



HOROLOGICAL TIMESTM

AMERICAN WATCHMAKERS-CLOCKMAKERS INSTITUTE

DECEMBER 2010



ISSUE highlights

This Month's Focus: Technical Challenges

Impulse Faces

The Tourbillon: New Beginnings

The Importance of Spring Bars

Challenging Situations: The Stem Pilot

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EDITORIAL & EXECUTIVE OFFICES

American Watchmakers-Clockmakers Institute (AWCI)
701 Enterprise Drive
Harrison, OH 45030
866-FOR-AWCI (367-2924)
or 513-367-9800
Fax 513-367-1414
awci@awci.com
www.awci.com

Amy S. Dunn
Managing Editor & Advertising Manager

James E. Lubic, CMW21
Executive Director/
Education & Technical Director

Thomas J. Pack, CPA
Operations Director

Thomas D. Schomaker, CMW21
Watchmaking Instructor/
Certification Coordinator

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Education Coordinator

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a message from the president

BY MARK BUTTERWORTH



During this holiday season especially, many of us are filled with differing emotions. For those of us in the Christian faith it is a time of inspiration, reflection and renewal. For everyone, regardless of background, I hope it is a time of peace, appreciation of family and

also the beauty and wonder of life.

Because the season has become the single highest commercial event of the year, we also nearly succumb to becoming manic-depressives. We know full well that for some, unless they have a "good" season, they may close their books permanently at year's end. It is not a matter of greed, it is a matter of survival, and those of us who operate small businesses can appreciate that. It can be high-risk and long hours with no guarantees.

For those of us in the repair business, the good news is that we are nearly always busy. The other side is that folks are very demanding in wanting a clock working on Thanksgiving Day when the family is home, or for the holiday parties, and sometimes, they give little notice. Or, they wish to give their heirloom watch as a present. There are twenty-four hours in a day and craftsmanship cannot be rushed.

As a tradesman, I have spent many holidays working long into the night getting the jobs out for my customers. The days slip by and we realize Christmas is here and we have not done our own shopping. Fortunately, most of us have had understanding spouses in our line of work.

Of course, another important part of the season is New Year's Day, and besides the football and much overeating, we have the tradition of saying farewell (or good riddance?) to the old year with anticipation for the new one. We look forward to trying new things and generally moving on. This is healthy.

Finally, this is the time when we start the process of seeking new Board members to be sworn in at the annual meeting next year. It is an honor to serve, and I think, fulfilling. Of course, it's work, but it is also an opportunity to make the world of horology a better place. It is also an opportunity to learn and to make good contacts. Please give a Board position some thought, and if you are interested, please feel free to contact our nominations chair, Dennis Warner at dwarner6@austin.rr.com.

One final thought for this year's end, which was aptly stated by talk show host, Larry King:

"I never learned anything while I was talking."



AWCI new members

Alabama

John W. Tenant, Chelsea, AL

Connecticut

Alvin Krutolow, Danbury, CT*

Minnesota

Ellen Joan Hartman, Saint Paul, MN
David Milne, Preston, MN*

New Jersey

John Hickey, Bergenfield, NJ*

Pennsylvania

Michael Graham, Langhorne, PA
Stephen Noble, Lititz, PA

Texas

Matthew Becker, Keller, TX
Billy W. Stout, Abilene, TX

Utah

Michael Rennert, St. George, UT

*AWCI welcomes back these individuals who have chosen to reinstate their membership.

a message from the executive director

BY JAMES E. LUBIC, CMW21



I would like to wish everyone a very Happy Holiday season. Since it is the season for giving, I want to remind you of the AWCI ELM Charitable Trust. The Education, Library, and Museum (ELM) Trust is the charitable arm of AWCI. The trust is organized under section 501 (c) 3 of the Internal

Revenue code for charitable not-for-profit organizations. When you donate cash or an item to the ELM Trust, you will receive a letter acknowledging that the gift may be deductible. By giving to the ELM Trust, you are not only eligible for a possible tax deduction, but you're also helping to perpetuate our trade by enabling the ELM Trust to continue its mission which is printed below.

AWCI - EDUCATIONAL, LIBRARY & MUSEUM (ELM) CHARITABLE TRUST MISSION STATEMENT

The AWCI-ELM Charitable Trust was organized and is operated to aid in the advancement of the art and science of timekeeping (horology) through activities in education. Its purpose is:

- 1) To lend all practical assistance to schools that engage in the teaching of horology
- 2) To educate and encourage students/individuals who are either pursuing or considering studies and/or careers in horology and the horological crafts
- 3) To provide those individuals who are interested in horological crafts with practical, technical and current information about horology. We are able to provide these services by maintaining our Henry B. Fried Resource Library on site
- 4) To provide and maintain a horological museum on site where unique timepieces (i.e., watches, clocks, etc.) and tools can be stored or placed on permanent/semi-permanent display for study, research and public viewing.

The Orville R. Hagans *History of Time* Museum provides the public and the professional with a better understanding about the history of watchmaking and clockmaking through the years.

After renewing your AWCI membership this year, remember to visit our website at www.awci.com. Log into the member protected area and make sure your contact information in our referral directory is turned on and that your contact information is correct including email and website, if you have one. The information in your record that appears here can be edited by you and only you. Any changes you make to your internet referral directory record should be forwarded to our membership coordinator, Sally Landis, at slandis@awci.com. This referral directory is frequently recording hits and is an excellent way to increase member visibility on the internet.

When logging on to our website you must know your membership number and password. If you have never logged onto the member protected area before you must know these two pieces of information. Your password is your member number plus the first letter of your last name capitalized. Once you are logged in, you can access your contact information for the Referral Directory and access content that the rest of the world cannot. If you have any problems please contact AWCI toll free at 866-367-2924, that's 866-FOR-AWCI.

Additionally, be sure to check the AWCI Member Benefits sections of the website and make sure you are taking advantage of everything AWCI has to offer. And please remember to thank our advertisers for supporting AWCI and the *Horological Times* when placing your orders.

Merry Christmas and Happy New Year.



BY JACK KURDZIONAK, CW21

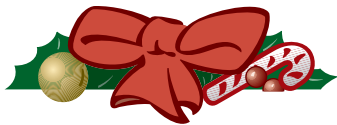


ANOTHER YEAR IN THE BOOKS

As 2010 draws to a close, we need to take some time to enjoy the holiday season with family and friends. We have passed through some difficult economic times during the past few years

and all indicators now seem to be pointing in a positive direction. We have successfully endured the economic stresses as many others have, both here in the U.S. and around the world. Now that December is upon us, we still have to deal with the holiday stresses imposed upon people in almost any service business. Do not forget to set aside time for yourself, your family, and your friends to celebrate the season. Client-imposed holiday deadlines for service are often arbitrary and seldom reflect a critical need on the part of a client. Remember, January will come and the repairs will still be waiting for your attention.

*Best wishes and warmest regards for the season,
Jack Kurdzionak.*



ASSUMPTIONS

We live our lives making assumptions, most of which are valid and helpful, and if not valid, at least they are harmless. Whenever we get into our cars we make numerous assumptions. They include that the car will start each time we turn the key, and that the car will move forward when we place the gear selector into D. We also assume the car will safely stop when we push on the brake pedal. We generally make these assumptions unconsciously without any additional consideration, except when we know the car battery is dying, the transmission is leaking fluid, or we have heard the brake pads grinding away for the past several weeks.

The dictionary defines ASSUMPTION as:

A "commonly used term when used as a proposition for that which is taken for granted, as if it were true based upon presupposition without preponderance of the facts."

Assumptions are useful shortcuts for our daily routine. If we rationalized each decision we make, we would spend an inordinate amount of time making unnecessary decisions. Most of the time we function quite well and efficiently utilizing numerous assumptions every day of our lives. However, there are times when we need to question our assumptions and review our thought process about a given situation. Failure to consider these assumptions can become very costly in many ways. All business owners, regardless of the size of the business, need to carefully examine their assumptions frequently to make certain that they are operating their business at peak efficiency. Do you frequently review any of the following?

a. Bills and statements from your vendors

If you do not review these, you will pay for any errors made in their favor. If the invoice listed 10 case back gaskets, were there 10 in the package? Did the monthly statement from the material house listing a balance due of \$475.97 actually match the purchases that month? Everyone makes mistakes. Part of your job is to be certain the mistakes of others do not cost you money.

b. Telephone

Do you assume you have the best and lowest-cost telephone/internet service now available? Just because the service you signed up for in 2004 was the best bargain at that time does not mean it is still the best. A lot can change in six years.

c. Alarm system

Do you test your alarm system frequently to be certain it is functioning as it should, or do you just assume it is OK because it worked three years ago?

d. Insurance package.

Do you review your liability insurance annually or do you assume your agent is doing that for you? (You might want to check into the insurance offered through AWCI—the program from Dowell is designed for our industry and the rates reflect negotiated group discounts: www.dowellias.com.)

e. Your trade accounts

Do you assume you have the best ones available? Or, do you think it is too difficult to obtain new accounts? A very successful watchmaker confided to me that he always sought out new trade accounts. If the new one was better than the worst one he had,

he would keep the new one and drop the worst of the old ones. Thus, he constantly upgraded his list of trade accounts. Remember, your trade accounts are constantly doing the same to you to make certain you are the best vendor they have. Why not select them as they select you?

f. Your own skills

Just because you have XX years experience in your business do you really assume you have no room to improve? We often hear some people complaining, "I have been doing this for XX years, why do I have to go to class, or get some CEU's, or buy new equipment, or etc., etc, etc." Who amongst us would trust our eyesight to a non board-certified ophthalmologist who works with obsolete lab equipment and refuses to participate in continuing education? I would venture to say very few of us would visit that doctor. Professionals in every field stay on top of their profession by constantly retraining.

Some years ago, we worked with a colleague at the sales counter who, by virtue of his age and past experiences, made a lot of assumptions, many of which were faulty. When a customer came in to make a purchase, this colleague mentally prejudged the customer. If the person appeared too young, the assumption was made that our stock was not suitable for that customer. If the person appeared to be old enough to collect social security, it was assumed that the person either would not spend much money or did not have enough money to spend. You may safely assume in this case that person is no longer working in the business. An often told anecdote in the jewelry industry is about the slovenly dressed customer who walks into a guild-quality store and proceeds to make a very large purchase. That is, they make the purchase if the sales associate, who assumed a slovenly dressed person was not going to be a customer, did not turn that customer away.



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from the **workshop**

BY JACK KURDZIONAK, CW21

Watchmakers make just as many assumptions at their benches as do sales associates at the front counter. Do you ever assume any of the following?



a. The battery in a watch is good just because the customer said someone else checked it. Test the battery yourself with your own excellent quality test meter.

b. The watch loses or gains so many seconds or minutes a day just because someone else says so. You need to test it yourself before you decide how to proceed with a repair.

c. The watch really works perfectly, and if you fit a new stem, crown or replace the shattered crystal, it will continue working perfectly. You need to explain to the customer that the watch may work well after fitting a new part, but then again, it may not.

d. You will be able to buy a needed part for \$15 because the last time you bought that part in 2006 that is what it cost. You should check the price and availability of needed parts before you even complete an estimate. The part may now cost \$100, or now be obsolete.

e. The customers will carefully listen and understand when you tell them to be careful with the watch near water. You need to realize that customers must be fully educated—if they expose their particular watch to water it will leak, rather than, it may leak.

The examples listed above could be extended by thousands of words, but that is not necessary. We all need to regularly examine our assumption list to make certain we are working to the best of our abilities and making the most of the opportunities presented to us. Keep operating with appropriate assumptions to save time and work efficiently. Examine the other assumptions to see if they are valid. If they are, carry on, but if they are not, reboot your mind and try again. ♦

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BY ROBERT D. PORTER, CMW

Gear Cutting On The Lathe, By Laurie Penman, ISBN 0 907868 22 3

Mr. Penman is an internationally recognized author and clock maker. He has served as an instructor for the American Watchmakers-Clockmakers Institute. *Gear Cutting On The Lathe* was first published in 1991 as a correspondence course and has gone through several revisions since then.

This new fourth edition, published in 2010 measures 6" x 8 1/4" and contains 72 pages. The book reflects Mr. Penman's many years of experience as a clock making instructor and answers nearly all the questions anyone would have about designing and making wheels and pinions. Basic and advanced gear-making techniques are presented and supported with excellent drawings.

A few of the many topics covered in this book include: Tooth Form: The development of the cycloidal curve, used extensively in horological gearing, is illustrated and explained.

Gear Cutting Setups: Several methods of holding the gear blank for cutting is depicted and discussed in detail. The Huckabee dividing head, as well as several other practical dividing methods, is explained. The Module, Circular Pitch, and Diametral Pitch gear systems are discussed. Machining methods are illustrated with easy-to-understand drawings and text.

Making A Fly Cutter: The making and use of fly cutters to cut train and escape wheels is illustrated and explained in detail, as is the repair of wheels and pinions. The making of a new lantern pinion is also well illustrated.

Gear Cutting On The Lathe contains a wealth of useful information in a small package, and is highly recommended to anyone wanting to design and make the gears needed in a clock movement. ♦



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The Tourbillon Carriage, New Beginnings

BY PAUL LOATMAN

In my previous article I explained the tourbillon carriage, the carriage that I had spent countless hours learning how to make through trial and error. This carriage, although invaluable to me as a lesson in horology, no longer had any value as a component for my watch. I learned from every single part that I made, and I had to make quite a lot of parts due to mistakes from inexperience. This learning curve compounded to the point where, when I was nearly finished with the carriage, I knew I could make another, much better carriage. I hinted that I would probably redesign the carriage in the previous article; the last few months were spent doing exactly that.

The new carriage is lighter, thinner, smaller overall, has a better heat treatment, and has a more efficient design than the last. In a word—it's "better." The new carriage is 0.5 mm thinner and a whole millimeter smaller in diameter than the previous carriage. There were also significant weight savings, which was achieved by making smaller screws and using smaller jewels that aren't held in brass bushings, but are, instead, fitted directly into the steel bridges. Steel is a bit lighter than brass, and so for this carriage I didn't use brass at all; whereas, my previous carriage used brass bushing for the jewels, including the shock systems, and also for the steady posts and pillars. This new carriage only has two bridges, instead of three, like the previous one. It has a slightly different design, but is fairly similar and straightforward. This new carriage, being much thinner, required the hardness to be slightly greater. The earlier carriage was tempered to a blue. This carriage was tempered only to a purple, giving it more rigidity and was my response to the more delicate features. The key new features have already been explained, and the rest is the same as the old carriage. (See Figures 1-6.)

In my last article I already explained how to make the components; it's fairly straightforward and I didn't change much about it. Although, one problem that I discovered with the new carriage, due to it being much thinner than its predecessor, is that when you quench the main carriage bridges you have to use some sort of back plate to keep the bridges flat and true, otherwise they'll distort very easily and will have to be remade. It took me three attempts to finally quench the carriage properly, so experimenting with different types of back plates is recommended.

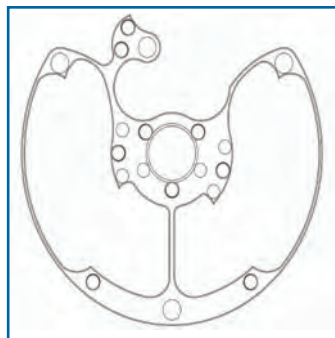


Figure 1

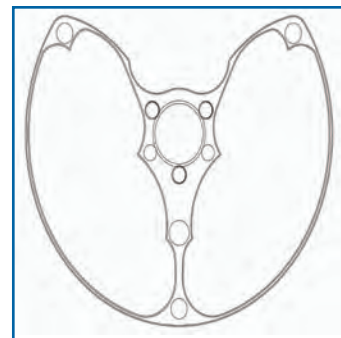


Figure 2

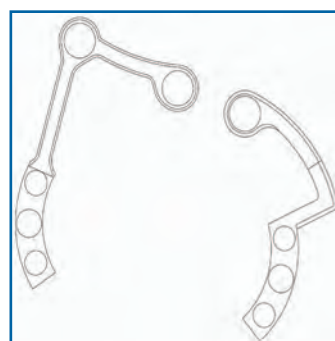


Figure 3

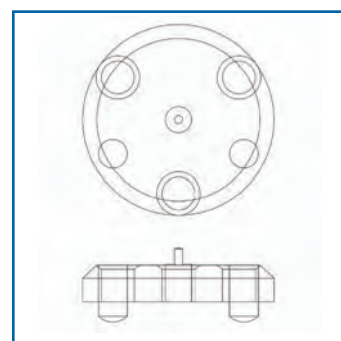


Figure 4

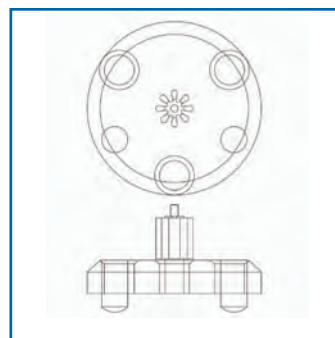


Figure 5

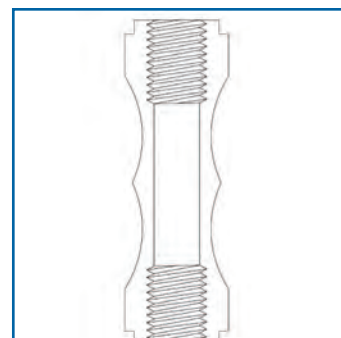


Figure 6

The majority of the shaping after quenching and tempering can be done with diamond files and diamond coated piercing saw blades.

Now that we have the carriage made, we have to finish it and poise it. The finishing comes first because the slight removal of material that's required to polish the steel will affect the weight and balance of the components; therefore, the carriage must be completely finished before poising it. The way I chose to finish this particular carriage was to mirror-polish the bevels and give a frosted finish to the flat surfaces.

The Tourbillon Carriage, New Beginnings

BY PAUL LOATMAN



Example of a Tourbillon (from Maitres du Temps).

The frosted finish needs to be applied first before you polish the bevels because I use silicon carbide granules to achieve this sort of finish, and just one of the particles could easily scratch a mirror polished surface on steel and ruin it. The silicon carbide is most commonly known as a honing compound. There are various grits and grades available. For the tourbillon I used 240 grit, which seemed to create just the right finish for the size of the carriage. There are various ways you can use this, but the easiest and most effective way I have found is to use a flat-ended stake of the largest diameter from a watchmaker's staking set, put a dab of oil on the flat end, and then add an equal amount of the honing compound. You can free hand it, or use the staking set. The theory behind the finish is to cover the surface of the steel with small nicks and cuts, which gives it the effect of a sparkling or frosted surface due to the many small reflective surfaces created from the silicon carbide particles. So, the idea is to be consistent, but not uniform. That may sound contradictory, but think of it this way: You have to make sure the surface is not uniform, otherwise it would be smooth, but at the same time you want that nonuniformity to be evenly dispersed across the surface of the carriage. This consistency can be achieved by grinding in a circular motion. You don't want to apply too much pressure; otherwise, some of the particles will get imbedded either into the carriage or the stake and cause large scratches that can look very out of place and inconsistent. The silicon carbide granules should "roll" over the surface of the steel, and not simply slide across, which would cause scratches instead of a frosted finish. Therefore, enough pressure must be applied to roll the particles but not so much that they catch the steel parts and scratch them.

The mirror polishing, also known as a black polish, is very difficult to achieve and requires polishing the same areas for extended periods of time. A good choice for polishing compound is diamond paste, the sort that comes in a syringe. A set of 6, 3, and 1 micron grits would be ideal and will allow you to achieve a very high polish. The bevels must first be formed using a file. (This should have been done during the basic shaping, before the frosted finish is applied.) To start, a rough polishing compound should be used to flatten out the bevels and to get rid of all the deep scratches caused by the diamond files—oil-stone paste, or anything similar to it would be good for this process. Once the bevels are relatively flat and smooth you can then start with the diamond paste, a piece of wood similar to Maple, Alder, or Poplar would be ideal to use with the diamond paste; those woods are hard enough not to conform to the steel under pressure, but soft enough not to scratch the steel and allow for a black polish. Using a 10x loupe would allow you to see any small scratches. Small scratches you discover may require you to go back to a rougher grit compound to remove, so it's ideal that you spend a lot of time on each compound to make sure you've polished it to the best result each particular compound can achieve. This will help you avoid having to go back to a previous compound and starting over from there.

The carriage still needs to be poised, which will require some form of weight that can be attached to the carriage in strategic areas to balance it out. This will all be covered in the next article. I first wanted to cover a few things that seem small but are absolutely essential, such as screws and drill bits. Drill bits, screws and even threading tools of this scale aren't cheap, but they should be considered disposable. Even taps at this size will commonly break even with a very good setup. I realized this very early on and decided I would start making my own drill bits, screws, taps and screw plates.

I use O-1 tool steel for every component of my watch that needs to be delicate, but still rigid. O-1 is an AISI (American Iron and Steel Institute) grade of steel. This isn't a brand name, this is an AISI designated grade. As long as the manufacturer makes the steel to AISI specifications, it can be called O-1. There are various grades of steel available. Some common tool steels you may find are W-1, O-1, A2 and D2. The "W" stands for "water." This is because W-1 is quenched in water. O-1 is quenched in oil and the "O" stands for

"Oil," while the "A" stands for "Air" which is air hardening steel. D2 is also air hardening steel, but has high chromium content. These are only the more common varieties. There are many more, so you might ask yourself, "Why choose O-1?" Well, there are a few variables to consider: One would be your geographical location. In countries outside the U.S. it might be difficult to get O-1 since this is an AISI grade. The SAE International (formerly Society of Automotive Engineers) also uses the same steel grading standards as AISI, so in some countries it may be possible to get O-1. Another major standards organization is the BSI (British Standards Institution). The BSI has very good all-around steel for watchmaking known to many as "silver steel."

Silver steel is the trade name for BS-1407. It's similar to W1 as it is water hardened, so if you live in the U.S., you might think that W1 would be a good choice. Although it's similar to silver steel, the differences make it a relatively bad choice for watch work. W1 is very difficult to machine, and when working on tiny, delicate parts, this could pose a problem. A2 and D2 are air hardening, and unless you have a furnace specially made for hardening steels, it would be impossible to harden these steels on your own. This leaves us with the readily available O-1, which is commonly known as "drill rod" as one of its main uses is in making drill bits. The oil hardening O-1 can be quenched to a hardness much greater than W-1 but also is more easily machined than W-1 when annealed. This makes O-1 a very good candidate for watch steel and is my reason for selecting it.

I'll start with drill bits, which are very easy to make. They're known as spade drills. If you've gone through a watchmaking program, then you'll most likely have

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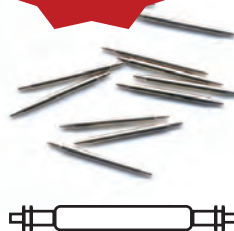


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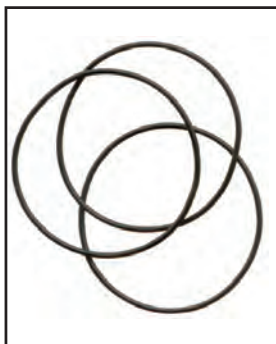


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The Tourbillon Carriage, New Beginnings

BY PAUL LOATMAN

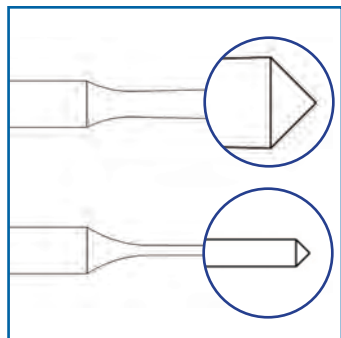


Figure 7

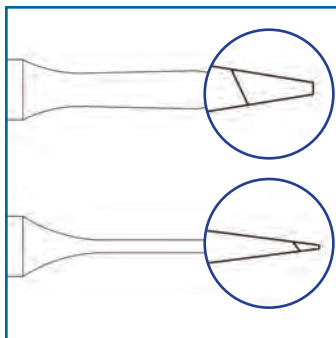


Figure 8



Figure 9

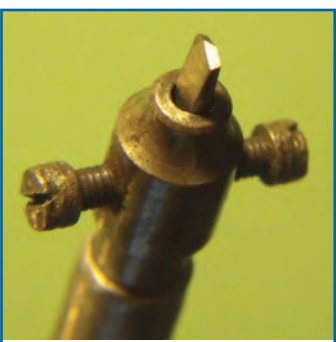


Figure 10

learned how to turn steel down to a very thin diameter. With this skill, any size drill bit can be made. To start, a shaft of the needed diameter and length is first turned. As a rule of thumb, a diameter greater than 1 mm should have a reverse taper to it. Anything smaller should be parallel. You need to quench the steel. This is done now because the next process can easily distort a thin drill bit if it's not hardened; you shouldn't temper these at all. Finally you need to create a spade head, grinding down two sides of the shaft for relief, and then grinding the head down so that we have two cutting edges at the tip. The two edges at the tip should slope down in the opposite direction of each other. It's the same principle as any normal drill bit; it's just fairly uncommon (Figures 7-10).

Now for screw plates, which one can make with screws as well as taps. There are two ways to start off. One would be if you wanted to replicate a screw, and another would be to start off with a commercial tap. If you want to replicate a screw, there are a few prerequisites. The screw must be hardened. An easy way to tell if they've been hardened is if they're blued. Usually this means they're hardened and tempered, and it also means they can be re-hardened. Most modern-made screws for watches are soft steel

with a zinc coating; these cannot be replicated. Another requirement is the screw head needs to be large enough to hold with a pen-vise or some other similar tool. If the screw meets these prerequisites, then you can start by grinding down two sides of the screw's threads. Next you can either re-harden it or try it as it is. I can't say for sure which way would be best since not every screw is made of the same steel; use your own discretion. Now that the threads have been ground down, this can be used as a makeshift tap, a one-use sort of tap. After a few minutes of threading, the threads will most likely be worn down too far and no longer be effective, but it should last long enough to make a screw plate. Now that we have some sort of tap, we can start the screw plate. This is a very simple tool. I use precision ground O-1 tool steel for these. You simply drill a few holes of the correct diameter in order to thread them with the taps you have. Once you've drilled and tapped the holes, you need to create a run off for the threads to be cut away into. An easy way is to drill another hole next to the threaded hole. You only want the run off hole to open up the threaded hole by a very slight margin, so undersizing the hole and then broaching it out carefully to a good size is recommended. You should only harden this after all the work has been done to it. When hardening the screw plate you do exactly the same as you did with the drill bits, only quench them, do not temper at all (Figures 11-12).

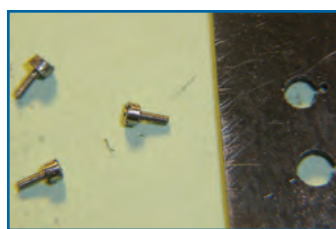


Figure 11

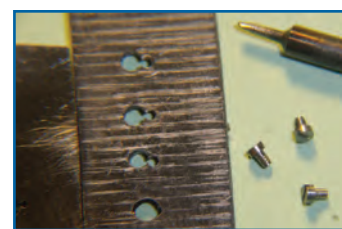


Figure 12

Now that we have the screw plate we can make our own taps and screws. This is very simple. I'll explain the taps: You should start off the same as a drill bit, but instead of grinding down the sides of the shaft, you thread it. Obviously, the shaft needs to be turned to the correct diameter for threading. Once you've threaded the shaft, then you must harden it. For very small taps under 0.6 mm, I would temper it to a very light straw color; for anything larger I wouldn't temper it at all. Now that it's been hardened, you must create relief for it. This isn't the same as a drill bit or the makeshift taps, these taps must be given much relief while still leaving as much of the threads as

The Tourbillon Carriage, New Beginnings

BY PAUL LOATMAN

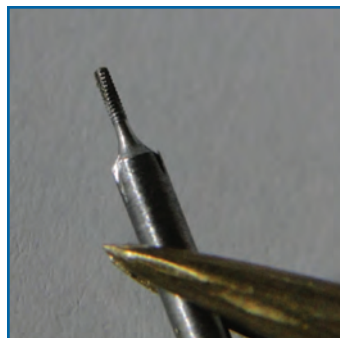


Figure 13

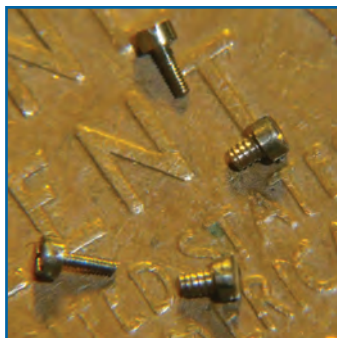


Figure 14

possible. I grind the relief into the threads by using a very thin grinding/cutoff wheel, the sort you would use with a dremel. You can thin the edge of the wheel with a diamond file; giving the edge of the wheel a knife-edge would be ideal. Once the wheel has been prepared you should hold the tap in the lathe headstock, and the cutoff wheel in a milling head mounted on a cross slide. This way you can cut the relief very accurately. This process should be done care-

fully and slowly. Once you've cut the relief, the tap is ready to be used. Always remember to use cutting fluid when cutting threads, especially at this scale. (Figures 13-14).

In my next article I'll explain how to finish off the tourbillon by poising it; there are various methods to poising the carriage. I'll write about my solutions and theories. I'll also show you how to get started with the pillar plate. If you learned anything from my series of articles, it's that nothing about this project is set in stone. When you learn new things that can improve your work, you should go forth and apply yourself with this new information. ♦

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Why Spring Bars Are So Important

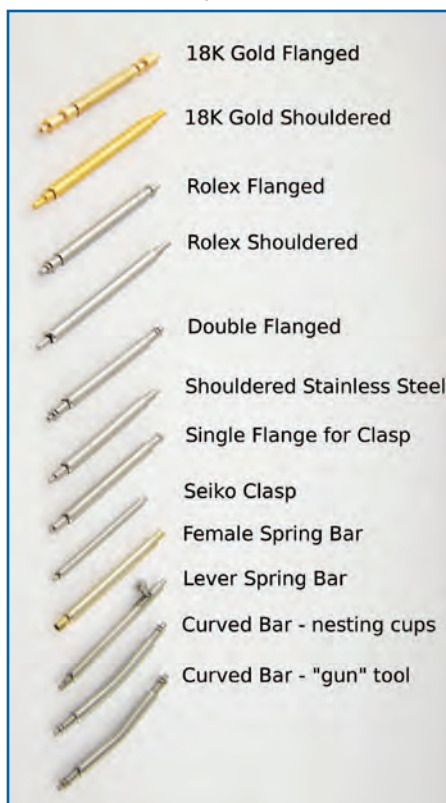
BY JORDAN FICKLIN, CMW21

We all know spring bars as those little metal springy rods that connect a watch bracelet or strap to the case. You often see them in other applications as well, like buckles, clasps, and even bracelet links. Costs can vary anywhere from a few cents to about \$50 for 18K gold. While simple in design, they are very essential. There are many different types of spring bars serving different applications. Therefore, it's important for us to train counter help, apprentices, and others on how to choose the right spring bar for the job.

Good quality spring bars keep the watch from falling off the customer's wrist and there are a few things you should know about them. Using the wrong spring bar may cause the watch to fall off the strap, the spring bar to break prematurely, or may just make it impossible for the next guy to remove them without risking damage to the watch case.

Spring bars come in different diameters and lengths. You should always use the largest possible diameter which will work with the strap or bracelet. Common sizes are 1.3mm, 1.5mm and 1.8mm. Spring bars for Rolex and other high end brands are sometimes as big as 2.0mm in diameter. To determine the right length of the spring bar, measure the space between the two lugs with a vernier caliper or similar device. A spring bar that is labeled as 15mm should fit lugs with 15mm between them. The spring bar will be much larger when expanded, but when fully compressed it will be slightly smaller than 15mm.

Figure 1



The following information will help you choose the right spring bar for your customer's watch.

Types of spring bars (Figure 1):

- **Double flanged:** For use only with lugs whose holes do not penetrate to the outside of the watch case (blind holes). The function of the second flange is to allow access to remove the spring bars.

- **Shouldered:** For use with lugs whose holes penetrate all the way through. No flange is necessary because you can push on the tip of the bar through the hole to remove them. It can be challenging to remove these from "blind" lug holes because there is no way to grip the shaft of the bar and compress the spring. Since the holes pierce the entire lug, the bars can penetrate deeper providing more support although the "blind" hole is more aesthetic.

- **Clasp bars:** These are usually single-flanged but with a very short tip which will not stick out beyond the edge of the clasp. In order to have a secure fit, the diameter of the portion which penetrates the clasp should be a tight fit; however, this can be difficult to accommodate when using a generic spring bar.

Clasp bars with short tips are not designed to be used to attach the bracelet or strap to the case because they provide very little support.

- **Curved bars:** Some manufacturers design lugs that require a curved spring bar to hold the strap to the case. The only advantage in using a curved bar is aesthetics. Assortments of curved bars can be purchased. Additionally, tools which can place a gentle bend in the straight bars are available.

- **Female bars:** These bars have a cup on the end in place of a post and are used when the lug has a post sticking out instead of a hole.

- **Lever bars:** Lever bars are a fairly recent invention for use with quick release or "E-Z fit" straps. High quality lever bars have a screw which can be removed and reinserted once the bar is placed into the strap. Lower

quality bars have a post welded onto the pin in the bar. In order to insert the bar, the entire bar needs to pass through the lever slot in the strap. Then the pin is depressed to get the short end through the slot.

The spring bars you choose should be made of a non-corrosive material such as stainless steel. Base metal spring bars will corrode and break faster. It is also common practice to use spring bars made of the

Why Spring Bars Are So Important

BY JORDAN FICKLIN, CMW21

same metal as the watch case (i.e. gold or platinum). This prevents Electrolytic plating action from occurring as sweat contacts the two metals or unnecessary wear if debris gets ground into the softer metal.

As with all things watch related, it is best to use the manufacturer's original parts if available. The use of generic parts can void a warranty, as well as cause other problems. I recently became aware that generic spring bars can cause the compass in a Tissot T-touch to fail. Genuine Tissot spring bars for the T-touch have a non-ferrous spring inside which will not interact with the compass. Genuine spring bars are usually designed so the tip of the bar will have no play against the case, ensuring a tight fit.

Usually when a customer comes in for a spring bar it is because one has failed. It is considered good practice to replace both spring bars at the same time because the other one is probably ready to fail, as well. Spring bars should also be replaced whenever the watch is serviced and examined when a power cell is replaced. A couple of dollars will go a long way in preventing a catastrophic failure.

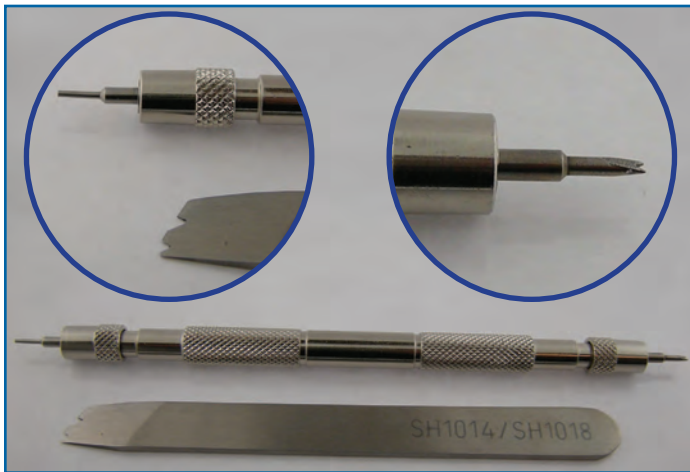


Figure 2

I have included some photos of spring bar tools, which make removal and installation easier (Figure 2). The Bergeon spring bar tool has a pin on one end which is used with through holes to depress the pin. The other end has a forked tip which is used to remove flanged pins from "blind" holes. The red tool has a graduated gauge (Figure 3) for measuring lug width with a forked end for removing flanged bars. In addition, this tool has a short pin for pushing out shouldered bars and a set of nesting cups used for bending spring bars when you need a curved bar

(Figure 4). These cups produce a fairly smooth curve in the bar. The green "gun" tool is also used for bending spring bars (Figure 5); however it makes a sharper bend which may weaken the bar if too much bend is applied. The flat tool is a specific, manufactured tool for removing and installing straps that use two spring bars on the same strap.

Following this guide should help you provide the best service possible for your customers when it comes to quick, easy and profitable bracelet repairs, like spring bar replacements. ♦



Figure 3



Figure 4



Figure 5

BY DALE LADUE, CMW21

A very nice “Angelus Chronodato” chronograph came in for service. Aside from a few screw heads that needed refinishing, the movement looked to be in good condition considering its vintage (Figure 1). This style of chronograph was popular in the 1940s and 50s.

After completely disassembling the movement, I noticed that the stem pilot post was worn. The end of the square on the stem where the pilot begins was the culprit. Lack of lubrication and excessive inward pressure while winding milled a recess into the post (Figure 2). Many times this is overlooked in non-chronograph hand wound watches, as long as the clutch and wind pinion mesh properly (left). However, this style of chronograph has the minute recorder wheel pivot in line with the stem pilot bushing hole. Also note the wear mark created by the stem pilot as it was encroaching on the minute wheel pivot (right).

I decided to make a small steel bushing that would fit into the milled out worn area, which would draw the stem back into its original position. I used a piece of blued steel wire that was the same diameter as the diagonal of the square (Figure 3). A perfect center was turned in the end and a hole was then drilled with a carbide spade drill (Figures 4 and 5). The drill was made to the same diameter as the pilot, which would cut a hole very slightly larger, and provide a slip fit. Figures 6 and 7 show the drilled wire and the stem pilot being tested for fit.

A small section of the tube was parted, and to prevent loss, a brass wire was inserted into the tube as shown in Figure 8. The other end of the brass wire was supported by the lathe tailstock. The parted bushing (Figure 9) was inserted in a collet and was slightly broached out to remove any burr. The pilot was tested for a proper slip fit before inserting the bushing in place (Figure 10). The bushing diameter fit fine. However, the height was too great, as shown in Figure 11. In order to reduce the height, a brass mandrel was turned with a slight taper. The steel bushing was pressed on the mandrel and the bushing was turned down to a little less than half its height (Figure 12). The bushing was reinserted into the worn area, as shown in Figure 13. The bushing could have been sweat soldered in place or left free to rotate. However, because it pressed in place quite tightly I decided to use a red permanent thread locker material.

Figure 14 shows the stem in position with the pilot drawn back to its original position. Allowing, with proper servicing, many more years of use can be expected from this timepiece. ♦

Figure 1. The “Angelus Chronodato” movement



CLOCKS

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BY DALE LADUE, CMW21

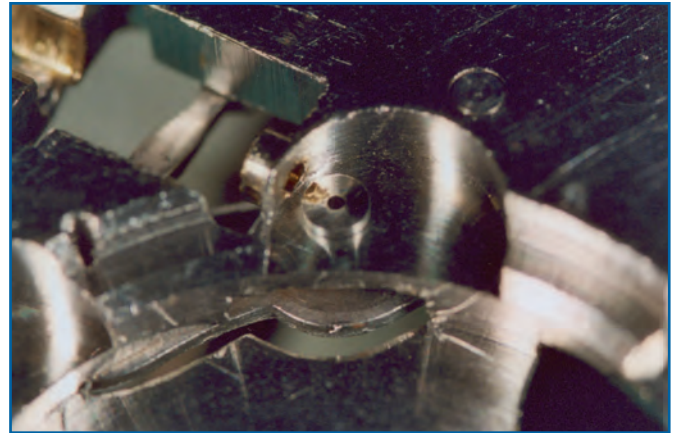
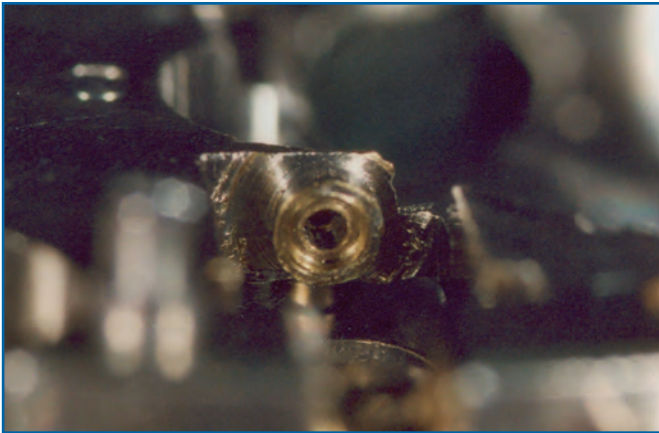


Figure 2. The worn (milled) stem pilot post as viewed looking into the post end (left) and the mark created by the stem pilot indicating eventual interference with the minute recorder pivot (right).

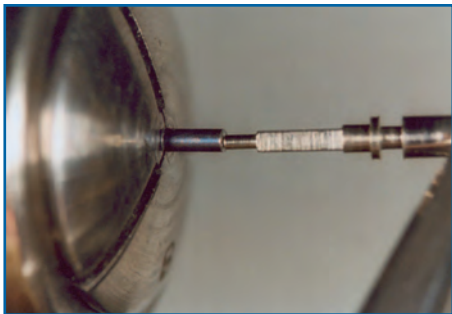


Figure 3. A blued steel wire was chosen with a diameter that equaled the diagonal measurement of the stem square.



Figure 4. A perfect center was turned in the end of the wire.

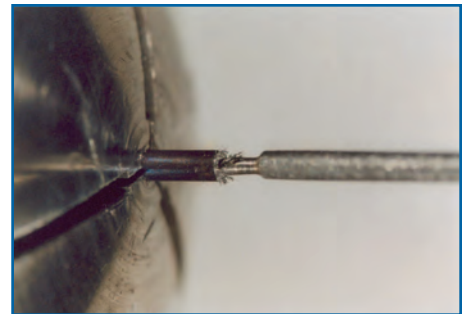


Figure 5. A carbide drill the same size of the stem pilot was used.

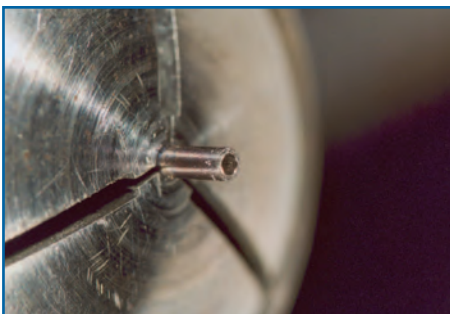


Figure 6. The drilled wire.

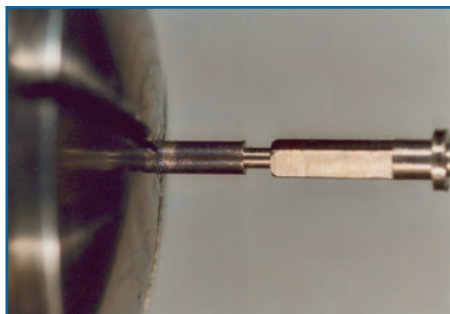


Figure 7. The pilot was tested for fit.

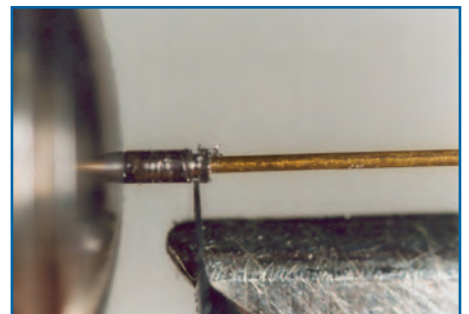


Figure 8. A brass wire was inserted into the steel wire to prevent the small bushing from loss as it was parted.

BY DALE LADUE, CMW21

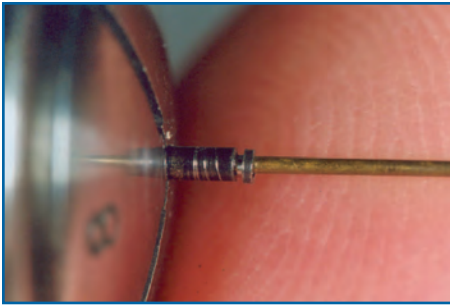


Figure 9. The bushing parted from the stock.

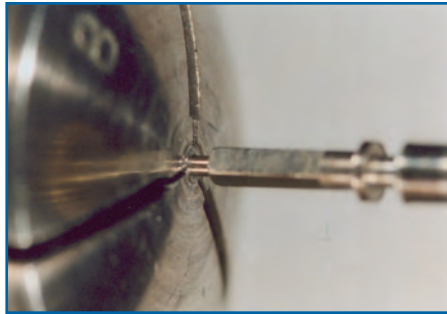


Figure 10. The bushing was mounted in the lathe, and was broached slightly to remove burrs. The pilot was tested again for freedom in the bushing.

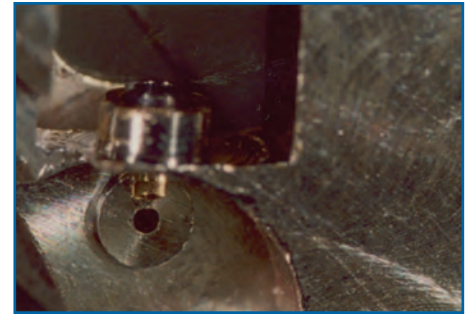


Figure 11. The bushing's height had to be reduced.



Figure 12. A mandrel was turned out of brass to support the tiny bushing and the bushing's height was reduced approximately one half.

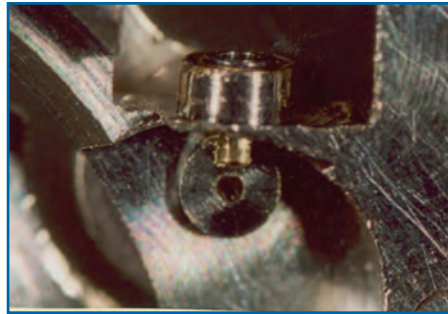


Figure 13. The bushing in place; notice the pilot wear mark.

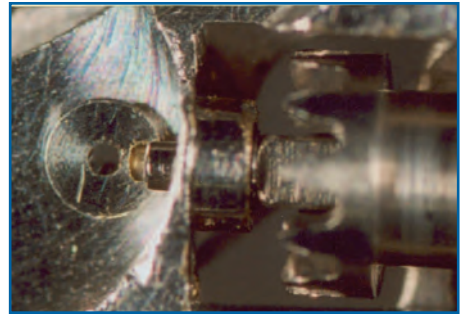


Figure 14. With the bushing in place the stem pilot has been returned to its original position, eliminating any contact with the minute recorder wheel pivot.

Dale LaDue is a second generation watchmaker-clockmaker who has been a contributing author to *HT* for many years. A graduate of the Gem City School of Horology, he has been in business in the Rochester, NY area for nearly 30 years. Dale's work covers the gamut of "challenging situations," which are often the topics of his articles. Dale is also the current president of the New York State Watchmakers Association.



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A Member's Passing: Howard D. Woodward



Howard "Woody" Woodward, who passed away in October, was a charter member of AWI. He served on the Board of Directors as the Research and Education Council director

for many years. Woody was born in Red Wing, Minnesota in 1936. He pursued his education at the University of Minnesota and completed a watchmaker course at Minneapolis Vocational Institute, graduating in 1958. He served his two-year watchmaker apprenticeship at Jorgenson's Jewelry in Spring Valley, Minnesota and opened "Woody's Time Shop" in Zumbrota soon thereafter. In addition to Woody's watchmaking activities, in the later 50s he was instrumental in starting and organizing numerous

polio clinics throughout Southern Minnesota, as he suffered from the disease himself.

In 1964, Woody was offered a position in watch repair at St. Paul's Technical Vocational Institute where he taught clock, watch and jewelry repair until his retirement in June, 1995. He created his own curriculum and authored a certification course for the American Watchmakers Institute. Also, he chartered four watchmakers' guilds in Minnesota. Throughout his teaching career Woody received recognition in many specialized areas including: The Bulova School of Watchmaking in New York City, The Minnesota Governor's Trophy for Excellence in Education, the WCCO Good Neighbor Award and the Outstanding Vocational Instructor Award.



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Impulse Faces

BY LAURIE PENMAN

The jig for grinding the impulse faces was shown in September's magazine, but I have not yet made the disk that is used to define the impulse angles. There are, in fact, two circles, but they are so similar that I settled on just one with a diameter of 40.50 mm. In order to turn a disk on the lathe, it needs to be supported on a mandrel. A mandrel is a rod with a turned down position that is concentric with the body of the rod and has a nut to hold the disk firmly in place (Figure 1). I am not keen on the second method shown (I find that sooner or later the inserted stud begins to move) and turning from the solid requires a diameter of bar I cannot hold in my chuck. The obvious answer is to

to produce a truly "square" face. As it happened, I did not have a collet that matched the drill rod or silver steel bar I had in stock, so the turning had to be carried out with the bar hanging out of the chuck much farther than I liked.* Drill rods do not come in a fully annealed state, but are tempered to a condition that allows them to be machined; however, that leaves them stiffer than annealed steel would be, and with care and a very sharp tool, the bar can be turned in this position, producing a decent finish.



Figure 3

There are three diameters to machine and (Figure 3) shows the first two (the register for the disks and the body of the mandrel). The third one will be behind the body and dimensioned to suit my collet. Since everything is carried out at one setting, all diameters will be absolutely concentric. After sawing off the bar, the end of the mandrel is faced until it is square to the rest of the body. Then it can be stood upright on a piece of ceramic tile, the brass disk dropped over the smaller end, and soldered in place (Figure 4).

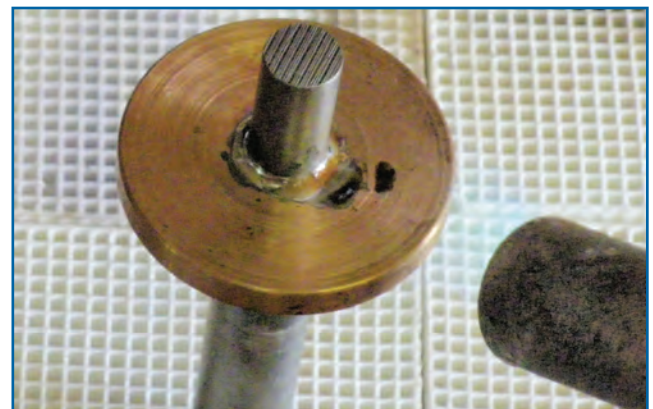


Figure 4

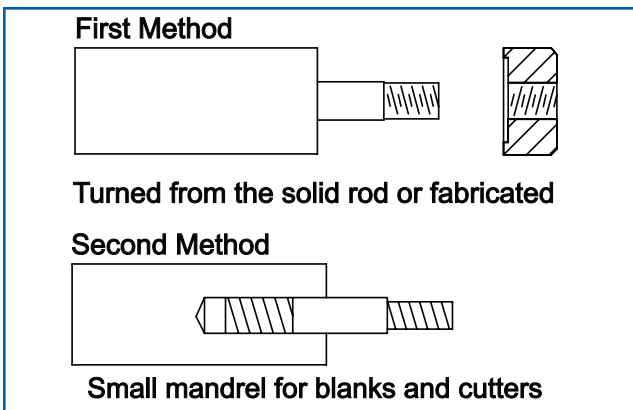


Figure 1



Figure 2

use a bar that I can hold, turn and screw, and also use for soldering a brass shoulder into position for supporting the disk at right angles to the axis. Figure 2 shows the brass being drilled and readied for slipping onto the machined bar. As the face will be machined after it has been soldered into place, it is not important that drilling in the manner is unlikely

The shoulder that is formed is not necessarily true to the axis of the mandrel, so it is wrapped with a heavy paper, such as is used for drawing and illustrating. This is to protect the surface while it is held in the chuck. I could use the collet, of course, but the next operation requires the three jaw chuck and I see no reason to take the chuck off more frequently than necessary. Facing the shoulder (Figure 5) and turning the diameter that will be threaded does not require the mandrel to run absolutely true. As long as its axis is parallel to that of the lathe, a small eccentricity will not affect the utility of the mandrel.

I cut a 70% thread on the turned down diameter. In other words, the height of the thread form was just 70% of the whole thread, which is M6 x 1. The height of the thread is 0.613 mm and 70% of this is 0.43 mm. Add twice this height (0.86 mm) to the core or minor diameter of 4.77 mm and the diameter to be turned for screwing is 5.63 mm. This will make a flat-topped thread that, nevertheless, will be quite strong enough for this job. To start the thread, I taper the end with a file, support the die stock with the face of the drill chuck, and rest the handle on some convenient flat surface (Figure 6). This should ensure the thread

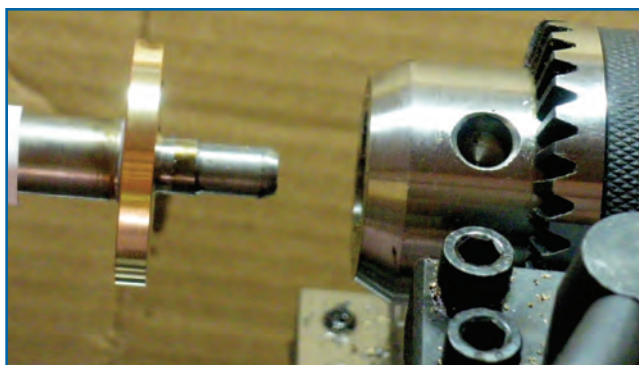


Figure 5

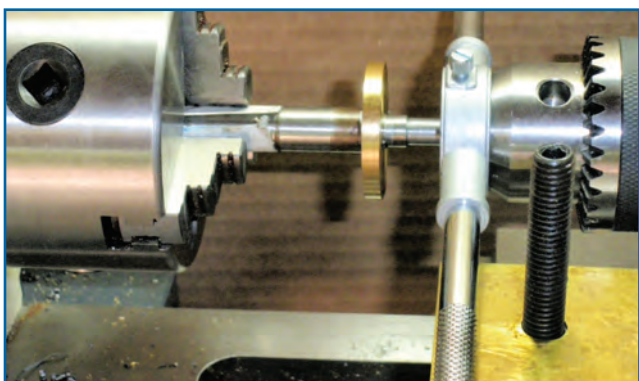


Figure 6



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Impulse Faces

BY LAURIE PENMAN



Figure 7



Figure 8

cuts true to the axis of the work, but the chuck probably will not grip the rod firmly enough to cut the thread for its full length. It is, therefore, transferred to a vise (Figure 7) and the thread completed by hand (Figure 8). Even though the die was lubricated, the resultant thread is likely to be slightly rough (unless the drill rod is free cutting). A little polishing with folded emery paper backed up with a strip of metal (Figure 9) should remove the roughness. The lathe should not run too fast because the strip of emery paper will travel too quickly along the thread and be difficult to keep sunk into the “V” of the thread.

When I mount a disk on the mandrel it is not good enough to clamp it back with a nut alone; it ought to have a large dished washer the same size as the shoulder to reduce the chance of “chattering” when machining the disk. In (Figure 10) it can be seen that I have combined the nut and washer in one. I had a blank large enough for the washer, but not large enough to machine the combination from solid, so I soft soldered a boss about 15 mm diameter and 10 mm long to the back of the blank. I centered it up as



Figure 9



Figure 10

well as I could, but relied more on the fact that I was going to machine it all over.

First, I held the boss in the chuck and turned the outside and face of the larger disk, dishing the face a matter of half a millimeter or so. Drilling and tapping (M6 x 1) with a 5.25 mm

drill was carried out from the tailstock in much the same manner as the dyeing of the male thread, holding it in the drill chuck to obtain a “start” and then using a tap wrench and resting the handle on a convenient part of the lathe. However, if this is the only support, the tap will probably be pulled out of true. One hand must be used to make sure the tap follows the start the drill chuck gave it and the other hand is used to rotate the chuck. After tapping, the hole was bored out for about 3 mm to clear the register diameter on the male thread (Figure 11). This ensures that it is the face of the nut/washer that takes charge and

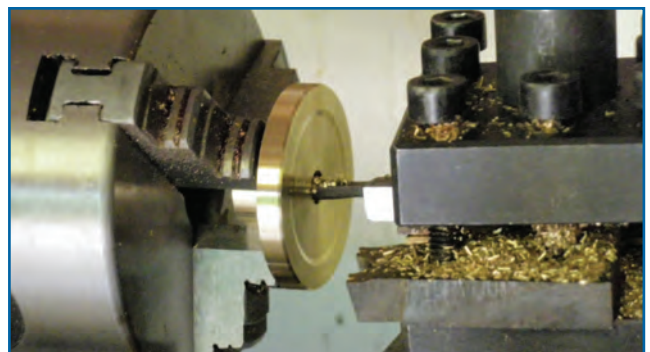


Figure 11

Impulse Faces

BY LAURIE PENMAN



Figure 12

not the thread, which may have gone slightly out of true. Figure 12 shows the disk clamped onto the mandrel and ready for holding in the collet for turning to 40.5 mm diameter (Figure 13).

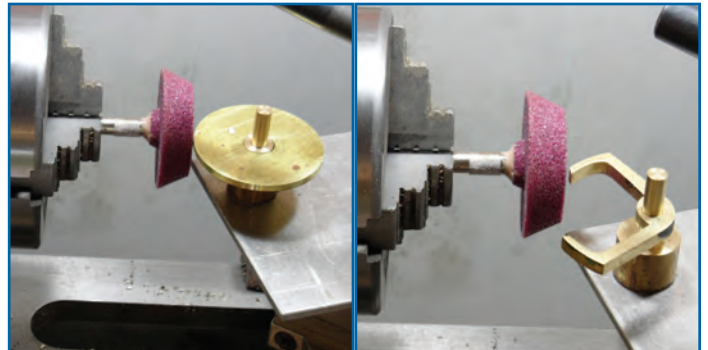


Figure 15

*Ideally, you would follow the normal practice of drilling a center in the end of the bar and supporting it with the tail post. The besetting sin of these small lathes is that the tail stock does not present its center dead on the center line of the machine reliably, and as a consequence, will tend to hold the work away from the true axis, resulting in a taper. There are adjustments and machinists tricks that will get around this which are delicate and time consuming (and my tail stock has so short a foot that it rarely locks in the same position twice to closer than 0.005"). By taking care, using a dead sharp tool, tiny depths of cut, lubrication with machine oil and a very fine traverse, I was able to produce two diameters that were concentric to each other and cylindrically parallel with an error of less than 0.001" over the full length.



Figure 13

The rest of this task (grinding the impulse faces) is simple. The preparation often takes longer than the job itself, at least for the first time. The disk that has just been made is lined up with one face of the grinding wheel (Figure 14).

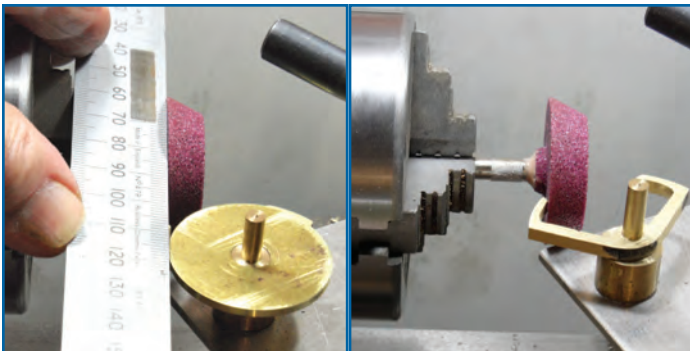


Figure 14

It does not really matter which face is being ground at this point because the pallets can be turned over to establish the entry and the exit. The second pallet is ground by using the alternative grinding face of the wheel (Figure 15). The lock will be discussed next month. ♦

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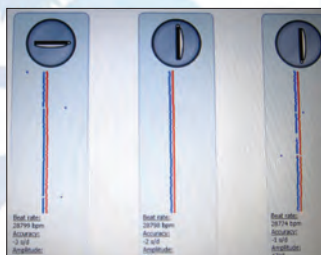


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Your Education and the S&P's

BY JERRY FAIER, CMC21

Happy Holidays to you and your families and best wishes for a healthy, happy and definitely more prosperous New Year! This last year was a real tough one for many of you and we can only hope to leave last year's difficulties behind and work towards building a better 2011. If I were to offer a wish for everyone, it would be for you to exceed your expectations, see new pathways to improve your business and find the capital to attend the 2011 AWCI Annual Meeting. You may discover some new ideas resulting in greater productivity in your life.



Education Committee Functions

I have quite a slate of topics to discuss this month. Along with the items from the S&P's, I also want to bring everyone up to speed on what is happening with the Education Committee and the Educational Development Program (EDP). The Educational Development Program is a broad educational philosophy that AWCI will use to direct and develop its educational programming for all members. As you know, it has been the goal of our organization to set up programs for: 1) The development of our beginning workers (and those who are just enthusiasts), 2) To help our current bench professionals grow and develop towards certification, and 3) To encourage our certified professionals to stay sharp and at the top of their skill set. We especially want to keep our highly skilled Masters active with both those that are developing, and those who are aspiring to achieve the Masters certification. We know our members are our greatest assets and we must make better use of their talents if we are to grow and develop not only AWCI, but the horological trades, as well! The needs are different for watch versus clockmakers but the goals are similar. This will give us a pattern for how

AWCI will develop all further classes and how each member can achieve what he or she wants from AWCI.

We know that not everyone can or will become certified. Those of us who have been trained as educators know that without a goal, we often lose sight of successful directions and that is why we need this program. We have tried to allow for choices at every level and are working to give some options to those who wish to push themselves even more. Since the final vote (at the time of this writing) from the committee has not been sent to the Board of Directors for their final endorsement, you will have to watch the *HT* for the final development. If all continues as charted, you should have the full program by next month. In any case, I know there are some of you concerned about your need to acquire so many CEU's (Continuing Education Units) to maintain your certification. I can tell you with certainty not to worry. When the Board adopts the final plan, those of you who now hold certifications will have 5 years from the date of adoption to acquire what you will need. After that, all other certificate holders will have 5 years from the date they receive their certification for the first time to acquire the additional CEU's. So, be patient, and as soon as we are finished, you will know what you will need to do and have plenty of time to do it. We have really tried to keep it as simple as possible.



The Watch S & P

As for the use of the S&P to help develop your bench skills, this month I want to address some specific points. Starting with the watch, look up the Watch S&P and go to page 10 which tells of the requirements for a CW21. Whether you hold a CW21 or not

Your Education and the S&P's

BY JERRY FAIER, CMC21

is unimportant. What that material tells you is what we expect of any bench professional when they are servicing a watch. The first sections deal with proficiencies. They set the standard for readiness of yourself and your equipment. One point here to consider is: Can you perform all these points? If you don't have the necessary equipment to do the job and to service your tools in order to return them to readiness for the next job, then it's time to evaluate what you are doing and examine your equipment. Design a plan to replace old worn equipment and arrange for the purchase of new materials. It may break the bank to buy all you need at once, but by adding new equipment gradually, it becomes doable.

The next sections deal with specific types of watch products: Electronic/quartz, mechanical, and chronographs. Each section breaks down the specific behaviors a professional must possess. Your task is to test yourself on each item to see if you can perform it properly and completely. How's your knowledge of quartz theory, current consumption, or coil resistance? How many other terms are used to define the proper use of battery power in a quartz watch? Are you up-to-date on the general principles of the common analogue and digital modules that are sold? Get a current movement catalogue from a supplier and test your knowledge. Next, find a module you can test yourself on and tear it down. Check every feature discussed in the "Service Procedures" and be sure you can define all the terminology that comes along with it. Next, tear the movement down again. Only this time, use a stop watch to see how long it takes you to complete the tear down, re-assemble, oil and adjust the movement and re-case it. Try another under the timing routine and see if you can improve your time without losing a step. When I work on a product for the first time, I work for accuracy. The next trial is for efficiency, and all the future times I try for entering and exiting without leaving any marks or evidence that anyone other than the factory was ever there. That may include correcting mistakes made by others, but certainly includes being extra careful to make it as perfect as possible with no lint, dirt, crumbs or markings of any kind left behind. It is this timed discipline that will direct you into more efficiency and less effort when you encounter these types of movements.

Don't forget the water testing. Can you define the difference between water proof and water resistant? How do we prepare a case for each? How was the

case prepared for the watch you are working with at the moment? Do you have a proper tester? Do you know how to service the tester so your results are correct? These are all skills to practice that will help you improve the speed of your work, improve your efficiency, and improve your bottom line. We'll look at more details next month on these types of watches.

If you have a fellow watchmaker you visit with from time to time, an excellent activity to sharpen your knowledge and help key in your service skills is to trade questions about some aspect of the service process with this type of watch. For example, the customer brings back in a quartz watch you serviced about 2 months earlier. The watch doesn't seem to keep accurate time. First, what diagnostics can you perform without taking the watch apart or out of the case to determine what may be going wrong? List all the reasons that could make this timing problem happen, why they may be the possible reasons for this occurrence and what you would do to correct each option. The certification assessment follows similar approaches. It's what a competent bench person will do every day for their living. I used to call this "play time fun at the shop!" It builds skills and confidence, as well.



The Clock S & P

Clockmakers, check out page 20 of the Clock S&P. Why do we suggest that a movement be torn down before cleaning? Could it be because you are flirting with disaster if you don't tear them down after you have removed them for cleaning? Why? Capillary action is not just something you can choose to forget after you left high school. Physics works and only a fool will try to violate its principles. You can mess

Your Education and the S&P's

BY JERRY FAIER, CMC21

with a lot of things, but Nature isn't one of them! For example, liquids like to crawl into tight places. Thus, if you have tight places (center shafts, pivots, mainsprings, etc.), the water or solvent likes to crawl into them and stay there. If it is a solvent, the physics of solvents is to dissolve foreign materials and carry them away as they creep. Think of the center shaft. How many rusted or difficult-to-turn minute hands are due to this problem? Yet, almost every week I encounter a rusted center shaft that won't turn easily. (It's that pin that holds the tension washer in place. That's a small space, remember? Think physics.) Ultrasonics are outstanding tools but they are not an end all. I have seen many movements that were bright and shiny and were totally stuck together. How many lever studs have you seen where the lever won't rotate smoothly, or where rusted pivots didn't take oil because the pivot and its hole weren't properly cleaned? Besides that, it is very hard to get a true picture of what bearings are worn when there is still old, hardened oil sitting down in the bearing, helping to take up the space! It's costly and frustrating when you find that floppy pivot you missed because of debris that didn't clean out better.

When using a cleaner (water based or solvent based), are you careful to keep close track of how long you let it sit and soak? Most cleaners (both water and solvent based) have acetone in them to help with grease solvency. If you leave the movement in the cleaner too long, that acetone will dissolve the lacquer from the plates and (you guessed it) by cap-

illary action, wicks into the bearing holes. Now your fresh oil has a nice layer of lacquer to help chew out that bearing faster. I actually count the seconds I can leave a movement in my ultrasonic without swelling or pulling the lacquer, and I adhere to that time reference. Want a better looking job? Review your cleaning procedures and I think you will find: 1) Your bench doesn't get so filthy, 2) You don't get so filthy, 3) It's easier to diagnose the needs of the movement for repairs, 4) Your tools last longer as they get less contaminated as you work, and 5) You can see what you are doing! It's easier to call a customer and tell them they need something at the beginning of a job rather than trying to explain why you missed it until the end. I would venture to say that many of the sloppy repairs I see occur because something was not found until a lot of time was invested and the way out was a quick fix to save the bench person their time. Not a good scenario to get trapped by, especially when getting it clean at the start will end this. How much longer will your burnisher finish last if the pivots you are working on start out clean, rather than having a bunch of debris stuck to their shoulders?

Next month I hope to have a lot of details on the EDP. Keep watching the *HT* for more. Most importantly, keep practicing your skills development to see if you can improve your timing and accuracy. It's guaranteed to raise your bottom line.

Happy Holidays! ♦

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There's no better place to find immediate information on recent events than the American Watchmakers-Clockmakers Institute Facebook page. You'll find everything from events to PowerPoint presentations to links to articles. Right now, for example, you can find the entire PowerPoint from Witschi on *Quartz Know-How for the Professional* which many people have asked to view. Although we've recently started our Facebook page, we grew to 151 visits the week of November 8th--up from 76 visits just a week prior. *Like Us* so we can continue to double our weekly visitors! It's a great way to stay updated on events in the watchmaking-clockmaking world. (Yes, we're definitely including info for our clockmaking friends, too!)



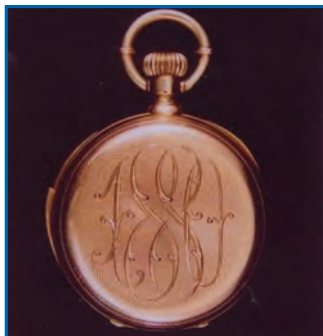
questions & answers

BY DAVID CHRISTIANSON, CMW21, FAWI

QUESTION:

I am asking for any information on an Albert Potter pocket watch. Pictures are enclosed. Please provide us with any information you may have.

Linda, Pounders Jewelry
Spokane, Washington



ANSWER:

Albert Potter (1836-1908) was an American watchmaker who went to reside in Geneva, Switzerland in 1876. He was such an influence in the watchmaking world that it was the aim of nearly every great watchmaker of the time to work with him. Potter made about 35 watches of his own design in the U.S. He continued to produce high grade watches and chronometers in Geneva that were manufactured both by himself and by others in Switzerland under his direction. His Geneva ultra-high-grade ebauche timepieces (made from Swiss blank movements) are thought to have been made by the Charles Ami LeCoultre firm of the Le Sentier-Le Brassus area. His firm failed in 1896, having produced about 600 watches.

Your minute repeating pocket watch appears to be one of Potter's ultra-high-grade watches produced in Switzerland for Albert H. Potter and would date between 1876 and 1896.

Send your Questions to *Horological Times*
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QUESTION:

Is this the standard Hebdomas watch? The name on the dial is Marlboro and might have come from the Lancaster, PA area.

Steve Pace
Greenville, South Carolina

ANSWER:

This is not a Hebdomas watch. The Hebdomas was an 8-day movement with a mainspring barrel the diameter of the movement. This one is a one-day watch with the balance, cock and pallet fork reversed so that the cock and balance are visible through the front of the watch, much like the Hebdomas.



"Marlboro" was one of the many trademarks of Louis Goering of La Chaux de Fonds. Goering was known to make a number of "Swiss fakes" of American-style watches. In this watch the movement was cased by the Star Watch Case Company of Elgin, Illinois. The Star Watch Case Co. was located in Elgin from 1897 to 1905 when it moved to Ludington, Michigan. The movement is marked with a German patent mark, D.R.P. 140880. D.R.P.'s were issued for "true" inventions from 1877 to 1945 (as opposed to D.R. G. M.'s or "utility model patents").

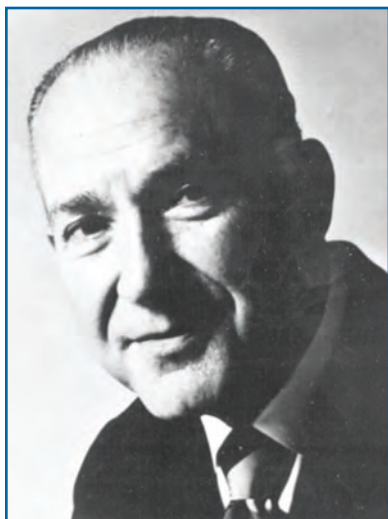


Doug Stevenson published a "patent-number-by-the-year" table in the October 2000 NAWCC Bulletin (whole number 328, p. 594). In his list this patent number was issued "not earlier" than 1902. So with this list and the watch case we can safely say that this watch was made between 1902 and 1905. The style and finish of the movement, as well as the style of the dial, tend to confirm this date of manufacture.

It is an interesting and well-made watch harkening to an era when the Swiss were trying to distance themselves from their reputation of making low quality "Swiss fakes" and starting to promote their well-made watches that they had also been making all along.



Henry Fried, a remarkable man



BY HAROLD L. RAPP, CW

I met Henry at one of the monthly meetings of the New York Horological Society which he attended regularly. He also lectured from time to time, and whenever the program had him scheduled, the attendance was always up, and for good reason. He interjected

humor, knew his subject inside out, and frequently brought knowledge to his audience that no one had ever heard. And then there were his projections! He crafted superb drawings of all horological parts, just like those found in his books.

In the old days, our society frequently organized visits to collectors' homes, and I attached myself to Henry in expectation of getting a brief background description of the rarest and most interesting antiques on these visits, along with a quick appraisal that enhanced my knowledge over time.

In 1947 I wanted to take the Horological Institute of America's (HIA's) Certified Watchmaker Exam, and Henry offered to be my proctor, but first, he had a friend send me some jewel bearings so I could practice setting them. Thanks to his input, I succeeded in passing.

Visiting his home in Flushing, New York was like going to a museum. By his own calculation his collection was worth \$1 million. After dinner at our home one time, he wanted to see my comparatively modest assembly of timepieces. Of course, he gave me a running commentary. He corrected my "carriage clock" description for "coach clock," as I clearly recall.

Henry loved to travel and take groups of people to places of horological interest. After one such trip to Turkey, he told me he had visited a watch store in the Grand Bazaar where he found a unique timepiece. The store's owner knew nothing about the piece. He purchased this treasure and was endlessly proud that his know-how had enabled him to find it.

Not many know that he was a teacher at the George Westinghouse High School in Brooklyn where he taught our trade to a tough bunch of youngsters. He had to be a disciplinarian in class, but we could tell from his stories that the students respected and loved him, as did everyone who was privileged to reach his inner circle. ♦

Technical Discussion & Parts Forum



The American Watchmakers-Clockmakers Institute Technical Discussion & Parts forum is available online at www.awci.com. Just click on *Technical Discussion and Parts Forum* in the blue box. Guests are free to browse our topics and posts but only validated AWCI members will be able to actively post messages and communicate with one another via private messaging. The purpose of this forum is to aid our members in finding watch parts, clock parts, and tools, and to enable members to discuss technical issues. This forum is not open to generic advertising posts; therefore, web addresses and e-mail addresses should not be included in public messages.

Sellita Spare Parts Resource

Terry Kurdzionak, owner of Eckcells Supply, now stocks, for immediate delivery, the full line of genuine spare parts for Sellita mechanical watch movements including the SW200, SW200-1, SW220, SW240 and the SW300 calibers. Although Sellita movements resemble those made by ETA, they are not the same. They require genuine Sellita spare parts for their proper repair. Sellita parts use the standard Swiss nomenclature and numbering system. You may order any Sellita parts from Eckcells by phone (781-438-3208), fax (781-438-6954), or e-mail eckcells@gmail.com.

New Chapter One Wristwatch Features Breakthrough Technology

According to the manufacturer of Chapter One, Maîtres du Temps, no other wristwatch has featured a tourbillon with mono-pusher column wheel chronograph, retrograde date, and retrograde GMT, as well as moon phase and day of the week on their own rolling bars. Efficiently transmitting power 90° to the two rollers and ensuring they work simultaneously with all functions was an immense technical challenge. However, the ease of both reading and adjusting Chapter One's many indications disguises the fact that it is a world's first combination of complications crafted from 558 components.

From a design standpoint, the circles within circles are balanced by the juxtaposition of the rectangular forms of the two roller indications. The long, flowing compound curves traverse the case while a laser-pierced moon and stars on the outer roller of the moon phase indicator add to the design.

The Chapter One watch was crafted by two watchmakers: English watchmaker, Peter Speake-Marin, and Master Watchmaker, Christophe Claret, of the Geneva School of Watchmaking. Mr. Speake-Marin believes, in order for horological artistry to flourish, watchmakers must be aware of the past and conscious of the wealth of new possibilities offered by the future. "New design and manufacturing technologies allow a fresh scope for different forms that were unimaginable

only 10 years ago," he says. For Speake-Marin, Chapter One by Maîtres du Temps is the perfect medium through which to express his experience of the historical tradition of fine watchmaking and to convey his belief in its future.

A second offering, Chapter Two, is a collaboration of Daniel Roth and Peter Speake-Marin. This wristwatch features a large date with the day and month on Maîtres du Temps iconic rollers, making it one of the more legible triple calendar mechanical wristwatches now available.



“It’s truly worth the time, effort and money to take these classes. No one can match what AWCI is doing to move the watch profession forward, and Tom Schomaker at AWCI is a great instructor!” Participant from October, 2010 Class on Modern Mechanical Chronograph, Servicing & Adjusting

AWCI Academy of Watchmaking Class Schedule

AWCI is offering a series of 5-day watchmaking classes. Each 5-day block will cost \$725; 3-day block is \$435.00. All classes are held in Harrison, OH. For additional information call toll-free: 1-866-FOR-AWCI (367-2924), ext. 303 or e-mail education@awci.com. Class information is also available online at www.awci.com.



January 3-7, 2011	Modern Mechanical Chronographs, Servicing & Adjusting
January 31-February 4, 2011	Modern Automatic Watches
February 14-18, 2011	Basic Quartz Watch & Quartz Chronograph Repair
February 28-March 4, 2011	Servicing & Adjusting the Swiss Lever Escapement
March 7-11, 2011	Balance Staffing & Timing
April 11-15, 2011	Modern Watch Lubrication
June 13-17, 2011	Modern Mechanical Chronographs, Servicing & Adjusting

AWCI Watch Repair Course schedule is subject to change. Seats may become available for the classes; please contact AWCI to be added to the waiting list.

AWCI 21st Century Certification Exam Schedule

Visit AWCI’s website for complete information on the 21st Century Certified Watchmakers Exam. To register for an exam or for more information call toll-free: 1-866-FOR-AWCI (367-2924), ext. 303 or e-mail education@awci.com.

January 10-13, 2011	AWCI Training Facility, Harrison, OH
February 7-10, 2011	AWCI Training Facility, Harrison, OH
March 14-17, 2011	AWCI Training Facility, Harrison, OH
May 23-26, 2011	AWCI Training Facility, Harrison, OH

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AWCI Watch Certification schedule is subject to change. Seats may become available for the exams; please contact AWCI to be added to the waiting list.

Certified Watchmaker 21

AWCI congratulates these members who have successfully completed the AWCI 21st Century Certified Watchmaker exam.

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*Passed in 2009

Letters To The Editor

ANOTHER LOOK AT "THE WAY IT WAS"

BY MILTON E. ROTH, FORMER VICE PRESIDENT, AWI

I was so pleased when I opened my August copy of the *Horological Times* to see Ewell Hartman's article, "The Way it Was," and the pictures honoring all of the Past Presidents of AWI.

As President of the State of Iowa Horological Association, I also was a participant of that founding meeting in Chicago in 1960. I remember at that founding meeting how concerned Orville Hagans was that his group would lose its identity in a merger.

I was elected Vice President of AWI when Don Leverenz of Elgin Watch Co. was elected Presi-

dent of AWI. At one of our annual meetings in New York City, General Omar Bradley had just retired from Military service and had become President of Bulova Watch Co. Therefore, AWI honored him at the meeting and he spoke briefly. Because James Dobson was on the Board and from Kentucky, Jim contacted the Governor of Kentucky and secured appointments for General Bradley and the officers of AWI as Official Kentucky Colonels.

So now you have my contribution to "The Way It Was."



Attendees of the meeting where UHA of A and HIA were merged. Past presidents and others you may know include: Milton Roth (back row, third from left), John Farrell (back row, fourth from left), Donald Leverenz (back row, sixth from left), Orville Hagans (back row, fifth from right), Henry Fried (back row, first on right), James Dodson (front row, second from left), Marvin Whitney (front row, fourth from left). Harold Calvert, front row, first on right.

Mediation Resolution Report

On October 21, 2009 the AWCI Ethics Committee received a formal complaint filed by AWCI member, Douglas Stuart, against AWCI member and President, Mark Butterworth, alleging a violation of AWCI Policy. Mr. Stuart alleged that Mr. Butterworth had violated those portions of AWCI policy pertaining to confidentiality of member communication, e.g., Sections 2.1995.01 and 4.2003.01. Mr. Butterworth alleged that the subject letters to the Board were not confidential under AWCI policy, and does not admit to any violation of AWCI policy as part of this settlement.

On July 29, 2010, after conducting a lengthy investigation, Gene Bertram, Chairman of the Ethics Committee and AWCI Board Member, returned the following recommendation:

“That Mark [Butterworth] issue an apology for publishing the letter from Doug Stuart, Andre Fleury, and Jim Sadilek. Said letter can mention that he was acting on the advice of our attorney. However, it should include the statement that he regrets any pain, suffering, and/or embarrassment it may have caused. Said apology to be published in the same venues as the letter was published.

Second, that the Ethics Committee recommend that the policy manual be amended to state that all correspondence from members to the Board be considered confidential until or unless permission is received from the author to publish or disseminate.

Mr. Stuart and Mr. Butterworth have agreed to settle Mr. Stuart's complaint. Mr. Butterworth will publish a letter of apology in the same venues and for a similar length of time as the original letters which are the subject of the complaint. The Ethics Committee will consider Mr. Bertram's recommendation and decide whether to recommend to the AWCI Board of Directors that it clarify any ambiguity that may exist in current AWCI policy regarding confidentiality of member communication with the Board, staff, or officers of the AWCI. Mr. Butterworth's letter of apology is attached.

October 10, 2010

Dear AWCI Members,

In October, 2009, I posted to AWCI's website and published in *Horological Times* a letter from three members that was addressed to the Board of Directors. I also referenced and posted a link to the letter on the *Horology-Matters* Yahoo group. In the letter, they inquired about a draft opinion from one director on the spare parts issue that they believed should have been in the Board minutes, but which had not been included. AWCI's lawyer reviewed their letter and concluded that the item did not have to be included in the minutes since it was simply a draft that was subsequently referred to a committee. I asked our attorney if there was any problem if I posted the letter from the three members and the attorney's response on the website and in *HT*. Since the letter from the three members did not indicate that the matter was private or confidential, and since the letter concerned an AWCI issue that was addressed to the entire Board, the attorney advised me that there was no bar to posting and publishing either the letter or his response. However, before publishing the letter, I e-mailed one of the signees and, as a courtesy, asked their permission to publish the letter. The member responded that he could not speak for all three signees since one was out of town and could not be reached. Rather than waiting for permission, I went ahead and published the letter. This was a mistake on my part as I had sought permission and should have waited until all three members gave me that permission.

I and the rest of the Board value the opinions of the membership. I have tried both as a Board member and as President to be as open and communicative as possible, while respecting the privacy and confidential nature of some of the correspondence and conversations I've had. In this instance, it would've been better to err on the side of caution, and I'm sorry I didn't. I'm also sorry if I caused any pain, suffering and/or embarrassment to any of the signees of the letter.

The policy manual may already be interpreted to mean the letter was confidential, and the Ethics Committee will make a recommendation on whether the policy manual should be amended to state explicitly that all correspondence from members to the Board be considered confidential until or unless permission is received from the author to publish or disseminate the correspondence. This should avoid any problems going forward.

We all make mistakes, but I try not to make the same mistake more than once. Please accept my apology.

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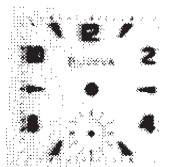
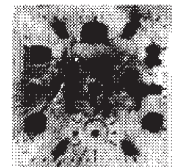
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Ron Landberg, CW21
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Operations Director
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Thomas D. Schomaker, CMW21

Watchmaking Instructor/Certification
Coordinator
1-866-367-2924 ext. 309
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Amy Dunn

Managing Editor/Advertising
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Education Coordinator
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Jim Meyer

IT Director
1-866-367-2924 ext. 323
jmeyer@awci.com

American

Watchmakers-Clockmakers Institute

701 Enterprise Drive
Harrison, OH 45030
Phone: Toll Free 866-FOR-AWCI
866-367-2924
513-367-9800
Fax: 513-367-1414
Email: awci@awci.com
Website: www.awci.com
Office Hours: 8:00 to 5:00 (EST)
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