SHOP.** 2317 S. Stoughton Rd., Madison, WI 53716: (608) 221-0416.

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

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.

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

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.

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

Accutron 218 Cell Coils Repaired. Mail to: **Carmody's Coil Repair, 630 N. Chestnut, Apt. 3., Litchfield, IL 62056.** Include check for $11.50 for each coil, postage and handling. Crushed, broken, or seriously damaged coils can't be repaired. Full refund for each coil that can't be repaired. I also repair all models of Accutrons. Write for price list.

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

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.

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

YOUR AD COULD BE HERE!

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.

The **FALL SEMESTER** for the **WATCH REPAIR TRAINING COURSE** at the John O' Connell Community College will begin **AUGUST 15, 1984.** This full time, tuition-free course has been in existence **SINCE 1952.** Brochure on request. John O' Connell Community College, 108 Bartlett Street, San Francisco, CA 94110; Phone (415) 282-3100.

For Sale

CUCKOO CLOCK PARTS–Everything for the clock repairman–Hard-to-find parts–SASE for illustrated catalog–Rock bottom prices–Personalized service on all orders. Cuckoo Clock Doc, Dept. HT, 42 Birchwood Terrace, Nanuet, NY 10954.

VC101–Used 30-40 times. Like new $1500, or best offer. M-80 Quartz timer $950, or best offer. Health reasons. Will ship by bus in original cartons. (512) 674-6142.

JADOW–AWI MICROFICHE READER. Microfiche systems for Ebauche - Seiko - Citizen - American - Bulova. Current. $360 complete. SASE for list, Seiko, Citizen, Ebauche. Quartz and mechanical manuals. Kavanagh, 18A Lakeshore, Farmington, Conn. 06032. (203) 677-9132.

VC10–BULOVA AUTOMATIC CLEANING MACHINE–Factory reconditioned. Perfect condition. Best Offer. (404) 860-4477.

CLOCK TIMER. Regulate your clocks electronically with the new C.T.J. 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.

KUNDO AND SCHATZ PARTS –Mechanical, electronic, and quartz. Try Us! Baltimore Clock Parts, 2004 Hillside Drive, Baltimore, MD 21207.

CLOCK REPAIRMEN–Over 2,000 items for the professional clock repairman. FREE DELIVERY!! Send $2.00 for catalog to: Timesavers, Box 171, Wheeling, IL 60090, (312) 394-4818.

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 Road, Springfield, OH 45505; Phone (513) 322-8562.

MINI QUARTZ MOVEMENTS. Guaranteed lowest prices (as low as $2.30). 2 year guarantee. Large selection of hands and numerals. Free delivery. SASE or call (704) 333-0221. Hall Clock Shop, 1512 Central Ave., Charlotte, NC 28205.

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.

KWM BUSHING TOOL–New $198, asking $100. **BERGEON** Clock Mainspring Winder–New $435, asking $295. Farmer's Jewelry, 71 Valley Mall, Hagerstown, MD 21740; (301) 582-3573.

Griener "C" Quartz, tuning fork, mechanical timer, new, $900. Also # 700 Accutron meter $100. (816) 836-1195. Aloha, 627 Red Rd., Indep., MO 64055. Will consider trades.

METAL CUTTING LATHES (Unimats, Sherline, Compacts, Maximats, Maximat Super Eleven, Enco), Lathe Accessories, Bench Mills, Drillpresses. 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 Road, Springfield, OH 45505; Phone (513) 322-8562.

FOR SALE: Small jewelry store–West Central Iowa County Seat, only jewelry store in county. Includes: Stock–watch repair material equipment, store fixtures. Fine location center, main street. Desirable lease. All stock clean and up-to-date. Owner retiring. **NO BLUE SKY**, 1-(515) 747-2562.

BE ALL THE CLOCKMAKER YOU CAN BE WITH CHRONOS, KEYSTONE, AND J.M. WILD tools. Wheel cutting engines, pinion mills, depthing tools, spring winders, wheel blanks pinion steel, test stands, division plates, construction books, lubricants, cutters, lathe attachments, etc. Send $2.00 for literature to: Ken Law, CMC, CMBHI, Highway Contract 30, Box 825, Prescott, Arizona 86301.

Help Wanted

WATCH REPAIR INSTRUCTOR––Require a CMW, CW, or individual with equivalent bench experience to instruct students of a Rehabilitation Facility in the basic theory and construction of watches, repair, and regulation of both mechanical and electronic watches. Salary open. Submit resume or letter along with salary requirements to: P.O. Box 15848, Cincinnati, OH 45215. An Equal Opportunity Employer.

Clockmaker needed for busy well-equipped repair shop. Must be a self starter with background in antique and modern movements. Ability to work quickly with accuracy is essential. We offer paid vacation and holidays plus group medical insurance plan. Send resume with references and salary requirements to: Box HW6841, 3700 Harrison Ave., Cincinnati, Ohio 45211.

Wanted To Buy

Milling and/or indexing attachment to fit Levin or Boley lathes. Robert Mohr, P.O. Box 2218, Sandpoint, ID 83864.

ESCAPE WHEEL TISSOT 28.5 ZIT. Lora R. Clemence, 485 Greenville Avenue, Johnston, RI 02919: Phone (401) 231-1236.

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

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.

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., NE, Suite 318, Atlanta, GA 30345. Phone (404) 938-0744.

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

Situations Wanted

High grade watchmaker wants position in pleasant working environment. Can repair all models–Certified Rolex, Seiko Quartz and Accutron Technician. Also some jewelry repair. Robert L. Vierra, 3110 7th St., Rockford, IL 61109; (815) 398-8332.

Korean Watchmaker/Clockmaker, expert in Analog, Quartz, Lathe, Welding, with 21 years experience in all aspects of watch and clock repair, seeks position in USA. Write to: Jun Duk, 570-1 Dalsu Apt. 14 Dong, 410 Ho Suku Sung Dang Dong, Taegu KOREA.

Dates To Remember

JULY

14—Indiana Watch & Jewelry Trade Show and Convention; presented by Jewelers Association of Traveling Salesmen of Indiana; Atkinson Hotel; Indianapolis, IN; Starts at 12:00 noon.

27-29—Watchmakers Association of Ohio, Inc. Convention; Marriott Inn East; Hamilton Rd., Columbus, Ohio.

28-Aug. 1—New York International Jewelry Trade Show & Convention; Sheraton Centre and New York Hilton Hotels; Information and tickets obtained from: Jewelers of America, 1271 Avenue of the Americas, NY, NY 10020.

AUGUST

4-6—MINK SHOW; The Inn of Executive Park; Kansas City, MO.

6-10—Introduction to Clock Repair Bench Seminar; instructors: D. Arnold & M. Whitney; Cincinnati, OH.*

13-15—Using the Watchmakers Lathe Bench Seminar; Archie Perkins, instructor; Cincinnati, OH.*

18-20—Nebraska and South Dakota Jewelers 79th Annual Convention; Holiday Inn of Kearney, Nebraska.

18-19—Common Sense Quartz Watch Repair Bench Seminar; Bob Bishop, instructor; Toronto, Canada.*

19—Basic Electricity & Use of Meters Bench Seminar; Jaeger, instructor; Plantation, FL.*

7-12—International Exhibition BIJORHCA, Parc des Expositions, Porte de Versailles, Paris.

8-9—Iowa Jewelers Convention & Trade Show; Des Moines Marriott Hotel; Des Moines, IA. Information: Iowa Jewelers and Watchmakers Assn., 906 SW 2nd, P.O. Box 44, Eagle Grove, IA 50533; 1 (515) 448-4640.

10-11—North Dakota Jewelers & Watchmakers Association Convention; Seven Seas Motor Inn; Mandan, ND; (701) 663-2537.

15—Pulsar Bench Seminar; J. Broughton, instructor; Mandan, ND.*

17-20—Striking Clocks-Advanced Seminar; Jos. Baier, Ph.D., instructor; Cincinnati, OH.*

18-21—Hong Kong Jewellery & Watch Fair, Hong Kong Regent Hotel and New World Hotel.

21-23—New York State Watchmakers Association Annual Meeting and Convention; Trinkaus Manor, Orinskany Falls, NY.

22-23—Watchmakers Association of Indiana, 1984 Fall Convention; Holiday Inn Southeast, I-465 and Emerson; Indianapolis, IN.

23—Repairing the ESA 900.911 Digital/Analog Bench Seminar, Wm. Biederman, instructor; Chicago, IL.*

24-25—Watchmakers Association of Indiana Convention and Trade Show; Atkinson Hotel; Indianapolis, IN; (317) 631-8124.

SEPTEMBER

4-5—Mid-America Jewelry Show; Cincinnati Convention Center; Cincinnati, Ohio; (614) 221-7833.

4-8—International Watch, Jewelry and Silver Trades Fair; Earls Court; London, England; (212) 752-8400.

6-9—Intermountain Jewelers Association Convention; Jackson Hole, Wyoming.

6-9—JUWELIA '84; Vienna, Austria; Information:Mrs. I. Boyd, Glahe International, Inc., 1700 K St., NW, Suite 402, Washington, D.C., 20006; Phone: (202) 659-4557.

6-11—Commercial and Professional Arts and Crafts Exhibition, Parc des Expositions, Porte de Versailles, Paris.

OCTOBER

7—AWI Certified Citizen Quartz Watch Technician Bench Seminar; Carpenter, instructor; Hutchinson, KS.*

8-9—Illinois Watchmakers Convention; Holiday Inn; Decatur, IL; (217) 762-4061.

13-14—Common Sense Quartz Watch Repair Bench Seminar; Bob Bishop, instructor; Greensboro, NC.*

26—Pulsar Bench Seminar; J. Broughton, instructor; Tampa, FL.*

26-28—Florida State Watchmakers Association Convention; Tampa, FL.

NOVEMBER

12—Watchmakers Association of New Jersey Annual Dinner Dance; Royal Hawaiian Palm; Lyndhurst, NJ; (212) 698-7506.

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

JANUARY 1985

17-20—NAWCC 1985 Florida Mid-Winter Regional Meeting; new Marriott's Hotel and Harbor Beach Resort; Ft. Lauderdale, FL.

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

Advertisers' Index

Seiko believes the world's most advanced timepieces deserve the world's most advanced after-sale support system.

At Seiko today, it normally takes about 6 to 9 working days for in-warranty job completion! What's more, the simplicity of control saves time and headaches, and fosters the kind of special relationship between Seiko dealers and their customers that you want and deserve.

How is this industry breakthrough accomplished? With the help of our Seiko service professionals, thoroughly trained experts, every one. With a service and materials system destined to be the most efficient in the industry—the most sophisticated and advanced computer-backed system imaginable.

From the moment a watch arrives at a Seiko Service Center, all pertinent facts about it go into our computer system. We can monitor it through the repair cycle. Pinpoint its status at any time. Maintain an incomparably detailed record of every watch we handle, retrievable from the system for years to come.

We've streamlined our supplemental services as well. Our unique microfiche system puts all the technical information you'll ever need to know about any Seiko watch at your fingertips easily and inexpensively. And we offer full-scale instruction bench course programs. Now Seiko service is upgraded to parallel the fine reputation of Seiko and its dealers everywhere.

In servicing our superb timepieces Seiko has gone all out to achieve the same single-minded standard of leadership that prevails in producing them. Our way of best serving you, our valued Seiko Authorized Dealers.

SEIKO

Setting the standard for the world, for the future.

"A free telephone! Maxell, you've got style."

You'll get a free phone, too, because you've got connections at Maxell. Just call your participating Maxell distributor, say "I've Got Connections" and get a free phone with your 100 watch battery order. A great reason to stock up on a great battery that's color coded and cross referenced for fast identification. So pick up your phone and get a free phone. But hurry, offer expires July 31, 1984.

For the name of your nearest participating Maxell distributor call 201-288-9000, Maxell Battery Division.

maxell®

IT'S WORTH IT.

Maxell Corporation of America
60 Oxford Drive
Moonachie, N.J. 07074