JULY 1985

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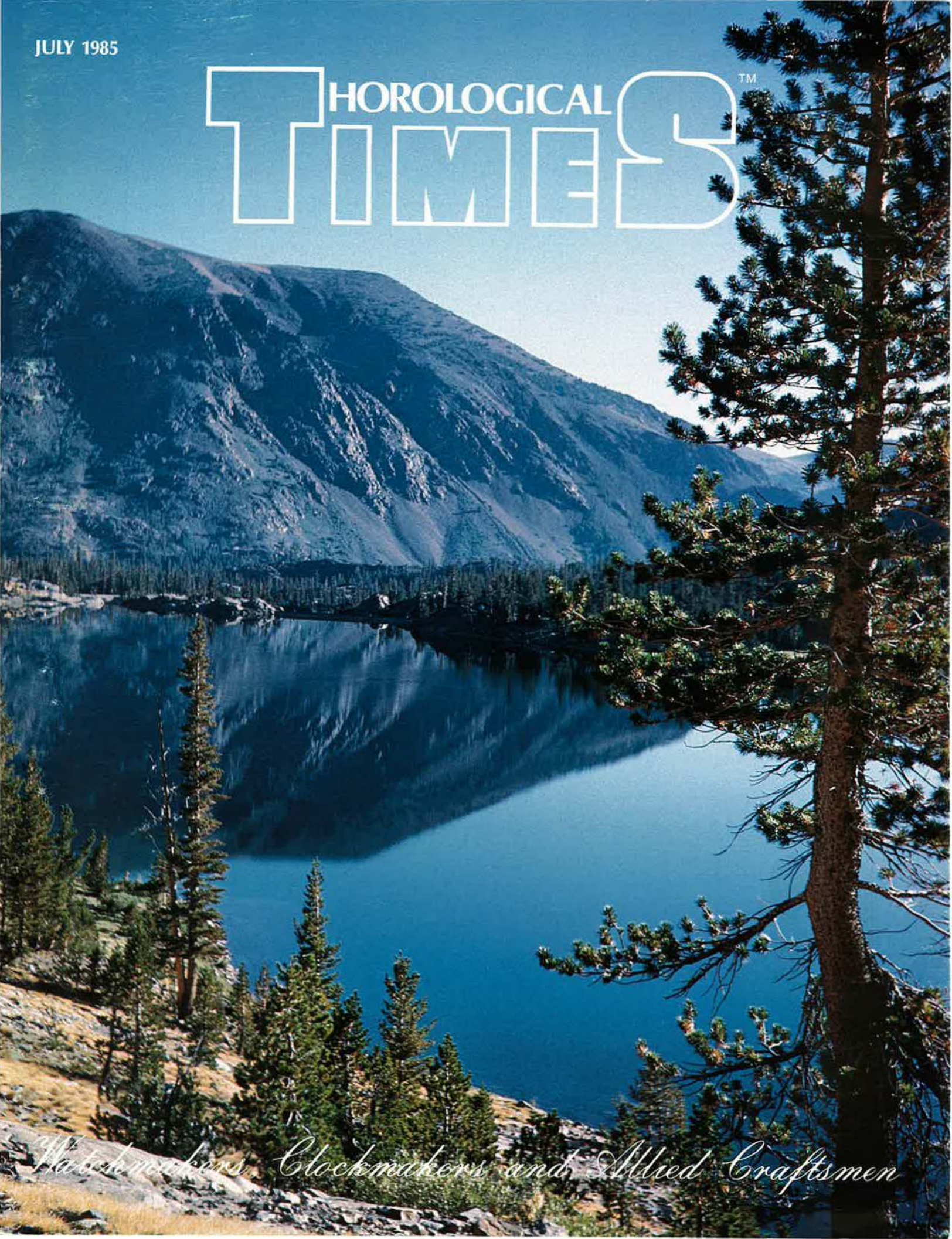

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Editorial

Surveys tell a lot. This magazine was just evaluated by its readers, and much of what we believed showed to be accurate. We were surprised, however, to find almost a complete lack of interest in some editorial content. As directed by the editorial committee, adjustments will be made by the staff of *Horological Times*. On the other hand, some subjects will be expanded, depending upon the availability of expertise in those fields. All in all, the recent survey will be pleasing to the most of you.

In your business, you might do well to conduct a sampling of your customers to find the needs they are seeking.

On the Front

There's never a dull sight at Yosemite National Park in California. This is just one of the many beautiful lakes found there . . . a refreshing scene for our July issue.

Photo by Dr. Joseph Baier, Ph.D.

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PRESIDENT'S MESSAGE...

COMPARISON

Fred S. Burckhardt

I belong to the local advertising club. We meet each Wednesday for lunch and a program. There has never been a week when an excellent program hasn't been offered. At election time, members actually campaign for the various offices. When volunteers are needed, more than enough offer their services. When a worthy charity needs help with an advertising campaign to solicit funds for their work, members help them on their own time without pay, because they feel as professionals, this is the right thing to do.

The only reason I bring this up, is because it is the direct opposite of the way many of those in our profession conduct themselves. How often have you heard the complaint that it's hard to find a program for the monthly meeting? How many times have there been elections when no one wanted to serve or someone was picked because everyone else was president so now they had to take their turn? Is getting volunteers like pulling teeth in your group? When was the last time help was offered when somebody was in a bind? What have you done lately to enhance your professional status?

Don't misunderstand, this isn't to criticize. It's just to show what can be done when an organization's members take an interest in their association's activities. Too many societies suffer when they become lopsided with "takers" instead of "givers". It is a law of science that when something leaves, something else must take its place. In numerous cases, enthusiasm is replaced by apathy; interest by indifference; helpfulness with lack of cooperation. Once this lethargic attitude takes over, rebirth becomes very difficult–but not impossible.

It is the duty of each and every member to do his/her share. Are you doing yours?

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Questions & Answers

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

The Split Stem Syndrome

You've bailed me out more than once and I deeply appreciate your help and interest. My problem may be of interest to others in the trade. With the plethora of quartz movements available for replacement of obsolete or otherwise troublesome mechanical movements a new problem pops up, the casing of movements requiring a split stem (waterproof cases where the movement is removed from the front after removal of the crystal).

Two examples come immediately to mind:

1. **An ETA 1090 Barrel-shaped movement (Wyler Incaflex) cased in a rectangular case with a rectangular crystal.** Not only does the case opening require a barrel-shaped movement for partial support and lateral positioning, but also has a recess into which the dial fits. This implies that the dial feet must fit the movement. You can't easily get away with soft-gluing the dial to the movement. A split stem is necessary and depth of the movement is critical if the stem is to match the case hole. Is there a movement available? Can a split stem be found or must one be fabricated?

2. **An AS1673 (Lord Elgin Self-winding).** This movement was featured in a prior issue of the H.T. which I can't find. The common problem was wearing of a collet or bushing-like bearing surface integral to the pillar plate which wore to the point that one wheel of the self-wind mechanism would skip and fail to wind, plus interfere with the transmission of power from the barrel to the train. Cutting down a Bulova 5AH ratchet wheel screw to fit the wheel was supposed to work, but it didn't work for me; the screw thread was wrong, so in frustration I put aside the movement years ago. Then came the advent of quartz and then the potential problem of the split stem again! And to compound the problem, if the only solution required is modification of the stem, the total stem length called for (male plus female) may be too short to be possible.

With these two juicy brain teasers I once again turn to you.

Philip Strayer
Boulder Creek, CA

The conversion, two-piece stems are still available from your material jobber. In retrofitting, I may question the use of these stems except in larger, sturdier quartz movements with sturdy setting mechanisms. Pulling out on these may break the delicate set levers when the snap-stem junctions are too secure.

Consider using a smaller movement with a Dow Corning fit-in solidifying paste and replacing the dial with double-backed adhesive. Then the new stem, supplied usually with longer threads, can be held (before the dial is positioned) with a long-nosed pliers and the crown secured that way.

The Dow-Corning material takes about a day to harden and can be positioned until you are satisfied with the retrofitted movement's height its stem alignment with the case pipe and the dial position regarding the bezel opening.

In cases like yours, the retrofit may be the best solution. Repairers in the New York City area have been able to fit 6x8 movements in such cases using either a Dow-Corning material or else a two-part putty-epoxy which is twist-mixed and hardens in a day–after which it can be scraped, filed, threaded (if need be), and polished.

Which is the finer polish: Burnisher or Diamantine?

Steve Nicholson
Des Moines, IA

For small pivots or turned surfaces as watch or clock pivots, burnishing a **prepared** *surface is better. First, it polishes well. Secondly, it provides a hardened compressed surface and thus better wearing. Polishing*

(Please turn to page 17)

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Archie B. Perkins, CMW, FNAWCC

Files and Filing © 1985

One very important part of the training that the student watchmaker and clockmaker should receive is in the use of files. The course should contain enough filing exercises for the student to gain the necessary skill in the use of all of the different styles of files. Some of the exercises could be the crossing out of a wheel blank, making a pair of pierced clock hands, making grinding and polishing slips, making gravers and slide rest turning tools, as well as making a set of flat drills and making winding stems and filing the square on them. This skill is needed in restoring antique clocks and watches; in fact, it is a necessity.

FILE HISTORY

It is believed that some form of file was used as early as Biblical times to sharpen plowshares, mattocks, axes, and sickles. Chances are that these crude files were made of stone.

It is believed that Leonardo da Vinci, about 1490 A.D., invented a machine for making files. This was believed to be the first attempt to machine-cut files.

The first machine to actually cut files was said to be invented by Chopitel, a Frenchman, about 1750. Other file cutting machines were made between 1756 and 1862 mainly by Frenchmen.

There are indications that water-driven machinery was used in England for making files about 1765.

The first American filemaking machine was made about 1836, and the first English machine was said to be made by Nasmyth in 1840.

The process of improvement in making files by machine is credited to such pioneers as Bernoit, Nicholson, Whipple, and Weed. These pioneers brought forth machines capable of making files more precisely than by hand which led to standardization of the different kinds and cuts of files.

FILE MAKING

The following steps are used in making a file:

1. The steel is received in various shapes such as square, flat, round, half-round, etc.
2. The blank is heated and forged to the shape the file is to have, including shaping the end and the tang.
3. The blank is annealed in preparation for forming the teeth.
4. The annealed blanks are ground or milled, followed by draw filing to produce the exact shape needed. This action produces true surfaces necessary for uniform formation of the teeth.
5. The teeth are formed by a rapidly reciprocating chisel that strikes successive blows on the file blank as it moves past the chisel. This action forms the exact desired tooth shape. The single cut file has a single series of teeth. Double cut files have two series of diagonal teeth. The first of its cuts is called the over cut and the second is the up cut.
6. The cut files are hardened. They are heated in a molten lead bath to the controlled hardening temperature. Then the heated file is immersed in a quenching solution. This controlled process brings the file and its teeth to a maximum uniform hardness.
7. The file is cleaned by sandblasting. Then the tang is annealed to give it strength. The file is then inspected and oiled to prevent rust.

FILE NOMENCLATURE

Figure 1 shows a hand file for the purpose of naming its parts.

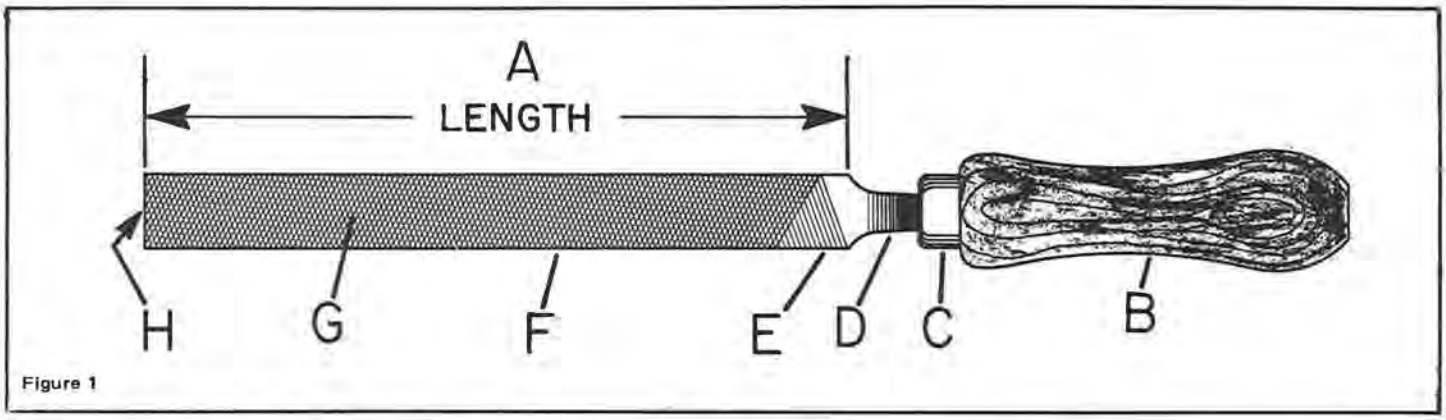


Figure 1

View A shows the length of the file. The length is the cutting part of the file exclusive of the tang. View B, Figure 1 shows the file handle; View C shows the ferrule of the handle. The ferrule is needed to help prevent the handle from splitting when the file is driven into the handle. View D shows the tang of the file. View E shows the heel of the file. View F shows the edge of the file. View G shows the face of the file, and View H shows the point or end of the file.

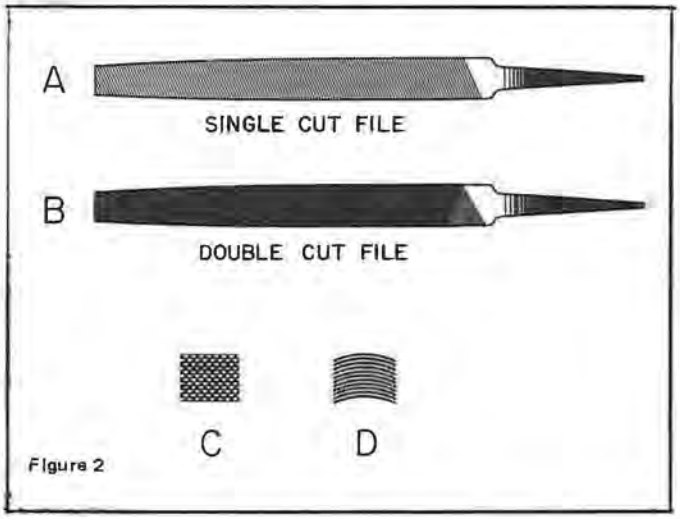


Figure 2

FILE CUTS

Files are made with different styles of teeth or cuts. Figure 2 shows the most common cuts for files. View A shows the single cut file. This style of cut is mainly used on American files. View B shows a double cut file. This style of cut is used on both American and Swiss pattern files. View C shows the rasp cut which has a series of individual teeth which are produced by a sharp, narrow punch-like chisel. This is an extremely rough cut which is used to form the rasp that is used on wood, hoofs, aluminum, lead, and other soft material when fast removal is desired. View D shows the curved cut. This cut is used on files which are to be used for filing soft materials. These files are fast cutting and leave a smoother finish than the rasp.

TYPES OF FILES

Files can be classified in two categories: (1) the Swiss pattern, and (2) the American pattern. The Swiss pattern will be discussed first. Figure 3 shows the different cuts used on Swiss pattern files. The Swiss pattern cuts are of the double cut type and are numbered as to their coarseness starting with Number 00 as the coarsest and Number 8 being the finest.

The cut patterns shown in Figure 3 are intended to show the relative courseness of the different Swiss cuts only. The coarseness can also vary with the different file makers for the same cut number. The coarseness of each cut number also varies with the length of the file. For example, on files of 10-inch lengths and over, each cut is coarser for each number of cut, and on files that are 4 to 8 inches in length, the cuts are finer for each number of cut. In other words, the cut patterns shown in Figure 3 are for files of 10 inches or over, and for files which are 4 to 8 inches in length, the "00" pattern becomes finer and is the same coarseness as the "0" pattern. All of the other pattern numbers are reduced in the same order for the same length files.

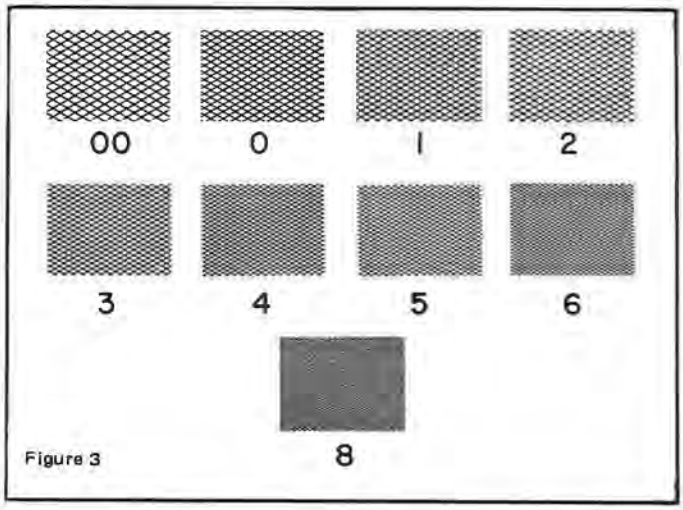


Figure 3

Figure 4 shows the four main types of files that would be used by the watch- and clockmaker. View A shows the hand file. The Swiss hand file is slightly tapered in thickness, being thinner at the point. The sides are parallel. One edge is cut and the other edge is a safety edge or uncut. The flat sides are double cut and the edge is single cut. View B, Figure 4 shows the needle file. Needle files are smaller than the hand file. They are made in different shapes and usually come in sets of a dozen in assorted shapes. View C, Figure 4 shows the escapement file. These files are smaller and more delicate than the needle file. They are used for watch and clock escapement work. These files are made in 25 different shapes. They can be bought individually or in sets of a dozen assorted. View D, Figure 4 shows the die sinkers riffler file. These files come in many different shapes and are used to file in restricted places that cannot be reached with the needle or escapement files. All of the files that are shown in Figure 4 will be discussed individually in the order shown.

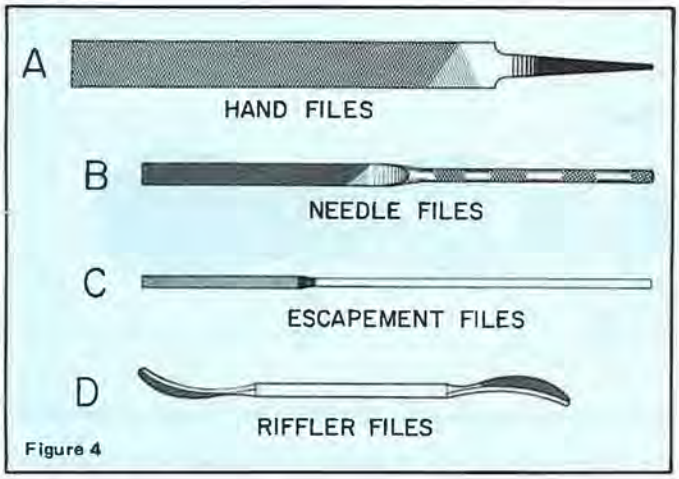


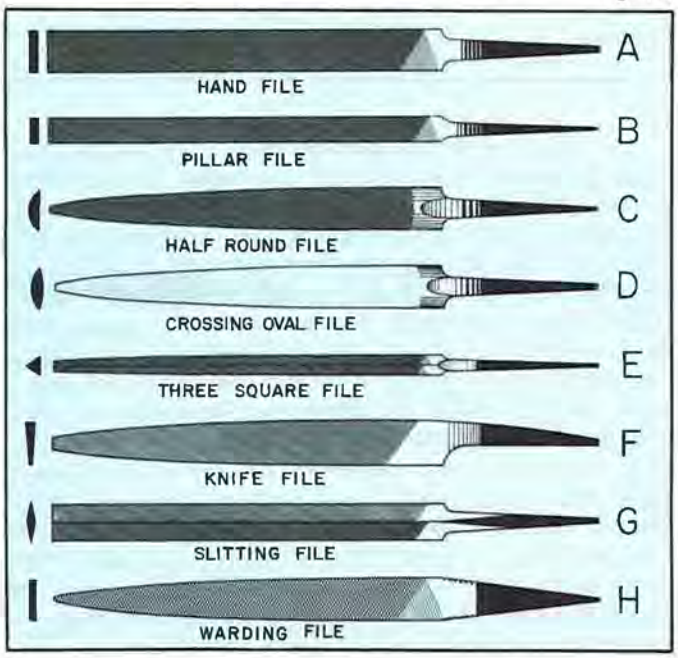
Figure 4

Figure 5 shows some of the different shaped files that fit into the hand file category. View A shows the flat hand file. The two edges of this file are parallel. One edge is single cut and the other edge is smooth (uncut). The two flat faces are double cut. This file is tapered in thickness; that is, the file is thinner at the point than at the heel. This file is used to file flat surfaces and for general filing. It comes in the following lengths and cuts: 3 inch, 4 inch, 5 inch, 6 inch, 8 inch, 10 inch, and 12 inch lengths 00, 0, 1, 2, 3, 4, 5, 6, and 8 cuts. The width and thickness of the file vary with its length. The width and thickness increase as the length is increased.

View B, Figure 5 shows the pillar file. These files are more narrow than the hand file. They are made in four basic widths: regular pillar, demi-narrow, narrow, and extra narrow. The pillar file is parallel in width, the thickness is tapered, and it is double cut on the flat faces only. The edges are smooth. The lengths and cuts are the same as for the hand file. Pillar files are used when filing in narrow slots that the hand file will not enter.

View C, Figure 5 shows the half-round file. This file has one side rounded and the other side flat. Both sides are double cut. This file is tapered toward its end in both width and thickness. The half round file is mainly used on curved surfaces. The half-round side is used for concaved surfaces and the flat side is used for convex surfaces. The choices of lengths and cuts are about the same as for the hand file.

Figure 5



View D, Figure 5 shows the crossing oval file. One side of this file is half round and the other side has a longer radius. This file is tapered like the half-round file. Both sides are double cut. This file is used for filing curved or concaved surfaces.

View E, Figure 5 shows the three square or three-cornered file. All three sides are double cut. This file is tapered toward its end, and it is used for filing acute angles and finishing corners.

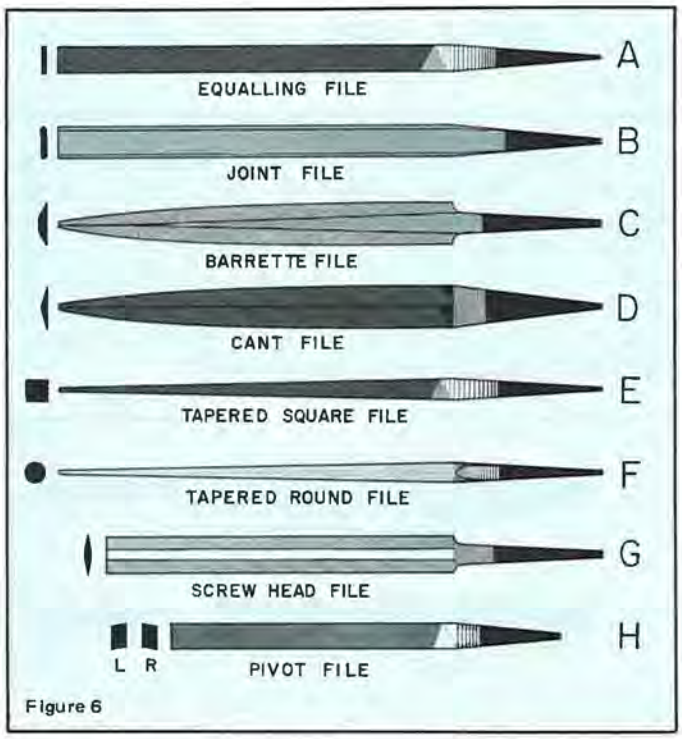


Figure 6

View F, Figure 5 shows the knife file. This file is tapered in width and thickness, but the knife edge is the same width from the heel to the point of the file. The knife file gets its name from the fact that its shape is similar to a knife blade. This file is double cut on its sides and single cut on the edges. This style of file is used to file in a slot or wedge-shaped opening. These files are made in 3 inch, 4 inch, 6 inch, and 8 inch lengths and cuts of 00, 0, 1, 2, 4, and 6.

View G, Figure 5 shows the slitting file. This file is parallel in width and thickness with a long diamond cross section. All four sides of this file are double cut and the sharp edges are single cut. This file is used for filing slots.

View H, Figure 5 shows the warding file. This file is parallel in thickness and tapered in width. Both sides are double cut and the edges are single cut. This style of file is useful for filing narrow parallel notches. The shape of the point will allow it to enter small openings. This shape of file is used by locksmiths for filing ward notches in keys. This file is made in lengths from 3 inches to 10 inches and cuts from "00" to 6.

Figure 6 shows other shapes of files. View A shows the equaling file. This file is parallel in both width and thickness and is double cut on both sides as well as both edges. The thickness of this file is approximately one-third the thickness of the hand file and it can be purchased in special thicknesses from .014 inch to .083 inch and in lengths of from 4 inches to 8 inches. This file is used for filing slots and filing inside narrow slots.

View B, Figure 6 shows the joint file. This file is parallel in width and thickness, and it is single cut on the edges only. The flat sides are smooth. This file is made in two styles,

round edge and square edge. These files are made in 4 inch and 6 inch lengths and in thicknesses from .014 inch to .134 inch. The lengths are 4 inches and 6 inches with cuts from "0" to 2. This file is used to file notches. The round edge joint file is used to file watch case joints when replacing the tubes that form the hinge on the case.

View C, Figure 6 shows the barrette file. This file is tapered in width and thickness, and it is double cut on the flat face only. The back of the file is tapered at the edge and left smooth (uncut). This file is useful for filing a wide flat surface where it is not desirable for the edge of the file to cut, such as filing in a dovetail slot. This file is also made in a pointed-back style.

View D, Figure 6 shows the cant file. This file is similar to the barrette file except that it is double cut on all three surfaces. The width and thickness are both tapered. This type of file is used for shaping the inner angles of wrenches for hexagon bolt heads and nuts. It can also be used to file inside dovetail notches.

View E, Figure 6 shows the tapered square file. This file can also be obtained in a parallel square shape. These files are usually double cut on three sides but can be obtained with all four sides double cut. This file is mainly used for filing square holes.

View F, Figure 6 shows the tapered round file. Round files are also made with parallel sides. These files can be purchased with chisel cuts for fast removal of material and etched cuts for finished cuts. This type of file is used for enlarging round holes and rounding off a radius (concaved surface).

View G, Figure 6 shows the screw head file. This file is single cut on four sides leading to the edge, and single cut on both edges. These files are made with or without a tang, in 2 inch, 3 inch, and 4 inch lengths. The main use for these files is for filing slots in screw heads and cleaning out screw head slots.

View H, Figure 6 shows the pivot file. These files are double cut on both sides and the edges are left smooth. These are also supplied with one side double cut and the other side smooth. In this case, it would be called a combination pivot file and burnisher. When this file is used on top of the pivot, it would be a left hand style, and when used underneath the pivot, it would be a right hand style. The edges of this file are undercut to form these two styles. These files are used to file clock pivots to remove the grooves in them. The cut on these files is extremely fine, approximately a Number 8 cut.

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1. C & E Marshall Co. Catalog Number 52, Chicago, Illinois: 1925, pp. 109-115.
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3. Nicholson, Paul C., Jr. *File Filosophy*, Providence, Rhode Island: Nicholson File Co., 1956.
4. Oberg, Erik and Jones, F.D. *Machinery's Handbook*, New York: The Industrial Press, Thirteenth Edition, 1946, pp. 1384-1389.
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6. Swartchild and Company, Catalog Number B500, Chicago, Illinois: 1951, pp. 388, 392.

Next month, the American pattern file will be discussed.

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

A Freak Escapement

(NOTHING NEW, JUST AN OLD TRICK)

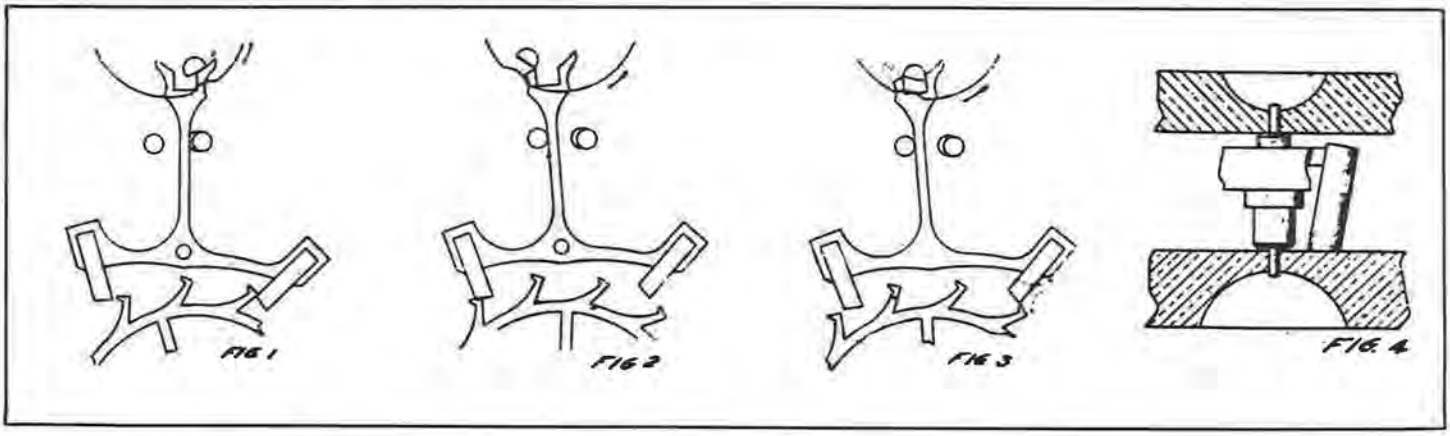
A watch in which the balance rotates continuously in one direction is actuated by a lever escapement. The method of making the device is extremely simple. An American watch with exposed pallets is best suited to the purpose, preferably a three-quarter plate.

Interchange the pallet stones by placing the receiving stone in the discharging slot and the discharging stone in the receiving slot. Then cut off the guard pin and the left horn of the fork to the end of the slot, and tilt the right banking pin outward. Now adjust the pallet stones so that the wheel will lock on the discharger, not on the receiver.

The pallet stones in American watches invariably have impulse faces at a more obtuse angle with the locking face of the discharging, than with the locking face of the receiving stone. By changing the stones, a condition in the escapement can be secured. The escape wheel will lock only on the discharging side as shown in Figure 1. The same result can be produced by using two discharging stones, but simply interchanging the stones will answer the purpose. When the proper condition is secured, it will be found that the escape tooth will drop on the impulse face of the receiving stone as shown in Figure 2. When the tooth drops on the receiving side, the fork is immediately thrown over to the discharging banking. The escapement overbanks since the guard pin has been removed and there is nothing to prevent it from doing so. The objective of cutting off the left horn of the fork is so that it may pass unobstructedly from the left to the right banking. If the left horn was not removed it could have struck the foller pin before it had time to get out of its way, thus checking the motion of the balance. This condition is shown in Figure 2 where the broken lines indicate the horn in contact with the jewel pin.

The object of tilting the right banking pin is to overcome the effect of recoil—to prevent recoil of the fork. The left banking pin is straight because recoil on that side is desired. Since the right is so inclined—either being bent or tapered—that when the edge of the fork strikes it, as in Figure 4, it is forced to slide upward. This presses the upper shoulder of the pallet arbor against the underside of the pallet cock, thus wedging it, so to speak.

This insures the fork, remaining in proper position, to unlock the escapement and receive impulse from the discharging stone. An escapement thus adjusted will give impulse in one direction, as indicated by the arrows in Figures 1, 2 and 3. A hairspring cannot be used on this device. The balance will attain a high rate of speed and it may be advisable to use a light mainspring for driving power.



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THE PICKLE BARREL

Marshall F. Richmond, CMW

Report on First Jewelry Repair Seminars

The first "Introduction to Jewelry Repair" seminar was held in Atlanta, Georgia, the second in Orlando, Florida and the third in Greensboro, North Carolina. The participants had varying degrees of skill and experience. Some had never before held a file or jewelers saw in their hands, some were watchmakers or clockmakers with no jewelry repair experience, and some had a small amount of experience in jewelry repair—but none had ever sized rings.

Being the instructor, in my evaluation of the success, I will rely on my observation of the skills developed in the three-day classes and the final interview with the participants on the closing hour of the third day. The final judgement of the success of these classes will be the evaluation of the Seminars and Workshops Committee and the Board of Directors who instructed the committee to set up these seminars and authorized the purchase of necessary equipment. The Watchmakers Association of Indiana, an affiliate chapter of AWI, sold their equipment to AWI which included four jewelers benches, one instructors bench, nine torches, one polishing machine, hoses and manifolds for setting up the torches. As each of the four benches will seat three people, the class could handle as many as 12 participants. But with one instructor and a limit of three days, the committee set a figure of eight maximum for these classes. Incidently, the Indiana affiliate chapter contributed the money received from the equipment to the AWI Elm Trust so in fact this was really a contribution to AWI. AWI purchased a new van to transport these classes from place to place as well as other supplementary equipment and supplies.

AWI Central, under the direction of Mike Danner, makes all the preliminary arrangements for these classes. Through their system they procure the participants and make all the physical arrangements for meeting rooms, etc. This leaves the instructor with transporting the equipment, setting it up (about a two-hour job), and presenting the three-day class. The first three classes were presented over a 16-day period and covered approximately 2,400 miles of travel.

Our first estimate of what could be accomplished in three days was that a complete novice could be taught to size most gold rings that they would have occasion to change the size on, plus some simple repairs. To obtain this result we have to start by teaching how to file and saw, heat and its application, solders and how they work, fluxing, cleaning, pickling, shielding, and polishing. To do all this in three days requires continuous application both mentally and physically of both the participants and the instructor with very little time for rest breaks. About 90% of the time spent is hands-on bench work with the saw, files, torch, and polishing equipment.

Having served two, three-year terms as a director of AWI and two years as its president, I have been aware of the efficiency of AWI Central. The membership no doubt knows very little of this. In fact, the well thought-out scheduling and arrangements of these first three classes showed me even more how efficient this office is. The scheduled driving time was easy to make and upon arrival at all three class sites the arrangements were made in detail so it was no hassle to have the classroom set up the night before and the classes then could start on the scheduled time.

Due to the cost of gold all basic practice is done with brass and silver solder, which works much the same as gold. To start getting the students familiar with sawing and filing they are given copper and brass pieces out of which they first sawed a curved piece of copper and shaped it into a tapered ring, silver soldered the ends, filed it, shaped it, and polished it. This could be used as a holding ring for emery cloth on a tapered felt inside ring buff to rough finish the inside of rings on the polishing motor. During this work period the participants were given instructions on sawing, filing, how to set up torches using oxygen and gas, how to adjust the pressure regulators and the safety steps necessary in handling these gasses.

They were also instructed in the use of fluxes and how to pull solder by moving the heat of the torches, and how to control it with the flux. They were next given a piece of brass 1½ mm thick from which they sawed a strip, rounded it bringing the two ends together, and soldered it with a butt joint. When this was done it was rounded on a ring mandrel filed to shape, then polished. The ring was then cut in the solder joint and the ends filed to make a "V" joint. This same ring was then soldered and finished. The third step in this ring was to again cut it and also cut a piece from the brass plate to add two sizes and make the ring a size 8. This was then finished.

The next project was to saw out another ring shank from flat brass and saw off a piece of 3/16 brass rod about ½ inch long, filing a taper to make the shape of a ladies tiffany ring head. The ends of the shank were filed to shape to fit the head. This was silver-soldered—which is the same procedure as installing a full shank on a head to make a ladies engagement ring. After filing and finishing, some of the participants filed this head and/or sawed it to form four prongs making a four-prong mounting. The bottom half of the shank was then cut off and with "V" joints reinstalled as a half shank. With these projects everyone sized rings up and down, installed a head or a full shank, a half shank they used butt and "V" joints and learned how to pull solder with moving heat. This completed the first two days. The third day was devoted to discussing individual problems, demonstrating different methods of repair on gold and silver rings that the participants brought. Some of the things demonstrated were putting on prongs, sizing a silver stone ring without removing the stone, setting a cubic zirconia in a belcher mounting, making rings larger by stretching on a steel mandrel without cutting them, putting on tie tack or pierced earring posts, and many other repairs normally encountered in a jewelry repair shop. During the course of the seminar color slides on jewelry repair were shown. Methods, tools, and equipment were discussed.

The "Introduction to Jewelry Repair" seminar was designed to present as much in the limited amount of time as

is possible and to enable a person to start doing limited jewelry repair with the smallest possible investment in tools, equipment, and materials. Many watchmakers need to supplement their income and as jewelry repair has always gone hand in hand with watch repair it can add greatly to their income with very little added capital to their tool and equipment inventory. Other watchmakers in one-person stores can well use the skills of jewelry repair to give a more complete service to their customers without having to send the work away. Many jewelry repair jobs can be completed in as little or less time than it takes to package it in sending it out for repair. At least one participant was a jewelry store employee sent to learn the basics of jewelry repair to help in making estimates, taking in work, and assisting the full-time jeweler working in the store.

In the final hour of these classes everyone was interviewed and asked to comment on the accomplishment of the seminar. This was taped to be used by the Seminars and Workshop Committee. The answers were all of a positive nature. All agreed that much more had been presented than was advertised in the brochure. One person commented that he had learned more in these three days than he had learned in a three-week school that he had attended. Most everyone commented that they would be interested in an advanced course. One commented that the work pamphlet should have been sent in advance so they could have studied it before starting the seminars. This would have been done except these pamphlets did not get back from the printer in time—but it should be done for all future seminars.

In evaluating the success of these first three classes from the instructor's observations, I would have to grade the students on a scale of 1 to 10 and try and consider natural aptitude or talent, experience, application, and ability to visualize in shaping. In making the grading it would be my opinion that all the participants would come between a 7 and a 9. There might have been at least one in each class that could have been given a 9½. One thing that should be pointed out is that every student showed a determination to get the most out of this seminar as they could. Their attitude and cooperation was an excellent example of positive thinking. With all these pluses to work with, my opinion is that these three seminars were a success.

"Introduction to Jewelry Repair" is just another of the valuable seminars and workshops that are made available by the American Watchmakers Institute to its members. If these seminars are successful for the balance of this year advanced jewelry repair seminars will be available next year to go along with the introductory seminar and for members who do limited jewelry repair but want to learn how to do the more difficult repairs. This could eventually lead to even special seminars teaching diamond and stone setting.

SHOP TALK

Wes Door, CMW

Cleaning Cases and Push Buttons

Repairing quartz watches entails some very important procedures. They are case cleaning, pusher repairs, replacements, and cleaning.

Analog watch case cleaning is rather simple and we are more familiar with doing these ordinary watch cases which have only one stem and crown to remove. We must exercise more care in digital watches (or a combination of analog and digital) due to the several push buttons.

To clean the case it is advisable to strip the case as much as practical. This includes removing the back, the back gasket, the hatch, the hatch gasket (if applicable), and even remove the bush buttons (at least the easy ones).

The most usual types of push buttons fall into three types, which we will call "A", "B" and "C". (See Figure 1.)

TYPE "A" PUSH BUTTONS

Type "A" push buttons push toward the inside of the case to remove. These should definitely be removed while cleaning the case. They are easy to remove, in fact, they will generally fall out as the movement (module) is removed from the case.

There are no springs inside of these, but they depend on the spring loading structure in the module. Therefore, these pushers are quite free (loose) and easy to remove after the case and movement are separated. Many problems result from not placing these pushers back into the case properly when doing the simple task of changing the power cell. Normally the module isn't removed from the case in the cell replacement operation. However, if the module slips outward just a slight amount, the push button can slip under the spring loaded type contact, and then you are in trouble.

TYPE "B" PUSH BUTTONS

The type "B" push buttons push out to remove and are held into the case by friction. Although this type has a built-in spring it may be difficult to remove this type of pusher to clean.

This case, with pushers intact, may be placed into the ultrasonic cleaning machine. The inside of these push buttons may be gummed and a small needle may be used to clean out the hard to reach areas, like we would to clean the recesses in a waterproof crown in a stem set watch.

If these pushers are loose or need replacing, then we can do so by using a special tool to press these out and in. There are excellent button press tools available through wholesale supply houses.

(Please turn to page 26)

Figure 1

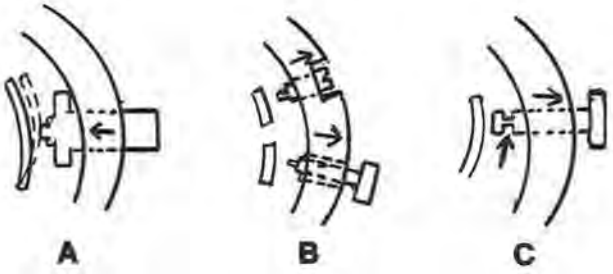
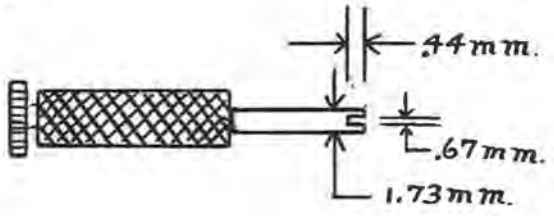


Figure 2



QUESTIONS & ANSWERS
(Continued from page 6)

only provides a good-looking surface. If your surface isn't smooth, the polish will only polish whatever surface you've provided.

I have recently serviced a fusee, cylinder escapement pocket alarm (Swiss, I suspect). The only identification is the script "Brothers Melly" near the ratchet click for the fusee mainspring.

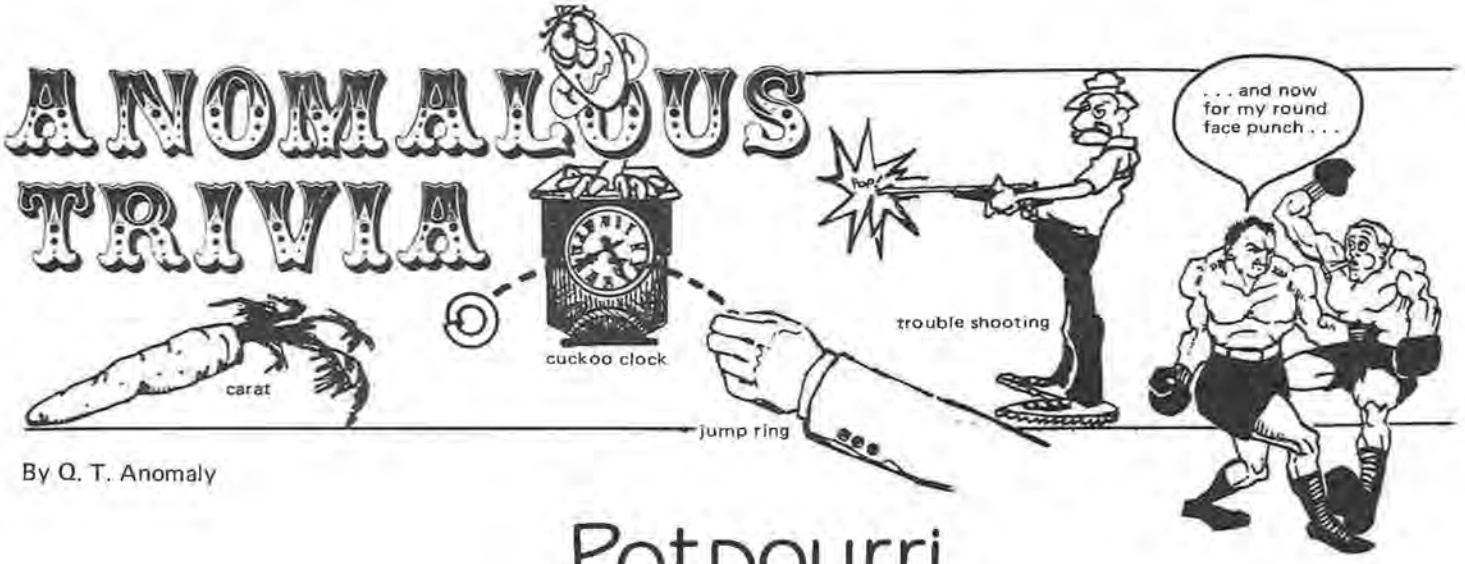
The movement measures approximately 47mm on the dial side and 42mm across the upper plates. I am enclosing photographs of watch and hope you can give me some information concerning it which I can pass on to my customer, such as age, history, etc.

J.E. Carlstrom
Edina, MN

The Brothers Melly operated from Geneva and Paris from the late 18th century to about 1830. Your watch was made aobut 1829. I suspect that this one was made not in France or Switzerland, but in England. Had you given some indication of the hallmarks stamped on the inside cover (back) of the case, I could tell you much more. It is so important to supply as much information that is on the watch which only those in possession have so that we in turn can tell you more about it. On the backs of these cases on their insides are stamped logos of case content, where made, and often the casemaker's initials or trademarks. Also, there are punch marks of the locality in which the case, at least, originated.

The whole structure of the movement suggests English manufacture, such as the use of a cock rather than a bridge. And the use of the cylinder escapement oddly was more a favorite of the English before the Swiss and French adopted it. Possibly the movement, at least, was contracted by Melly freres in England by English makers to be more readily accepted by the domestic purchaser in that country.

Henry B. Fried



By Q. T. Anomaly

Potpourri From the Bench

I am getting tired of people interfering with my day off. According to an article I read recently, everyone should have a day where they do only what they want to do, not what is expected of them or what someone else plans for them to do. To me, this is one of the great ideas of the 20th century. What the article forgot to discuss was how you let the rest of the people know it's "your day," with no interruptions from the rest of the world?

One day after careful planning, I was all set up to spend the day with my favorite pastime—dissecting aardvarks. I boiled a pot of them the night before so no time would be wasted on my day. No sooner had I made my first incision, the phone started to ring. It was a recorded message from a department store saying the order was ready and to please pick it up at my earliest convenience. Without thinking, I thanked the recording for calling and said the order would be picked up soon.

After a relatively long period of time—about fifteen minutes—the door bell rang. It was some joker asking if I had made plans for a burial plot at one of the local cemeteries. I told him no, but I hoped he had, because if he didn't vacate my doorstep in three seconds it would be put to good use. Before the door closed, the phone rang again. This time the person was asking for a donation to send wealthy kids to camp. I told her they were no better than the poor kids. If they wanted to go to camp, let them work for it. While slamming down the phone, I noticed the mailman approaching. There were two pieces of mail. One said that if I subscribed to a magazine I would become eligible to win a million dollars. The other had a large stamp scross the face of the envelope which said "WINNER." I thought at last my luck had changed! I tore open the envelope and started to read the letter. It said that I was already a winner. All I had to do to claim the prize was to visit some lake property in another state. If I did, I would win a trip for two to Paris, a microwave oven with a turntable, a digital clock radio, or a baby turtle with a handpainted scene of Custer's last stand. With the way my luck was running, I threw the thing away. I probably wouldn't win the turtle anyway. I saw that it was getting close to lunch time so I decided to eat. While making my favorite sandwich of bologna and whipped cream, the phone rang again. This time it was for tickets to the Annual Ambulance Drivers' Ball. This woman didn't know when to quit. Finally I told her I wasn't interested and to please not call again. She signed off with "If you ever get sick, don't call us!" Needless to say, this had some effect on my appetite. I could hardly finish the third sandwich. I thought I would take a little nap hoping things would be better during the afternoon.

It was almost an hour later before I started to doze off. Someone was banging on the front door when I awoke. It was a delivery serviceman asking if he could leave a package for someone down the street. I told him no, because I was leaving in an hour to fly to Pakistan. Who would ever guess that this guy just returned from a two-week vacation in Pakistan??! It was almost three o'clock when he finished telling me of the Pakistani highlights.

Not to be discouraged, I returned to the aardvark. Before I could pick up the scalpel, the phone rang again. At first I was going to ignore it, but I thought maybe it was something important. It was. The young voice said if I could answer two questions I would win a complete set of encyclopedias. The first question was "Who was buried in Grant's tomb?" I said it was George Washington.

She said, "That's close enough."

The second question was, "Name the hundred and twenty members of the New York Philharmonic Orchestra?"

I missed it by three.

By this time, I realized I would get nothing accomplished. I threw the aardvarks into the freezer for later use. After dinner, I settled down to watch some TV. As you may have guessed, the phone rang again. This time it was someone selling storm windows. It was aggravating enough just to get the call, but to me there's nothing less thrilling than listening to a sales pitch being read, especially by a person who can hardly read.

During the night there were two more calls. One from a fellow asking for Jane. I told him there was no Jane living at my number. When he asked who I was, I said, "ME TARZAN!" and hung up.

The last one hit the jackpot. It was some woman asking for donations to help indigent watchmakers. I told her to put me down for fifty. Then on second thought I said, "Go ahead and put me down for the whole dollar!"

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ANGLES

Elizabeth Brehmer

Recycling Scrap Metal

Jewelry equipment and supplies are very expensive, especially to a small shop operation. Gold stock for sizing, pronging and shanking is expensive when purchased from a refiner or manufacturer, so to cut costs and keep more of the profit in the shop, it's a good idea to learn what metals can be recycled and how to reclean and use scraps of gold that are around the shop. Good scrap metal comes from a variety of sources, clippings from sizings, sprues and sprue buttons from casting, old shanks, and pieces of sized chains.

Scrap metal must be sorted, cleaned, melted and reformed into whatever shape is needed. Keep a dish or small container in the bottom of your bench pan, and at the end of the day clean out your pan and save any pieces of metal, spring rings included. It's surprising how quickly metal scrap can add up when collected daily. During the day pieces can be used from the dish for sizing work. Small pieces are good for quarter, half, and full sizings. When the season becomes busy scrap stock is accumlated, and when business becomes slow the excess saved can be used for repairs. Always examine the piece of stock being used for sizing lines. Scrap from old rings can have several sized areas.

CLEANING SCRAP METAL

Scrap metal has hand oil, compound, flux, borax and solder all mixed in with it. The sources of dirt are endless. Clean your scrap in a basket in the ultrasonic cleaner. The sonic will take care of the dirt, borax and other contaminates. Once the metal is clean, sort it according to karat and color. When sorting white gold take care to check for palladium heads. Many heads produced today are palladium–an alloy of platinum. These heads have a higher melting temperature than the white gold. If mixed with white gold, palladium will keep its original shape even after the white gold has melted. Acid testing will help you to determine which heads are white gold.

There are some pieces of scrap which are undesireable to use over again because they do not remelt cleanly or contain too much solder. Shanks with multiple solder joints have too much solder. Small serpentine chain pieces contain a large percentage of solder. Spring rings must have the steel spring removed before they can be used. Check around with some findings manufacturers. Sometimes the findings companies will take back worn or broken springs rings in partial trade as scrap or partial credit toward a further purchase.

Scrap which contains solder will cause porous areas and bad quality stock when melted. Keep the unusable scrap in a separate container and build up enough to make it worth sending in to a refiner to be reclaimed and realloyed into useful material.

MELTING METAL

Each metal should have its own crucible. Gold can be used in just about any type of crucible, be it graphite or ceramic. Clay or graphite are the first two best choices.

If the crucible is new, make sure that it is clearly marked on the outside of the sleeve. Each metal should have its own clean crucible. Properly season or prepare the inside of the crucible before adding any of the metal. To prepare the crucible use a large torch. One usually used for casting will work. Apply a fine layer of borax and melt it. Repeat this process until the crucible has a smooth layer of glazing on the sides and bottom. Excessive glazing can be a problem. It will clog the pouring area and shield the metal from the heat. If there is too much borax, use the stirring rod and heat up the crucible and scrape out some of the extra. While the crucible is still warm, add in the gold to be melted. Do not over pack the crucible with gold. Fill it about half way and melt the metal. Over packed crucibles tend to allow the metal to freeze in some areas. Freezing occurs when a particular part of the metal cools and is not as fluid as the rest of the metal.

Heat the metal on the crucible using a large reducing flame. Gold should be melted as quickly as possible. Extended heating causes the metal to oxidize on the surface and collect dirt. Overheating will burn alloys out of the metal. Most of the scrap being melted has already been melted before, so prolonged heating only increases the chance of porosity in the metal. Smoking metal is a sign that the metal is being over-

heated. Zinc is the first alloy to burn out of gold, and the smoke is the zinc evaporating/burning. When the zinc burns out of gold, it becomes porous and too low in quality to be used for any jewelry work. Porosity can be caused by many factors, however tired or fatigued metal is a primary source. Porosity in gold looks like a haze or clouded area on the metal surface. Usually porosity is not superficial, but goes all the way down into the metal's thickness. There is really no way to rid the metal of the porosity other than to remove the bad area. On some of the lesser cases, the porosity can be burnished over or small pits can be filled with solder. Porosity usually will soak up all the solder that is applied to the area. The easiest way to avoid the problem is to watch the metal and to keep track of the number of melts it has been through.

Gold should have the appearance and consistency of mercury. When the metal has reached temperature, add a pinch of flux and stir the metal with a carbon or graphite rod. A pencil with the wood stripped back to expose the lead will work when a carbon rod is not available. Use the carbon rod to draw off any of the excess flux or any skin which has formed on the surface from heating.

If pouring ingots, preheat the ingot mold. The mold should be treated with a fine layer of oil which will act as a barrier between the hot metal and the iron mold frame. The mold must be heated to warm up the iron. If it's not, when the hot metal is poured it will spatter back out at you.

With the metal at the proper temperature, and the ingot mold warmed, start to pour. Keep the flame moving on the metal and also on the top of the mold where the metal is to be poured. Slowly and steadily pour the metal into the ingot mold. Watch the mold fill and when the metal nears the top of the cavity the pour is finished.

The vaporization of the oil in the mold causes a cushion between the frame and the freshly poured metal. The metal will start to cool, first around the sides closest to the frame and then cool inward. Allow the frame to sit and cool for awhile before releasing it. The metal will show a slight depression in the top where it has contracted as it cooled. Once cooled, the mold (depending on the style) can be opened. Wire or square stock ingots have a clamp, similar to a "C" clamp which has a threaded butterfly wing nut screw to tighten it. Other molds are open faced and have a depression which gets filled with hot metal, and when cool is just turned upside down to release the ingot bar. Bar stock is usually rolled out to make flat sheet stock.

USING SCRAP TO MAKE CASTING SHOT

To make casting shot, have your scrap cleaned and sorted. You will need a stainless steel beaker or a container that will not melt under heat. The container should be approximately ten inches in height. Place it under a faucet which has cold running water. Position the container so that the water is constantly running into the inside, preferably down one side. This will keep the water agitated while the hot metal is being poured. Slowly pour the metal from the crucible. The same steps for preparation and heating the metal are followed as in preparing to make an ingot. The metal is ready for the pour when a liquid eye appears in the center of the molten mass.

Keep your pour smooth and consistent. Pour the metal from just above the water level. The hot metal should hit the moving water and break into small open cup-shaped spheres. Small round balls will result when hot metal is poured too far above the beaker. The metal will cool partially before it reaches the water and forms this shape. The small balls of metal will hide dirt and flux inside themselves, that is why broken cup shapes are more desireable when using scrap metal for casting grain. When pouring the metal, keep the reducing flame back from the crucible so that it is just brushing over the metal and also over the spot on the crucible where the metal is going to be poured from. This keeps the metal from freezing during the pour.

Another easy method for a small shop to clean its own metal is to again take a stainless steel beaker or large container and fill it to the top with crushed ice. Add cold water over the crushed ice until the beaker is filled to the top. Heat the metal and pour again close to the water's surface (approximately six inches). The hot metal will run down through the cold water and crushed ice. It will form nice cup-shaped spheres. The ice shocks the surface of the metal and breaks away the dirt that is attached to it and floats it to the top of the water. This is a rather unusual method, however I find that it works quite well. Be sure to pour the newly made shot from the beaker into a very fine sieve or mesh. Ice pours like this one can make very fine granules. If there is a large percentage of shot, which didn't break open into cup shapes, I would remelt the shot and pour it again.

For melting large quantities of metal, a good machine to have is an Electromelt. It is a small compact oven surrounding a graphite crucible. The Electromelt has an automatic thermostat which can be set on a particular temperature and that temperature can be maintained within the crucible. With the temperature at a constant, it is very unlikely that the metal will be burned unless you set the temperature too high. The Electromelt is designed so that there is a handle on the back and a knob for lifting the lid. Metal is poured out of it just as though water is being poured from a pitcher.

When using scrap for casting, I like to mix in new metal with the old metal to improve its quality. The new metal helps to keep the karat and the color of the metal acceptable. It also replenishes the alloy materials somewhat. When melting old sprues and buttons, remove the bottom quarter inch of the button. The bottom is where all the poorer metal settles out and the excess flux and dirt collects. Porosity tends to show up in the base of the sprue because of the loss of alloys from heating and reheating. I usually put away the bottom quarter with the chain pieces and old shanks that are to be sent to the refiner.

There are all types of ways to recycle old metal in a shop. Chunks of shank can be used to fill gaps or pits in metal. Scrap can be fused into place rather than being soldered.

Many large shops don't bother to go to the trouble to refine their old metal. Their operation moves so quickly and is so reliant on time that they just save their scrap for the refiner and don't bother with it at all. However, small operations work on a different scale and perspective. Everything that they have in the way of materials in the shop needs to be used to its fullest in order to get a little extra out of it. Economics plays a big role in the life of the everyday jewelry repair industry and the jewelry repair shop. I like to make the most of what I have at hand.

A Hairspring and Collet For a Verge Watch

RALPH GEIGER, CMW, CEWS

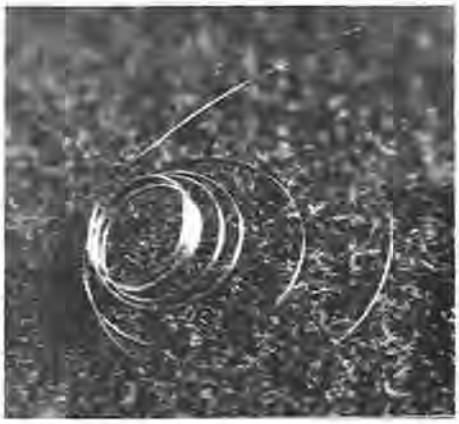

Figure 1. Result of pulling wire over broach too quickly. It can still be made into a useable hairspring, but the job will be much more difficult.

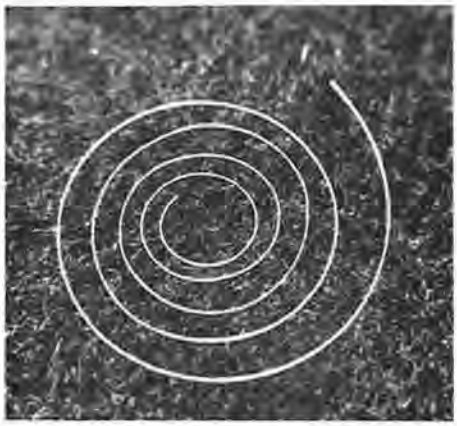

Figure 2. Hairspring trued and ready for colleting.

Each time the balance is to be removed from a verge watch, the hairspring must be unpinned from its stud. Such a requirement is an invitation to hairspring damage from accidents and/or mishandling. Consequently, one is apt to see verge hairsprings misshapen or broken too short to be useable and in need of replacement.

The process of making a verge hairspring is a fairly simple one and requires tools most watchmakers already posess. These springs are made by hand as they were in the 18th century. Before proceeding, however, I do not think it can be said too often that whenever one works on a verge watch, ALWAYS, ALWAYS block the train with a piece of Rodico before loosening the balance cock screw!!

Start by rolling flat a piece of B & S gauge #38 spring wire to about .05mm thickness and about 8 inches long. Many jewelers have rolling mills; if you do not own one ask your friends if they do. Take care to feed the wire straight into the mill so that it also comes out straight. Attaching a pin vise to each end of the wire will make it much easier to handle while rolling it flat.

The coils are formed in much the same way that you would curl the ends of a ribbon on a Christmas package. A hairspring is not a ribbon on a package, though, so continue reading before you give it a try. Working with about ½-inch at a time, gently and slowly pull the wire between your thumb and a round broach (about 1 mm dia.). Continue pulling this ½-inch section over the broach until it develops the radius you desire. Increasing the pressure of your thumb pressing on the broach will decrease the radius of the coil. Be careful to pull the wire perpendicularly over the broach. If the wire is pulled over the broach at less than a 90-degree angle, the coils will form a helix. Truing the spring in the flat will be much more difficult. When the coil is shaped properly, start working on the next ½-inch section. Continue in this way until you have about eight coils.

The hairspring is now trued in the flat and the round in the same manner you would handle any hairspring. At this point, though, I do not suggest you spend too much time truing. Adjust the spacing of the coils and flatten them just enough to allow the hairspring to operate properly. We still need to find the proper length of the spring and in the course of doing so we will probably need to remove coils and reform the outer coil a few times. There is no sense in wasting time in unnecessary truing. Careful truing will be done after we know the correct length of the hairspring.

With the hairspring roughly true, pin it to the collet and install the balance in the watch. Pin the hairspring to the stud with about 1/3 coil extending through it. Push the regulator all the way to "fast" and let the watch run for about an hour. Chances are the rate will be very slow. If so, block the train and remove the balance. Shorten the hairspring 1/3 coil, repin it so that 1/3 coil extends through the stud and run the watch for another hour. Continue this process until the watch is keeping a fairly close rate. By leaving 1/3 coil extended through the stud and pushing the regulator to "fast" you will not easily be able to shorten the spring too much too soon. Except for very early watches, verge hairsprings usually had between four and six coils. If the spring you have made will only keep time when longer or shorter than four to six coils, you may need to use a different gauge wire.

Some may be wondering: "Why fuss with all the trial and error timing to determine the hairspring length? Why not just vibrate the spring as you would for any other watch?" Two reasons: Verge watches do not all have the same beat rate. Counting the train is time consuming–especially if one happens to miscount. The rate of a verge watch is directly

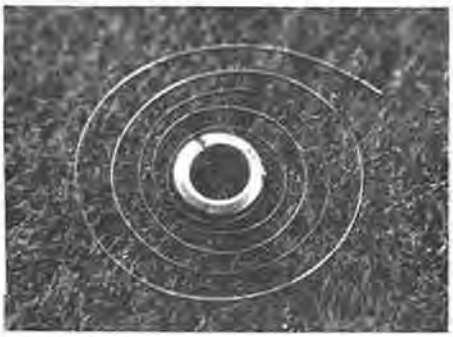

Figure 3. Hairspring colleted and blued and ready for timing.

Figure 4. Making starting center for drilling pinning hole in collet. Bur is cutting radially into side of brass rod.

Figure 5. Angle of bur has been changed to make chordal cut.

Figure 6. Parted collet showing chordal drilling.

Figure 7. Collet held in pin slide to make cut for slot.

Figure 8. Finished collet.

affected by the depth of engagement of the escape wheel with the verge. (To change the escapement depthing was, in fact, one of the methods of regulating prebalance spring verge and foliot timepieces.) This makes it preferable to adjust the escapement for optimum operation and then adjust the hairspring to the escapement.

Here it should be noted that if one is contemplating replacing a verge hairspring because the original cannot be regulated to a good rate, do not discard the original spring until the escapement is determined to be in good order. The fault may be in the escapement and not in the hairspring. Also look to the adjustment of the mainspring and fusee.

Now that the watch is keeping fairly good time, the hairspring can be removed (after having blocked the train) and given its final truing and bluing. Verge hairsprings were not precision hairsprings. Minor eccentricities in coil shape and spacing are allowable in a handmade hairspring. However, do not let this be an excuse for poor workmanship. Bluing is best accomplished by heating the hairspring on a bed of fine, clean sand.

If a collet is needed, it too can be made without great difficulty. Select a piece of brass rod and turn it to .20 mm to .40 mm larger in diameter than the finished size of the collet. Drill a hole in the center of the rod about the same size as the hairspring shoulder on the balance hub. With the graver, mark off the length of the collet on the brass rod.

Using a sharp pointed bur, make a starting center for the pinning hole. Start the bur cutting radially into the rod and after a sufficient depth has been reached, change the angle of the bur so as to cut chordally.

(Please turn to page 27)

The James Ward Packard Collection

Patek, Philippe Watch #12

Its Restoration – Part II

Joseph G. Baier, Ph.D.
CMW, CMC

Insofar as records are available, and memory prevails, the watches of the Packard Collection have not been serviced for some time. As museum pieces they are not subjected to the wear and tear of daily use. However, on close examination several years ago, and again last year, it was found that many watches were inoperative, or poorly so, and indications of hardened oils were visible. Because of that it was recommended to the Executive Committee and the Board of Directors that a planned program of restoration be undertaken over the coming years. Watch #12 was among those identified for early attention. Let us run through some of the features and details of the movement, with suggestions of possible value in the disassembly and assembly of complicated watches.

Many parts of the watch movement were removed while still in the case. This is a desirable procedure for complicated watches so that the positioning of the many parts in respect to the case can be noted, particularly the various control buttons on the case rim. In fact, until the dial is lifted off, the stem and crown cannot be removed, and care must be given to the many control buttons and levers running from the case to the movement.

The ten hands were removed, with each set placed within a vial marked with a number corresponding to the nearest hour mark on the dial. To be sure, several hands appear to be identical, but some differences do exist, particularly in fit to their respective arbors. The dial is removed from the movement using a small 'pry' bar, or the blade of a screwdriver, lifting up one side, then the oppostie side, alternately, until loose. A notch is found on the side of the dial which in assembly fits over an alignment pin on the movement. (Refer to Figure 1 of Part I of this series, for a view of the intact dial with hands [June 1985 issue].) Figures 5 and 6 are views of the dial and the day, month and moon-phase disks, before and after cleaning. The day and month disks have silvered bases. Note the darkened areas caused by longer exposure through their respective windows. The tarnish was removed using a product called Tarn-X®, a wipe and rinse fluid containing acidified thiourea, with detergent and corrosion inhibitors. Other products have a similar action. Small cotton swabsticks make excellent applicators. The moon-phase disk is a deep blue enamel with superimposed silvered stars and moons. Note that the day and month disks are fastened to their arbors with small screws, off center, so they cannot be mismatched or improperly located.

Figure 7 illustrates the movement dial side up, on the left, with the dial plate removed to the right. The dial plate is mounted to the movement with four irregularly placed screws, some differing in size. The dial plate supports several wheels affecting the positioning of the day, month and moon phase disks. Of significance are the two lower wheels in the figure, the smaller one on the right establishing the month of the year, with its 12 positions, held with a jumper. Note that of the positions between each two projections, eleven have slightly varying heights for establishing 30 and 31 day months. However, one position between these projections contains a rectangular pivoted piece, with one side of that rectangle farther away from the pivot than the other three. This

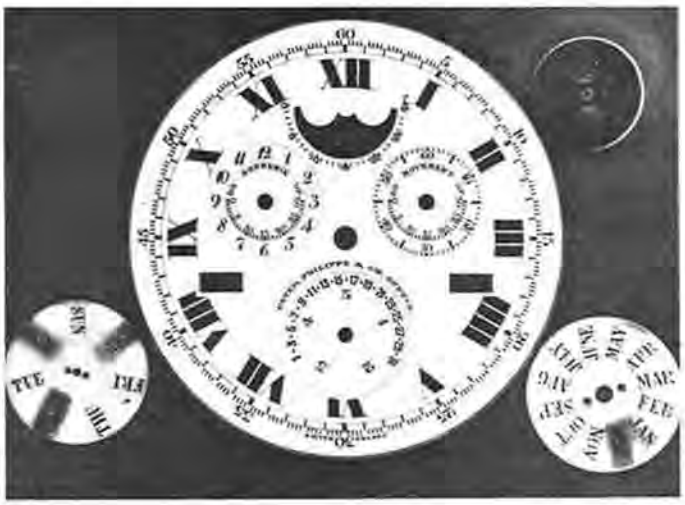

Figure 5. Dial; Day, Month and Moon-Phase Disks before restoration.

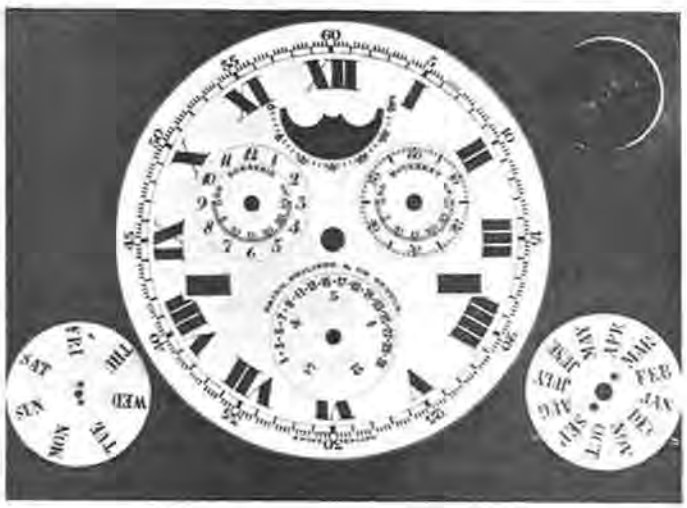

Figure 6. Dial; Day, Month and Moon-Phase Disks, after Restoration.

part of the month wheel establishes the period of 28 days, for February; but one year out of four, as that rectangle exposes its longer side, a one-day delay occurs, giving a month of 29 days. Recognizing these variations in the shape of the wheel, along with the small rectangle, allows proper setting of the month calendar of the watch at the time of assembly.

The larger wheel at the lower center of the dial plate, having 31 teeth, checks off the date, one to 31, but with a lever and fly-back arrangement permitting the return of the date hand to one, after an elapse of 31, 30, 28, or 29 days. This is controlled in part by the month setting wheel, along with a step mechanism on the center wheel, triggering the return of the date hand sooner for those months having less than 31 days. The day of the week disk has a star wheel with seven points, that wheel being an integral part of the disk. Only its arbor and jumper can be seen on the dial plate to the left of center. These wheels are positioned to the hour wheel and thereby to each other by means of markers (scribe dots), with the proper number of wheel teeth ratios and trip pin locations for their several functions.

Returning to the dial side of the pillar plate (on the left of Figure 7) note the quarter-rack below the minute rack, the 12-pointed star wheel and its jumper determining the hour strike, and the numerous levers involved in the clock-watch action, each with its special function.

In the restoration of any complicated watch it is imperative that the watchmaker carefully study the mechanical construction of the watch in its entirety as well as understanding the role played by each part. This can be very time-consuming, but is very important in memorizing the relationship of all parts before the watch is disassembled. It is too late to wait until all the pieces are on the bench pad for that study to be made!! Further, during that initial detailed study, many of the problems needing attention can more readily be found, and notes be made. One overlooked part, one bent tooth, one worn or cracked jewel may mean a partial or complete disassembly again in order to correct the error. The writer has been in the habit of photographing certain selected watches during their restoration if not for purposes of presenting programs to meetings of fellow watchmakers, at least for a learning experience. A picture is worth many words. For that reason, Figures 8 and 9 are included.

Figure 8 is a more highly magnified 'winding stem' area of the lower plate before disassembly. In fact, many of the parts seen here are located on a half-plate intermediate to the dial plate shown in Figure 7, and the pillar plate found just under it. Some of these parts had been removed from the watch as photographed in that Figure. Note to the left a small wheel with a tooth missing. Except for a detailed study, it was almost overlooked. One can only speculate how that tooth was lost; a most probable answer being that it was damaged by one of several 'pieces' broken off here and there in the watch, particularly from the tail of the minute rack. Figure 9 is a view of the stem side of the upper plate. The many parts of the chronograph section appear superimposed on the upper plate, with other portions running throughout the watch.

Complete disassembly of the watch followed its careful study. Complicated watches must be disassembled in a regional fashion, not train by train, because all parts are located in positions where space permits, and connections can be made. In that disassembly process all parts in one area are placed in a compartment separated from all other parts.

(Please turn to page 30)

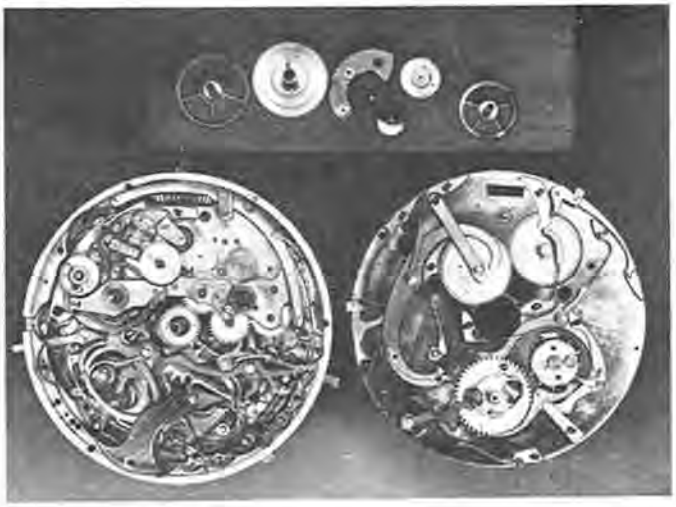

Figure 7. Movement Pillar Plate, Dial side, with Dial Plate on the left.

Figure 8. Half-Plate, intermediate to the Pillar Plate and the Dial Plate.

Figure 9. View of Stem Side of Upper Plate, showing some Chronograph levers and Wheels.

(Continued from page 16)

TYPE "C" PUSH BUTTONS

Type "C" push buttons push out after removing the "C" shaped clamp. Although one is tempted to leave these push buttons in the case while cleaning, it is best to remove them. Since these are held in place with a "C" clamp, it must be removed (hopefully without losing it). This can be accomplished by making a special tool from an old screwdriver or a new inexpensive one.

Figure 2 shows this homemade tool (made by my son, Jim), and it is printed here with his compliments. He used an inexpensive screwdriver. It is not shown here to scale.

The blade is flattened on the end to 0.40 mm. Other measurments are shown in Figure 2. This size seems to fit on most of the "C" clamps. Jim says that flattening the end of the screwdriver is very important, as the usual wedge shape end will not properly fit behind the "C" clamp for its removal.

DRYING & LUBRICATING

After cleaning it is very important to thoroughly dry the case, push buttons, case back, gaskets, etc. A heat lamp or bulbs can be used.

For lubricating, the same silicone that is used for gaskets, etc. may be used to lubricate the push button gaskets.

Like all of our other repairs, common sense prevails.

We Goofed !!

. . . AND WE'D LIKE TO CLEAR IT UP!

Get out your March '85 H.T.'s and turn to page 23. Just a normal looking page, right? But it has been brought to our attention that a section of the type was inadvertently transposed. Let us correct that here.

The last six paragraphs of the article, shown below, were meant to PRECEDE the first paragraph on page 23.

A comparison of the two types of steam can be seen by observing steam as it rises from the spout of a kettle. At the first inch or so, there is an invisible gap (true steam-dry) but as the water vapor (gas) enters the cool atmosphere, it condenses, turns to liquid water, forming tiny visible droplets which float on the air (so-called steam–wet).

And, finally, let's look at the word *humidity.*

The dictionary definition is: *moisture, dampness, a moderate degree of wetness which is perceptible to the eye or touch . . .*

The Encyclopedia Britannica, however, says: *the subject of atmospheric humidity deals only with water in its vapor state.*

In meteorology, the dictionary refers to relative humidity and defines that as *the ratio of the quantity of* water vapor *actually present in the greatest amount possible at the given temperature. Complete saturation is designated by humidity 100 and partial saturation by smaller numbers.*

Notice that in the scientific definitions by The Encyclopedia and the dictionary, both refer to "water vapor" which we have shown is not wet. (Often one will hear even meteorologists refer to "dry" air and "wet" air. But this is used only to simplify a very complex process.)

We have not, as yet, dealt with how water vapor gets into the air. Let us say you spill water on a hard flat surface. In time, the water would disappear–seem to cease to exist. Actually, the water has merely changed its form. It has not disappeared. It has turned into invisible water vapor (evaporated) and has been absorbed into the air. (This will not occur if the air above the liquid is completely saturated with water vapor–100% humidity. The air is then unable to absorb any additional vapor. The spilt water remains as liquid.)

The above section must precede the paragraph below:

We must also contend with the fact that hot air can contain more water vapor than cold air. Therefore, when hot air comes into contact with cold air, it will be able to absorb some of the water vapor from cold air.

We apologize to Mr. Matz, whose article on condensation was excellent, and to the readers of *Horological Times.*

WATCHES INSIDE & OUT
(Continued from page 23)

Select a drill somewhat smaller than the finished diameter of the pinning hole. Drill carefully so as not to break the drill and not to drill through the inside wall of the collet. When the brass starts to bulge where the drill is making its exit hole, stop drilling. Turn the collet to its finished diameter. This will clean up the bur around the entry hole and open the exit hole. Part the collet from the rod after making any additional finishing cuts. Stone the bur from the parted side of the collet.

The slot can be cut with a jewelers saw or a screw head file, while holding the collet pin slide. Test the collet for fit on the hub. If it is too loose, it can be closed in a lathe collet. If too small, chuck it in a lathe collet and open the hole with a broach.

Many horologists might consider a verge in need of a hairspring an "impossible" repair. It is actually quite easy, and the results are most satisfactory.

BIRTHSTONES

Edgar Cleves, Jr.

July - Ruby

The Gem of Summer

Ruby is a variety of corundum. It differs only from sapphire in color. Ruby includes only the medium to dark tones of red to violetish red. All other colors including violet, purple, and light red are properly called sapphire. Dark purplish red stones are the most desirable. They are often called Burma rubies, and they are the most expensive.

Ruby crystallizes in the hexagonal system. It has four directions of parting or false cleavage. It is aluminum oxide (Al_2O_3). If it was pure, it would be colorless, but the presence of chromium imparts the beautiful red in ruby. The specific gravity varies from 3.96 to 4.01. Refractive indices are $\omega = 1.770 - 1.779$ and $\epsilon = 1.759 - 1.767$. The birefringence is low .008 and constant. The dispersion is also low .018. The optic character is uniaxial negative. Ruby possesses strong dichroism. It generally exhibits light orange-red and dark violet red. Dark ruby stones usually exhibit orange and violet. The luster is vitreous to subadamantine on polished surfaces, and vitreous on fractured surfaces. On the Mohs scale of hardness, ruby is 9 and the toughness is excellent. During the formation of a ruby crystal, sometimes needle-like rutile inclusions occur in an hexagonal pattern within the stone. When the stone is cut properly en cabachon, internal reflections will produce the optical phenomena known as asterism. Asterism, which is much rarer in rubies than sapphires, is a six-rayed star.

Fine rubies in the Smithsonian Institution include three-star rubies from Sri Lanka: a 138.7 ct. red (The Rosser Reeves Ruby), a 50.3 ct. red-violet, and a 33.8 ct. red. In the American Museum of Natural History in New York is the 100 ct. DeLong. In the Royal Collection of England, there is a pale, nearly flawless ruby into which is carved a portrait of Louis XII of France. Rubies of good quality and color are so rare that any stones of 10 carats or more would be classed among the world's rarest gemstones. The famous Black Prince "ruby" and the Timur "ruby" in the British Crown jewels are not rubies but red spinels. The "ruby" which Catherine the Great of Russia received from King Gustav II Sweden is a fine red tourmaline. "Ruby Zinc" is not ruby, but red Sphalerite.

In the United States, small rubies of medium quality have been found in North Carolina at Cowee Creek in Macon County. Other sources are: Burma, Thailand, Sri Lanka, Afghanistan, Pakistan, Brazil, Kenya, Tanzania, India, and Australia.

Substitutes: Spinel, synthetic spinel, synthetic ruby, garnet, tourmaline, beryl, glass, and doublets.

Synthetics: Verneuil synthetics, Flux synthetics (Chatham, Kashan, Knischka, Ramaura), and Hydrothermal synthetics. Synthetic stones can be distinguished from natural stones by microscopic examination of the kinds of inclusions and internal defects.

According to Sanskrit medical literature, a physician of Cashmere used ruby as a valuable remedy for flatulency and biliousness. An elixir of great potency could be made from rubies by those who understand the employment of precious stones in the compounding of medicines. According to an old Spanish list, ruby falls under the zodical sign of Taurus; however, the current zodical list puts ruby under the sign of Capricorn, the goat. Among Mohammedans, the fourth heaven was made up of rubies. According to ancient lore it was believed that ruby was in sympathy with the sun, while others believed that it was influenced by the planet Mars. Ruby is associated with the star Aldebaran 3° of Gemini, and also the Hyades. According to an old book on dreams, if you dreamed of rubies, you were going to have unexpected guests. Ruby is one of the acrostic stones of Charity, Forever, and Dearest. It is also the gemstone of Burma and Thailand. In Thailand, deep red silks and rubies are appropriate for Sunday wear. The ruby is the gemstone for the 40th wedding anniversary and the star ruby, the 52nd wedding anniversary. Some Burmese believe that a ruby, embedded in the flesh, will protect its wearer from bodily harm.

Synthetic rubies are used for bearings in watches and other delicate instruments, because it is very hard. It is also used in masers and lasers. Maser is the microwave amplification through stimulated emission of radiation. The device can receive a weak radio signal and by stimulating the synthetic ruby rod gives off its own radio signal of the same wavelength but a thousand times more powerful. An optical maser is

called a laser "light amplification through stimulated emission of radiation." A beam of red laser light vibrates nearly a billion times faster than radio waves. It is so narrow and so intense that it can be transmitted over great distances without being lost. It is now being used in medicine and has been very successful in eye surgery.

In 1885, "Geneva Rubies" were synthesized by heating together small fragments of natural ruby until they fused into a single mass that could be cut and polished. Nothing like this had ever been accomplished, so for some time they were not suspected of being anything except natural stones. Many possessed cracks which resulted from rapid cooling, or air bubbles, which in some cases were so numerous that a cloudy appearance resulted. In 1887, Fremy and Feil produced synthetic ruby flakes, some of which are exhibited in the Minerals Gallery of the British Museum of Natural History.

Flame Fusion: one of the basic techniques used in the flame fusion process invented by a French chemist, Auguste Verneuil in 1902. He developed an upside-down blowpipe, which was very successful in making fine rubies. Rubies cut from this material are chemically, physically and optically identical to the natural stone. They are superior in color, clarity and size to almost all natural rubies. Rubies grown by this method will display curved growth lines. In most cases, they can be seen under 10X magnification. They are best seen when the stone is immersed in a liquid with a refractive index close to that of ruby. Methylene iodide is recommended because it has an R.I. of 1.74. Generally, the curved lines can best be seen at right angles to the table. Color distribution will also be curved; however, in many cases, it may be difficult to see. Rubies grown by the flame fusion method in most cases will display stong dichroism through the table facet, since they are normally cut with the table to the optic axis. They display strong fluorescence, and will phosphoresce when exposed to X-rays. No natural rubies phosphoresce.

Flux Grown: Flux grown or flux fusion synthetic rubies react more like natural rubies than like synthetic rubies. They tend to display a stronger fluorescence. Under short wave ultraviolet light, "Kashan" rubies--which are synthetic rubies by Ardon Associates of Texas– seem to have a whitish surface glow. Ardon is making crystals large enough to cut crystals of 10 carats and larger. Some Kashan rough has been found mixed with genuine rough in Bangkok. Some Kashan rubies do not transmit short wave ultraviolet light and are almost opaque to the rays. The main manufacturer of rubies grown by the flux melt method is Carroll Chatham. Curved striae appears in the Verneuil parts and flux inclusions are present. A purplish dividing line is visible between the two sections. "Cigarette smoke" is a sure sign of flux melt origin.

Hydrothermal synthetics: In 1957, Landise and Ballman of Bell Laboratories successfully manufactured a synthetic ruby by growing a synthetic ruby over a synthetic corundum. The best agent for satisfactory crystallization is the mineralizer NaOH. The red color is provided by the addition of sodium bichromate. Since the properties are identical with the natural materials, examination, sometimes becomes very difficult. Natural inclusions in the seed will influence the observer into thinking the stone is genuine, if not examined carefully. Tiny bubbles appear to coat the seed. Swirled wispy structures appear in the outer layer.

Genuine rubies: Under magnification, they will have angular inclusions, liquid inclusions, hexagonal or straight growth banding, straight color banding, silk (needle-like inclusions interesting at 60°), twinning lines, parting, or "heat-wave" effect.

HINTS FOR THE BENCHMAN HANDLING RUBIES

REACTION TO:	EXCELLENT	VERY GOOD	GOOD
setting		X	
polishing mounting	X		
torch heat			X
boiling in cleaning solutions			X
steam cleaning			X
ultrasonic cleaning			X
pickling & plating acids			X

CAUTION: OILED RUBIES CANNOT BE HEATED.

BERTRAM S. LOWE

Bert Lowe was actively involved with the organization of the American Watchmakers Institute. Records of the early meetings held to arrange the merger of the HIA and UHAA to establish the American Watchmakers Institute reveal that Bert Lowe played a key role in the proceedings. He was a staunch supporter and benefactor of the Institute over the years.

An alumnus of New York University, Mr. Lowe served as Senior Vice President of the Longines-Wittnauer Watch Company and President of the LeCoultre Watch Company, New York from 1946 to 1971. Bert Lowe was one of the original directors of AWI and served as Industry Advisory Board Chairman in 1968. Until his retirement recently, Mr. Lowe was the administrative officer of the American Watch Association.

Originally from Saginaw, Michigan, Bert Lowe became a long-time resident of New York, New York. He is survived by his wife, Hannah, and three children.

PACKARD COLLECTION

(Continued from page 25)

For the purpose, the writer has clear plastic 'cupcake'-like trays, with eight compartments in each tray. The parts are arranged in the trays in order of disassembly, and cleaned as separate groups whenever possible, but because certain parts are very delicate, each group may be subdivided in cleaning if there are insufficient isolated areas in the cleaning baskets. In cleaning one watch as many as 25 basket loads may be needed. After cleaning, each part of the watch is carefully examined again; are the parts fully cleaned, are they free of damage, is there excessive wear? Unlike most modern watches, complicated watch parts are unlikely to be found in the stocks of 'parts' houses, and must be made by the watchmaker.

In the watch under review, two pieces were found loose between the dial plate and the pillar plate. Their suspected functions and their possible positions were determined earlier, but final location came only after complete disassembly and cleaning. One of these was the tail of the quarter rack, a 'boomerang-shaped' piece, found to fit nicely against the jagged edge of the rack. The other was a "heart-shaped" piece, obviously part of the chronograph return mechanism. On final disassembly this deduction turned out to be correct, but the question remained: how did it become removed from the long and delicate arbor of the split-second hand, and be found between the dial side of the pillar plate and the dial plate, deep in the watch between the many clock/watch levers. The third major item damaged involved the tail of the minute rack. While never uncovered within the movement it can only be presumed that this small, slender piece of steel may have been the culprit causing the loss of the small tooth on one of the up-down wheels referred to in Figure 7.

One of the cardinal rules in watch and clock repair involves letting down the mainspring of a watch followed by removing the balance assembly, before any other disassembly occurs. The writer long ago learned the procedure to follow in complicated watches in which there may be two or more mainsprings found on separate arbors, or as in this watch, three mainspring barrels mounted on two arbors, and wound by a single winding crown and stem, alternately turned clockwise and counter-clockwise, with ratchet gearing allowing one arbor to be wound in one direction, the other in reverse direction. But he has not found this procedure described in articles and books available to him on complicated watches. However, for those who care, the procedure will be included in Part III of this series.

Part III will describe the final disassembly, repairs made, and final assembly, adjustment and lubrication of the watch, with photographs where appropriate. And, procedures will be given on the let-down of mainsprings of complicated watches having two or more mainsprings, wound alternately

Book Review

AMERICAN POCKET AND WRIST WATCHES BALANCE STAFF INTERCHANGEABILITY LIST, by George E. Townsend. 8½ x 11 inches, soft covers, 36 pages, fully illustrated. Published 1984 by Heart of America Press at $5.00.

For restorers of older American-made pocket and wrist watches, this booklet should be helpful. Before his death, George Townsend measured and listed in logical order the measurements and illustrations of many American balance staffs.

The contents of this posthumous editon is full of drawings and gauges of the balance staffs of Waltham, Elgin, Hampden, Waterbury, Illinois, Trenton, Marion Standard, South Bend, Studebaker, Howard, Seth Thomas and the Rockford and Adams & Perry balances.

These charts and gauges have been assembled and published by Roy Ehrhardt. In it, the measurements have been listed both by factory name and by gauge affinity so that one can determine if the available staff of a Hamilton, for example, may be used for Hampden. Some gauges are rather close and only slight alteration is needed to make these operative.

The publisher has also included some technical pages on fitting balance staffs, taken from the Hamilton technical manuals. Also, there are pages of staff drawings and measurements taken from older Elgin, Waltham, Illinois, and South Bend material catalogs.

Most of this publication, however, is composed of the individual drawings and their detailed gauges of balance staffs from the drawing board of George Townsend. The booklet should make a valuable reference to those who undertake the repair of pocket and earlier wrist watches of American manufacture.

Henry B. Fried

AWI NEWS

Milton C. Stevens

ANNOUNCING...

*** NEW DIRECTORS**
*** GOALS FOR FUTURE**

Tabulation of the ballots in the recent election for Board of Directors has resulted in the members shown below being elected to serve a three-year term as an AWI Director.

We wish to thank all of the members who voted in the election, and we wish to especially thank all of the candidates for allowing their names to be placed in nomination. All of the candidates were eminently qualified and have already contributed to the progress of the Institute. We look forward to utilizing their special talents as we strive to aid and better the field of horology in these difficult and changing times.

At the time of my writing this article, the annual meetings will not have been held; it will be necessary to report on these events in another article; however, there are several random topics that I would like to discuss this month.

In March 1985 *Horological Times* we inserted a questionnaire seeking input from the membership to guide us not only during our annual meeting deliberations, but in evaluating the performance of the Institute and its various departments and services. The response to the questionnaire was excellent, and we wish to thank all of the members who took the time to respond.

Robert Bishop

Archie Perkins

Jerry Jaeger

Fred Burckhardt

William Biederman

During the next few months we will be evaluating our educational program. The results of the questionnaire gives us guidance as to which programs (bench courses) have the most appeal as well as those which have lost some of their appeal. As a result, we will either upgrade some of the less appealing programs, or discontinue them altogether and replace them with the kinds of programs our questionnaire results indicated were desired.

It was somewhat of a surprise, in these days of the quartz watch, to find that many requests were for courses on the repair and restoration of older mechanical watches, including the fusee watch. There were also many requests for courses on quartz watches as well. Those requesting courses on quartz watches most frequently asked for courses dealing with advanced quartz watch repair and with retrofitting. A number of the requests included the desire for courses dealing with dial problems as they relate to retrofitting.

It was interesting to note those columns in the *Horological Times* which are the most frequently read. We will be using this information to review the entire magazine and its content with the goal of providing the kind of articles most readers told us they want to see.

Equally important were the evaluations we received of the various departments and of personnel. The stand members took on the question of an Educational Director and possible name change for the Institute will certainly aid the directors when these issues are considered. In general, the questionnaire was an unqualified success; we plan to utilize the results every two years or less in the future.

As I write this article we are just taking delivery of the Silver Anniversary commemorative plates. They are very attractive and of excellent quality. We will have a supply of plates for sale to the membership on a limited basis even after the anniversary program is over. The plates cost $10.00 each and can be ordered from AWI Central. Other Silver Anniversary items which can be ordered by mail include the coffee mug ($7.95), the AWI History ($7.50), and the Silver Anniversary Program booklet ($2.00). All of these items will be sent postpaid.

The Trustees of AWI's ELM Trust have completed work on their student loan fund. The revised program announcements, applications, financial statements and other documents are now available from AWI Central. The Trustees also would like to remind individuals and groups of their "Sponsor A Book" program whereby groups or individuals can place a book in the AWI Trust's library dedicated to an individual or a special occasion. Details can be obtained by writing the Trustees at AWI Central.

We Salute These Museum Donors!

(Listed in Alphabetical Order)

The AWI ELM Charitable Trust wishes to acknowledge receipt of the following donations. The items will be added to the collection in the AWI Museum in Cincinnati, Ohio to perpetuate the history of horological progress.

FRANK, Gerold, New York — Lady's Patek Philippe wrist watch, 7-3/4 lignes, 18 j, movt. No. 853417, rose gold dial. 18K rose gold case with 18K r.g. bracelet. Case nos. Ref. 2066 and 647789.

FRYE, Dr. O.B., Phoenix, AZ — 18s Waltham p/w full plate, glt, Wm. Ellery model, k/w back, k/s front, 15j, No. 1048612. S/s Roman dial. O/f hinged back & bezel, Dueber Silverine case, No. 51735. ca. 1877. 18s Waltham w/w, full plate, nickel, 17j, adj., P.S. Bartlett model, No. 8152332. S/s Roman dial, red 5 min. track. S/w, 1/s. Y.g.f. h/c, Keystone, J. Boss, engraved, watch paper inside back cover. ca. 1897. 18s Waltham p/w, s/s Roman dial, k/w back, k/s front, full plate, gilt, Broadway model, No. 1286518. O/f W.S.C. Co. coin silver case, hinged back & bezel, off set gold hinges, No. 6527. ca. 1878. 18s Waltham p/w, Arabic dial, red 5 min. track, full plate, nickel, 21j, adj., Vanguard model, No. 10090262. O/f y.g.f. engraved case, Keystone J. Boss 25 yr. case, hinged back & bezel, No. 7790262. ca. 1901. 18s Waltham p/w d/s Arabic dial, red 5 min. track, fancy hands, full plate, nickel, 15j, adj., Appleton Tracy Co., 5507848, s/w, s/s. 18K o/f y.g.f. Fahy's Montauk case, screw back & bezel. ca. 1891. 18s Waltham p/w, s/s Roman dial, s/w, 1/s, Appleton Tracy Co., model 1877, 15j, adj., No. 2179777. Y.g.f. h/c, No. 137809. ca. 1883. 18s Waltham p/w, d/s Arabic dial, red 5 min. track, s/w 1/s, full plate, nickel, model 92, No. 845, 21j, No. 14154955, Y.g.f. o/f swing ring case, Keystone J. Boss, No. 5445272. ca. 1905.

18s Waltham p/w, s/s Roman dial, full plate, gilt, F.S. Bartlett model, 11j, No. 1869559, s/w, l/s, O/f sterling swing ring AWC case, ca. 1882. 18s Waltham p/w, s/s, Roman dial, full plate, gilt, P.S. Bartlett model, 15j, No. 1607559, key w/s, O/f hinged back & bezel, Dueber coin silver case, No. 385727, ca. 1880-81. 18s Waltham p/w, d/s Arabic dial, red 5 min. track, full plate, nickel, Crescent Street model, 19j, 5 positions, s/w, l/s, No. 16127683. O/f y.g.f. Scepter case, screw back & bezel, No. 7572969, ca. 1907. 16s Waltham p/w, s/s Arabic dial, red 5 min. track, 15j, No. 14543132, s/w, s/s. O/f y.g.f. Philadelphia case, No. 7068785, screw back & bezel, ca. 1906. 16s Waltham p/w, d/s Roman dial, red 5 min. track, 17j, No.7672215, adj., s/w, l/s, H/c, engraved y.g.f. Tornado case, No. 35064, ca. 1896. 16s Waltham, s/s Arabic dial, 17j, No. 33747655, stem w/s, O/f base metal case, screw back & bezel, ca. 1952. 0s Waltham, s/s Arabic dial, red 5 min. track, 3/4 gilt plate, 7j, No. 10198639, stem w/s, Y.g.f. Dueber h/c, No. 8726538, ca. 1901. 18s Elgin p/w, d/s Arabic dial, red 5 min. track, full plate, nickel, 17j, No. 18043248, stem w/s, Model 336, O/f y.g.f. Union case No. 8414849, screw back & bezel, ca. 1914. 18s Elgin, s/s Roman dial, full plate, gilt, G.M. Wheeler model, No. 2867904, s/w, l/s, Y.g.f. h/c Fahy's No. 1 with Anti-Magnetic Shield, No. 28623, ca. 1887. 18s Elgin p/w, s/s Arabic dial, full plate, nickel, 17j, No. 16671333, stem w/s, O/f Philadelphia silverode case, No. 74711, screw back & bezel, ca. 1911. 18s Elgin p/w, s/s Roman dial, full plate, gilt, 15j, No. 2292872, stem w/s, O/f Crescent, swing ring, silveroid case, No. 92291, ca. 1886. 18s Elgin, Roman dial, full plate, gilt, 7j, No. 1047041, key w/s, O/f Fahy's No. 1 ore silver, screw bezel, hinged back case No. D6142, ca. 1882. 16s Elgin p/w, s/s Arabic dial, model M13, 9j, No. 42061228, stem w/s. O/f Star base metal case, screw back & bezel. ca. 1943. 16s Elgin p/w, s/s Arabic dial, red 5 min. track, 7j, 24486207. O/f y.g.f. Illinois W.C. Co., "Elgin Napoleon" Model 1, full plate, gilt, 15j with Chalmer's Patent, No. 633598, s/w (k/w conversion), lever set, Y.g.f. Dueber h/c, No. 1336922, ca. 1895. 16s Elgin p/w, d/s gold Arabic dial, Bunn Special, 21j, adj. 6 pos., No. 4253325, s/w, l/s, O/f, screw back & bezel, Star White g.f. case, No. 8389224, ca. 1890. 16s Illinois p/w, d/s Arabic dial, red dot 5 min. track, 17j, No. 3012598, stem w/s, O/f screw back & bezel, Star 12K g.f. case No. 6747343, 'Elgin RR' under crown, ca. 1907. 18s Hampden p/w, s/s Roman dial, full plate, gilt, Chester Woolworth model, 15j, No. 22156, key w/s, O/f, hinged back & bezel, coin silver case, No. 41787, ca. 1877. 18s Hampden p/w, s/s Roman dial, full plate, gilt, 7j, No. 303504, key w/s. O/f hinged back & bezel, Dueber silverine case, No. 938239, ca. 1879. 18 s Hamilton p/w, d/s Arabic dial, red 5 min. track, s/w, l/s, full plate, nickel, Model 940, 21j, adj., No. 514773, O/f y.g.f., screw back & bezel, Philadelphia case No. 8171593, ca. 1905. 16s Burlington p/w, gilt metal d/s Arabic dial, 21j, adj. temp. & pos., No. 3126416, s/w, l/s. O/f Illinois Burlington 25 yr. gold case, No. 5058135, ca. 1907-08. 18s Columbus p/w, d/s Roman dial, red 5 min. track, full plate, nickel, Time King model, 17 j, No. 323614, s/w, l/s, Russel Brothers, Cincinnati, Ohio, on dial, O/f hinged back & bezel, engraved, B II, warranted g.f. case, No. 466477, ca. 1904-05. 18s Keystone, p/w s/s Roman dial, 3/4 plate, gilt, 15j, 15j, No. 327440, s/w, l/s, 20 yr. y.g.f. h/c, engraved, No. 695048, ca. 1886-90. 18s E. Howard p/w, s/s Roman dial, black 5 min. track, N series, series VIII, 15j, adj. temp. & pos., No. 505198, stem w/s, O/f screw back & bezel, y.g.f. Fahy's Montauk No. 1 case, No. 736814, ca. 1880. Collection of 8 bisque, handpainted watch/clockmaker figurines: 2 - man at bench with clock, made in Taiwan; 2 - man holding a watch, clock on table, 1 signed "A. Benni", 1 made in Japan; 2 - man working on clock, 7 clocks on bench, dog at feet, made in Taiwan; 1 - man holding a watch, clock and lamp on bench, No. 6647, made in Japan; 1 - man working on clock, 4 large clock in background, made in Japan.

GRUEN, Robert D., Indianapolis, IN — Columbus p/w by Dietrich Gruen, movt. No. 572, 19 lignes, 17j, stem w/s, CWC on en. dial, black Roman numerals & hands, 18K y.g. h/c case, No. 40195, ca. 1875. D. Gruen & Son p/w, movt. No. 62428, 19 lignes, 18j, s/w, l/s, en. dial, 3 hands, black Arabic numerals, Canadian Nat'l. Railways engraved on back of o/f silveroid case, No. 176323, ca. 1984. Gruen & Sons p/w movt. No. 63235, 19 lignes, 18j, s/w,l/s, en. dial, black & red numerals, black hands. 10K h/c case, No. 465197. ca. 1898. Gruen r.r. type p/w, movt. No. 131216, 19 lignes, 21j, DG&S/Gruen on movt., s/w, l/s, en. dial, black Arabic numerals & hands, 10K r.g.p. modern o/f case, Star Case Co., No. 4466368, ca. 1905. Gruen Precision p/w, movt., No. 135469, 17 lignes, 21j, gilt dial, floral design in center, black Arabic numerals & hands. Gruen VT o/f 14K y.g. case, dust cover, No. 177086, ca. 1912. Gruen S-T p/w, movt., No. 11549, 17 lignes, 16j Silvered dial, raised gold Arabic Numerals, black hands, O/f g.f. 10 yr. case by Wadsworth,

No. 4775929, ca. 1915. Gruen p/w, "Dietrich Gruen model, UUT movt. No. 449389, 16 lignes, 18j Silver dial, raised gold Arabic numerals, black hands. Gruen "Paris Square" o/f irid. platinum case, No. 3791, ca. 1916. Gruen VT p/w movt. No. 450364, 17 lignes, 15 j En. dial, red & black numerals, black hands, O/f y.g.f. 25 yr. VT case, dust cover, No. 311405, RHJ engraved on back, ca. 1918. Gruen p/w movement with dial, "Dietrich Gruen" model, UT movt. No. 14988, 17 lignes, 19j, silvered dial, raised gold numerals, black hands, ca. 1910. Gruen VT p/w, movt. No. 488609. 17 lignes, 17j, silver dial, raised gold numerals, black hands, O/f g.y.f. case No. 333269, Glk engraved on back, engraved on dust cover "Louis XIV Model - Gruen Watch Co." ca. 1920. Gruen p/w, S-T movt. No. 68731, 16 lignes, 17j, stamped "Gruen Guild". Silver dial, floral design in center, raised gold numerals, black hands. Octagon shape o/f 14K w.g.f. case, No. 3042291, RAW engraved on back, ca. 1922. Gruen S-T p/w, movt. 709047, 16 lignes, 17j, stamped "Gruen Guild." Silver dial, floral design in center & outer edge, black Arabic numerals & hands. Wadsworth "Triad" o/f 14K w.g.f. case, No. 3026644, case ring & back engraved, WJP in center back, ca. 1924. Gruen "50th Anniversary" p/w, movt. No. 446, 17 lignes, 23j (21 ruby, 2 dia.), gold plates engraved floral pattern. Silver dial, raised gold numerals, gold hands. O/f 14K green gold "Pentagon" case, No. 220 (on movt. ring). Engraved on back "Presented to William E. Fitzpatric in recognition of continuous service from 1897", on 5 edges "Friendship, Industry, Loyalty, Steadfastness, Fidelity", inside back of case "The personal appreciation of W. Kelsey Schoef, President, the Cincinnati Traction Co. 1925", ca. 1924. Gruen VT p/w, movt. No. 504882, 17 lignes, 17j, silver dial, black Arabic numerals & hands, O/f Gruen VT 14K w.g.f. "Oxford Square"case, No. 432900, ca. 1928. Gruen "Carre" pocket/purse watch, movt. No. 188582, 10-1/2 lignes, 15j silver dial, raised gold Arabic numerals, gold hands, movt. in silver case fitted into an outer silver folding case dec. in green, black & red enamel, case No. 1570, ca. 1931. Gruen p/w, movt. No. 493180, 17 lignes, 17j, silvered dial, raised gold Arabic numerals, black hands, O/f 18K w.g. "Pentagon" case, No. 1077582, inside back cover engraved "In appreciation, F.G. Gruen, 1931". Applied gold shield on back, initials WHW in black enamel, ca. 1931. Gruen VT p/w, movt. No. 4-144785, 16-3/4 lignes, 17j, gilt finish plates. Silvered dial, raised gold Arabic numerals, gold hands. O/f 10K r.g.p. Keystone "Victory" case, No. 5376467, ca. 1940. Bulova Accutron w/w, date model, series 218, gray & silver dial, black tipped silver hands, red sec. hand, SS case No. H883271 - NI, gray suede band, original display box, guarantee, price tag & carton, ca. 1971. Gruen VT p/w, movt. No. 468009, 17 lignes, 17j, silvered dial, raised gold Roman numerals, black hands, O/f g.f. Wadsworth "Octagon" case, No. 351849, ca. 1920. Gruen VT p/w, movt. No. 500263, 17 lignes, 17 j, silvered dial, raised gold Arabic numerals, gold hands, O/f y.g.f. G.W.C. Co. case, No. 344129, hinged back & dust cover, engraved "Veri-thin Model, Gruen Watch Co. and J.C. Bowen, Jan. 8, 1924, ca. 1924. Columbus Watch Co. p/w, ca. 1889, movt. No. 199766, 18s, 11j, en. dial, black Roman numerals & hands, 10 yr. y.g.f. Dueber h/c, No. 5379449, heavily engraved: shield on front & castle, lake & sailboat on back; 4 doves & ribbon engraved on dust cover. Case ca. 1900. Gruen p/w, DG&S movt. No. 138817, 16 lignes, 17j, en. dial, black & red Arabic numerals, black hands, O/f 14K GNWC Co. case, No. 173694, fine engraving on bezel, case ring & edge of back cover, Initials JBE on case back and Dec. 25, 1912 on dust cover, Thomas J. Morrow on dial, ca. 1912. Gruen p/w, movt. No.129321, 18 lignes, 21j, en. dial, black & red numerals, black hands, Smith, Patterson & Co. on movt. & dial, O/f 14K y.g. GNWC Co. case, No. 172668, "C.L. from G.M.B., Xmas 1911" engraved on dust cover & initial on back of case, ca. 1911. Gruen in-store advertising clock, electric, octagon case, made by Lackner Sign Co., Cincinnati, OH, dated 6-1941. Gruen Watch Co. "Point of Purchase" molded display designed to display a strap watch on one side/pocket watch on the other, used by Gruen dealers during the 1920's & early 1930's. Gruen Watch Co. advertisements on display easels: (1) Saturday Evening Post, 1911; (2) Nat'l. Geographic, 50th anniversary model, 1924; (3) Canadian Trade ad, 1936; (4) Typical full color ad from 1938. Gruen w/w, Quadron design, movt. No. 322819, 15j, dial with radium numerals & hands. 14K w.g.f. Wadsworth case, No. 5347505, ca. 1927.

HANNEKEN, Arthur, Cincinnati, OH – Brass plate with UHAA emblem in color from UHAA membership plaque.

MIOFSKY, Ted C., Lowell, IN – Early Quartz Solid State LCD gents w/w in original box, produced by Microma, U.S.A., Palo Alto, California, about 1975. SS case and bracelet, case of French mfg., No. 406675.

NAWCC AWI Chapter No. 102, Cincinnati, OH – Miniature German Regulator, 14-day spring driven time and strike movement, solid plates with adj. pallets, mock gridiron pendulum with R/A porcelain insert in bob. 30" walnut case, finials top & bottom, ca. 1890.

SEYMOUR, Clark, Palestine, IL – (1) Waltham Watch Co. mainspring gauge. (2) Illinois Watch Co. watch movement shipping box.

SEYMOUR, William, Liverpool, NY – Boetteger & Wittig, Milwaukee, Wisconsin, demagnetizer, wood base with light bulb. Pat. May 13, 1902.

STEVENS, Louis, Grandview, MO – Movement holder, steel spring clamp on base.

This list will be continued in a future issue of the H.T.

INDIANA

Among the featured speakers at the upcoming gala Indiana (Midwest) Jewelry Trade Show and Convention will be Ms. Lorraine Gruys, instructor from the Gemological Institute of America who will present a special seminar on "Grading and Evaluating Cultured Pearls," and another seminar on "New Colored Gemstone Information," courtesy of Jewelers of America's new program to assist State Association affiliates in improving their educational seminars. This presentation is scheduled for the second day of the show on Sunday morning, July 14, 1985 atop the Grand Ballroom of the Atkinson Hotel. Ms. Gruys has been an instructor for GIA for the past five years.

Jewelers of America, Indiana Director and President-elect of Jewelers of America Raymond Goodman, owner of the Goodman Jewelers stores in Indiana, will address the IJA membership Sunday morning.

The Convention and Trade Show will open Saturday morning, July 13, at 10:00 AM with a special computer seminar, "What Every Jeweler Should Look For When Buying a Computer," or "Now Computers are Ready for Every Jeweler–Big or Small." Ms. Michal Mazur, a former GIA instructor, will present the seminar.

The Indiana Jewelry Trade Show and Convention, which is presented jointly by the Indiana Jewelers Association and the Jewelers Association of Traveling Salesmen of Indiana, will be held Saturday and Sunday, July 13 and 14, at the Downtown Indianapolis Atkinson Hotel.

The Trade Show will open at the Atkinson Hotel at 1:00 PM on July 13, 1985 following the morning seminar and will feature over 75 exhibit booths.

MISSOURI

At the recent meeting of the Metro St. Louis Watchmakers Association, Mr. George Oldendorph from Bethalto, IL brought his watch collection. He had eight cases of watches displayed on a table, with at least 40 watches per case! There were old and unusual wrist watches, pocket watches, and a few military chronometers.

Mr. Oldendorph's oldest watch is a fusee dated around 1800 and his most unusual is a seven-dial pocket watch which tells world time. When asked what kind of watches he collected, Mr. Oldendorph said anything that caught his eye from high grade to junk.

After dinner, members had a discussion about the history of watch and clock companies. Everyone present had something to add to the discussion.

NEW YORK

Henry B. Fried, foremost authority on horology, gave the Horological Society of New York a very interesting lecture entitled "One Hundred Years of Standard Time." Ordinarily this story would make an interesting history lesson, but in Mr. Fried's hands it was a unique blend of astronomy, celestial mechanics, and horology. The whole concoction spiced with humor provided an entertaining, informative evening.

At the next meeting, Jacques Reymond conducted a bench course on quartz watches. In this all-day session, three movements representing different types of mechanisms were covered. Of special importance were two points Mr. Reymond brought to the attention of the members: (1) a warning on test meters, and (2) a short-cut to determine whether a movement is running in a non-sweep watch.

On the following day, Mr. Irving Albert gave a talk on retrofitting that was filled with ingenious techniques for converting mechanical watches into quartz watches. Mr. Albert is a technical writer, and lecturer, and is Manager of the Technical Information Department for the Bulova Watch Company as well as a Past President of the Horological Society of New York. Mr. Albert pointed out in his talk that the main problems facing the watchmaker in the conversion process are the dial feet, hour and cannon pinion heights, movement thickness, and stem hole position (among other problems). Also important is the fitting of hands of the lightest weight to compensate for the low torque of some quartz movements. In each of these problems Mr. Albert described a number of alternate solutions. The response to his presentation was enthusiastic, and he was asked to provide a follow-up bench course on the subject for next Spring.

New slate of officers elected for 1985 are as follows. Seated, front row (L to R): Vice-president Dan Gaenger; President Jack Schecter; Exec. Secretary Al Rudnick; Financial Secretary and Treasurer Frank Carpathia. Second row: Ben Matz, Paul Homberger, Irv Albert, Harry Fisher, members of the Executive Committee. Third row: Henry Loeser, Howard Levy, Exec. Committee; Recording Secretary Ted Fishkow; and Dennis Tricarico and Morty Silver, Trustees.

OHIO

The Marriott Inn, Hamilton Road in Columbus, Ohio, will be the site of the annual convention of the Watchmakers Association of Ohio (WAO) July 26, 27, and 28, 1985.

Fred Burckhardt, President of the American Watchmakers Institute, will be the main speaker at the Saturday night banquet. A full schedule of education and entertainment is planned for the weekend. Interested parties who have not received their information packages should contact Al Brehl or the office of information immediately. There will be a Swap-and-Shop Table available as part of the program.

(Please turn to page 39)

We Salute These New Members!

ADELSON, Bernard—Dearborn, MI
AUSTEN, A.A.G.—Petone, New Zealand
BAKER, Harold—Millers Creek, NC
BALL, Marvin S.—Blanchester, OH
BATES, N.—Wanganui, New Zealand
BEAUCHAMP, Robert M.—Lancaster, PA
BECKER, Terry L.—Kennebunk, ME
BENZIE, Robert W., Jr.—Cascade, MT
BIEDERMAN, Mardie—Cincinnati, OH
BOONE, Daniel T.—Vaughn, MT
BOSWELL, Al—Grifton, NC
BOUCHER, Larry W.—Belton, MO
BROWN, Franklyn O.—East Rochester, NY
BROWN, Robert E.—Pomona, CA
BROWNING, William M.—Cincinnati, OH
BURGESS, R.W.—Lower Hutt, New Zealand
BURROWS, Ray, Liberal, KS
BUTTERFIELD, D.E.—Oakdale, CA
CARLSON, Daryl—Minneapolis, MN
CARR, I.—Taradale, New Zealand
CATO, Robert—Renton, WA
COSTANTINO, C.J.—Plattsburgh, NY
COURSEN, Anne. R.J.—Eustis, FL
DAVIS, Richard N.—Biloxi, MS
DAVIS, Stephen D.—Chattanooga, TN
DUNLEVY, Neal F.—York, PA
DURBIN, Johnny R.—Baton Rouge, LA
EDWARDS, John R.—Casselberry, FL
ELLSWORTH, Clifford—Glendale, AZ
EVANS, Roy—St. Paul, MN
FABRICATORE, Joseph—Scranton, PA
FORD, J.E.—Mize, MS
FORD, Leslie R.—Akron, OH
FRAGALE, John R.—Wheeling, WV
GAZDA, Robert J.—Newmarket, NH
GENTER, Keith R.—Hollidaysburg, PA
GIBSON, George E.M.—Queens, NY
GOODHUE, A.E.—Kaikohe, New Zealand
GOODING, Judy G.—Smithfield, NC
GOODRICH, C.S.—Sacramento, CA
GREEN, Howard—Severna Park, MD
GREENBERG, Irving—Austin, TX
GREENING, Denny D.—Sarasota, FL
HARR, Roy A.—St. Johns, MI
HASTINGS, John—Wyoming, MN
HATT, Robert W.—Scotia, NY
HAUCK, Louis III—Okmulgee, OK
HEATH, Dave M.—Ceres, CA
HERBERT, Michael T.—Catonsville, MD
HERMAN, Richard—Sewickley, PA
HERREID, Ralph—Luverne, MN
HERWEG, Paula J.—Fort Worth, TX
HILL, Gregory R.—Denver, CO
HINRICHSEN, Mark—Eureka, IL
HIRT, Harlan P.—Cincinnati, OH
HOWDER, John K.—Downey, CA
HOWELL, Richard—Jackson, AL
HUTTO, Ben C.—San Antonio, TX
JENSEN, Villy B.—San Francisco, CA
JOKSCH, Dennis P.—Marysville, CA
JOLLY, Glyn—Victoria, TX
KAUL, Henry P.—Arabi, LA
KERN, James R.—Moraga, CA
KIM, Jin-Chul—Seoul, Korea
KIM, Kun-Heung—Seoul, Korea
KLODZINSKI, Gary T.—Anderson, TX
KUBES, J.E.—Fort Worth, TX
LAURENT, S.H.R.—Hastings, New Zealand
LEE, James R.—Winthrop, MA
LENNON, Jay W.—Los Olivos, CA
LEPLEY, Larry—Bloomington, MN
LINDEMANN, Raymond J.—Cincinnati, OH
LOVE, Robert P.—Alberta, Canada
LY, Lanh Trong—San Jose, CA
MADDEN, A.A.—Waipukerau, New Zealand
MAETZIG, N.A.—Inglewood, New Zealand
MAGHDISSIAN, Setrak—San Francisco, CA
MALTZ, Henry—Schenectady, NY
MARTIN, John L.—Wallingford, PA
MARTINEZ, Lucio M.—Chula Vista, CA
MATT, Anthony S.—Champaign, IL
McAFEE, Albert W.—Paris, TX
McCULLOCH, R.—Gisborne, New Zealand
McWILLIAMS, W.T.—Petal, MS
MERZIG, John E., M.D.—Oneonta, NY
MEYER, Merlin M.—Santa Maria, CA
MIDDLECOFF, Spence L.—Selma, IN
MILLER, Thomas L.—Cheviot OH
MILLER, Thomas S.—Marlin, TX
MILNE, G.M.—Hastings, New Zealand
MOORE, Ted—Ehrenberg, AZ
MULDER, Edward G.—Rochelle Park, NJ
OLEKNA, David J.—Annandale, NJ
OWSINSKI, Leo E.—Minersville, PA
PADGETT, R.E.—Quincy, FL
PAEGE, Lynn M.—Colonia, NJ
PARIS, M.—Wellington, New Zealand
PERKINS, Michael E.—Winston-Salem, NC
POLOZOLA, S. Gary—Arlington, TX
POURCIAU, Roy—New Roads, LA
POWERS, Larry L.—Pompano Beach, FL
PRICE, Earl W.—Kansas City, MO
PRICE, J.E.—Sylva, NC
PRIEST, John J.—Cincinnati, OH
RESSLER, John—Quincy, IL
RIGGAN, Penny—Winter Haven, FL
RINALDI, Dan—St. Paul, MN
ROBINSON, P.—Upper Hutt, New Zealand
ROGERS, Vernon L.—Fresno, CA
ROSS, Mark—Berkeley, CA
RUDARY, David J.—Independence, OH
RUDIO, M. Mark—Clancy, MT
SCALES, Carlyle, Jr.—Duluth, GA
SCHEER, Paul J.—Dallas, TX
SCHMITTNER, Wesley—Dumont, NJ
SCHNEIDER, Raymond J.—Bloomington, IN
SHEDD, John L.—Des Moines, IA
SHELTON, William P.—Ocean Springs, MS
SOWELL, Dale—Senatobia, MS
SMITH, Anthony R.—Washington, D.C.
SMITH, B.K.—Feilding, New Zealand
SMITHEY, John P.—Seattle, WA
STEGENGA, Jerry A.—Coral Gables, FL
STEINHAUSER' Wilbert R., Jr.—Riverside, CT
STINSON, Mike—Anniston, AL
STOMMEL, Ronald J.—De Soto, TX
STREETER, B.C.—Christchurch, New Zealand
SUMNER, Gilbert G.—Anchorage, AK
TANCIG, James E.—Taylors Falls, MN
THITIRARTKARN, Sueshard—Edmond, OK
THOMPSON, Edwin E.—Fresno, CA
TOROS, Albert—Lompoc, CA
TSAI, Ken—Sacramento, CA
WAGNER' Robert D.—Dyer, IN
WALLACE, Guy P.—Oneida, NY
WARE, Ronald D.—St. Joseph, MN
WARNER, David M.—Manchester, MO
WASHBURN, Charles—Cincinnati, OH
WEBBER, Samuel E., Sr.—Dallas, TX
WEEKS, Ronald E.—Virginia City, NV
WERSCHING, Daniel—Dunedin, FL
WESTERMAN, Elmer A.—Darien, IL
WINGFIELD, Lloyd H.—Huntington Beach, CA
WOOD, Henry C.—Raleigh, NC
ZERBE, J. Scott—Pittsburgh, PA

SCHOLASTICALLY SPEAKING

Alice Carpenter, CMW, CEWS

WE MADE IT!

I just came from a graduation ceremony at my school. I can't begin to tell you the sense of pride and accomplishment when one of your students walks across the stage to receive his or her diploma. There is also the small sense of wonder that we both made it.

I remember the time one of my students wrote three words for an essay question on a test. In actual fact, he was correct in his answer. Even though I left half a page for the answer, I didn't specify how many words he should write. This student was noted for his economy of words and effort. I could always depend on him to find a short answer or a shorter way of doing things. In fact, I predicted he'd marry a widow with children to save himself work.

There was the time I checked and found myself short one alarm clock. I discovered that while I had been called out of the room to the phone a couple of days earlier, one of the students had become very angry with his clock, placed it on the floor, and proceeded to stomp the stuffing out of it. To keep me from finding out what he'd done, he took the pieces to the men's restroom and threw them away there.

There was the student who refused to take the mid-term exam. (God give me patience.)

There was the very nice student who always helped me close up at the end of each day. Four times in one month he slammed our tool room door shut with all my keys still inside. (Oh, Security, please be patient when I call you to come and unlock our doors!)

There was the student who told me that what I was teaching was wrong. We were on escapements and everything I was teaching was there in print. Then he suggested that I go home and ask Buddy (by husband) if I wasn't wrong and he (the student) was right. (Patience Alice, it doesn't pay to lose your temper!)

There was the student with the learning disability who wrinkled his nose every time he didn't understand something. I learned to gauge how well I was getting through to him (and the whole class) by watching his nose. It paid off—we made it through successfully!

And there was the night I woke from a nightmare. I dreamed I was four inches shorter because of the heavy books I was carrying back and forth to school. (I can't afford to loose four inches, I'm already under five feet tall.)

The bottom line is—have you thought about the watchmaking instructor in your area lately? Aside from the mountain of paper work, keeping himself knowledgeable and up-to-date in the latest technology, the long hours, the difficult students, the patience that's needed—your instructor has to be a dedicated, tireless , imaginative, innovative and unique person. It would probably help if he could walk on water. Make his day—pat him on the back from time to time.

One thing I must do before I close. Do you remember Jim Burdette? He wrote an article in 1983. At the close of his article I asked the question: "By the way, Jim, where IS Montana?" Well folks, now I know! I just received, from the Governor of Montana, a letter and maps and the whole works telling me all about the beautiful state of Montana (at Jim's request). Thanks, Jim. I asked for that!

I want to thank each one of you who has read this column, and the comments you have made. My special thanks to each one of you who has contributed to this column in any way over the past two years. I couldn't have done it without you.

ONTARIO, CANADA

Mr. Jacques M. Reymond, Technical Director for ETA Industries, Inc., presented a hands-on Swiss Quartz Bench Course for members of the Ontario Watchmakers Association at the George Brown College of Applied Arts & Technology, Horological Dept., Toronto, Ontario.

Mr. Reymond covered the servicing of Calibre 927.001, ETA 202.001 and 955.121, using slides. Each model was discussed and worked on: first testing for the problem, then servicing them. Mr. Reymond was very understanding and explained in detail the procedure and testing. He went from bench to bench discussing each model and answering individual questions. Several of the 25 participants were attending their first bench course. Everyone was grateful to Mr. Reymond and ETA Industries for presenting the course.

NEW JERSEY

The month of May was the 46th anniversary of the Watchmakers' Association of New Jersey, Inc. In keeping with past traditions, their meeting included a 50/50 auction, a buy, swap and sell, and a general shop talk atmosphere.

This year's recipient of the Fellowship Award is Walter Riegler. His past presidency along with aggressive involvement with association projects make him the nominating committees' choice for this year's award.

Mark your calendars: The Watchmakers Association of New Jersey will celebrate their 46th Anniversary with a dinner dance, Saturday, October 26, at the San Carlos in Lyndhurst, NJ. Reservations from Dinner Dance Chairman Joseph Barbieri, (201) 791-3041. All are invited.

MINNESOTA

A seminar was held at the Brookdale Mall in Brooklin Center, MN for the Minnesota Watchmakers Association. The speakers were Darrell Carlson on 400-Day Clocks and common problems of these. Joann Snyder gave an interesting demonstration on clock case refinishing and restoring, and Harvey Glaemman presented how to estimate clock repair in a systemmatic way to the customer.

Officers of the Minnesota Watchmakers Association are (L to R): Frank Yanari; President Rudolph Benson; Janet Larson, Rose O'Fallon, Executive Secretary & Treasurer; 2nd Vice-president Steve Naber; Donald Kelley, Secretary and Treasurer. Standing (L to R): Past President Maurice Grundei; Vice-president Mark Cormier; David Chastan, Harvey Glommen, Irvin Schneider, Edward Meyer.

BENCH COURSES

	PROGRAMS	INSTRUCTORS
A	Meter Microamps and Modules	Gerald G. Jaeger, CMW, CEWS
B	AWI Certified Citizen Quartz Watch Technician	Buddy Carpenter, CEWS
C	Pulsar Quartz Analog Y590 and Y112	James H. Broughton, CEWS
D	Seiko Quartz Combos	Leslie L. Smith, CMW, CEWS
E	Quartz Watch Test Equipment	Calvin E. Sustachek, CMW
F	Common Sense Quartz Watch Repair	Robert F. Bishop
G	ESA Digital/Analog 900.911 and ETA Analog 961.101	William Biederman, CMW
H	ESA Analog Quartz Repair	James Adams, CMW
I	Using the Watchmakers Lathe	Archie B. Perkins, CMW
L	Introduction to Striking Clocks	Joseph G. Baier, Ph.D., CMC, CMW
M	Striking Clocks—Advanced Seminar	Joseph G. Baier, Ph.D., CMC, CMW
N	Introduction to Clock Repair	David G. Arnold, CMC
R	Introduction to Jewelry Skills	Marshall F. Richmond, CMW Max Hoover, CMC Charles Callahan

JULY 1985

7	A	New Orleans, LA	JAEGER
7-9	R	Boston, MA	RICHMOND
11-13	R	Hartford, CT	RICHMOND
16-18	R	Kenilworth, NJ	RICHMOND
21	G	Boston, MA	BIEDERMAN
28-30	R	Richmond, VA	CALLAHAN

AUGUST 1985

1-3	R	Towson, MD	CALLAHAN
7-9	R	Nebraska	HOOVER
11	H	Milwaukee, WI	ADAMS
11-13	R	Iowa	HOOVER
15-17	R	Minnesota	HOOVER
18	G	Columbia, SC	BIEDERMAN
25-27	R	Idaho	RICHMOND
29-31	R	Utah	RICHMOND

SEPTEMBER

3-5	R	Colorado	RICHMOND
7	A	State College, PA	JAEGER
7-8	E	Sacramento, CA	SUSTACHEK
10-11	E	Fresno, CA	SUSTACHEK
13	B	Manden, ND	CARPENTER
14-15	E	Los Angeles, CA	SUSTACHEK
14-15	L	Dallas, TX	BAIER
15-17	R	Milwaukee, WI	CALLAHAN
19-21	R	Cleveland, OH	CALLAHAN
20-23	M	Orlando, FL	BAIER
21-23	I	San Francisco, CA	PERKINS
22	C	Richmond, VA	BROUGHTON
22	D	Denver, CO	SMITH
30-2	R	West Virginia	CALLAHAN

I AM INTERESTED IN YOUR BENCH COURSE TO BE PRESENTED

ON _____

AT _____

PLEASE SEND MORE INFORMATION.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

TIMEX INTRODUCES NEW QUARTZ WATCHES

Timex Corporation's all-encompassing watch line, which features 22 new quartz models, will be unveiled at the Jewelers of America show in July. The new collection offers a menu of smartly designed, best-selling styles.

"The line segmentation emphasized last season has been enthusiastically received," comments Dave Rahilly, vice president, U.S. marketing and sales. "Today it's common to have more than one watch—one for the office, one for weekends, and even a special one for active sports. Timex is responding to consumer needs by offering the latest fashion and technology in sport, dress and specialty timepieces."

Timex's top-of-the-line QUICK-SET quartz watch for men is water-resistant and handsomely strapped in leather. Just a simple turn of a crown sets the alarm. Style number is 35411 and suggested retail is $74.95.

NEW DIAMOND LIGHT FROM KASSOY

"Diamonlite," a self-ballasted mercury vapor lamp that intensifies the sparkle of diamonds and highlights the color of other gemstones, is now available at Kassoy.

This lamp operates on any standard incandescent socket, giving you exceptionally long life (12,000 hours) more light with less electricity and less heat. It allows you quick, cost-free conversion to the best indoor lighting—to efficient, economical mercury vapor lamps. The price is $59.00 per lamp.

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

"Diamonlite" self-ballasted mercury vapor lamp from Kassoy.

FREE TOOL AND INSTRUMENT CATALOG

Contact East is offering a free 1985 Electronic Tool and Test Instrument Catalog, featuring over 5,000 quality technical products for assembling, testing and repairing electonic equipment. This is an excellent buying guide for all technicians.

Products include precision hand tools, test instruments, tool kits, soldering supplies, plus a new full selection of telecommunication tools and instruments and a complete range of static protection products. All products are fully illustrated with photographs, detailed descriptions and pricing to allow for easy ordering by phone or mail. Most orders are shipped within 24 hours and carry a 100% satisfaction guarantee.

The Contact East 1985 Catalog is available free from Contact East, 7 Cypress Drive, P.O. Box 160, Burlington, MA 01803, (617) 272-5051.

Contact East's 1985 Electronic Tool and Test Instrument Catalog.

MOMO DESIGN

The elegant appearance of MOMO Design watches, coupled with their absolute reliability, accuracy and functionalism, rank them with the world's choicest timepieces.

Several of these superbly styled models feature exclusive elm and maple briarwood dials, providing an impressive choice for the discerning consumer. Prices range from under $300 in steel to approximately $1,700 in 18 karat gold with elm dial.

Halcyon Watch Corporation is proud to announce their

appointment as sole distributor for the exciting new MOMO Design timepieces. The company is located at 47 Water Street, Norwalk, Connecticut 06854. For more information call 1-800-243-5146.

MOMO Design Watches from the Halcyon Watch Corporation.

NEW CHEMICAL DEVELOPMENT ALLOWS PACKAGING IN PLASTIC

After long term testing, Zenith Manufacturing has released a new improved line of Zenith Cleaning Solvents for watches, clocks and precision instruments.

Zenith's new stabilizer system makes it possible that all cleaning and rinsing solutions can now be packaged in plastic containers. This system allows the use of plastic containers without the negative effects of evaporation, decomposition, discoloration of the solvents and deformation of the plastic containers. Zenith proudly offers this state-of-the art approach to provide a better product combined with the advantages of easier storage, handling and reduced cost for shipping. Zenith's products can be obtained nationwide at participating jobbers.

For more information contact Zenith Manufacturing and Chemical Corp., P.O. Box 320, Closter, NJ 07624.

ECONOMICAL SECURITY CAMERA

Mountain West announces Photo Trap, a unique new security camera that snaps one bright, clear picture when triggered. Any device with a normally open dry contact (motion de-, tector, door contact, holdup switch) can be used to trigger the camera. Conventional disc film can quickly be developed at any 1-hour photo lab to give the police (or company security department) an immediate print of the crime.

Applications include all areas of security, covering burglary, vandalism, shoplifting, holdup, employee theft, etc. Take a picture of "smash and grab" burglaries, entry/exit to a restricted area, unauthorized use of company equipment, or even an intruder. Photo Trap can be used as a stand-alone device or connected into an existing security system. Disguise the camera to catch the criminal in the act, or display it openly to help deter the criminal to begin with. The small unit measures just 4-11/16" wide x 3-3/16" high x 1-1/8" deep.

Automatic film advance and exposure control insures the picture quality, while superior Kodak technology guarantees you performance and reliability for your security. Mounting is easy with the included bracket, and Photo Trap costs less than conventional surveillance cameras.

Photo Trap was specially designed for offices, company security departments, and small businesses. For more information, write Mountain West, P.O. Box 10780, Phoenix, AZ 85064-0780, or call 1-800-528-6169.

"Photo Trap," new security camera from Mountain West.

MAXELL GIVES BATT-TRONIC TOP BILLING!

Maxell's watch and calculator batteries distributed by BATT-TRONIC now prominently feature the Batt-Tronic Cabinet System Drawer Number along with the Universal Battery Number. This unique identification will make it easier for the retailer to find, stock, store and sell replacement batteries. Batt-Tronic is America's largest distributor of watch/calculator batteries, and their cabinet system is widely used throughout the jewelry industry.

For further information contact Batt-Tronic Corp., Battery Park, P.O. Box 10, Orangeburg, NY 10962, Nationwide 1-800-431-2828 (New York State 1-800-942-1944), 10 AM to 8:30 PM Monday to Friday.

Maxell's batteries distributed by BATT-TRONIC

From the Tissot Collection, are his-and-her watches that boast of Swiss craftsmanship and technology. The jet dial and interlocking bracelet are strikingly set off by inserts of gold plating. Other features include an ultra-thin, water-resistant case and a scratch-resistant sapphire crystal. For more information contact International Time Corporation, P.O. Box 2274, Waterbury, Connecticut 06720.

Comparison Price Advertising

Stating there is "no First Amendment right to knowingly deceive and mislead consumers," JA Legislative Counsel Shelly London recently testified before the Connecticut Department of Consumer Protection and urged the agency to adopt regulations designed to crack down on fictitious comparison price advertising.

The proposed regulations, developed by the Department of Consumer Protection with considerable input from the Connecticut Jewelers Associaton (CJA), represent the most significant progress achieved at the state level in this area since the State of Wisconsin adopted regulations in 1974. The Connecticut proposed regulations draw heavily from the Wisconsin rules which are considered by many as the model code for policing deceptive advertising practices. The problem of fictitious comparison price advertising has grown into a major concern for jewelers across the country, and many experts feel that the gains made in Connecticut could lead other states to consider similar action.

JA Chairman Michael D. Roman, an industry leader in the fight against deceptive advertising, commended the Connecticut Jewelers Association for spearheading the drive to develop regulations in that state. "CJA deserves enormous credit for the progress that's been made in Connecticut in such a short period of time. Ed Isenberg and his members lobbied the legislature to have the Department of Consumer Protection study the problem and then worked closely with the agency to propose regulations that would fight deceptive advertising without inhibiting innovative marketing techniques."

PULSAR TO SPONSOR SWEEPSTAKES AT JULY JA NEW YORK SHOW

Arthur J. Cohen, president of Pulsar Time, in Mahwah, NJ, announced that an all expense paid one-week trip for two to Japan will be the first prize in Pulsar's "World Knows a Great Watch When It Sees One" Sweepstakes for Pulsar's retail customers attending the Jewelers of America Trade Show in New York City, July 27-31.

"The contest is to commemorate the imminent Pulsar milestone of the sale of its 10 millionth quartz watch, which is expected to occur in the second half of 1985," Mr. Cohen stated. "We believe the sweepstakes will create considerable excitement at the show and offer retailers an opportunity to win an extremely valuable prize," he said.

Jewelers visiting the Pulsar exhibit in Bryant Suite A, 2nd Floor, at the New York Hilton Hotel, will have the opportunity to fill out a form to guess the exact date in 1985 when Pulsar will sell its 10,000,000th watch. All entries will be put into a large sealed canister to be opened for review on the day Pulsar reaches the milestone. In addition to the trip to Japan, Pulsar will award 12 watches as runner-up prizes. In the event of a first place tie, the winner will be selected via a special run-off.

JIC SHIFTS HEADQUARTERS TO 42ND STREET

Gerry Hansen, president of the Jewelry Industry Council (JIC), announced as of June the Council's new offices will be in midtown Manhattan on 42nd Street.

"The move is beneficial for the Council," Hansen reports, "for not only will we have more modern facilities, but we are gaining a bit more space without any additional expense while still remaining near the New York jewelry center."

Founded in 1946, the Council was headquartered in the Swiss Building on 49th Street and Fifth Avenue for more than 30 years. The Council's new phone number and address are: (212) 302-1770, 130 West 42nd Street, New York, NY 10036.

"BREAKFAST WITH TIFFANY'S" HEADLINES PROGRAM

Retailers are invited to have "Breakfast with Tiffany's", a complimentary champagne and strawberries breakfast seminar featuring Tiffany & Co.'s Michael Moser.

During the presentation, which is one among the series of seminars scheduled for the San Francisco International Jewelry Show September 21-23, Moser will discuss the merchandising philosophy and display techniques that have made the firm a powerhouse in jewelry retailing. Demonstrations illustrating what creates the Tiffany touch in display will be featured at the breakfast, which is open without charge to retailers attending the show.

Some of the most important benefits derived from trade shows, attendees say, are the seminars and workshops that prompt ideas and offer information retailers can apply directly to their businesses. Seminars at the San Francisco International Jewelry Show will focus sharply on management and merchandising and are designed to help retailers keep current with industry trends.

All seminars presented at the show are offered free of charge to attendees, but because seats are limited, reservations are required. These sessions will begin promptly at 9:00 AM, one hour before the show opens each day.

PJC GEMOLOGY CLASS GRADUATES

Nineteen students received certificates for completion of Paris Junior College's professional gemology program recently according to Malcolm Heuser, gemology instructor at PJC.

Texas residents graduating included Carol Brown of Houston, Johnny Q. Clawson, Jr. of Baytown, Margaret Garcia of Harlingen, Elizabeth Foote Mannino of Port Arthur, Kerry Martin of Lake Whitney, Nett Ott of Gainesville and W.T. Williams, Jr. of Dallas.

Others completing the intensive program were Lana Carter of Cordell, OK; James H. Harrison III of Oklahoma City, OK;

David L. Jenkins of Franklinton, LA; Jennifer Herbert of Lake Charles, LA; Dan G. Bates of Bossier City, LA; Mitchell Gibbons of Jonesboro, AR; Oliva Sordo of Fayetteville, AR; Carroll K. Little of Corinth, MS; Steve Morrow of Senatobia, MS; Todd Hammen of Carroll, IA; Scott Rigsbee of Plant City, FL; and Robert L. Guymon of Las Vegas, NV.

The 16-week course in professional gemology is taught three times a year at Paris Junior College. The intensive instruction of gemstones and minerals includes theory and laboratory work. Instructors are Heuser and James Overstreet.

Information on enrollment in the gemology, jewelry or watch repair program at PJC may be obtained from Hoyle Barr, Paris Junior College, Paris, TX 75460; (214) 784-9249 or (214) 784-9380.

PORTESCAP ANNOUNCES APPOINTMENT OF NEW SALESMAN

Joseph Presti, Vice President of the Vibrograf Machine Division of Portescap U.S., announced a new appointment to their national sales force.

Mr. Joseph Caltagirone brings to Portescap a distinguished 19 year career in the jewelry industry. From 1966-1971 he worked at various positions at the Bulova Watch Company including case inspection and watch repair. From 1972 to 1983 he was a sales representative for Bulova Watch. After Bulova, Mr. Caltagirone was a sales representative for a diamond distributor.

Mr. Caltagirone will cover the Southwest for Portescap including Texas, Oklahoma, New Mexico, Arkansas and Louisiana.

Joseph Caltagirone

JOSEPH SINDT PROMOTED AT LORUS PRODUCTS

Joseph Sindt has been promoted to Senior General Manager Merchandising for Lorus Products, it was announced by Mortimer Gershman, president of Lorus.

In his new capacity, Sindt will be responsible for the selection, design and purchasing of Lorus' complete line of more than 200 all-quartz watches and 70 clocks.

Sindt joined Lorus Products in 1982 as General Manager of Merchandising after more than 10 years in the watch and clock industry. Just prior to joining the firm, he served as General Manager Sales Service for Seiko Time Corporation, responsible for customer service, inventory control, and consumer relations.

Joseph Sindt

NEW TOLL FREE NUMBER FOR TIMEX CUSTOMERS

To improve customer service and facilitate watch repair, Timex Corporation has instituted an 800 telephone number with a voice response system.

"The new system is designed to shorten the time it takes to have a watch serviced," states Dave Rahilly, vice president, U.S. marketing and sales. "The customer simply calls our 800 number on a touch-tone telephone, a voice will ask that they punch in their zip code number, and the system will respond with the location of the nearest local service center."

If there is no authorized service center in the area or if they do not have a touch-tone telephone, customers will be directed to send their timepieces to Timex's Little Rock, Arkansas , repair facility.

The toll free number is 1-800-828-3311.

EVEREADY AWARDS ONE MILLION DOLLARS

Mr. Charles F. Evans (right) of Conyers, GA receives his first check from Mr. C.H. Bunger (left), Battery Products South Central Division Manager. Mr. Evans was the lucky winner of the "Energizer $ Millionize Me" pack-in game. Mr. Evans purchased several packages of Energizer batteries on his way to a weekend hunting trip in Georgia. While deep in the woods with his friends, he scratched off the game cards and discovered that he had the three matching game pieces which together spelled "ENE-RGI-ZER" in the bottom gold bar of the game cards. The first check for $100,000 was presented to Mr. Evans recently, and he will receive nine more checks by 1994.

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

Pocket Watch Case Repair. Hunting case, bezels, hinges, dents removed, etc. Tick Tock Specialties, 308 N. McLeansboro St., Benton, IL 62812. (618) 439-6995.

Expert Swiss trained watchmaker, 35 years experience in different countries. Specializing in very complicated watches, such as repeaters, clockwatches, etc. Any broken part can be custom made by the expert. All estimates free of charge. Louis Rybicki, 674 Floral Drive, Solvang, CA 93463. (805) 688-0327.

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Dates To Remember

JULY 1985

11-13—Introduction to Jewelry Skills Bench Seminar; Hartford, CT; Richmond, instructor.

13-14—Indiana Jewelers Association Annual Convention and Trade Show; Atkinson Hotel, Illinois Street and George, Indianapolis, IN. (317) 631-8124.

14-15—Jewelers of America Sunbelt Jewelry Trade Show and Conference, Hyatt Regency Hotel, New Orleans, LA (212) 489-0023.

16-18—Introduction to Jewelry Skills Bench Seminar; New Jersey; Richmond, instructor.

20-21—Common Sense Quartz Watch Repair Bench Seminar; Chicago, IL; Bishop, instructor.

21—ESA Digital/Analog 900.911 and ETA Analog 961.101 Bench Seminar; Boston, MA, Biederman, instructor.

26-28—Watchmakers Association of Ohio Annual Convention, Columbus, Ohio.

27-31—Jewelers of America 1985 Fall International Jewelry Trade Show and Convention; Sheraton Centre and New York Hilton Hotels, New York, NY (212) 489-0023.

28-30—Introduction to Jewelry Skills Bench Seminar; Virginia; Callahan, instructor.

AUGUST 1985

1-3—Introduction to Jewelry Skills Bench Seminar; Maryland; Callahan, instructor.

3-5—Mississippi Jewelers Association Convention; Royal D'Iberville Hotel, Biloxi, Mississippi. (601) 432-8189.

7-9—Introduction to Jewelry Skills Bench Seminar; Nebraska; Hoover, instructor.

11—ESA Analog Quartz Repair Bench Seminar; Milwaukee, WI; Adams, instructor.

11-12—Jewelers of America Chicago Jewelry Trade Show and Conference; Expocenter; Chicago, IL (212) 489-0023.

11-13—Introduction to Jewelry Skills Bench Seminar; Iowa; Hoover, instructor.

15-17—Introduction to Jewelry Skills Bench Seminar; Minnesota; Hoover, instructor.

16-18—Nebraska and South Dakota Jewelers Association Annual Convention; Holiday Inn, Grand Island, Nebraska (308) 234-3773.

18—ESA Digital/Analog 900.911 and ETA Analog 961.101 Bench Seminar; Columbia, SC; Biederman, instructor.

25-27—Introduction to Jewelry Skills Bench Seminar, Idaho; Richmond, instructor.

29-31—Introduction to Jewelry Skills Bench Seminar; Utah; Richmond, instructor.

SEPTEMBER 1985

3-5—Introduction to Jewelry Skills Bench Seminar; Colorado; Richmond, instructor.

7—Meter Microamps and Modules Bench Seminar; State College, PA; Jaeger, instructor.

7-8—Quartz Watch Test Equipment Bench Seminar; Sacramento, CA;Sustacheck, instructor.

10-11—Quartz Watch Test Equipment Bench Seminar; Fresno, CA; Sustachek, instructor.

13—AWI Certified Citizen Quartz Watch Technician Bench Seminar; Manden, ND; Carpenter, instructor.

14-15—Quartz Watch Test Equipment Bench Seminar; Los Angeles, CA, Sustachek, instructor.

14-15—Introduction to Striking Clocks Bench Seminar; Dallas, TX, Baier, instructor.

15-17—Introduction to Jewelry Skills Bench Seminar; Milwaukee, WI, Callahan, instructor.

19-21—Introduction to Jewelry Skills Bench Seminar; Cleveland, OH, Callahan, instructor.

21-22—Watchmakers Association of Indiana Annual Convention; Indianapolis, IN.

21-23—Using the Watchmakers Lathe Bench Seminar; San Francisco, CA, Perkins, instructor.

22—Pulsar Quartz Analog Y590 and Y112 Bench Seminar; Richmond, VA, Broughton, instructor.

22—Seiko Quartz Combos Bench Seminar; Denver, CO, Smith, instructor.

30-2—Introduction to Jewelry Skills Bench Seminar; West Virginia, Callahan, instructor.

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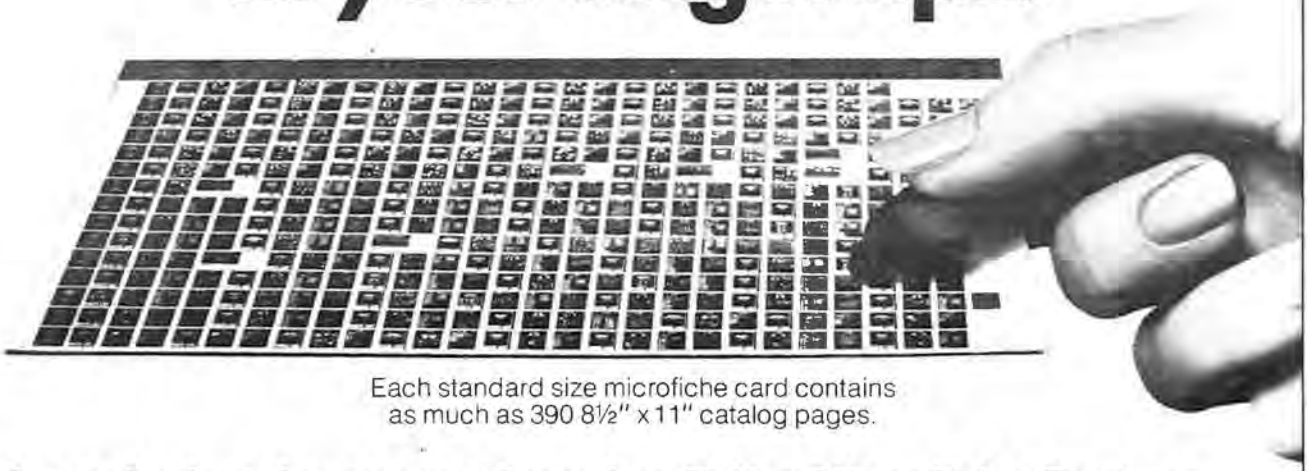

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