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COVER

This month's cover features the
Tour de l'Ille: A Blend of Style and Technique

President's Message

By Mark Butterworth

The mid-year meeting was a very productive one. At the Industry Advisory Board meeting, the various participants [material suppliers, watch manufacturers' representatives, and those speaking as both watchmakers and consumers] had a great opportunity to share their points of view. Certainly one learning experience for me was that even though each brand may have a different policy regarding parts accounts, often brands do have less restrictive accounts than I had been led to believe, in some cases little or no restrictions. Information is available on the AWCI website regarding the brands, but this will get updated. One can also contact the brands directly. In other cases either the genuine or generic part is available through the supply house. I get the idea that certain supply houses may have exclusivity on certain parts or brands, so one might check around. I am optimistic that things will change for the better.

Finances were reviewed and the audited report for the fiscal year ending June 30, 2009 is on the AWCI website. You will be happy to know that although budgets are tight in terms of balancing our annual income and outgo, our financial position is quite strong thanks in part to our Perpetuation Fund. Our net assets are over $6 Million. Since much of our assets are tied to the financial markets, understand that they do fluctuate, but they are highly diversified and we have some excellent advisors to invest the money.

There is an exciting new feature on the AWCI website that I hope everyone with Internet access will utilize. There has been a parts and tools forum in which one can ask questions on where to find watch or clock parts or finding or using tools. To this forum has been added a technical Q & A for both clocks and watches. It will give members fast access to some of the best minds in the business and their collective wisdom. I am very excited about it and it is especially beneficial for our members overseas. If I can use it, anyone can! Go to www.awci.com. Find blue box in the upper left-hand side under the flag and the link "Technical Discussion & Parts Forum." Double click on that; there are separate areas for watch, clock, and tools. You can also double click on the picture of the watch movement under the heading "Visit AWCI's Technical Discussion & Parts Forum." You will need to do a registration if you are not already registered. It seems you can even stay signed in so that doesn't need to be done each time, but the office will be happy to help you through it. Of course, we are still delighted to answer questions the old fashioned way if you write or fax the question. It is my goal to greatly expand the member benefits for all members. We will also be putting the complete *HT* issues online and have them searchable. Many of the articles are already there. If you have not yet signed up for the referral directory, it is a great way to get your name out as a professional member of the trade. We receive a number of inquiries from people who have moved, etc., and are seeking a reputable repair shop. This is another example in which one [free] benefit of belonging to the AWCI used only once will pay for a year's membership.

Speaking of the *HT*, by the time of the annual convention, we will be unveiling an exciting new look and in color. This is also an important benefit of membership, and we need to strengthen it and keep it fresh. I think you will like the new look. Don't forget to tell your supplier that you appreciate the advertising and support he gives to the AWCI. If he is not a current advertiser, ask for his support.

The benefit you receive from the AWCI in large part depends on YOU. You need to sign up and use the forums, get your name on the referral list. Maybe you can supply the obsolete part requested. It all depends on all of us members supporting one another. Let us know how we can help.

Executive Director's Message

By James E. Lubic, CMW21

April is the month that I usually report our current membership numbers. This past October 2,142 members were billed for their 2010 membership. We use the number of members that were billed as our annual reference as that is a snapshot of the paid membership taken approximately the same time every year.

Just as an FYI, we presently have 1,811 paid members, 1,705 renewed their membership from the dues billing. Between the months of October and March there were 65 new members and 41 re-instated members. Then we add in the 352 life members (3 less than last year) and we have a grand total of 2,163 members. That will gradually go up between now and October of 2010. Last year we gained 228 new and re-instated members throughout the year.

Of the 437 members that haven't renewed, we know that 12 have passed away, and 26 have notified us as canceling their membership. That leaves 399 members that we would like to see renew their membership yet this year.

Fiscal Year	Number of Members Billed
2000-01	5,121
2001-02	3,952
2002-03	3,839
2003-04	3,627
2004-05	3,378
2005-06	3,112
2006-07	2,829
2007-08	2,941
2008-09	2,565
2009-10	2,142

As we look over the previous decade of membership numbers we can see that our membership has dropped every year with the exception of 2008. The average drop has been 10.5%.

In the coming year we here at AWCI will be doing all we can to reverse this trend and invite you to help us. Please invite any fellow tradesman that you may know to look at all AWCI has to offer. You can refer them to our website at www.awci.com, or have them call me toll free at 866-FOR-AWCI (866-367-2924) extension 310, and I would be proud to point out the value of an AWCI membership.

This just in…as I type this at the end of the day for the April *HT*, our membership has increased to 2,178.

Questions & Answers

By David A. Christianson, CMW21, FAWI

Question

Can you identify the movement in the picture? It looks like a Waltham but I'm not sure. It is an 18/size and has a private label on the dial. Thank you very much.

Steve P. Pace
Greenville, SC

Answer

Your 18/size full-plate movement was made by the Columbus Watch Company in Columbus, Ohio. According to its serial number your movement was manufactured in 1889. They made your watch movement and privately-labeled it for Gilreath & Patton, who was probably a jeweler and retailer of watches in Greenville, South Carolina. All I could find about them was that a Mrs. Jane Henry granted a deed to a storeroom on Main Street in Greenville to Gilreath & Patton in 1884.

The Columbus Watch Company was started by Dietrich Gruen in 1874 using imported Swiss movements. In 1882 he started manufacturing his own watches in Columbus. The company continued after 1894 without Gruen at its helm, when he went on to form what would become the Gruen Watch Company of Cincinnati. In 1903 the Columbus Watch Company was sold to the Studebaker family of South Bend, Indiana (of car fame) and who started the South Bend Watch Company with their newly acquired Columbus Watch Company machinery and unfinished movements.

Send your questions to:
Questions & Answers
Horological Times
701 Enterprise Drive
Harrison, OH 45030
E-mail: magazine@awci.com

Technical Discussion & Parts Forum

The American Watchmakers-Clockmakers Institute **Technical Discussion & Parts Forum** is available online at **www.awci.com** Click on Technical Discussion & 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 board is to aid our members in finding watch parts, clock parts, tools and discusss technical aspects of watch and clock repair. This board is not open to generic advertising posts; therefore, web addresses and e-mail addresses should not be included in public messages.

We Respond, You Decide

AWCI Board of Directors:
President Mark Butterworth has asked Dennis Warner to answer the following questions regarding the Federal Case with Richemont North America, Inc., a Delaware Corporation and Successor to Cartier.

Questions that have been asked:
1. Why would I get involved?
2. Who removed Mr. Fleury from the case and why?
3. Was there a conflict of interest on my part?
4. What changes were made to the original document by the existing and updated subclass members?
5. Did I receive any monetary reward or preferential treatment from Richemont or Cartier from my involvement?
6. Where does the settlement stand at the present time?

The full document is available on AWCI's website:
http://www.awci.com/2010midyear/DWarnerCartierFleuryResponse.pdf

Tour de l'Ile: A Blend of Style and Technique

By Christian Selmoni and Vincent Kauffmann
VACHERON CONSTANTIN
Branch of Richemont International SA
10, chemin du Tourbillon
1228 PLAN-LES-OUATES (GE)

Introduction

Vacheron Constantin, which has been making timepieces in Geneva for more than 250 years, stands at the heart of high-grade watch manufacturing. Its product strategy takes three major directions: technical mastery, superb finish and classic styling. In this context of the technical and artistic challenges of complicated watchmaking, we take the opportunity to return to the development of a model that became a milestone in the company's history for the influence it has on our current and future production. The highly complicated *Tour de l'Ile* wristwatch was unveiled in 2005 to mark the firm's 250th anniversary.

Project Background

The Vacheron Constantin company (Figure 1) was founded in Geneva in 1755 by Jean-Marc Vacheron, an independent watchmaker. His grandson Jaques-Barthélemy went into partnership in 1819 with, qui François Constantin, who took charge of sales and made a major contribution to the fortunes of the company. Vacheron Constantin is certainly the oldest watch manufacturer and has kept production going through nearly three centuries of crises and difficulties.

Because of its history, the brand decided to put the celebration of its 250 years at the center of its communications and product strategy. Accordingly in 1999 a committee was set up to design and develop the timepieces for the anniversary in 2005.

The Vacheron Constantin teams set to work designing a commemorative collection of five models expressive of the brand's historical heritage. These timepieces thus had to demonstrate 250 years of skills, technique and creativeness.

Figure 1. Historic picture

In addition to a unique mystery clock, Vacheron Constantin unveiled four wristwatch models in 2005, each with a different degree of horological sophistication, progressing from a minor complication to the most mechanically elaborate wristwatch ever produced by the brand.

Vacheron Constantin presented its flagship watch, the highly complicated *Tour de l'Ile*, on April 3, 2005 (Figure 2).

The *Tour de l'Ile*, A Watchmaking Exploit

Seven *Tour de l'Ile* watches were made between 2005 and 2007. Hailed as a wristwatch beyond superlatives, the first piece sold at auction on April 3, 2005 for 1,876,250 Swiss francs—a record price for a contemporary wristwatch.

The *Tour de l'Ile* features an unprecedented combination of complications displayed on both sides of its case. Achieving such a large number of mechanical complications and their indications in a wristwatch designed

Figure 2. The Tour de l'Ile

for comfortable daily wear was a real challenge for the teams involved in the project.

Caliber 2750

The movement was designed and built from 2000 to 2004 by Vacheron Constantin's constructors under the supervision of the late Bernard Guillaume-Gentil. It needed more than 10,000 man-hours of research and development, and comprises no fewer than 834 parts.

Caliber 2750 offers 16 functions with indications on two dials:

- Minute-repeater
- Tourbillon escapement
- Power-reserve indicator
- Second timezone
- Phases and age of the moon
- Torque indicator for the strike
- Perpetual calendar showing dates, days, months and leap years
- Perpetual equation of time
- Times of sunrise and sunset
- Celestial chart
- Sidereal time

Research into the limits of mechanical miniaturization enabled these complications to be combined into a movement of only 36 mm diameter and 11.25 mm height. The workmanship bears the Hallmark of Geneva.

Sharing the Task

The 250th anniversary collection was designed in a coherent way with styling features common to the four watches, especially in their cases and dials, and according to the space available for indications. These requirements forced designers to come up with a very distinctive style that at the same time bore the historical hallmarks of the brand's design.

To ensure the success of the entire collection, the designers of the watch exteriors and packaging were briefed on the project at the same time as the engineers who developed the mechanisms.

With hindsight we believe that sharing the key elements of the project (aims, importance, definitions and expectations) from its start enabled each team, whether in Le Sentier or Geneva, to appreciate the constraints and difficulties that the other might encounter during the development of the watch.

Even though such a project as the *Tour de l'Ile* might take years, the systematic exchange of information and experiences invariably favored the quick and effective co-ordination of the stages in its development.

Energy	Manually wound
Regulating organ	Breguet overcoil balance-spring, balance with adjustment screws
Frequency	2.5Hz (18,000v/h)
Jewelling	39 jewels
Power reserve	58 hours

Table 1. Other features of the caliber 2750

Designing and Building the Watchcase

The first hurdle confronting the designers of the watchcase was how to create a super-complicated watch that would look elegant and feel comfortable on the owner's wrist.

Design work took two directions. On one hand, 3D computer-aided design software gave an initial idea of the minimum dimensions required to house a movement measuring 36 mm x 11.25 mm.

At the same time, freehand sketches started on the lugs, which are a distinctive stylistic element of this collection. As the creative process advanced, the lugs were incorporated into the 3D construction. Software engineers and designers met several times to refine the process and produce a 3D image as close as possible to the desired reality.

A movement with a diameter as big as 36 mm does not in itself pose any major design constraints. However, the height of more than 11 mm and the requirement of two back-to-back dials gave the designers of the *Tour de l'Ile's* case the biggest headache. It took several weeks' work on the virtual image to find the solution.

Initial designs that were satisfactory in terms of proportion and stylistic balance would have required a case of more than 50 mm without the lugs — way beyond the specifications for an

Figure 3. The case in profile

attractive shape. The design team had to build several working models using stereo-lithography before coming up with an optimal compromise — a case with a diameter of 47 mm for a total height of 17.8 mm.

Watchcases of this size can usually be found in contemporary sports watches or in spectacular pieces designed to make an immediate impression. So far as the *Tour de l'Ile* was concerned, Vacheron Constantin sought to make a watch in a conventional style that was as unobtrusive as possible.

In order to make the case appear thinner, the designers opted for a bulge to avoid a caseband with straight sides. The caseband is clearly divided into sections separated by the knurled surrounds of the bezel and caseback.

The knurled rims are positioned at an ideal height determined by the designers. The constructors built the caseback in several parts to make the knurled circles thinner and at a diameter 6 mm less than that of the watch. This makes the watch look smaller than it really is. Also the knurled break reduces the visual impact of the caseband (Figure 3).

The bezel design followed the same rules with the knurling just above the lugs to diminish the apparent thickness of the case. This provided space for the bezel, which, as we shall see, plays an important functional part in the watch.

Another difficulty was the positioning and form of the lugs. For the sake of balance they had to take up a lot of space on the caseband, but they could have no straight lines, which would make them look heavy. Welded to the caseband, they are shaped like a detail from the Maltese Cross, Vacheron Constantin's emblem. Their concave shape with abrupt edges meant they could only be satisfactorily finished by hand. The lugs thus flow from the clean curve of the caseband, completing the overall design in a markedly elegant way (Figure 4).

The case of the *Tour de l'Ile* was made in 5N pink gold, and finished with the utmost attention to detail.

Thanks to a construction integrating all the components of the movement and exterior, the watch has nothing of a bolted-together look. Its balanced proportions and the lugs welded to the case make up a harmonious ensemble that is worn naturally and comfortably on the wrist. The *Tour de l'Ile* was the first of the 250th anniversary collection; the other three models follow its design and have adopted its stylistic features.

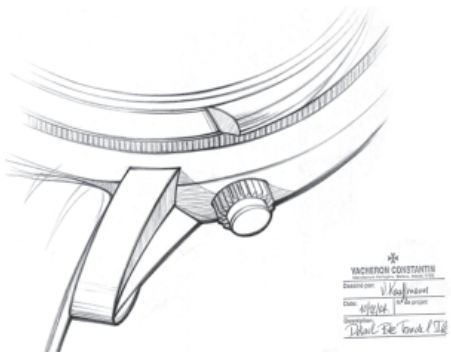

Figure 4. A sketch of the lugs

Activating the Minute-Repeater

In addition to the construction of the case, there was another technical problem to solve. The watch had to accommodate around its case not only the crown but also the seven pushpieces to set the different indications. Above all there was the bolt sliding along an arc of 67° to arm the minute-repeater.

It proved impossible to put the repeating bolt in its conventional position on the caseband for there was not enough space between the pushpieces, lugs and crown.

Vacheron Constantin found an innovative solution: twin bolts on the bezel, pushed by thumb and forefinger in opposite directions make it particularly easy to arm the repeater spring.

This elegant technical solution, in keeping with the overall style of the *Tour de l'Ile* case, illustrates our principle of finding the most attractive way of operating the functions of a watch. It's a matter of combining flair with technique.

Two Dials for 16 Complications

When it comes to highly complicated watches, people are often fascinated by the watchmaking skills in the movement, while the dial is more than ever an extension of these skills, as well as the face of the watch.

In the *Tour de l'Ile*, 12 hands indicate most of the movement's functions on two faces. The task of the stylists was to make these indications clear as an efficient translation of the technical function.

The main dial shows the hours and minutes, as well as the seconds on an exposed tourbillon rotating once a minute. Three other hands on this dial show the power reserve of the movement, a 24-hour second timezone, and the torque of the strike showing that the minute-repeater has been activated. An aperture in the dial reveals the phases and age of the moon.

Figure 5. The two dials

The remaining functions are shown on the back dial: the indications of the perpetual calendar, the equation of time and the times of sunrise and sunset. Six hands perform these tasks, while a celestial chart of the northern hemisphere takes up most of the lower half of the dial (Figure 5).

The first concern of the team designing the dials was to make them as plainly colored as possible. Only two colors are used on the dial: the silver finish and touches of blue to highlight the different areas of complication. The hands are all in blued steel except for the hours and minutes hands, which, like the hour markers, are in 5N pink gold to match the case.

As well as producing the final dials, Vacheron Constantin also had to make working dials so as to verify the functions that were particularly difficult to adjust because of the restricted space on the dials (Figure 6). These notably included the equation-of-time indication as well as the cams for the sunrise and sunset.

The simultaneous mobilization of resources and the synergy generated by the teams enabled each of the *Tour de l'Ile* wristwatches to be assembled and checked with the working dials, then taken apart before a trouble-free final assembly by specialists.

The final dials of each *Tour de l'Ile* watch were made with extreme exactitude in the scales and markers, and all were engine-turned. The back dial of each watch is engraved in a different pattern.

The Sky Chart

The real-time presentation of the night sky seen from the northern hemisphere takes up most of the lower half of the back dial. This was the last complication to be added to Calibre 2750 – less than six months before the official presentation of the watch.

The initial plan was to display the tourbillon on the back dial, but given the thickness of the movement and additional complications at the back, it would not have looked very attractive. The movement's engineers and constructors suggested the designers might use the empty space for a celestial chart. It took a few more weeks of work, with the help of the Geneva

Figure 6. Working dial

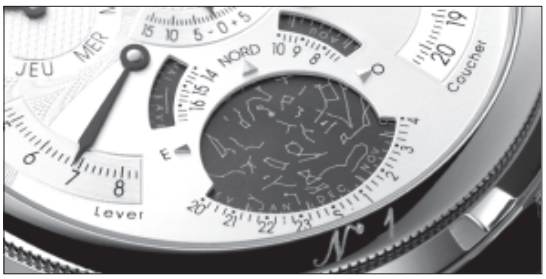

Figure 7. Star chart

Observatory, to add a new astronomical complication (Figure 7).

Once again, the synergy between the teams making the movement and the exterior of the watch and the quick response of the suppliers were responsible for this minor miracle.

In a very short time, the teams had to add to the case a lockable device enabling the celestial disc to be set easily and quickly.

The Legacy of the *Tour de l'Ile*

The teams involved in the development of this remarkable wristwatch gained a wealth of knowledge from their experience.

Going back over the different stages in the development of the *Tour de l'Ile* as described in this document gives the reader an idea of the many obstacles and difficulties that had to be overcome during the four years it took to design and build the watch right up to its unveiling in 2005.

Reading the project's technical and marketing specifications, it is clear that the desire to create a reference timepiece for high-grade watchmaking involved both a study in styling and superior workmanship. This was fully understood by the teams who never lost sight of an objective so dear to Vacheron Constantin.

In the light of this experiment, the brand's management decided on a complete review of the product

Figure 8. Patrimony Traditionnelle, 2007

development process with the aim of releasing synergies from co-operation between its research and development center in the Joux Valley and its product-development teams in Geneva.

Today these connections are operative, allowing a flow of opinions and ideas that give birth to new products distinguished both by technical competence and refined styling, worthy of a 250-year-old watchmaking tradition (Figure 8).

To conclude, the *Tour de l'Ile* wristwatch continues to symbolize for us today the constant challenge of designing and developing a complicated watch that allows its owner to admire with equal emotion the technical exploit, the beauty of its movement and the exterior components — all designed and finished in the same pursuit of excellence. In a nutshell, it thereby embodies what one might term the perfect blend of inner and outward beauty.

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La Chaux-de-Fonds
September 16, 2009

Photos courtesy of:
Vacheron Constantin

Countdown to the 50th

By Terry Kurdzionak
Convention Committee Chair

"But I cannot afford to leave the business...."

The following are a list of excuses for NOT attending the 50th Anniversary convention in August.

1. It's too expensive, time away from my shop, travel expenses, etc., *(Budget for it, time wise and money wise, it is an investment in YOU).*

2. But I'd have to close my shop. *(Watches and clocks have no feelings, they'll be waiting for you when you get back, this is not brain surgery, no lives lost.)*

3. I hate meetings! *(You owe yourself and this organization the opportunity to hear your opinions.)*

4. I won't know anyone. *(By the end of the first evening, I assure you, you will have some new friends, I'll see to it!)*

5. What will my wife do, I can't get her to come with me. *(Show her the article for the "girls" in the March issue of* HT. *If she still does not want to join you, you have my permission to come by yourself.)*

6. I'd rather go to the_____(beach, mountains, lake, Europe) than spend my vacation in Cincinnati. *(Good point, so would I.)*

7. I don't like to fly *(It is the fastest, safest way to go, and I don't know anyone who looks forward to it since 9/11. If your issues with flying go deeper than that, I can't help you.)*

These answers are somewhat in jest, but the excuses are all ones that I have heard for the past few years as convention chairman. You need to be involved in the organization that supports your trade or profession. The business gets done face to face at the annual meeting, not in the chat rooms. Do yourself and the other members a favor, come to the annual meeting, let your voice be heard, and enjoy the celebration.

AWCI
50th Anniversary
Convention &
Education
Symposium

August 4 – 8, 2010

Cincinnati Marriott at RiverCenter
10 West RiverCenter Boulevard
Covington, Kentucky

MEET THE CANDIDATES

Welcome to Meet the Candidates. This yearly feature gives each candidate for the AWCI Board of Directors the opportunity to introduce themselves to the AWCI membership prior to the annual mailing of the election brochure and ballot. This year there are 6 candidates vying for a seat on the AWCI Board of Directors. Candidates are listed in a randomly selected order. Three directors will be elected, each for a three-year term. The three who receive the most votes will join the current AWCI Board members during the annual AWCI Board of Directors meeting in August.

During the month of May, ballots and a background sketch of each candidate will be mailed to all AWCI members eligible to vote. The election mailing will also contain each candidate's response to a question posed by the Nominating Committee.

A ballot return envelope will also be included in the mailing. The envelope will be addressed to the Certified Public Accountant who is responsible for counting the votes and certifying the outcome of the election. All ballots returned must be in the ballot return envelope and postmarked on or before the deadline date published in the voting instructions. Only marked ballots should be sent to the Certified Public Accountant. Please do not include any notes or requests for information.

Thomas Jeswald

Professional History

- Career: Recent retiree from PNC Bank as VP Human Resources Planning and Development; had a 39-year career in Ford, RR Donnelley & Sons, and PNC. Past adjunct instructor at six universities; contributed business-related articles to three professional books and a dozen periodicals.
- Education: BS, Mathematics and Psychology, Ohio University; MS and PhD, Industrial Psychology, Purdue University
- Volunteer Activities: Currently education director for a national fraternal organization, responsible for developing and delivering education programs through volunteers in 80+ locations; Habitat For Humanity volunteer.
- AWCI History: Member since 2003; member and past president of an Affiliate Chapter (Western PA Watch and Clockmakers Assoc.); member of AWCI Finance Committee, 2006 to present.
- Other Horological Memberships: NAWCC; Northern Illinois Watch and Clock Collectors
- Residence: Belvidere, Illinois

As a candidate for your Board, I have three areas of experience that I ask you to consider. First is my business management experience in large corporations, and specifically, 14 years in banking. I believe that my perspective has been useful to the Finance Committee these past 4 years.

Second is my deep involvement with adult education, including testing, assessment, and certification, within corporations and in nonprofit organizations, making my knowledge in this area state-of-the-art.

Third is my experience with volunteer membership organizations. This includes working with Boards and volunteer committees, and building productive relationships between volunteers and paid staff members.

As an enthusiastic hobbyist, not a professional, I am not a typical candidate for your Board. However, I am very clear that AWCI must be run for the benefit of our professional members. I also believe that actions could be taken to make membership more appealing to a broader range of individuals, without detracting from AWCI's primary mission.

Ernest Tope, CMW21

The future for Clockmakers and Watchmakers depends on the marketplace. As long as people appreciate and truly value clocks and watches there will be a need for qualified horologists. Those who manufacture, buy, sell, restore, appraise, and service horological items are ultimately dependent upon the public desire for products and services. In this way the entire horological community is supported by the public perception of what has value. After all, very few people need a quality timepiece to know what time it is.

AWCI is in a unique position to cooperate with others in sincere endeavors to advance the interest of horological practice and to assist in the work of securing and maintaining the respect and dignity which belong to qualified members of this profession. If I am elected, I am committed to doing my part to bring about an increase in the public perception of value in horological items and the horologist.

I have been serving as a member of the AWCI Board of Directors for the last year and a half due to the resignation of a previous Director. I have been the chairperson of the Strategic Action Committee since 2007. I also chaired the Special Committee on Spare Parts that produced the "Official opinion and policy regarding the distribution of Replacement Parts, Equipment, Technical Data, and Education". As a working watchmaker I am engaged in the repair and restoration of high-grade watches and complicated watches doing business as Masterpiece Watch Restoration, LLC (www.watchrestoration.com). There is much more information about me on the website and I encourage you to visit.

Gene Bertram, CC

I have been working at the bench for about 20 years, both in a home-based environment and as a shop technician doing a lot of house calls.

I have attended every Board meeting for the last 19 years, served on a number of committees, including Constitution (Chair), Finance, Membership, and Ethics (Chair) and I am currently the Affiliate Chapter Chair. I have fought with some people and laughed with others. I have served as a Director on the Board in the past.

I earned my Clockmaker Certification under the old system. I have been on the Board of my local guild for the last 5 or 6 years (Vice President and President) as well as the Board of the Ethical Society of St. Louis. I am also a long-time member of Clocksmiths and Horology Matters newsgroups.

Ron J. Landberg, CW21

I am Ron Landberg, an independent watchmaker by profession. I work with several local watch and jewelry stores, spending the majority of my time at the bench or helping with customer service. Prior to owning my own business, I was the watchmaker in a large chain jewelry store as well as in a small family-owned store, and I sold high-end watches in a large, prestigious department store, once again focusing on customer service.

I am CW21 certified, WOSTEP certified and MBHI. I also manage CoSylDaDesign.com a consignment website for the sales of all things Horological: books, tools, watches, clocks, and materials. I am a member of the Chronometer Club, the NAWCC Denver Chapter #21, and the Boulder Horological Society. I am volunteering my services to AWCI in an effort to promote and evolve the future of our profession.

Fred T. White, CMW21

Fred White became a Certified Watchmaker under the Horological Institute of America in 1957, and recently successfully completed the AWCI 21st Century Certification for Watchmakers. Fred has had an active career in watchmaking and clock repair. Early in his career he was the C&O Railroad inspector responsible for watch repair in Clifton Forge, Virginia.

Fred has owned and operated Michelle Lee Jewelers for 26 years. He restored a watch that was owned by Napoleon Bonaparte. He has restored antique clocks for both the United States Navy and Department of the Treasury. He has a world-wide clientele including a customer in South Africa for whom he has repaired watches.

As president of the Horological Association of Virginia (HAV), he instituted a revision of the Constitution, which upgraded and streamlined the organization's policies. Fred was also the Technical Director for the HAV with Marvin Whitney.

Fred is interested in the Board of the American Watchmakers-Clockmakers Institute to promote professionalism in the organization. His long-standing commitment to providing quality products to customers is based on his desire to provide professional service and to bring credit to the watchmaking profession.

He is a three-term Past Master of the Masonic Lodge.

David M. Douglas, CW21

AWCI, though larger in its concerns than the interests of any one member, is fundamentally *our* organization. The strength of the Institute lies primarily in the diversity of its membership and in the many exchanges we have – with Industry, via education, in person, over the Internet, at local guilds, and in print.

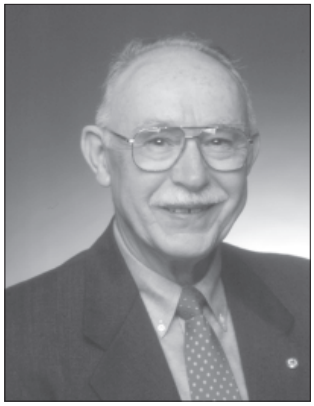
I seek election to the Board of Directors so that I might work with others, both on the Board and across the membership, by contributing to the ongoing activities, promoting inclusiveness, and advancing our common causes. I ask for your support so that I may serve on the Board in your behalf. I will bring to this responsibility my existing engagement with the organization, including my dedication in local education, as well as administering and assessing exams over the past few years.

We face many challenges, the effects of the economic conditions, generational shifts in learning and teaching methods, availability of parts, and new technological and communication tools – all subjects that AWCI must address in a timely manner. As a Board member, I will use my broad experience as an independent watchmaker, educator, assessor, and corporate engineering manager to help move AWCI in these directions.

AWCI is the premier watchmaker and clockmaker organization in the United States, with the potential to influence the trade of Horology to an even greater extent than it already does. I ask for your vote so that I may be a significant contributor to this effort.

Horological Times takes you on a trip back in time featuring messages from AWCI Past Presidents and Executive Secretary/Executive Directors as we continue to feature bits and pieces of the 50-year history of AWI/AWCI. This month we are going back to May 1985, Fred S. Burckhardt was President and Milton C. Stevens was Executive Secretary.

President's Message by Fred S. Burckhardt



Even though it is never mentioned in the AWI literature, I think one of the greatest benefits of belonging to AWI is that of belonging to a "fraternity". I guess this became even more apparent as I traveled to conventions of many of the affiliate chapters and our own annual meeting.

I firmly believe that if a survey was taken at these gatherings as to why people attend, the majority would agree that the fraternal benefits would be one of the top reasons. There are friendships cemented in our organizations that are much stronger than those found in many business or educational associations. I think this is what Howard Opp, Chairman of the AWI Membership Committee, had in mind when he wrote in his interim report to the AWI Executive Committee, "It is my personal belief that the best way to obtain members is through personal contact either through seminars, guilds, or state organizations of watchmakers or other allied trades. The benefits of being a member of AWI can be better explained personally than through the printed word. Therefore, it should be the responsibility of every AWI member to consider themselves a member of the Membership Committee."

"Personal contact" are the key words. Telling and showing that we care and are willing to share will help to bring in more members than any other benefits we can offer.

AWI News by Milton C. Stevens, Executive Secretary

By now everyone connected with AWI has received details of the special program that has been arranged for Friday, June 28, 1985, to commemorate the silver anniversary of the Institute. Reservations are coming in from members all across the country who plan to join in this historical event. I believe all that needs to be said about the program planned has been said; therefore, I want to discuss the other events that will occur from June 24 through June 30, 1985. If you do plan to attend this year's celebration and have not yet made reservations, please do so now. Time is running out!

The week-long events will begin on June 24th when the instructor members of the AWI Research & Education Council will begin their annual meeting and in-service training. Only instructors from AWI REC member schools are eligible to participate in the four-day program. Alice Carpenter, chairman of REC, has developed the agenda.

Because of our special program on Friday, the Affiliate Chapter Meeting has been moved forward one day and will be held on Thursday, June 27. Walter Riegler, chairman of the affiliate chapter group, has promised one of the most productive meetings ever held by affiliate chapters. Delegates from most of the affiliate chapters across the country will hear reports on group activities as well as consider proposals they wish to bring to the attention of the AWI Board of Directors. The delegates will select one of their number to serve as Affiliate Chapter Director for the next year. The Affiliate Chapter Director has all the rights and privileges of other AWI Directors elected direct from the membership. However, the term of office is just for one year.

The Education, Library, Museum Trust Trustees will hold their annual meeting on Wednesday, June 26. Trust Chairman Ewell Hartman has indicated that the agenda will be a full one with a number of important decisions to be made by the Trustees.

Results from the annual election of Board of Director members will be known by the first of June and the successful candidates will join the present Board during the meeting of the Board of Directors which will be held June 29 and 30. The newly elected Board members will be installed during the meeting and will then join with the remaining Board members to select the Executive Officers for the year 1985-86.

Soon after the Executive Officers are named for 1985-86, the incoming AWI President will begin to appoint members to the various committees of the Institute. Committee work can be most rewarding as it really is the backbone of AWI. Any member who has special interests or talent and who wishes to serve on a particular committee is urged to contact me as soon as possible. I will pass on your request and qualifications to the incoming AWI president for consideration when committees are developed. AWI is always looking for qualified workers who are willing to give their time and talents to help others in the betterment of our profession. Your reward for participation will be the pride and satisfaction you enjoy when your committee turns in a commendable performance for the Institute.

The recent survey enclosed with the March issue of *Horological Times* has provided much needed input for the directors as they deliberate on the future direction of AWI during their annual meeting. Some survey forms are still coming in and will be included in the final tabulation if they are received prior to June 1st. If you have a special project or subject you would like the Board to consider, it is suggested that you contact President Fred Burckhardt, one of the Directors, myself, an Area Representative, or your local Chapter Delegate. It is important to the well being of the Institute to have as much input from the members as possible to insure the continued growth and service the Institute has provided in its first quarter century.
As we mentioned in other articles, all of these events are to be held at the Drawbridge Inn & Convention Center, Interstate 75 at Buttermilk Pike, Fort Mitchell, Kentucky 41017. We will be happy to send you a reservation card or information about other facilities and points of interest if you will contact AWI.

Clockmaking Elements

Part 3

By Laurie Penman

Marking the Plates and Planting the Train

Last month I discussed the form of gear teeth and the dimensions of the gears. It was a brief discussion, but establishing the dimensions of the gears is really a very simple business. Calculating the center distances for the gears is just as simple:

The center distance equals the sum of the pitch circle radii of the meshing gears.

So if we have a pinion of 9 leaves and 0.7 module, and a wheel of 64 teeth and 0.7 module the center distance is:

$$\frac{9 \times 0.7}{2} = 3.15$$

and

$$\frac{64 \times 0.7}{2} = 22.4$$

The center distance is the sum of these two = 25.55 mm.

If the train is to be planted by "depthing" each meshing pair of gears, this calculation should not be necessary. However, there are errors that can creep in when transferring the center distance from the depthing tool to the plates and calculating the distance is a useful cross check. These errors can be minimized if the sources are recognized:

A) The ends of the pivots must have a shallow cone or a dome that is concentric with the pivot diameter, if it is not concentric the pivot will not center exactly in the hollow cones of the runners of the depthing tool. The runners are the long steel rods that support the arbors of the gears for depthing, they have a long tapered point at one end and a hollow center at the other (Figure 1). This photograph shows arbors with center holes and the pointed ends of the runners are being used to support them. It is more usual to support the pivots in the hollow cones that can be seen facing the camera.

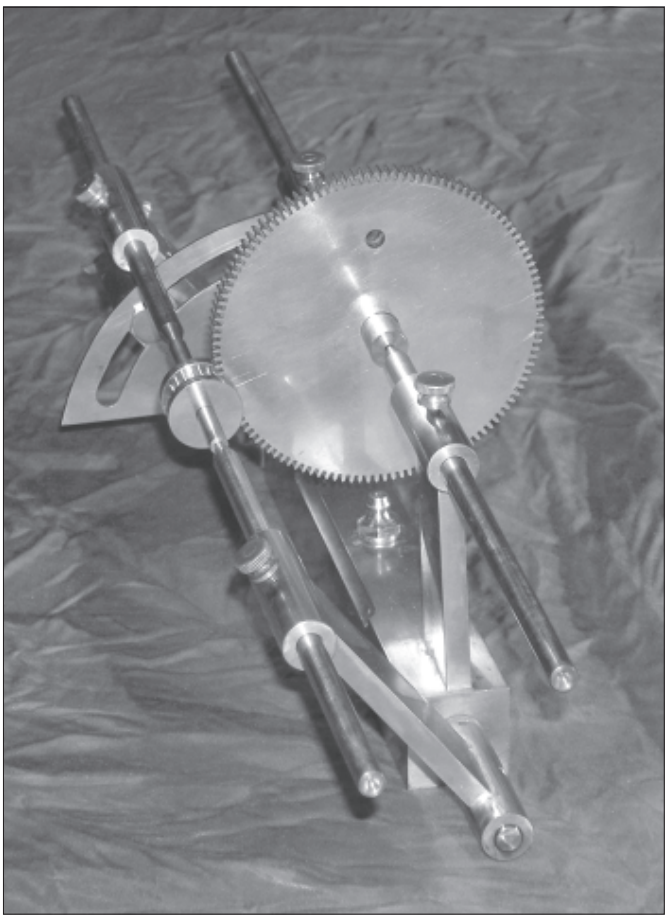


Figure 1

B) When the sharp points are facing outwards and the depthing tool is locked, any arc struck using the pair at one end should exactly match an arc struck using the points at the other end. This is a check on the parallelity of the runners, and proves that when they are used to mark the plates, the arcs truly represent the distance between the pivots.

C) The arbors are held between the hollow centers of each pair of runners. The have to be held tightly enough

to be held reliably and loosely enough so that they will rotate and the accuracy of their placement (in respect of each other) judged by the smoothness of the meshing of wheel teeth on pinion leaves. This is critical; a little too much looseness and the pivots will move to one side of the hollow centers. The center distance between the runners will be different to the actual center distance of the arbors.

D) Even when the centers are accurately defined by the depthing tool the position of the pivot holes has to be marked by dot punching the intersection of two arcs and then center punching the dot so that a pivot drill will locate accurately. A dot punch (Figure 2) is a slender center punch (slender so that the shaft does not obscure the intersection of the arcs); its point is much more acute than a center punch. Each of these operations can introduce an error.

E) The final error would be the result of the pivot drill not locating properly in the center dot.

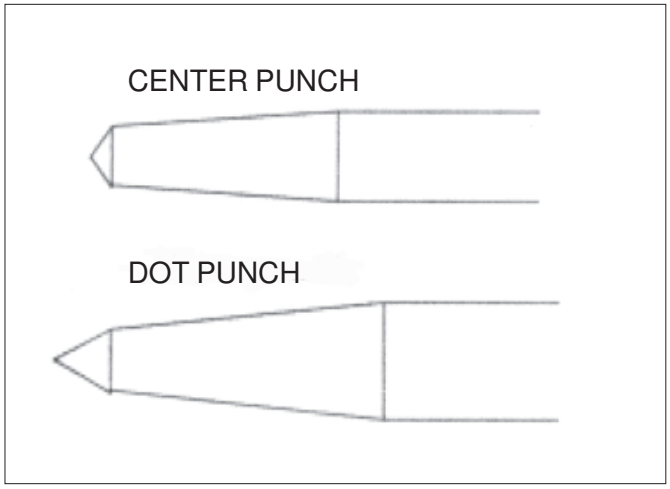


Figure 2

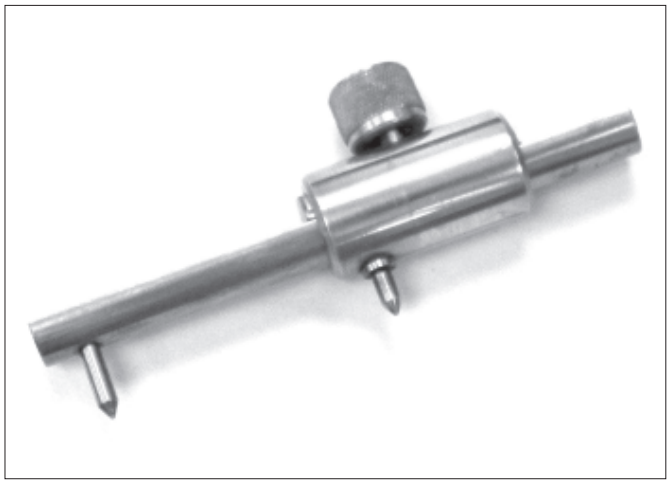


Figure 3

The first four of these potential errors may be avoided by the use of a center distance instrument and calculated center distances. The instrument (Figure 3) was described in earlier articles, March, April and May 2009 as I remember.

As I have said before, calculation by itself can also result in bad meshing because the formula for the gear dimensions relies on compromise. It nearly always results in a center distance that gives good smooth meshing, but it is not foolproof; checking the mesh by setting the depthing tool to the calculated center distance and running the gears in it is a worthwhile check.

It consists of two sliding points with shafts of a known diameter (Figure 4). The right-hand point is set in the sliding body; it has a sixty degree point with a slight flat on the end; the left-hand point, set in the stock that the body slides along, can be changed and locked in position with a set screw. Two different points can be located here, one has a sharp cone for scribing arcs, and the other has a shallow cone with the same included tip angle as the pivot drills so that it can be used as a center punch.

The shafts of the points are mounted absolutely square to the body and stock and they are of a known diameter. This allows for two methods of setting the centers.

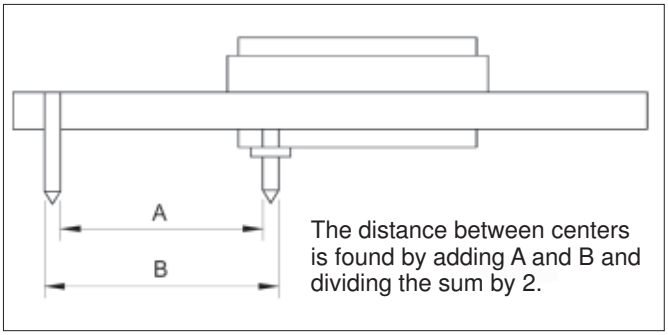


Figure 4

If a vernier caliper is used to measure over the inside and outside of the points, the results are added together and divided by two as shown in Figure 4. The alternative is to measure across the points and subtract the known diameter. If the shafts of the points are each 3 mm diameter and a measurement over the outside gives 25 mm, the actual center distance is 25 - 3 = 22 mm.

The point in the body can be located in an existing pivot hole or in a center dot (the flat at the end allows it to locate on the slope of the dot). A sharp point would rest on the slight radius that is often found in a center punched dot and not necessarily be in the true center. Both points can locate in pivot holes so that the instrument may be used to measure existing center distances to check their accuracy. In all cases the gauging positions (points, or flanks of the cones) are set so that the stock is parallel to the clock plate. If they are not, the measurement of the center distances will be distorted.

All the errors referred to are small, of the order of 0.001" and if we consider the possible result of using a depthing tool the five errors may sum to 0.005"—the thickness of a line on a steel rule. Would this matter?

For most trains an error of 10% of the module is an acceptable error (the result of my drawing out many large scale gear teeth and rotating them on the computer) and the efficiency of meshing is hardly affected. This error amounts to 0.07 mm for a 0.7 mm module, which comes to 0.0027". The misplacement of the pivot hole by 0.005" would definitely be noticed when running. Of course it would be unlucky if all errors worked in the same direction, it would be normal for some at least to cancel out.

Let me describe how I would go about the planting of time train.

Planting the Train

I position the center arbor first, making sure that it will allow the dial to be positioned suitably. That means that on the one hand there will be enough space above the center arbor for me to place the escape wheel and pallet arbor, and on the other that there will be space in the lower part of the plates for the dial mounting pillars. I prefer to cover the dial posts with the chapter ring; when the posts are riveted inside the small diameter of the chapter ring there is always the possibility of the rivet heads showing as rings. This can be hidden with matting or engraving, but good matting is expensive in time and good, ornamental engraving is not cheap either. Note that I have drawn two chapter rings (Figure 5). The lower one would place the dial posts (or feet) nicely on the plates, but right where the plate posts would normally be placed. (These

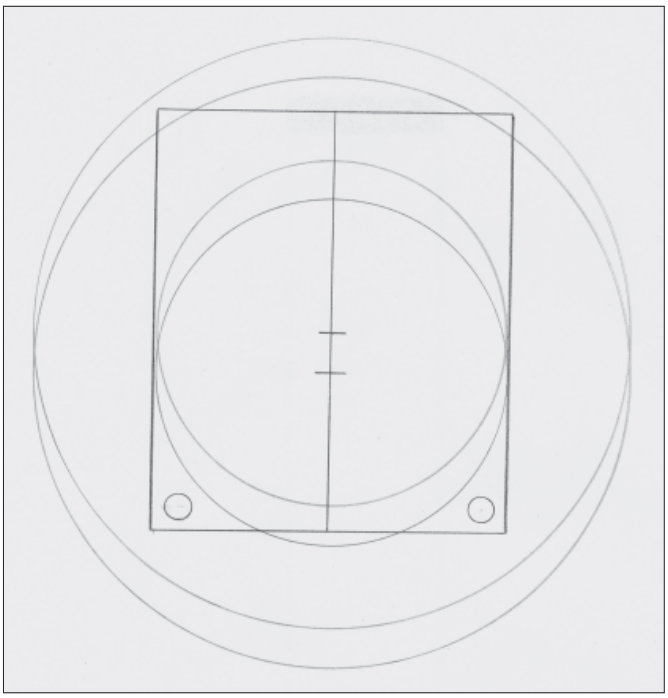


Figure 5

are usually near the edges of the plate in order to leave as much room as possible for the movements' trains.) I moved the center of chapter ring upwards by 10 mm. This is about as far as it could go without really cramping the upper part of the train. It does place the dial posts clear of the movement posts.

The chapter ring was to measure 170 mm (6") outside diameter and 100 mm (4") inside diameter. This was a decision based on the appearance of the clock that I wanted. Very little of the clock design is carved in stone as yet, but this is a fairly firm decision. What may result is that I have to increase the height of the movement plates if there is not enough room for the train. I shall stay with 100 mm width because I know that I can buy brass in extruded section of this width and 4.7 mm (3/16") thick, but it may be necessary to increase the length. Most time trains for plate clocks (as opposed to skelatonized or strap movements) have the escape wheel immediately over the center arbor; both are therefore marked on the vertical center line. I should point out that the term "center line" refers to the line that the centers are set out upon, it is not absolutely necessary for the center line to be centered on the plate, but it will usually be a vertical between the center and escape wheel arbor.

All the holes will be drilled with the same diameter drill, usually the smallest pivot diameter and then, after verifying the center distances increased to their respective pivot diameters. Figure 5 has placed the center pivot 56 mm above the bottom edge of the movement plate.

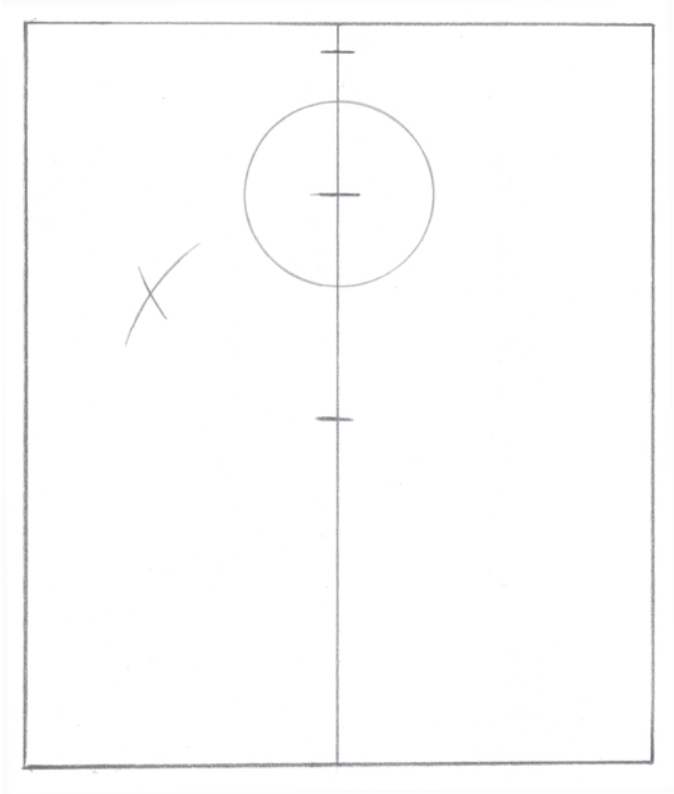


Figure 6

Figure 6 shows the plate marked out for the center arbor.

The clock is to carry a seconds pendulum and will make 3,600 beats per hour. This means that the escape wheel will have 30 teeth.

Remember the formula from Part 1:

The number of beats per hour = CW x TW x 2(EW) divided by TP x EP.

Where CW = Center wheel; TW = Third wheel; EW = Escape wheel; TP = Third pinion; and EP = Escape pinion

I have not chosen any count of wheel as yet except for the escape wheel with 30 teeth.

So CW x TW x 2(30) /TP x EP = 3,600

If I decide on pinions with a count of 8 this can be resolved to:

CW x TW x 60 / 64 = 3,600
CW x TW = 60 x 64 = 3,840

Which means that the two undecided gear counts come to 3,840 when multiplied together.

What numbers multiplied will give this result of 3,840?

As a rule I try to avoid great differences in the wheel counts, just enough to make sure that the uppermost wheel clears the arbor of the pinion driving it and if I take the square root of 3,840. I will have a guide for these wheels. Square root of 3,940 = 61.96.

So let me try one wheel as a 60t and the other as 64t, which is not only close to the square root, but indicated by the line CW x TW = 60 x 64. It does not always work out like this. If the escape wheel had 40 teeth that line would have read CW x TW = 3,600 x 64 / 80 = 2,880; the square root = 53.6.

Since 54 is too close to this result to be useful, 58t required a partner of 49.6t. Not a practical gear, but if 50t was used the beats per hour would change to :3,625, which would be acceptable for an ordinary domestic clock. However, if we partnered a 60t with a 48t the beats are 3,600.

The train that I am about to set out has CW = 64t, TW = 60t, EW = 30t, TP = 8t and EP = 8t, but what size should the teeth be?

I chose a plate size of 100 mm x 120 mm and the center arbor is 56 mm from the bottom edge, which leaves 64 mm to house the train from the center up. These centers comprise CW to TP and TW to EP (which may be angled) and EW to pallet arbor, plus a few millimeters between the pallet pivot hole and the top of the plate 4 mm to 5 mm is enough for this.

The escape wheel does not depend upon the gear module and 30 mm outside diameter is reasonable for a movement of this size. If a "square" escapement is used the distance between centers (wheel to pallet arbor) will approximate to 1.5 times the wheel radius amounting to 22.5 mm; add on the distance from the pallet arbor pivots to the top of the plates, say 4.5 mm, and the escape wheel center is situated on the center line and 27 mm from the top.

Two centers are now established and the distance between them is 120 mm - 56 mm - 27 mm = 37 mm.

The distance between the centers of the escape pinion and third wheel is:

the module M (60 + 8)/2 = 34M

and between the center wheel and third pinion is:

M(64 + 8)/2 = 36M.

Suppose the centers were set on the vertical center line, then:

M(34+36) = 37 mm; M = 37/70 = 0.528 mm

Not only will I have difficulty finding a commercial wheel cutter for 0.528 mm module, but I would prefer a larger gear tooth anyway.

As a result of these considerations I have chosen 0.7 mm module and scribed two arcs that represent the two center distances of 64 mm from the center pivot and 60 mm from the escape wheel pivot (Figure 6). The intersection lies on the position of the third pivot, by calculation.

When using the depthing tool method the center distance tool will transfer the result more accurately than using the points at the outer end of the runners.

The center arbor is put between one pair of hollow centers of the depthing tool and the third arbor between the other hollow centers. I make sure that the arbors turn freely but without shaking and then bring the center wheel and third pinion together until the wheel will rotate smoothly with no rumble or grating. The swinging arms of the tool are then locked in position and the arbors removed.

While keeping the ends of the hollow centers in the rough area where the test was made, I slide them until the ends are level and lock the runners. The center distance tool is unlocked and its points located deep in the hollow centers, where they are locked. The distance between the points is now almost exactly the same as center distance found by depthing and the marks on the plate can be checked by locating one point in the center dot and testing the other against the third pivot dot. If there is any difference an arc is scribed with the tool.

This process is repeated for the distance between the escape pinion and the third wheel. However, so long as the wheels and pinions are made to their correct diameter and with the proper gear cutter, the calculated centers are almost always accurate. All the dots must be finalized with a center punch so that there is a good mark to guide the point of the drill.

New Members

California
Farouk, Mohamed—San Jose, CA*

Florida
Jonas, Jim—Brooksville, FL
Morningstar, Eric—Hollywood, FL
Munchel, William—Lakeland, FL*
Saaty, Khalid—Saint Petersburg, FL

Illinois
Merrill, Robert—Peoria, IL

Maryland
Conklin, Daniel—Phoenix, MD
Ziadie, Kelly—North Potomac, MD

Minnesota
Sobell, Jacob—Bloomington, MN*

New Mexico
Hyde, Ronald—Chama, NM*

Ohio
Yarowski, Carl—Greenfield, OH

Oklahoma
Bohler, Rachel—Eufaula, OK
Guido, Tom—Okmulgee, OK

Pennsylvania
Roll, Robert—Clintonville, PA*

Washington
Carter, Logan—Bellevue, WA
Harris, Clinton—Snohomish, WA*

Canada
Belanger, Ray—Ontario*
Motz, John—Ontario
Wood, Louis—Saskatchewan

***AWCI welcomes back these individuals who have chosen to re-instate their membership.**

A Replacement 8 mm Lathe Draw-in Spindle

Part 1

By Dale LaDue, CMW21

I have purchased a number of lathes over the years, some hardly used and some well used. All of these little lathes were of the Webster-Whitcomb type, either 50 mm or 55 mm spindle height over the bed. No matter how the lathes looked on the outside, the internal bearings were in very good condition, which are my most important criteria when purchasing a used lathe.

This type of lathe should be kept well oiled and disassembled for cleaning periodically. Drawing 1 depicts the style of lathe; cone bearings at both ends; and a belt-driven multiple-grooved pulley for speed control in between. An internally threaded draw bar (spindle) traverses through the bearings and pulley and threads onto a split chuck (or collet). The spindle grip is turned and the chuck is drawn in tightly clamping the work piece. Spindle threads can be damaged if overly tightened or cross-threaded onto the chuck threads. Usually the first few threads that are worn are easily cross-threaded and create increasingly annoying collet changes. In the past I have ground away the few mangled threads in the spindle providing new starter threads. Using caution when drawing in (tightening) as well as the proper size chuck will extend the life of the spindle. I purchased a spindle many years ago from a watch and jewelry material and tool supply house. The only brand I could obtain was a Boley lathe spindle that was the proper diameter but too short. The Swiss Boley W. W. (Webster-Whitcomb) style lathe utilizes a longer chuck and a shorter spindle than the W. W. style American lathes.

The National Watch and Clock Collectors Association regionals are a source for used lathes, attachments and tooling. I usually gravitate to those vender's tables, always fascinated with the diverse and plentiful displays. Harvey Schmidt is an extremely knowledgeable tool specialist who attends our local regional mart as well as others. Among his multitude of lathe chucks and paraphernalia was a homemade lathe draw-in spindle that was made from a section of steel automobile brake line tubing.

Apparently, not all brake line is made equally. I have looked at different manufacturers' steel line and found variations in wall thickness as well as bulges inside and out. Figure 1 shows a brand called Poly Armour®, which I found to be flawless. The inside bore was smooth and bright compared to other brands, as well as having a durable protective coating on the outside.

I had previously purchased a tap sized 0.275-40, designed to chase damaged 8 mm lathe spindle threads, Figure 2. I purchased a 12" section of Poly Armour steel brake line and thought I would attempt to make a spindle. The steel line

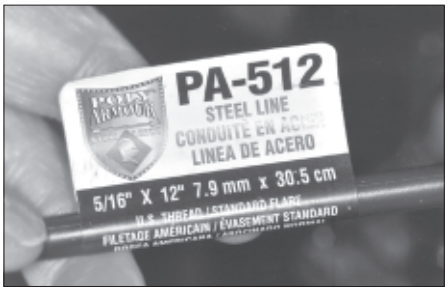
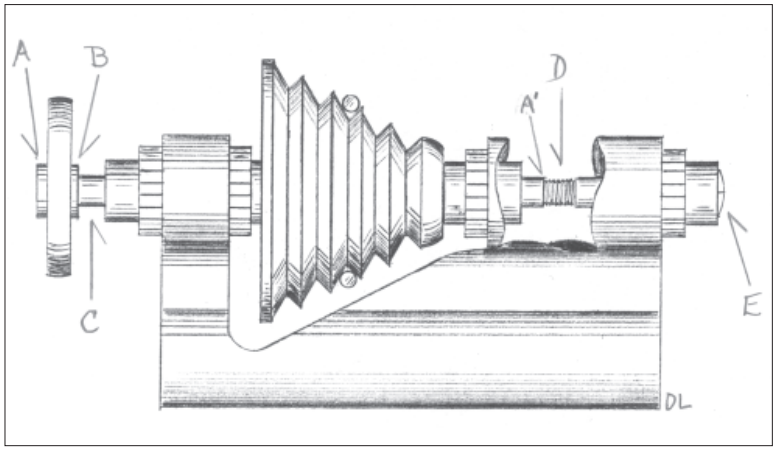


Figure 1. 5/16" x 12" steel brake line was used to produce the spindle



Drawing 1. A cutaway view showing the different views to ascertain the correct length of a new spindle.

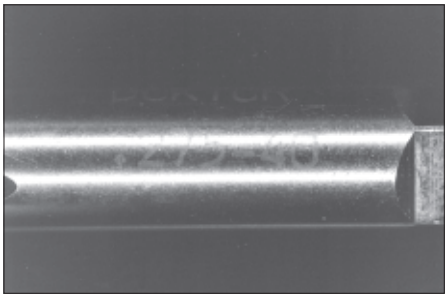


Figure 2. A 0.275-40 tap

has flared ends, which I decided to remove. I tried to incorporate the flare into the design but it seemed more complicated. The steel line was cut to a length that was long enough to extend through the lathe head an inch or so.

The steel line was mounted in the lathe and the 0.275-40 tap was held in the tailstock as shown in Figure 3. The tailstock was allowed to float on the bed and the headstock was turned by hand. As the tap started to cut it drew the tailstock along the bed. The process is shown in Figures 4 and 5. The tap was run about half its length into the steel line. The threaded line was then faced flat, Figure 6. Figure 7 shows a close view of the threads. After cleaning the oil and swarf from the threads, a long Boley chuck was tested for fit, Figure 8. The line was inserted in the lathe head and tightened onto a typical shorter American chuck. The coated line was bound at the threaded end and had to be very slightly relieved, Figure 9. The proper length was determined by unthreading the chuck a number of turns while in the headstock, Figures 10 and 11. The brake line extended from the headstock and was marked at the end of the spindle for the next phase of the project, Figure 12.

Drawing 1 depicts a cutaway view of a typical W. W. style headstock. The drawing shows different views that determine the proper length. View A-A[1] is the total length of a spindle. View B is the shoulder that tightens onto the lathe head bore as the spindle draws in the chuck. View C is the gap prior to drawing in the chuck. View D, in the cutaway, shows the chuck threads just entering the spindle. View

Figure 8. A Boley chuck was tested for fit.

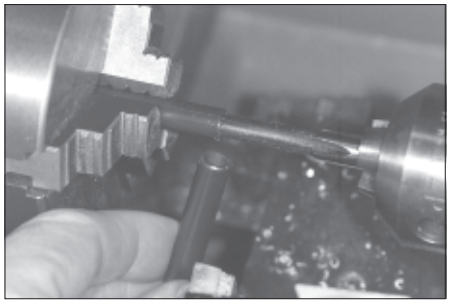


Figure 3. The brake line was parted in half and one end was threaded using the .275-40 tap.

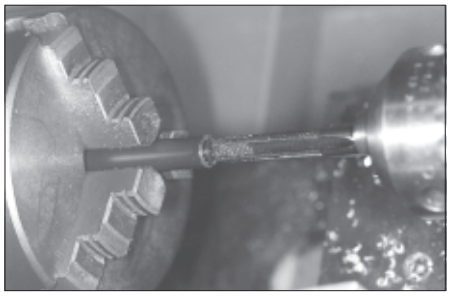


Figure 4. A view of the tapping process

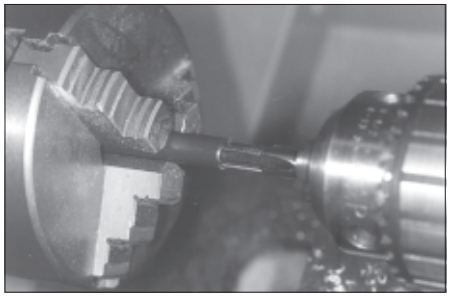


Figure 5. The tap was driven into the brake line approximately one inch.

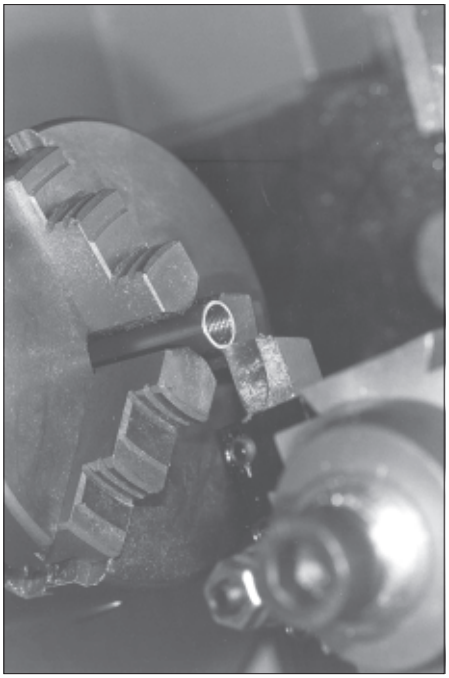


Figure 6. The threaded end was faced flat.

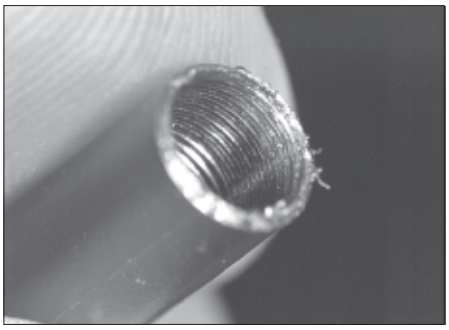


Figure 7. A close view of the threads

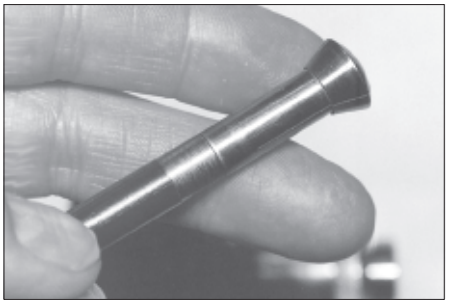


Figure 9. A shorter American chuck

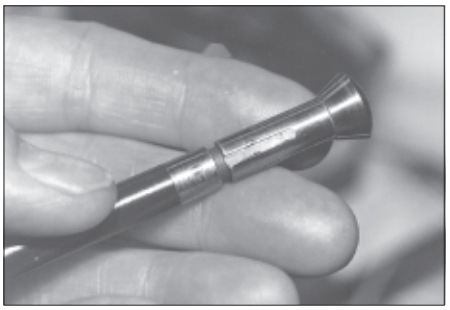


Figure 10. A view of the chuck unthreaded a few turns

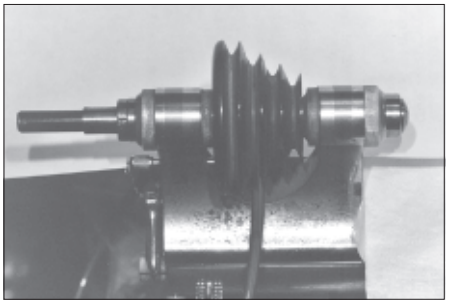


Figure 11. The spindle and chuck installed in the headstock in order to determine the length.

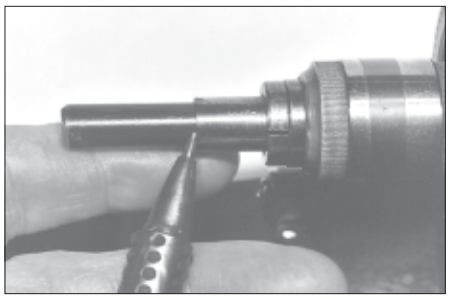


Figure 12. Marking the spindle for proper length

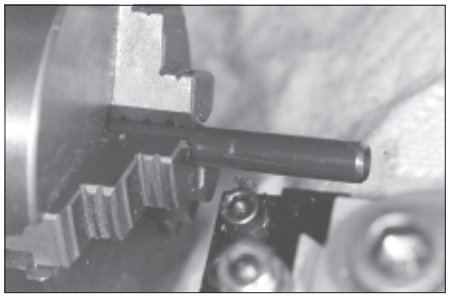


Figure 13. The spindle was returned to the three-jaw chuck.

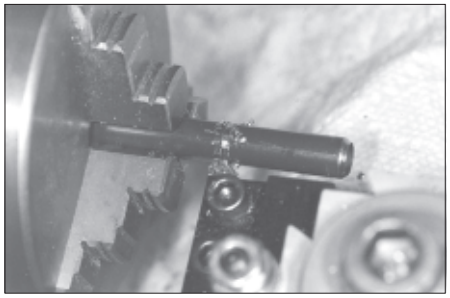


Figure 14. The spindle was parted at the marked length.

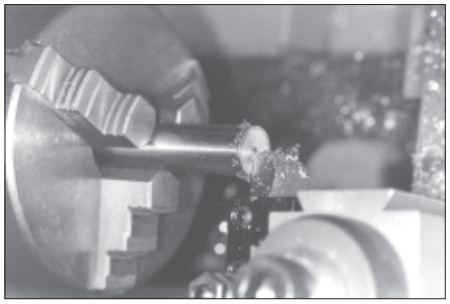


Figure 15. A steel rod was faced flat.

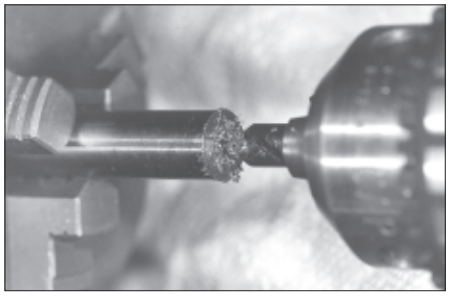


Figure 16. A center drill was used first.

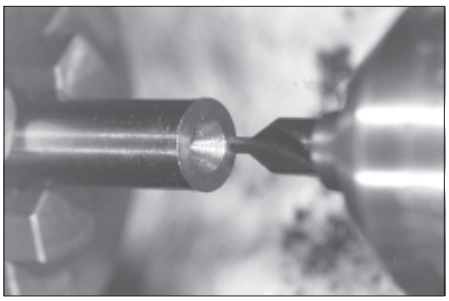


Figure 17. The center drill was driven into the rod to create a large conical center.

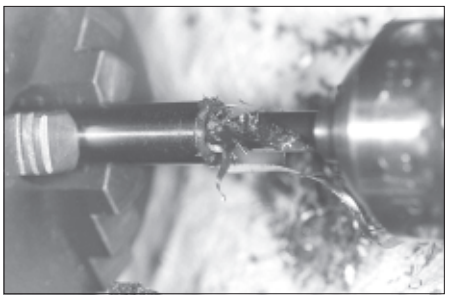


Figure 18. A 19/64-inch (0.2969 inch) drill was used first to a 1" depth.

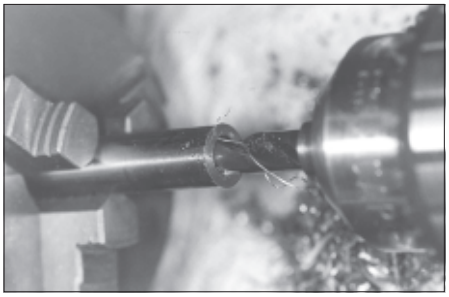


Figure 19. An N-size (0.3020 inch) drill was used next.

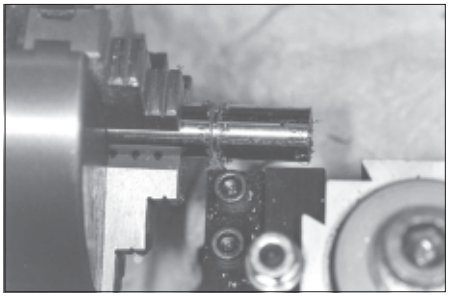


Figure 20. About an inch of drilled rod was parted from the stock.

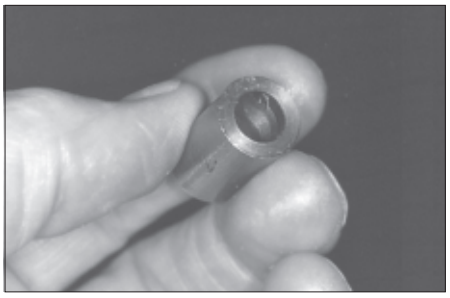


Figure 21. The parted sleeve

E shows the chuck face seated in the bore. The brake line was remounted in the lathe and parted where marked for length, Figures 13 and 14, and faced flat.

The next procedure was to provide a shoulder secure enough to withstand the pressure when drawing in the collet. Drawing 1, Views A and B show the diameter of the shoulder to be approximately the same as the lathe head spindle housing. The shoulder was created by making a sleeve that fits securely over the spindle end. A steel rod was selected that was larger in diameter than the spindle and as large as or larger than the spindle housing. The rod was mounted in a three-jaw chuck and faced flat on its end, Figure 15. A center drill was held in the tailstock and a hole was started on center, Figure 16. The center drill was driven deep into the rod creating a large conical center hole, Figure 17. The rod was first drilled with a 19/64-inch drill that measures 0.2969 inch, Figure 18. An N-size drill that measures 0.3020 inch was then used, Figure 19. The rod was drilled to a depth of approximately one inch and parted, Figures 20 and 21. The sleeve was cut in half and a 0.3115 high-speed steel reamer was used to enlarge the sleeve bore, Figures 22, 23, and 24. The diameter of the steel line measures 0.3125 (9/16) inch and the inside diameter of the sleeve measures 0.3115, which creates a 0.001 inch difference. The sleeve was pressed firmly on the end of the spindle and with a little persuasion from a rawhide hammer seated fully in place, Figure 25. The new spindle was tested in the lathe headstock for proper length before permanently attaching the sleeve, Figure 26. The line was replaced in the lathe chuck and the sleeve was faced flat on the front and back edges. The top surface was then turned true, Figure 27.

The sleeve pressed on very tightly and probably would be secure enough to withstand the draw-in pressures that delicate work would require. However,

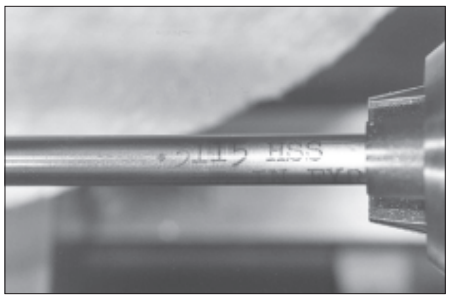


Figure 22. A 0.3115" high-speed steel reamer.

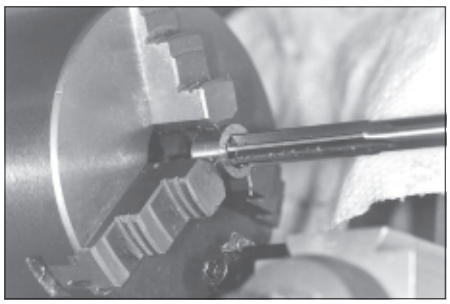


Figure 23. The sleeve was cut in half and each half was reamed out to 0.3115".

I wanted to permanently affix the sleeve by screwing it to the brake line. I held the brake line in a three-jaw chuck mounted on a rotary table, which in turn was mounted on a right angle plate. The end with the sleeve was supported by an adjustable tailstock that along with the right angle plate was attached to a milling machine table. A center was placed in the tailstock spindle and it was turned into the brake line. A center was held in the mill head drill chuck and brought to the middle of the sleeve using the x-y table, Figure 28. A flat piece of brass approximately 6 inches long was used as a guide to determine the center of the sleeve along the front to back (Y) axis, Figures 29 and 30. When the strip became level, the chuck was centered on the sleeve, Figure 31. The x-y table was then locked in position.

References

Harvey Schmidt can be contacted through the NAWCC Horological Tool Chapter #173 or email: wwlathlot@aol.com

Poly Armour steel brake line is available at Advance Auto Parts® stores.

Part 2 will continue next month.

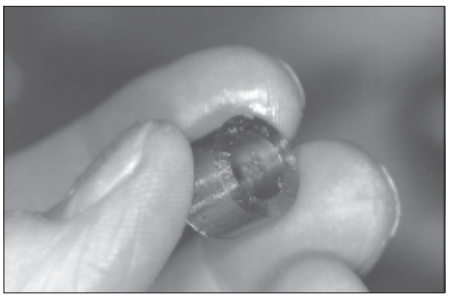


Figure 24. The finished sleeve

Figure 25. The sleeve pressed on the brake line with a 0.001 interference fit.

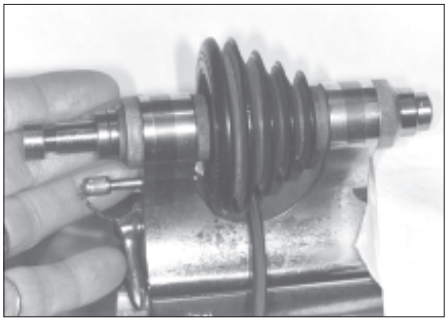


Figure 26. Checking the spindle in the headstock for proper sleeve placement. The sleeve can be moved in or out at this time.

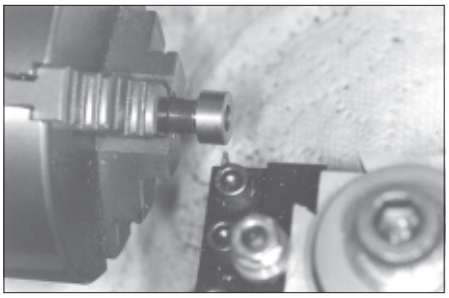


Figure 27. The spindle was remounted in the lathe and the sleeve diameter was turned true. Both ends were faced flat as well.

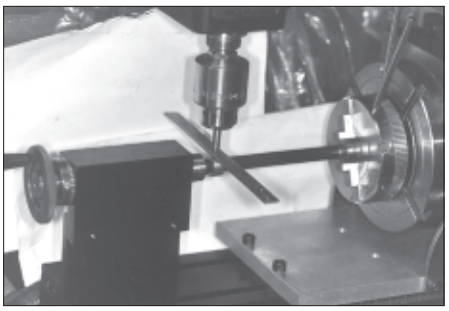


Figure 28. A male center was mounted in the mill chuck. A thin brass strip was laid across the sleeve and the center was lowered onto the strip.

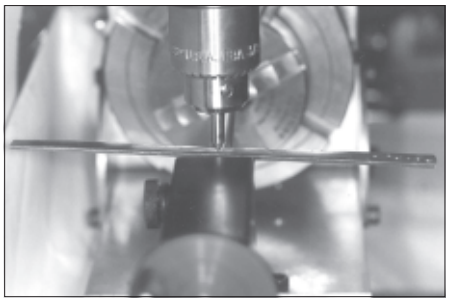


Figure 29. The brass strip indicates off center too far back on the x-axis.

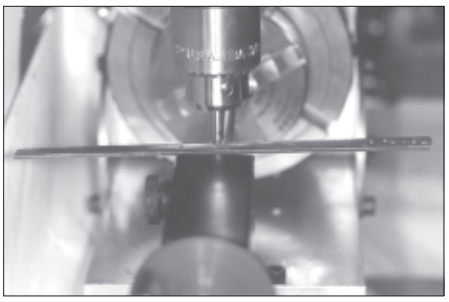


Figure 30. The brass strip indicates off center too far forward on the x-axis.

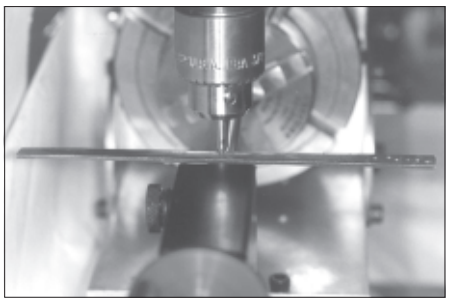


Figure 31. When the brass strip became level the x-y table was locked.

By Jerry Faier, CMC21

Education Notes

There are several items on the agenda this month. I picked up a copy of *The Buckeye Horologist* and read an article by Jim Riggs on pivot burnishing. I urge all of you to get a copy of this January AWCI Chapter newsletter (contact Mike Gainey or the AWCI office) and read through it. It's the type of publication that draws you into Chapter activities. Most important, is Jim's excellent comments about burnishing. He says a lot and then offers some useful ideas to help and encourage others to join him in his efforts to grow his skills for the craft.

Next, if you look at all the work that goes into any education program, it usually involves a large number of people to make it work. In the case of AWCI's 21st Century Certification program, that is almost an understatement. Not only were there a large group involved in developing the concepts (about 15 people served on the 2 sections—clock and watch) but then they and others worked to ensure the quality of the examination process; assessors had to be trained for each section each with different scoring needs; and administrators were trained who organize the certification process and see to it that everything runs smoothly and properly according to the procedures developed. All in all, there are about 45 to 50 people now who work to see that these programs stay on track and prosper. If you have participated in one of these programs, have you ever thought that maybe you should return the favor from so many by "doing" something? Perhaps you could volunteer to help someone else get ready for certification (like mentoring), or maybe train to be an assessor, or perhaps talk with others to help them progress in the trade or improve their bench skills. There are many opportunities to "pay it forward" to your colleagues and those enthusiasts and bench workers who want to grow their skills and produce quality repair/restoration work.

Even running for the Board or volunteering for a committee and helping direct the development of the organization. Yes, I said development and mean that AWCI has solidified its new direction with commitment, organization and quality. Many of you seem unclear of all these changes. Let me summarize these: the S&Ps were developed (one for each of the sections—clock and watch) to help all bench professionals produce what the organization and the industry believe to be the best, needed procedures and skills for the bench; the 21st Century Certifications were developed to give our members a chance to show off their skills, knowledge and dispositions through peer review and standardized examination, and now our last phase is to ensure that what has been gained is nurtured to grow even better and kept at the top level of skill performance charts.

Several observations have come up again and again that are worth your time to consider. For any organization to survive and grow, it takes a lot of support by its membership. Without your input, there can be no growth or development. All of us who have worked hard to develop these many programs have found that we have gotten back a great deal in return for our efforts. I know in several cases that the people who served on one of the development committees for the S&Ps have changed the way they work at the bench and how they approach a product. Having talked with many of these professionals, they now strive to apply the S&P principles as close as possible to the work they do. To see this clearly, you had to have been at the first watch assessor training at AWCI. In the room was over 450 years of watch knowledge and experience contained within the 26 assessor trainees.

Many of these men and women were teachers in the various watch programs throughout the states. There was one point during the training when everyone was asked to evaluate a certain watch part for scoring. The room fell to a hush when the group found that no 2 people gave the same score even though they were looking at the exact

same thing! That won't do if every student was to be scored on the same exact standards. So the task began to train them further so they would know exactly what to look for and how to determine what proper score to assign from the rubric given (i.e. the rubric is the scoring scale to be used that was developed from the Standards).

What was so impressive to me was to be the "bird on the limb" listening to all this talent discuss how they were going to do things differently when they got back to work! Be it teacher or bench professional, we all work toward a standard. In the past, it was an individually conceived standard usually predicated on the work of someone we either learned from or trusted to give us the correct way. Today, it is a written and documented standard of practice, recognized by our professional organization and the industry.

So, what can you do to reward all those who have worked so hard to help you grow? Help our profession and us by giving back in any way you can. Go to a high school career day and give a talk to help develop interest in our trade. Visit with other, newer watchmakers or clockmakers and see if there is something you can do to help them grow their bench practice. Perhaps getting together with another professional and working together, studying for a certification exam. Write an article for the *HT* about some project you have just completed. If it shows one of the S&P items in practice, all the better. I would bet if you put your mind to it, you could think of many ways to contribute and that is what we need. The more you are involved, the better the organization becomes and the more useful it becomes to you.

The Education Committee is now working on a multi-path Education Development Program that you will be hearing more about in the coming months. One of the pathways is for those in the organization who want to keep stepping up the education ladder to higher qualities and skills and, hopefully, some day achieve certification. This is true for both clock and watchmakers. The other path is for those who already have their certification and want to maintain their skills, knowledge and dispositions and show they are still at the top. The question of exactly what these items are that show these qualities are now under discussion by the Committee. More will follow as the Committee finalizes its work. Even though there is no longer a clock industry as such, those of us at the bench create that industry for the repair and restoration of those products.

Now more than ever, it is the professional clockmakers who must promote our trade and help keep fellow practitioners on track using S&P guidelines as the accepted practices for this work. Watchmakers, AWCI is working closely with industry to establish better connections with suppliers and industry leaders to define the same questions I now ask of you—"What can you (the Industry) do to help reinforce the work of competent, acknowledged practitioners?" At the mid-year meeting of the IAB, there was acceptance of this idea and the offer to do more. Now we see what can develop. Suggestions? Send them in to the IAB chairman, Henry Kessler for discussion with the Committee. Again, if you don't offer anything, how can you expect anything to change?

Keep your eyes and your minds open to what the future may bring and what you can do. When the thought occurs, "Just do it!" Participate! Find some way to give back to the profession that has fed, clothed and supported you and your family.

Last on the list this month but no less important was a very informative discussion with Mr. Tom Schomaker at the mid-year meeting in Harrison about student evaluations from those who are taking classes to get ready for the CW21 examination. Of the dozens (and I mean dozens) of responses I reviewed, I expected to find at least one comment that was less than positive, but to no avail.

Seems Mr. Schomaker is a top-notch instructor (he's way too modest to tell you this himself, but he is an excellent instructor and the reviews clearly show it!), and well liked by new as well as seasoned watchmakers. More than that, was the insight that I got from the comments about the state of knowledge and skill levels of our membership as well as insight into the value of these classes to both the student's bench practice as well as their preparation for certification activities. Rather than edit them, I just pulled out several students' responses to the following question. (Please remember these are direct quotes and are not edited!)

"My overall reaction to the AWCI Continuing Education Program is:"

1.) *"Now that I've seen the program, I can see the value to continue my understanding of proper watch repair and care for my client base."*

2.) *"The whole program has been wonderful. I think it has really improved me and my standards as a watchmaker."*

3.) *"Wow! What an eye opener. Very refreshing!"*

4.) *"Wow! Way more than expected. Totally blown away and humbled as to where I stood as (to) my own ability (abilities) were concerned. A total re-evaluation!"*

5.) *"I was impressed at the professional level of the attention to detail and consistency of procedures (especially in oiling). This was a great class for a novice and I'll definitely be back for more training."*

6.) *"Everything was great! I learned a lot and was inspired to do better, cleaner repair work, more attention to detail!"*

The last comment I wish to share with you came to Tom in the form of a "thank you" card. It read: "With sincere appreciation and warmest thanks!!" The appreciation and thanks were underlined heavily. From the handwritten note on the card: *"You are an inspiration and have breathed new life in my career as a watchmaker!"*

Take a careful note. These classes are designed to help you do a better job whether you take the certification examination or not. Taking the CW21? Be sure your knowledge, skills and dispositions are up with the rest of the industry. Things change, new specs are in place and thus new ways to deal with these new specifications. Check it out!! All it can do is improve your bottom line! Until next month, see what you can do to "pay it forward" to yourself and your profession, then tell us what you have done.

Bulletin Board

ITEMS STILL NEEDED

Patek Philippe 8180 Detent Lever
Donald Yax, Howell, MI, is looking for a source for a detent lever for a Patek Philippe 8180.

Do you have information regarding this month's requests? Do you need information about one of this month's responses? If so, send your information or requests to: *Horological Times* Bulletin Board; 701 Enterprise Drive; Harrison, OH 45030-1696; Toll-Free: 1-866-367-2924, ext. 307; Phone: (513) 367-9800; Fax: (513) 367-1414; E-mail: dbaas@awci.com

International Watch Collectors Society

By Jack Kurdzionak, CW21

New Neighbors

Arnold's Watch Repair, owned and operated by Arnold C., is located in a suburban strip mall. Arnold sells and services clocks and watches from his store that shared the mall with a dry cleaner, hair salon, pizza shop, and a real estate office. All went well for several years with the congenial neighbors getting along. They developed a strong sense of community so much that the last person leaving the mall in the evening would check the other businesses' doors to see that they were all locked.

The real estate market did so poorly last year that the real estate agent in the mall went out of business leaving a vacant storefront. The mall landlord was fortunate to get a new tenant within a few months to rent the space formerly occupied by the real estate agent. That is when Arnold learned that a battery specialty franchise (Batteries R Us) was going to share the mall with him and the other tenants. He immediately became concerned because the battery store sold and installed watch batteries as well as selling almost any other battery one could imagine. Arnold spoke with the landlord to discuss the no compete clause in his lease, but the landlord assured him that since Batteries R Us was not in the watch, pizza, or dry cleaning business, there was no violation of the clause.

Arnold is uncertain whether he should react or respond to his new neighbor. Does he react by telling them not to call upon him for help should they have a watch battery problem and hope they go out of business? Does he respond by welcoming them as new neighbors and offer his assistance?

What advice would you give to Arnold if he asked you? Please share your advice with Arnold and us by emailing it to me, Jack Kurdzionak (bostonwatchco@gmail.com) or by fax at 781-438-6954.

HOROTEC® Catalog Online and Now in English

Paper catalogs are going the way of blue mainsprings, pocket watch crowns, and hairspring vibrators. Decades ago every material dealer had a stack of catalogs, showcasing the wide variety of tools and supplies that were available to the trade. The dealers always had a large supply of these catalogs, imprinted with their name available for their customers. In light of the gradual contraction of our industry, these catalogs have largely disappeared. A few companies still print catalogs, but these seem to be the exception rather than the rule.

HOROTEC®, a well-known supplier of horological tools, has distributed a very nice 330-page color catalog to their dealers, but here in the American market it had one significant drawback. Until now it was only printed in French, although all of the pictures were in English (as well as every other language known to mankind). HOROTEC has solved that problem for us monolingual Americans. They now have this catalog in English and available to all at no charge. All you need to obtain this catalog is a computer with Internet access.

Visit their webpage http://www.horotec.ch/, click on catalog download and you can save it to your computer for reference at any time. If you appreciate organization, you will especially like this catalog as it is very logically organized. What else would one expect from a Swiss catalog? Each group of similar tools all share the same initial two digit catalog reference number and are found in the catalog chapter bearing that group number. As an example, any item beginning with the reference MSA 12.XXX will be a tweezers. You can locate all the tweezers in chapter 12. Look for a specific reference such as MSA 12.300-3 and you will find a picture of #3 carbon steel tweezers in chapter 12. Now you can peruse the catalog at your home or office, in English, and call your supplier with an accurate reference number for any item, and request an up to date price quote.

An Aid for Bracelet Sizing and Repair

Watchmakers frequently need to resize and repair watch bracelets in which the links are connected with pins and tubes, cotter pins, solid stainless pins, or screws. Without tools designed for these tasks, it is difficult to do quality work on these bracelets. The bracelets require some type of steady support to securely hold them while pins or screws are removed or inserted. In most cases, one needs to use both hands to work with the screwdrivers or pin pushers, and a third hand is needed to support the bracelet. Undesirable bracelet damage, sometimes severe, can be the result of someone doing bracelet work without the proper tools.

HOROTEC supplies a bracelet-sizing tool (ref. MSA 10.500) as pictured that you may find very helpful. Of course, if you go online and check out the catalog, you will see it in chapter 10. This well designed tool is totally self-contained with all accessories fitted to the tool itself. The pin driving punch is supplied with an assortment of eleven punches to drive any size bracelet pin out of a link.

The stand holds the punch perpendicular to the bracelet, which is supported, in a multi-channeled plastic frame below. A separate holder with a knurled handle is used to remove bracelet screws while the bracelet is supported in the same plastic framework. For bracelets with male and female screws in each link, a screwdriver is fit into its own support in the lower frame so that these screws can be loosened or tightened without any damage. Six sets of two matching screwdriver tips are supplied with the tool. As with any quality Swiss tool, spare parts are always available as needed.

Jack Kurdzionak

A New Beginning

Winter has gone, at least here in New England, and spring has arrived. I have always enjoyed our New England winters, actually welcoming the season with its bitterly cold weather and frequent snowstorms sometimes accompanied by a power outage or two for good measure. The long winter nights give me an opportunity to sit by the woodstove, listen to the radio, and contemplate what time to get up in the morning to plow the snow out of the driveway and shovel the stairs and walkways. Friends in Sunbelt states and snowbirds as well (those northerners who go to Florida for the winter), legitimately question my state of mind. I always tell those folks that we have four seasons to enjoy. Today (a lovely Sunday in early March) was a special treat. We had a preview of spring here in the mountains of central New Hampshire. The temperature went over 50 degrees as the remaining snow (about six inches) was melting away. I took my black Labrador dog, Ebony, for a walk in the woods and then she went for a swim in the ice-cold river near our home. She enjoyed her first swim of the season. As we walked through the woods I noticed something in the snow that I have never noted before. Small seedling trees that had been covered with snow and bent over all winter had sprung upright out of

the snow. They left a temporary imprint in the snow to mark the horizontal position they had occupied while they were covered with several feet of snow during the past season. Now they were again springing to life and the mark they left in the snow would soon be melted away.

We all have gone through a long winter of economic flattening that has lasted almost two years. We have had less work to do. Some have had no work for a period of time. We have been challenged just as the saplings here in New Hampshire are challenged by a heavy snowfall. We have been held down by forces out of our control just as those small trees have been. Now that the economy appears to be entering a rebirth, its own springtime, are we going to rebound as the saplings do every spring? This is an opportunity to demonstrate our resilience and get back to work again as all life does every spring. Let us do it well and make certain that the mark left on us by the long economic winter will be like that one left by the saplings in the snow. It is there only briefly before it quickly melts away.

Jack Kurdzionak

You Are Invited

Do you have a solution to a watch or clock repair problem that you want to share with our membership? Do you have a question about a repair problem you would like to ask? I invite you to participate in this column with your suggestions, questions, and comments. It is easy. Just e-mail me at AWCI <magazine@awci.com> or write using the old standby known as the postal service. You can even fax me at 513-367-1414.

I will do my best to help you help the membership. By sharing your questions and suggestions, all of our members can benefit from our combined knowledge and experience. The ideas, tools, techniques and products presented in this column are suggested by the author and contributing members and are not endorsed by any manufacturer, supplier, advertiser or AWCI itself.

Academy of Watchmaking Classes

Thomas Schomaker, CMW21 Instructor

AWCI is offering a series of 5-day watchmaking classes. Each 5-day block will cost $725; 3-day block is $435.00
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 www.awci.com

* Seats may become available for the classes; please contact AWCI to be added to the waiting list

April 12-16, 2010	Modern Mechanical Chronographs, Servicing & Adjusting
April 26-30, 2010	Basic Quartz Watch & Quartz Chronograph Repair
June 7-11, 2010	Watchmaker's Lathe I
June 28-July 2, 2010	Basic Watch Repair
September 13-17, 2010	Balance Staffing & Timing
September 20-24, 2010	Modern Automatic Watches
October 11-15, 2010	Basic Quartz Watch & Quartz Chronograph Repair
October 18-22, 2010	Modern Mechanical Chronographs, Servicing & Adjusting

AWCI Watch Repair Course schedule is subject to change

21st Century Certified Watchmakers 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

* Seats may become available for the exams; please contact AWCI to be added to the waiting list

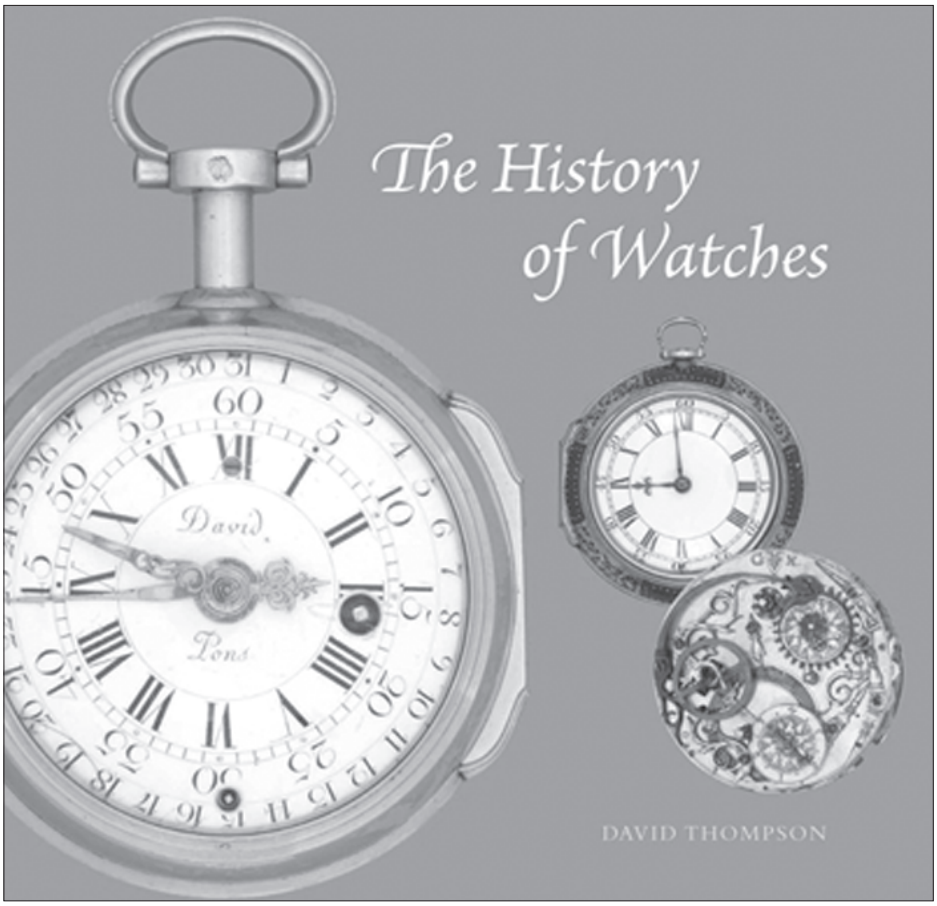
April 19-22, 2010	AWCI Training Facility	Harrison, OH
May 24-27, 2010	AWCI Training Facility	Harrison, OH
June 22-25, 2010	AWCI Training Facility	Harrison, OH
July 19-22, 2010	AWCI Training Facility	Harrison, OH
August 16-19, 2010	North Seattle Community College	Seattle, WA
August 23-26, 2010	Lititz Watch Technicum	Lititz, PA
October 4-7, 2010	AWCI Training Facility	Harrison, OH
November 1-4, 2010	AWCI Training Facility	Harrison, OH

AWCI Watch Certification schedule is subject to change

Book Review

By Jordan Ficklin, CW21

The History of Watches, by David Thompson, 175 pages. Hardcover with full color photographs, Abbeville Press 2008. Showcases the incomparable collection of watches at the British Museum. Includes bibliographical references, index, and glossary.



My father-in-law is the kind of person who, when he is at a museum, reads every plaque about every artifact. If you are like my father-in-law, then this is the book for you. After a fantastic introduction to the book and the history of watches in general, Thompson highlights 77 watches contained in the British Museum. The watches are arranged in chronological order and range from a 1560 tambour cased watch to a 2007 radio controlled wristwatch. Each chapter reads like a plaque that would accompany the watch in the museum.

The watches presented in the book are tremendous examples from watchmaking history and the photography (by Saul Peckham) is exceptional. The book serves as a fantastic reference for collectors or restorers as it surveys the work of many watchmakers, working mostly in London and Europe, pointing out the defining characteristics of each region, time period, and watchmaker with photographs of the watches inside and out.

The book is a history of the watchmaking profession as much as it is a history of watches. Thompson describes in much detail the circumstances of the watchmaker as well as casemakers, bell makers, pendant makers, enamelers, and all other tradesman involved in the art of creating fine timepieces. Thompson discusses the technical capabilities of each watch, but fails to describe how such feats were accomplished in a manner that would appeal to a watchmaker.

Whether you are a collector of historical timepieces, or just interested in expanding your knowledge of the history of our trade, this book is worth reading. My knowledge of the watchmaking trade was greatly expanded and I have a much greater appreciation for early watches.

Should I ever need to date a watch from the 17th or 18th century or attribute it to a specific maker, I will definitely include this book among those I turn to as a reference.

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By Gene Bertram, CC

Conventions

As I write this, the snowbells are blooming in the front yard, the daffodils are pushing up in the back, we just had the mid-year Board meeting, I've had 2 outdoor bike rides, and affiliate chapters around the country are planning their conventions.

By the time you read this, things should have warmed up in most parts of the country, the minutes from the Board meeting should be online, President, Mark Butterworth, and Executive Director, Jim Lubic, will probably have written about what took place at that meeting, and people will be making their plans for the summer. I join with Terry Kurdzionak in encouraging all AWCI members to plan on attending the 50th Annual Convention in Covington, KY as well as at least one Chapter convention. I'll be relaying info about those conventions in this column as I get it, and there should be links on http://www.awci.com/. First off is the Horological Association of Virginia. Here's their announcement.

The HAV Board of Directors is pleased to announce the 2010 Annual HAV Convention, scheduled for April 30, May 1 and 2, 2010. Convention Chairman, John Enloe, has organized an impressive schedule of events sure to please the watchmaker and clockmaker attendees. The convention will once again be held in Williamsburg, VA at the Williamsburg Marriott. Registration information is available at www.havhome.org.

The Williamsburg Marriott is one of the finest hotels in the area and rooms have been blocked at a special rate of $109 plus tax. Call the hotel now at (800) 442-3654 for reservations and information. Mention the Horological Association of Virginia, Group Code "horhora" to get the special rate. If you need additional information, call John at (703) 425-1524. Please complete your registration and send them to John as soon as possible so he can get a good head count for refreshments and banquet requirements. Two guest speakers have been arranged for this year's event. Our watchmaking speaker will be Dan Fenwick. Dan has been with us several times. He is a nationally recognized watchmaker employed by the Swatch Group and always provides our watchmakers with valuable techniques on the repair of modern Swiss watches. Our clockmaking speaker this year will be Al Dodson. Al is an experienced clockmaker, having attended Parkland College to study watchmaking and micro-precision machining. After completing his studies at Parkland in 1978, he returned to his hometown, Lexington, KY, and began repairing clocks professionally. Al moved to Columbia, PA in 2008 to become the lead clock instructor at the NAWCC School of Horology. The spouses' program will tempt even the clock and watchmakers. Gayle Graves has kindly volunteered to organize our spouses program again this year and I know all who attend will enjoy it.

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As usual, we will have our annual banquet, awards ceremony, and horological item auction on Saturday evening. We are fortunate to have Ronnie Spiggle as our auctioneer, something everyone always enjoys. On Sunday, we will have our Annual Meeting, a short program and close with lunch.

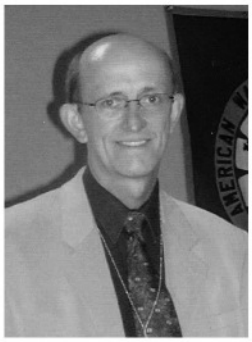
In addition to the HAV convention, the Watchmakers/ Clockmakers of Ohio will be having their convention on July 16th-18th in Columbus, OH. Yours truly will be teaching a hands-on class on repivoting for clockmakers. Check their website for more info (http://watchclockmakersohio.com/). Please let me know about your conventions as soon as you can. I can be reached through e-mail at GeneBert@swbell.net, through Facebook and LinkedIn.

HOROLOGICAL ASSOCIATION OF VIRGINIA ANNUAL CONVENTION

WILLIAMSBURG MARRIOTT
WILLIAMSBURG, VIRGINIA
April 30 and May 1-2, 2010

Al Dodson
NAWCC

President's Reception
Clock and Watch Technical Sessions
(Al Dodson and Dan Fenwick)
Annual Banquet
Members Auction
H.A.V. Annual Meeting
Spouses' Program



Dan Fenwick
Swatch Group

For registration information, contact John Enloe (703) 425-1524
or E-mail: john_enloe@verizon.net

Wisconsin Horological Society
75th Annual Convention
Osthoff Resort Elkhart Lake, Wisconsin
April 30, May 1 & 2, 2010

Convention Programs Include:

David Malmquist	Clock Servicing Insights: Pivot polishing w/a Morgan Pivot Polisher Concentric boring of mainspring barrels Special clock repair tools Selling the job, justifying your repair prices
Tamara Houk, CW21	The first 25 registered will build a quartz watch. You will assemble the watch starting with the movement to casing. This is for you to take home in celebration of our 75th.
Douglas Thompson, CW21	The hairspring and adjustments to make in respect to timing the watch.

For more information visit the WHS website - http://whsconvention.webs.com/

Honor Awards Nominations

The Honor Awards Committee would like your help in finding applicants who fulfill the requirements for the achievement awards given out at the AWCI Convention and Educational Symposium held in August. The awards are:

AWCI Fellow Award
This is AWCI's most prestigious award. It carries the endorsement of one's peers as an outstanding member of the Horological Community. The person must have these qualities:

- Tangible evidence of leadership abilities
- Active participation chairing or serving on committees
- Publication of articles in horological publications
- Given lectures, workshops and technical demonstrations

Outstanding Achievement Award
Recognized for outstanding personal achievements or accomplishments such as projects, inventions, or innovative or creative ideas that meet a need in the field of Horology.

Meritorious Service Award
Awarded to a person who has made a significant contribution to AWCI and its members.

The Honor Awards nomination form must be received by the Honor Awards Committee Chairperson by May 5, 2010. Please complete the form and mail to:
Honor Awards Committee Chairperson, c/o AWCI, 701 Enterprise Drive, Harrison, OH 45030
Please e-mail the Honor Awards Committee at jlubic@awci.com with any questions

Honor Awards Committee

Chair	Glenn Gardner, CMW
Members	Alice Carpenter, CMW, CMEW, FAWI
	Wes Door, CMW
	Dan Spath, CMW
	Fred White, CMW21
Staff Contact	James Lubic, CMW21

HONOR AWARDS NOMINATION FORM

Date Submitted _____

Nominee Name _____

Nominated for (check one):

❑ AWCI Fellow Award ❑ Outstanding Achievement ❑ Meritorious Service

Years of continuous AWCI membership, if known _____

Chapter Memberships_____

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Offices held:

Local _____

National _____

International _____

Participation on committees, chairmanships and other leadership roles:

Local _____

National _____

International _____

Publications, books, magazine articles, newspaper articles and other works promoting Horology and AWCI:

Chapter_____

Horological_____

Other pertinent publications_____

Lectures, workshops, seminars and other activities and goals advancing the study of Horology:

_____

Awards and recognition received for activities related to Horology:

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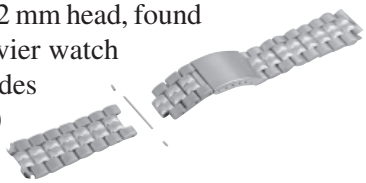


Contact Esslinger's at 1-800-328-0205 (phone) or visit: www.esslinger.com

NEW Catalog from Western Optical Supply, Inc.

The new 2010 catalog from Western Optical Supply, Inc. is totally redesigned to provide you with more "how to" information about the extensive Western Optical line of unique dispensing hand tools and accessories. Over 35 new tools are included in the expanded line up. Now most pliers are available with a foam grip or enhanced steel grip in addition to the traditional vinyl.

For additional information or to request a catalog please contact Western Optical Supply, Inc.; 20 Arroyo Cuyamungue Road, Santa Fe, NM 87506; www.westernoptical.com; 800-423-3294 USA; 505-455-1100 Phone; 505-455-1109 Fax, or your favorite Western distributor.

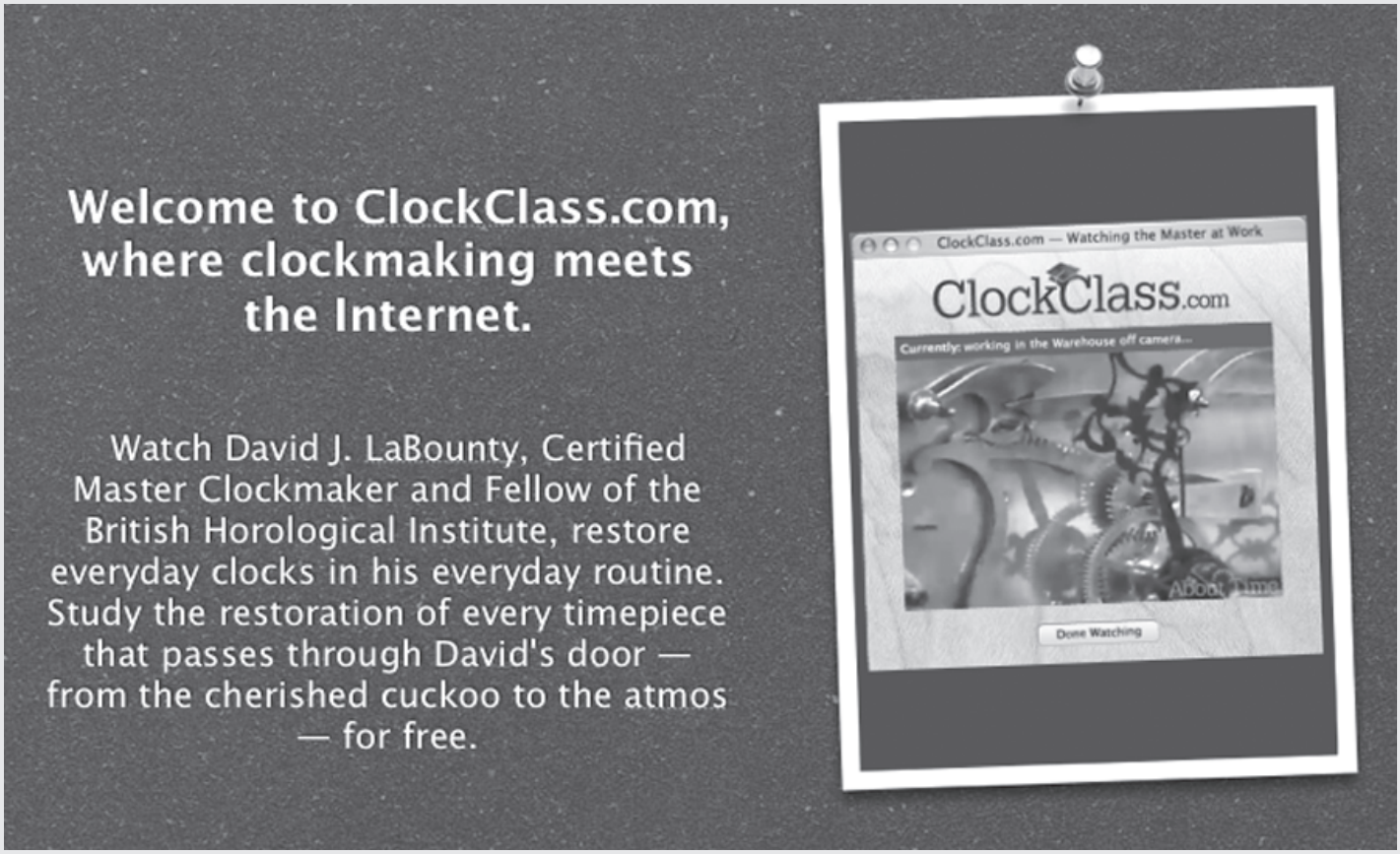
Gravograph LS100 EX YAG

Gravograph has announced the launch of its new laser solution for marking on metals and plastics: the LS100EX YAG. Made up of a xy platform that can house an object with a maximum volume of 24" x 12" x 5.7", coupled with a YAG 12W source, it presents the particular advantage of being able to mark hard or reflecting materials (black or stainless steel, etc.) as well as classic materials. The LS100EX YAG is aimed at applications involving personalization of objects (business gifts, trophies, etc.) and technical marking applications for industrial parts (tools, name plates, instrumentation, metal parts, etc.).

The laser technology featured in the LS100 EX YAG solution can be used to mark a wide range of materials (ABS, aluminium, black or stainless steel, precious metals, etc.). Its large work area can house bulky objects such as holder trays on which the operator places parts in shaped recesses for concurrent engraving.

The LS100EX YAG solution is controlled using the LaserStyle™ software, an intuitive interface specifically developed by specialists for laser engraving, that features automatic composition possibilities such as integration of lists of names and incrementation of numbers, and this makes it a really productive tool. With its maximum marking speed of 8.2ft/s and its front loading design (Front Loading Concept by Gravograph, the only one of its kind on the market), which cuts operating times between batches of parts, this laser engraving unit provides one of the highest machine use levels currently available.

There are many accessories available as options with the LS100 EX YAG to provide a solution that is perfectly suited to the application and the user's working environment. To start with, there are integrated filtering and ventilating systems for smoke and dust that enable compliance with working conditions for the user and the machine; these systems have been tried and tested in many cases of applications involving high emission levels of particulates and odors. There is also the wide range of objective lenses available, plus indexing supports for engraving on cylindrical and conical objects 0.12" to 5.12" in diameter. Lastly, a vacuum table can be fitted for marking thin, flexible materials.



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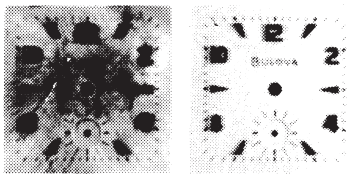

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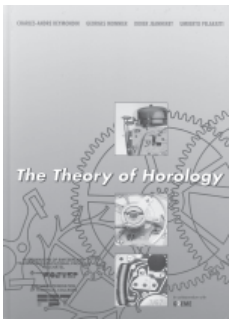
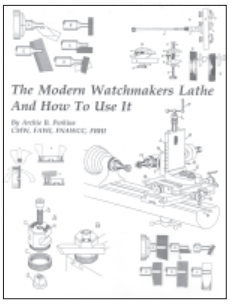
Recommended Literature for AWCI's CW21 Examination

The Theory of Horology



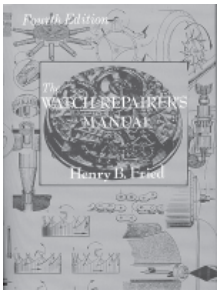
The Theory of Horology is a hardcover book with 360 large semi-glossy pages of 8" x 11½" and printed in full color. This book is a theory on horology pertaining to watches and clocks. This book is not a detailed guide of how to repair a watch or clock, but from the descriptions given and from the detailed line drawings of all types of timepieces, one can easily deduce methods of repair and re-assembly. *The Theory of Horology* is currently the "bible" of every novice and even the well seasoned watchmaker, clockmaker, and student. It ends with an eight (8) page section on exercises (with answers given of course) which is quite interesting.
RETAIL: $194.95 AWCI MEMBERS: $175.46

The Modern Watchmakers Lathe and How To Use It



By Archie B. Perkins, CMW, FAWI, FNAWCC, FBHI
A course in watchmaking, clockmaking, and repairing would not be complete without adequate instruction and practice in using the watchmakers lathe as well as instruction and practice in using saws and files. When restoring antique watches and clocks, the restorer must be skilled in the use of the lathe, saws and files to make and alter parts to fit the mechanisms. Parts are not always available, or available to fit, and must be altered or made from raw materials. This book is intended to teach these skills and to serve as a textbook for schools as well as for students of on-the-job training programs and hobbyists. This book has more than 400 pages with 548 illustrations. These illustrations include 267 photographs and 281 hand made line drawings. All of these illustrations were made by the author. The book also has eleven tables. There are 25 chapters in the book. Each chapter has a summary, questions about material in the chapter, and a reference guide for further reading.
RETAIL: $79.95 AWCI MEMBERS: $71.96

The Watch Repairer's Manual



By Henry B. Fried, CMW, CMC, FAWI
This book is frequently used as the textbook for courses in watch and clock repair. It is ideal for individual study as well. Published in 1986, the 4th edition includes the six chapters on case setting and winding systems, motor barrels and jeweled main wheels, the verge fusee watch, repairing fusee chains, how to make a verge (staff), and the duplex escapement. A total of 26 chapters comprise this 456-page book, along with a glossary, appendices, many illustrations.
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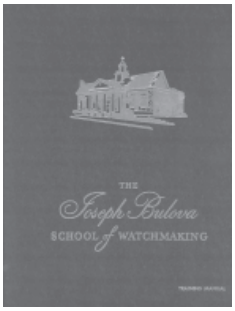
The Joseph Bulova School of Watchmaking Training Manual



The Joseph Bulova School of Watchmaking Training Manual units include: Staking Balance Staff, Truing Balance Wheels, Basic Turning, Turning Balance Staffs, Stem Making, Burnishing Balance Pivots, Poising Balance Wheels, Hairspring Truing, Hairspring Vibration, Overcoiling, Watch Assembly, Mainspring Barrel Assembly, Friction Jeweling, Wheel Train Assembly, Escapements, Terminology, Finishing, and General Repair Information. The Joseph Bulova School of Watchmaking was the principal author and developer of *The Joseph Bulova School of Watchmaking Training Manual*. Size: 8½ x 11, 352 pages, hard cover.
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