

May 2019



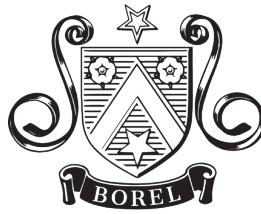
# Clockmaking Education Is Back at AWCI

AMERICAN WATCHMAKERS' CLOCKMAKERS' INSTITUTE - SETTING SERVICE STANDARDS AND EDUCATING THE HOROLOGICAL COMMUNITY



*The Many Uses for  
a Plexi Stick*

Bezel-Set Jewel Replacement, Part 1



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- Touchscreen
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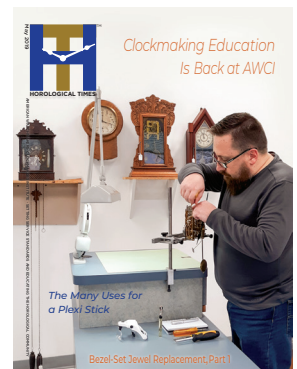
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Clockmaking student Mark Ott examines the strike train of a clock movement.

Photo by Donna Hardy

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## OUR VISION:

AWCI's vision is to have an educated and passionate horological community practicing the highest standards and with the resources to provide quality goods and services.

## OUR MISSION:

Setting service standards and educating the horological community.

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[www.facebook.com/MyAWCI](http://www.facebook.com/MyAWCI)

 Check out our educational videos!  
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**It's Finally Here!**

# The Archie Perkins Mobile Horology Classroom

The AWCI Board of Directors has made a historic decision that will change the future of horological education in the United States. We understand it is difficult to leave the workshop and travel to receive training, so AWCI will be bringing education directly to you in the places where you live and work. The Archie Perkins Mobile Horology Classroom is part of a renewed effort to expand our educational offerings to include all segments of the horological community, including professional watchmakers, professional clockmakers, sales and support staff, technicians, collectors, and anyone with an interest in horology. The Mobile Horology Classroom will be the first of its kind anywhere in the world!

AWCI construction of the Archie Perkins Mobile Horology Classroom is finally complete! The mobile classroom will travel all over the United States offering horological education at every level.

The classroom will provide a much better learning environment than what can be offered in a hotel meeting room or conference room. The classroom will accommodate eight students and one instructor with custom-made, adjustable-height watchmaking benches. Instructional technology will be similar to what is currently available in our Harrison classroom, including a digital microscope, bench camera, document presenter, projector, and monitors. There will be a dedicated cleaning room with automated cleaning machine, ultrasonic, and steamer.

The classroom is ADA accessible with a wheelchair lift and accessible restroom to accommodate the needs of every individual.

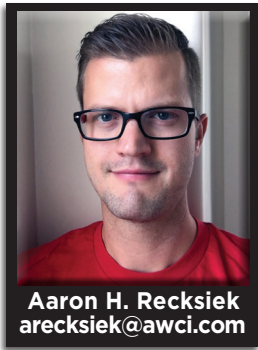
When the Archie Perkins Mobile Horology Classroom arrives in your city, you can expect it to stick around for one to two weeks. AWCI will offer a class for professional watchmakers as well as one for clockmakers. We will team up with local jewelers and AWCI members to host collectors' events and classes and to provide technician training for sales and support staff. If you are interested in bringing the classroom to your city, please contact our Education Director, Jason Champion, CW21, [education@awci.com](mailto:education@awci.com).

**We look forward to seeing you in our mobile classroom soon!**

**Sponsors:**

a message from the  
**president**

AARON H. RECKSIEK, CW21



**A**s I've said before, one of the most important things we can do as an organization is to preserve the profession for the next generation. We must make sure that there are professional watchmakers and clockmakers around in the future to keep up with the demand for our services. As you

may know, a major watchmaking school closed earlier this year. It's important that AWCI does what it can to ensure that the existing schools not only survive but thrive. In a collaborative effort between AWCI, the ELM Trust, and the Horological Society of New York, we were able to donate over \$34,000 in cash and equipment to the Paris Junior College watchmaking program.

On April 17, Jack Kurdzionak and I had the pleasure of attending the Horological Society of New York Annual Gala to present instructor Stan McMahan with a \$10,000 check from the ELM Trust, with HSNY presenting a matching donation of \$10,000. We also presented Stan with a brand-new Wellner cleaning machine donated by AWCI in collaboration with Eckcells Watch Materials & Tools, valued at \$14,000. If you would like to advance our efforts to support the schools around the country, please donate to the ELM Trust. It is fully tax deductible. We hope to make it a regular part of what we do as we support watchmaking education in the United States.

The mobile classroom is making its final preparations and getting ready to take its maiden voyage around the country. First, we will be showing it to tens of thousands of people at the Bay Area Maker Faire in California. This will be a soft opening and will be the first opportunity to come on board and look at how cool everything turned out. We won't be running full educational courses, but it will be set up

I appreciate every member who has stuck with us through all of these recent changes.

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a message from the  
**executive director**

JORDAN P. FICKLIN, CW21



**We** were really hoping to have photos of our mobile classroom on the cover of this month's magazine, but as is the case with most large projects, we had a slight delay. Farber Specialty Vehicles will deliver the finished mobile classroom on April 22. By the time you read this, we will be

working overtime in the mobile classroom finding ways to store all of our tools and learning how to teach effectively in the tight space. The mobile classroom leaves on its maiden voyage on May 13.

If you have never been to the JCK Las Vegas show, this year should be your first. The mobile classroom will be on hand, and Tom Schomaker will be giving short presentations. We would be happy to help you navigate the registration process and the show. There is much to see and do at JCK Las Vegas.

We have been communicating with all of our affiliate chapters, looking for opportunities for all of our members to see the mobile classroom in action. The mobile classroom will be at the Watchmakers-Clockmakers Association of Ohio at the end of July, at the Massachusetts Watchmakers-Clockmakers Association in September, at the Florida Watchmakers Association in October, and at the Horological Association of Virginia in November. If your affiliate chapter has not yet scheduled a visit from the mobile classroom, please talk to your representatives. We want the mobile classroom to visit *all* of our affiliate chapters during its first year of operation, and we are making it very easy.

If you don't have an affiliate chapter in your area, all is not lost. There are only eight seats in the mobile classroom, so if you have a small group of watchmakers or clockmakers who want a class without the headache of travel, please call Jason Champion at jason@awci.com or

If your affiliate chapter has not yet scheduled a visit from the mobile classroom, please talk to your representatives.

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# AWCI educational calendar

Reserve your spot today. Contact the Education Director, Jason Champion, CW21, at 866-FOR-AWCI (367-2924).

**Prices reflect members' discount! Contact us so we can help you find the best course suited to your skill level, expertise, and interests.**

## REGISTER NOW TO ENSURE YOUR SPOT!

<p><b>May 6-10</b></p>	<p>WATCH 230: <b>Balance Staffing &amp; Timing Course</b> Instructor: Tom Schomaker, CMW21 AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$1,095</b></p>	<p>Build on what you know in this course by investigating the verification and analysis of the escapement function, poising (static and dynamic), truing, and timing adjustment in a mechanical watch, cutting out a balance staff on the lathe, adjusting the balance staff, and removing the balance staff from Glucydur balances with the Horia tool.</p>
<p><b>May 18-20</b></p>	<p><b>CW21 Modular Exam</b> AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$2,495</b></p>	<p>Get Certified! The CW21 is now modular. You can take the full Certified Watchmaker for the 21st Century (CW21) Exam with each of the 4 modules over a 3-day period. Or you can take any combination of the chronograph module, quartz module, the restaffing module, or the theory module over the 3-day period. Contact Jason Champion, education director, at 866-367-2924, ext. 303 for more information. An exam application and notarized affidavit are required at registration.</p>
<p><b>May 31</b></p>	<p><b>Profitable Watch Battery Replacement (10-11 a.m.) Opening and Closing Difficult Watch Cases (2-3 p.m.)</b> Las Vegas, Nevada</p>	<p><b>FREE</b></p>	<p>Get hands-on with the latest tools as Certified Master Watchmaker Tom Schomaker shares the tips and techniques he has learned working in every segment of the watch industry. In this hands-on seminar you will see how the proper tools and some simple techniques will make you successful in either replacing batteries or opening and closing almost every watch case.</p>
<p><b>June 17-21</b></p>	<p>WATCH 190: <b>21st Century Watchmaking Standards</b> Instructor: Tom Schomaker, CMW21 AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$1,095</b></p>	<p>Evaluate your skill set in this course by exploring the fundamentals of modern mechanical watch repair including cleanliness, lubrication, endshake adjustment, and may include the verification and analysis of escapement function.</p>
<p><b>July 8-12</b></p>	<p>WATCH 420: <b>Vintage Chronograph</b> Instructor: Bernhard Stoeber, CW21 AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$1,095</b></p>	<p>Back by popular demand, come participate in a vintage chronograph course with Mr. Stoeber. In this course, you will go through theoretically and practically different vintage chronograph calibers with emphasis on troubleshooting, repair, and adjustments to each mechanism. Lemania, Landeron, and Valjoux calibers will be covered. Sign up quickly!</p>
<p><b>July 17-19</b></p>	<p><b>CW21 Modular Exam</b> AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$2,495</b></p>	<p>Get Certified! The CW21 is now modular. You can take the full Certified Watchmaker for the 21st Century (CW21) Exam with each of the 4 modules over a 3-day period. Or you can take any combination of the chronograph module, quartz module, the restaffing module, or the theory module over the 3-day period. Contact Jason Champion, education director, at 866-367-2924, ext. 303 for more information. An exam application and notarized affidavit are required at registration.</p>
<p><b>July 29 - Aug 2</b></p>	<p>WATCH 476: <b>Restoration and Construction Techniques</b> Instructor: Henrik Korpela AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$1,095</b></p>	<p>Join Henrik Korpela in this course where you will finish watch bridges using techniques employed in vintage restoration and construction of "kit" watches used by high-end manufacturers.</p>
<p><b>August 12-16</b></p>	<p>WATCH 175: <b>Case and Bracelet Refinishing</b> Instructor: Tom Schomaker, CMW21 AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$1,350</b></p>	<p>Polishing a case today requires many skills, and today's consumer has high expectations. This class includes concepts and hands-on training in the following areas: metallurgy, lathe finishes, modern variable-speed polishers, polishing techniques ensuring case shape integrity, and many more.</p>
<p><b>August 19-23</b></p>	<p>WATCH 100: <b>Introduction to Watchmaking</b> Instructor: Tom Schomaker, CMW21 AWCI Headquarters, Harrison, Ohio</p>	<p><b>\$1,095</b></p>	<p>A survey course for the new or prospective watchmaker covering the basic skills and techniques used by the modern watchmaker. This class is perfect for anyone thinking about entering the profession of watchmaking or for the individual who just wants to gain a better appreciation for the art of watchmaking.</p>



For additional details about specific courses in comprehensive syllabi form, including complete tool lists, visit: [www.awci.com/classes](http://www.awci.com/classes) or contact the Education Director, Jason Champion, CW21, at 866-FOR-AWCI (367-2924). For additional calendar events visit: [www.awci.com/calendar](http://www.awci.com/calendar).



September  
4-6

WATCH 102:  
**Watchmaking Theory**  
Instructor: Tom Schomaker, CMW21  
AWCI Headquarters, Harrison, Ohio

\$595

This course explains the inner workings of a watch and is a must for anyone considering taking the CW21. It allows you to understand not only functional issues, but theoretical ones as well. Lubrication, isochronism, automatic systems, calendar systems, and much more will be explained. Testing will be done at the end of each section covered and answers will be reviewed.

September  
16-20

WATCH 220:  
**Modern Mechanical Chronograph**  
Instructor: Tom Schomaker, CMW21  
AWCI Headquarters, Harrison, Ohio

\$1,095

Students will learn all the basics of the modern mechanical chronographs that are most prevalent in today's market as well as gain a profound understanding of how chronograph watches operate. Prerequisites: It is beneficial for the student to have a minimum of 3 years' experience in manual and/or automatic watch repair; own *The Theory of Horology* and read chapter 11.

September 30 -  
October 4

WATCH 200:  
**Modern Automatic Watches**  
Instructor: Tom Schomaker, CMW21  
AWCI Headquarters, Harrison, Ohio

\$1,095

This course teaches the student all the fundamentals of modern mechanical automatic watch repair that are most prevalent in today's market. The student will learn how to perform the various diagnostics in evaluating the condition of the various components, cleaning, assembling, adjustments, dialing, and casing. Prerequisites: At least 3 years in mechanical watch repair, WATCH 190: 21st-Century Watchmaking Standards, read pages 169-188 of *The Theory of Horology*.

October  
14-18

WATCH 350:  
**Tool Making For Watchmakers & Clockmakers: The Watchmaker's Lathe II**  
Instructor: Tom Schomaker, CMW21  
AWCI Headquarters, Harrison, Ohio

\$1,095

A continuation of Watchmaker's Lathe I, this class teaches the student the necessary knowledge and hand skills to manufacture various parts in steel that will be functional in a mechanical watch, e.g., the winding stem. Prerequisite: Watch 250: Essential Micromechanics—The Watchmaker's Lathe I or instructor approval.

October  
21-25

CLOCK 120:  
**Introduction to Clocks**  
Instructor: Ken De Lucca  
AWCI Headquarters, Harrison, Ohio

\$595

Build your skills as a clockmaker with this 3-day class. This course covers the basics of the American-style time/strike movement including disassembly, reassembly, common issues, beat adjustments, synchronization of the strike train, and more.

November  
4-8

WATCH 100:  
**Introduction to Watchmaking**  
Instructor: Tom Schomaker, CMW21  
AWCI Headquarters, Harrison, Ohio

\$1,095

A survey course for the new or prospective watchmaker covering the basic skills and techniques used by the modern watchmaker. This class is perfect for anyone thinking about entering the profession of watchmaking or for the individual who just wants to gain a better appreciation for the art of watchmaking.

“After getting my certification, I hold myself to a higher standard. It raised my professionalism to another level.”



Scott Walters, CW21

## Having your CW21

- Demonstrates your high level of expertise to your customers.
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- Enhances the brands you carry and promotes both your reputation and integrity.

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**Build your very own watch!**

Build a Watch is not only great for collectors and watch enthusiasts, it's also perfect for sales staff and customer service specialists. Why not have your staff join us for a day of watchmaking to learn more about the products they sell, how you perform a quality service, and what it takes to properly complete a repair?

**May  
25**

**Build a Watch**

\$1,245



**Salt Lake City, UT**

**May 31 -  
June 3**

**JCK Show/Mobile Classroom Tour**  
(See page 32 for more details)



**Las Vegas, NV**

**June  
21-22**

**Build a Watch**

\$1,245



**Winston Salem, NC**

**July  
1**

**Build a Watch**

\$1,245



**Boston, MA**

**August  
9-12**

**Atlanta Jewelry Show**



**Atlanta, GA**

**October  
25-27**

**Florida Watchmakers Association  
Annual Convention**



**Tampa, FL**

**YOU PICK  
THE DATE**

**Build a Watch**

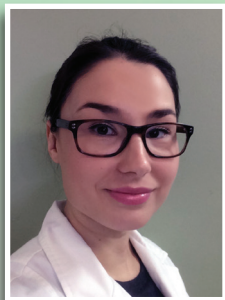
**Your City!**



For more information go to: [www.awci.com/buildawatch](http://www.awci.com/buildawatch)

To find out how you can bring one of these events to your store,  
contact the Education Director, Jason Champion, CW21, at [education@awci.com](mailto:education@awci.com)





“I left the quartz course with skills I could immediately apply at work. In a couple days we covered theory, servicing basic quartz movements to chronographs, and testing procedures. Understanding the working principles behind these movements helped me improve my diagnostic skills as well. I would definitely recommend attending this course!”

~Judit Katona

## **TIME IS MONEY**

Increase the quality and quantity of your work and become more profitable with classes from the American Watchmakers-Clockmakers Institute. We offer refresher and advanced courses designed to help you sharpen your skill set and stay current with the latest service techniques.

## **ARE YOU CERTIFIED?**

Invest in yourself by taking your skills to the next level, and becoming a Certified Watchmaker (CW21). Becoming certified demonstrates your high level of expertise to your customers, elevates your store above the competition, and enhances the brands you carry. Start the process today by registering for our 21st Century Standards Course.

Not sure which course to sign up for? Log onto our website and fill out our experience questionnaire or contact us so we can help you find the best course suited to your skill level, expertise, and interests.

Email or call our Education Director, Jason Champion, CW21, today for more information: [education@awci.com](mailto:education@awci.com)  
Phone: 1-866-367-2924, ext 303



# GEAR UP TO GET CERTIFIED BECAUSE THE CC21 EXAM IS BACK!

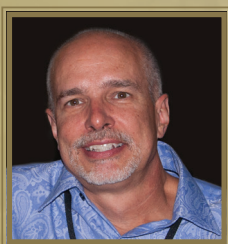
## \$1,150



Clockmakers, after months of preparation, the Certified Clockmaker for the 21st Century Exam is back online. Don't miss this opportunity to show your customers that your work has been approved by the leaders in your industry. This certification will set you apart from your competition and let your customers know that you are dedicated to delivering quality craftsmanship.

Best of all, this exam can be completed in your own workshop. After registering and coordinating the details of your exam, you'll receive each of the components of the exam by mail from AWCI's Clock Director, Mike Carpenter, CC21. Once you've completed them, you'll return them to him by mail. He'll assist you in finding a mentor to help administer parts of the exam and guide you through the process.

To get more information or to start the process, contact our education director, Jason Champion, today at 1-866-367-2924, ext. 303 or [certification@awci.com](mailto:certification@awci.com).



**“Receiving my Clockmaker’s Certification was  
one of the proudest moments of my life.”**

-Michael Gainey, CC21

# Clockmaking Education Is Back at AWCI: Introduction to Clocks

By Donna Hardy



**Instructor Ken De Lucca**

In March, Pennsylvania-based clockmaker Ken De Lucca visited AWCI headquarters to teach Introduction to Clocks. In this interview with De Lucca, he tells us about the class, the students, and the future of clockmaking education at AWCI.

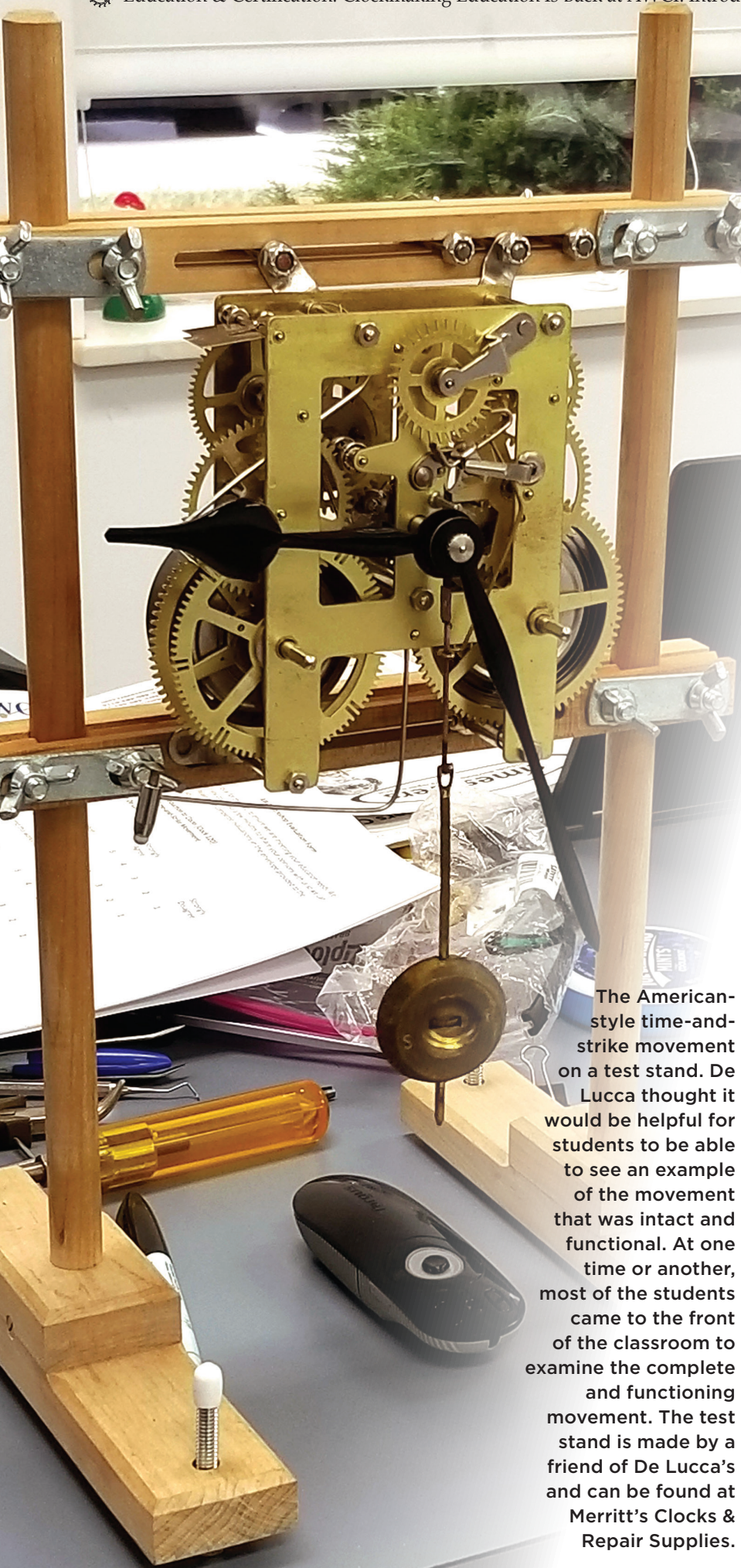
**This clockmaking class was for beginners and was to include the basics of the American-style time-and-strike movement including disassembly, reassembly, common issues, beat**

**adjustments, synchronization of the strike train, and more. Did you get to cover everything you wanted?**

It was surely a challenge to get everything into the class I wanted to. Besides the items listed above, we also touched upon lubrication, which was necessary to run the movements overnight. Not each clock was running in the morning, so we also had a wonderful, built-in troubleshooting experience! I would like to see the students tear the clock down another time or two; this is definitely when the saying “practice makes perfect” really comes into play. Surprisingly, there was very little grumbling when I examined a functioning movement and said, “Great, now tear it down and do it again!” I was especially pleased no one threw anything at me.



**Emmanuel-Sathya Gray, left, reassembles the American style time-and-strike movement while Mark Ott watches.**



The American-style time-and-strike movement on a test stand. De Lucca thought it would be helpful for students to be able to see an example of the movement that was intact and functional. At one time or another, most of the students came to the front of the classroom to examine the complete and functioning movement. The test stand is made by a friend of De Lucca's and can be found at Merritt's Clocks & Repair Supplies.

I think the greatest challenge for all the students was the calculation of beats per minute and pendulum length. I asked the students to do tooth counts while the time train was apart. Later, we did some calculations finding the overall pendulum length. It could be that students reached the saturation point, but I think this section was quite a challenge, especially when everything else was so new.

On a final note, we discussed the concept of test running the clock. Few clockmakers restore a clock without "testing" it to be sure it performs well for the owner. We discussed the potential length of time one should test run the clock movement to be sure all is well. I think many of the students felt we could have lengthened the course to cover each topic a bit more and allow more time for their understanding to sink in. But, with this being the introduction—you have to start somewhere!

### What was the skill level of the students?

Of the four students in attendance there was quite a range in skill level as well as age. One young man (under 20 years old) had recently completed the Build a Clock class and was very motivated to learn more about clocks. There were also a father and son in the class, who enjoyed the learning experience together. There was also someone who had taken a watch class, but realized just how many clocks are out there needing repair and is thinking about this other side of horology. All in all, they kept me jumping from one workbench to another, answering questions and preparing for the next topic to cover. They were a nice group of people who worked very well together.



Ken De Lucca “fine tunes” a clock movement for Edward Ott.

### **What were the students’ goals in taking the class?**

I feel the goals of all of the students were met by the class. I received many comments from the students and they were quick to voice what they wanted to know and what they were looking for. For example, this group was ready to determine the date of the next course, a course more centered upon repairs. With support, there may be three or four new clockmakers in waiting.

### **What were some of the highlights of the three days of instruction?**

To me, as a long-time laboratory-based instructor (mostly electronics and related), the greatest highlight was seeing an American style time-and-strike movement completely disassembled, and then reassembled by someone who had never done that before!

The looks on their faces said it all. I was proud for them, and after the shock wore off, I think they all sensed the accomplishment of the complete disassembly (into pieces-parts) back into a functioning device. Also equally important was the fact that each student remained interested in clockmaking. I didn’t scare anyone away. That made me feel good.

### **How was it teaching in the AWCI clock classroom?**

I was very pleased to be in the clock classroom. Over my many years of teaching, I have felt at times that I have been teaching out of a closet! Some laboratories were that tiny. But here at AWCI, the room is spacious and each student has plenty of room to dig into the work at hand. We also made use of the watch classroom. We used the document camera to examine worn pivot holes. The workbenches were well set up

and we had plenty of lighting. I think the students adjusted very easily to the room. It's important that the student has a positive experience—especially here, in the introductory course to clocks. I would like to see that classroom used much more often. And after working with these students, they would like that too.

### Is there anything else you'd like to add?

I feel very strongly that it was important to have a clock class, since one had not been taught for a while. Long-time AWCI members will remember Laurie Penman being on-site to teach the clock classes. It is now time to move the clock program ahead with the help of others who can educate the new students coming to AWCI to develop their skills in clock restoration. I was pleased to be one small part of the group that is trying to move clock education forward. The need is there and we, as an organization, must respond.

Ken De Lucca has taught technical, laboratory-based courses for over 34 years. A 19-year member of the NAWCC, he graduated from the School of Horology in 2007. Ken spent the academic year of 2015-2016 at West Dean College in the United Kingdom in the Clock Conservation Program. He is employed part-time in the clock department at Zimmerman Jewelers in York, Pennsylvania. His modest clock repair business is The Clockmender. With his retirement from full-time teaching on the horizon, he hopes to spend more time in horological pursuits.

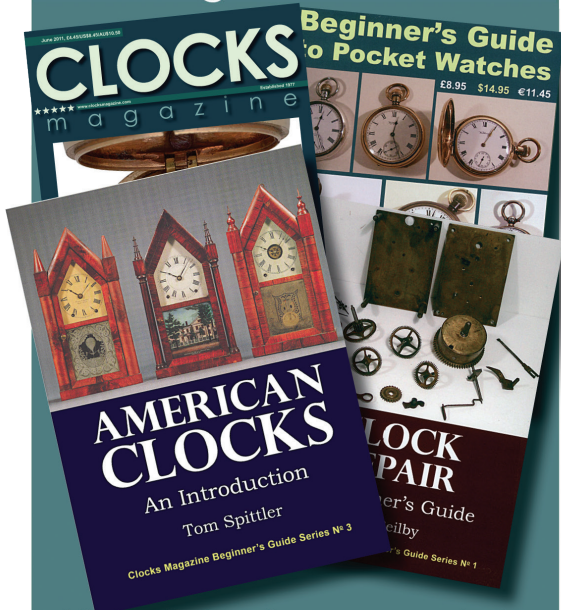
**Donna Hardy** is the managing editor of the *Horological Times*.

Mark Ott examines the strike train of the clock movement.



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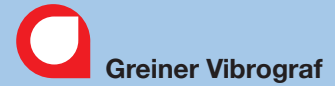
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# Bezel-Set Jewel Replacement, Part 1

By Dale Ladue, CMW21

As you can see, the movement shown in Figure 1 certainly needs some attention! I believe many watchmakers have seen antique or vintage watches in similar conditions. Often, after dirt, dust, and corrosion are removed, we are amazed that the movement's parts have remained in exceptionally good condition. We are also amazed at the challenge and inherent complications involved in a repair. This article focuses on the bezel-set jewel replacement processes used for a typical late-1800s Swiss lever escapement movement.



Fig. 1

When I removed the balance bridge cap jewel from the bridge, I was surprised to find that a small square chip of steel, Figure 2, had been placed over the balance jewel, in effect acting as a cap for the pivot jewel. Viewed from the top, the chip revealed what appeared to be a dimple worn into it by the balance pivot. Apparently, the chip had been used for some time and when it became worn, it had simply been flipped over. When I turned the chip over, I saw another dimple with a rust stain circling it. The balance jewel certainly was not the original and was set excessively low in its damaged bezel setting. This necessitated the steel chip to correct the excessive endshake. I pushed the balance jewel out of its setting from the underside (jewel seat side) of the balance bridge, using a jewel pusher and a hole stump, Figure 3. An image of the damaged jewel setting is not shown at this time. The replacement of the balance jewel will be addressed later in this article.

The upper balance cap jewel was cracked. The damaged cap jewel appeared to be the original, considering the pristine condition of the cap jewel plate's bezel, Figure 2. I pushed out the cap jewel in the same manner as the balance jewel. However, I used a small-diameter pusher from the top side (jewel seat side) of the cap plate, Figure 3. In my experience, most cracked bezel-set jewels will be reduced to pieces when pushed out, but rarely does the bezel become damaged as shown in Figure 4.

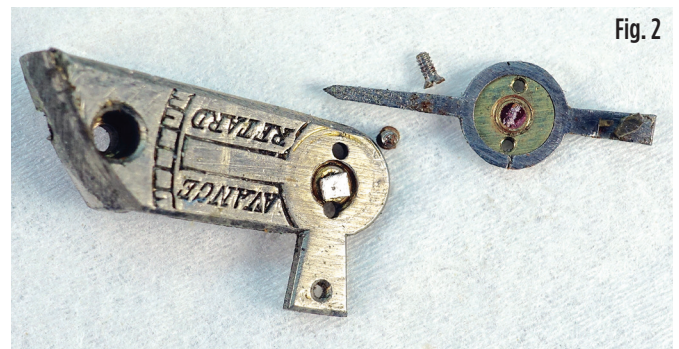


Fig. 2



Fig. 3



Fig. 4

For well over 30 years, I have used this vintage set of hand jewellery tools, Figure 5, setting countless plate, balance, and cap jewels. The tools were made in Germany and branded with the manufacturer's logo CWZ. Each tool has one end for raising (opening) the bezel to accept a new jewel and another end for closing the bezel, securing the new jewel in its seat, Figure 6. Each tool is adjustable throughout a range of bezel-diameter sizes. The bezel-raiser end is polished spring steel that is split into halves with a flat end cylinder tip 3mm or 4mm in length. One tine is threaded to accept an adjusting screw and knurled knob that when turned clockwise will push the opposite tine out, effectively increasing the tip's diameter.

The bezel-raising tool that I selected for the cap-jewel plate was adjusted to fit inside the un-raised bezel setting recess, Figure 7. The tip's end seated squarely on the jewel seat shoulder and did not project completely through the setting. Slightly tightening (clockwise) the adjusting screw expanded the tip and put pressure on the thin bezel, raising it up. Gently rotating the tip "rounded up" the bezel. By carefully repeating the procedure a few times, a

seat was insured for a cap jewel of the proper diameter. I find that thin jewel bezels are somewhat work hardened and easily split or crack. Slow and gradual opening of these bezels is the best measure against damage. It takes very little pressure to gently raise these thin bezels, and this particular cap jewel plate was held in place and prevented from rotating by soft tissue paper on my bench mat with the assistance of a brass tweezer. If the cap plate had rotated easily, I would have placed it on a small section of double-sided cellophane tape instead of the soft tissue. A less convenient but more secure technique would be to use a jewelry or step collet and perform this operation on the lathe.

The closing end of the jewelry tool, Figure 8, is concave and adjustable for bezels of various diameters. It also differs from the raising end in that turning the adjusting screw knob clockwise decreases the effective diameter. Opposite to the raising end, the adjusting-knob-side tine has a clearance hole, and the opposing tine is threaded. A stabilizing pin set midway between the tip and the adjusting screw helps prevent any misalignment while manually rotating the tool. The tines were drawn inward to allow the



Fig. 5



Fig. 7



Fig. 6



Fig. 8

concave surface to rest on the raised bezel. I pressed the tool down gently and rotated it, which forced the bezel onto the edge of the cap jewel, Figure 9. Then, I rubbed a polished steel, round-tipped burnishing tool around the bezel to assure a tight fit, Figure 10.

As I was replacing the original broken escape wheel bridge plate jewel in Figure 11, it became evident that a slightly more difficult jewel replacement technique would be needed.

I used the same procedure depicted above to remove the broken escape-wheel plate jewel from its setting. To determine the pivot-hole diameter of the replacement jewel, I measured the upper escape wheel pivot, which was in remarkably good condition. I used a bezel-raising tool to open the bezel, as previously described. Then, I measured the tool's cylindrical tip across its widest point, which provided the necessary diameter of the new jewel.

Friction jewels have robust, straight-walled edges that furnish the strength and area for a tight friction grip, .01mm larger than plate hole diameter. On the other hand, bezel-set jewels have a beveled contour to their edges and are placed in a recess that has a diameter equal to the jewel's diameter. They are held fast under pressure of thin metal bezels pressed over and around the jewels' beveled edges. The minimal edge-surface area does not allow safe and secure friction fitting of antique or vintage jewels designed for bezel setting. However, you can set a friction jewel in a bezel setting. Friction jewels are thicker by design than bezel-set jewels. Cross-sectional illustrations of friction- and bezel-set jewels can be referenced in Henry Fried's *Bench Practices for Watchmakers and Clockmakers* and in George Daniels's *Watchmaking*.

I selected a friction jewel that matched the previously measured diameter and had an appropriate pivot-hole size that provided approximately .01mm sideshake. I quickly determined this by placing the jewel on the pivot and observing an approximate 2°-5° degree tilt. To allow the bezel to hold the jewel in place, I had to bevel the jewel's circumference. Using a brass cement chuck in the watchmaker's lathe, I turned its face true. The flame of an alcohol lamp was applied to the brass until a small dollop of flaked or stick shellac stuck and melted onto the face. I inserted a pointed pegwood stick in the jewel's pivot hole, securing the jewel. While resting the pegwood on the T-rest, I applied the jewel to the melt as I slowly spun the lathe. The jewel was pressed flat against the true surface and brought to center as

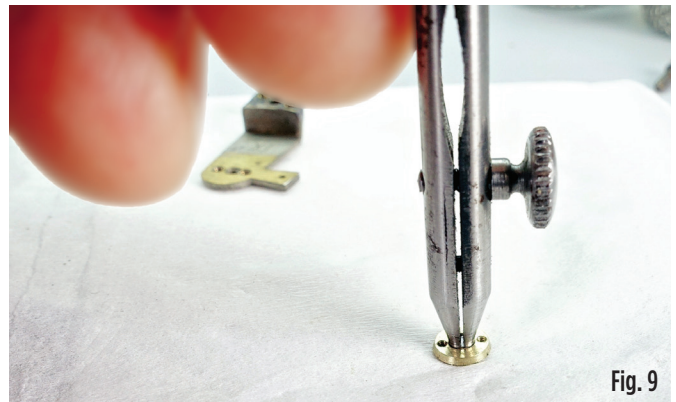


Fig. 9

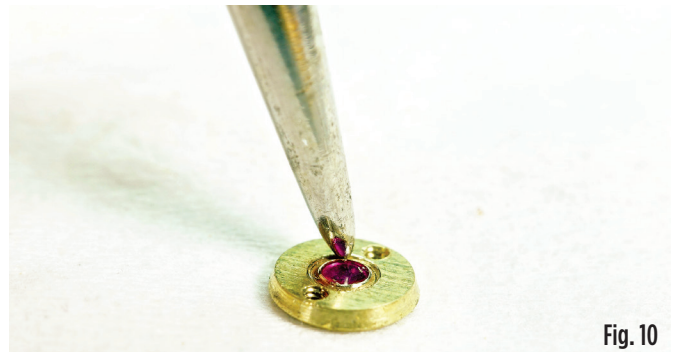


Fig. 10



Fig. 11

the melt cooled. When the melted shellac was fully cooled, the jewel was cemented firmly in place, Figure 12. Then, I carefully turned away the shellac, exposing the jewel's flat edge, Figure 13. Applying the tip of an extra-fine 600-grit diamond lap to the exposed edge as the jewel was spun, Figure 14, created an approximately 45° bevel, Figure 15. Warming the brass as before re-melted the shellac so that I was able to remove the jewel. Then, I soaked it in alcohol until all traces of shellac were dissolved, Figure 16. I placed the new escape-wheel jewel in its setting and closed the bezel in around the beveled edge of the jewel.

In a previous repair, the escape-wheel bridge base sides had been peened closest to the wheel to elevate the bridge and increase endshake, which raised burrs. I have seen this inappropriate practice applied in the past. Proper endshake was achieved after the burrs were filed flat, Figures 17 and 18.

In Part 2, I shall address the even more complicated replacement of the balance-bridge jewel in its damaged and unusable bezel setting.

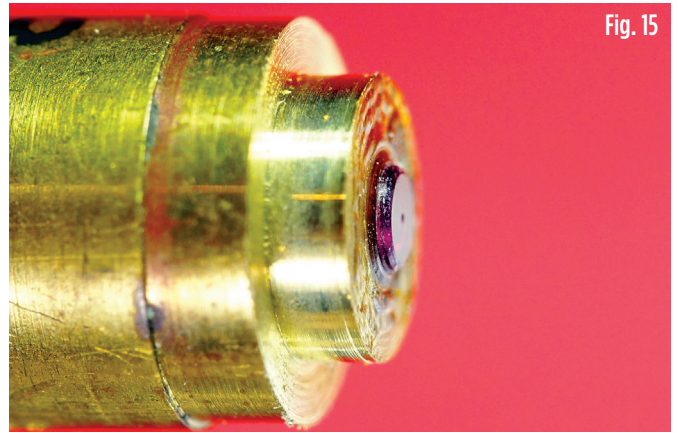


Fig. 15



Fig. 12



Fig. 16

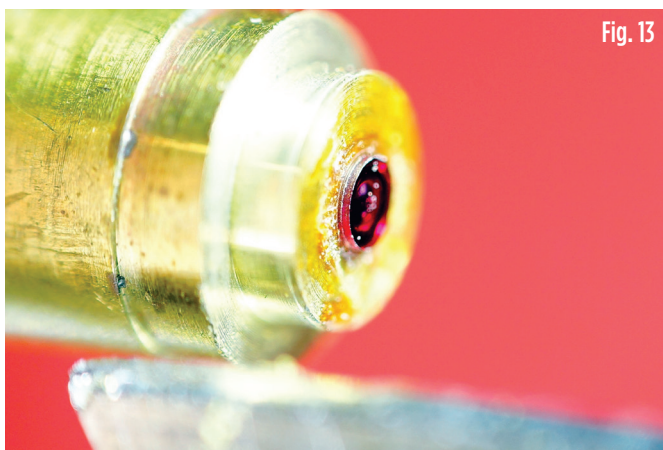


Fig. 13



Fig. 17

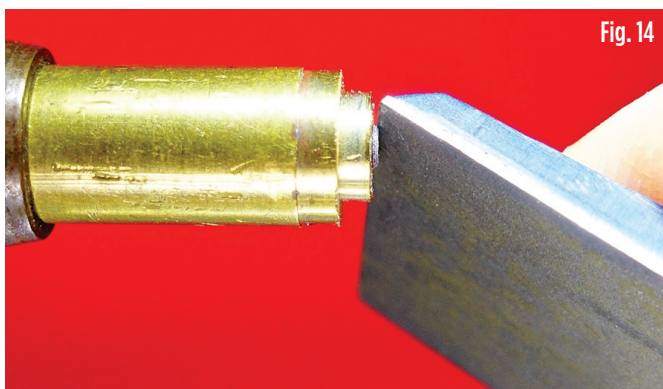


Fig. 14



Fig. 18

**Dale LaDue** graduated from Gem City College School of Horology and The University of Illinois Micro Precision Technology Project with AWI Certification. He has served the Rochester, New York, area as an independent retail and trade watchmaker/clockmaker for 48 years.

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# Tom's Tips

By Tom Schomaker, CMW21

## The Many Uses for a Plexi Stick or Watchmaker's Pick

There are several beneficial uses for a plexi stick, also sometimes referred to as a watchmaker's pick, when servicing a watch. The plexi stick should have one end shaped like a cone, so that it has a point. The other end of the stick should be shaped like a wedge, resembling a screwdriver blade. Plexi sticks should be well maintained. Make sure the tips of a stick are clean before use. Always sharpen plexi stick tips before use. Suitable materials for a plexi stick are plexiglass or acrylic rod, brass, nickel, or plastic, Figure 1. Plexi sticks need to be a softer material than the bridges, which are often plated brass. You can use the side of a grinding wheel or even an old crank-style pencil sharpener to shape the tip, Figures 2 and 3.

Fig. 1. Plexi sticks made of various materials.

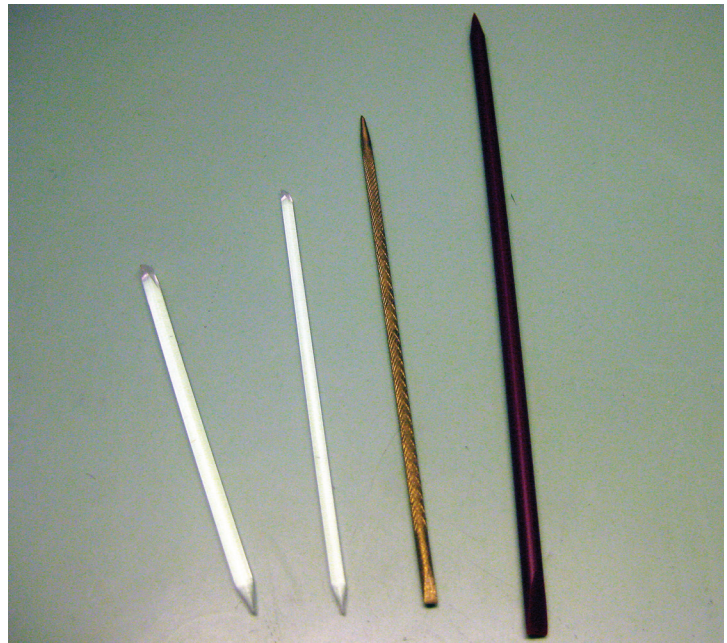


Fig. 2. An old-fashioned hand-turned pencil sharpener can be used to sharpen plexi sticks.



Fig. 3. The tip of a plexi stick sharpened to a point.

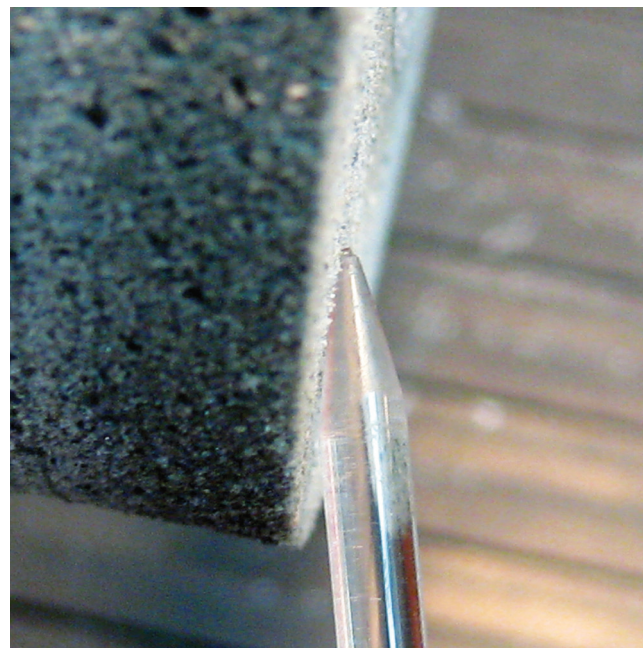


Fig. 4. Blocking the ratchet wheel.



**Remove excess glue.** Use a plexi stick to remove excess glue from glued-in crystals. A stick doesn't scratch the watch case.

**Block the ratchet wheel.** Use a plexi stick to block the ratchet wheel. This allows you to tighten the ratchet wheel screw while immobilizing the barrel arbor, Figure 4.

**Hold a spring.** You can also use the stick to hold down one end of a spring while you are positioning the other end to an adjacent part, Figure 5.

**Adjust the beat error.** Use a plexi stick to adjust the beat error in a watch that has a movable stud holder. Use the pointed end of the stick to shift the stud holder in the direction needed to decrease the beat error. You can do this while the movement or watch is on the timing machine. With practice, you can make very fine adjustments, but be careful of the tip and its proximity to the hairspring, Figure 6.

**Position a calendar disk.** Use a plexi stick to position a calendar disk into place with less chance of damaging the printing. You should use a very clean blade end of the stick. Take care that there are no burrs or damage to the stick. Ensure that you use the the flat side of the pick, maintaining a larger contact area to avoid sharp edges scratching or bending the disc, Figure 7.

Fig. 5. Use a plexi stick to hold down a spring.

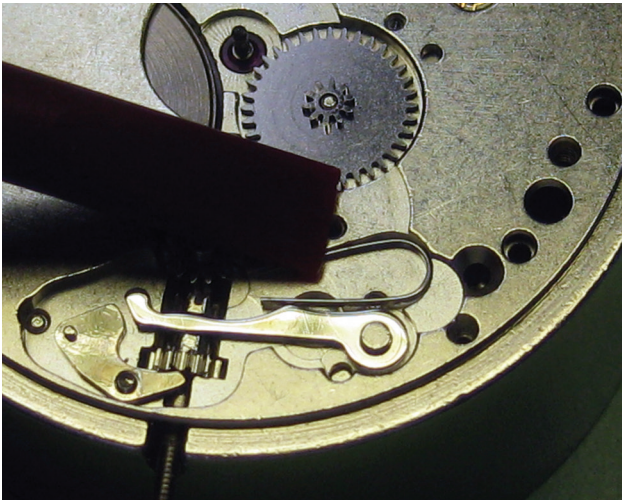
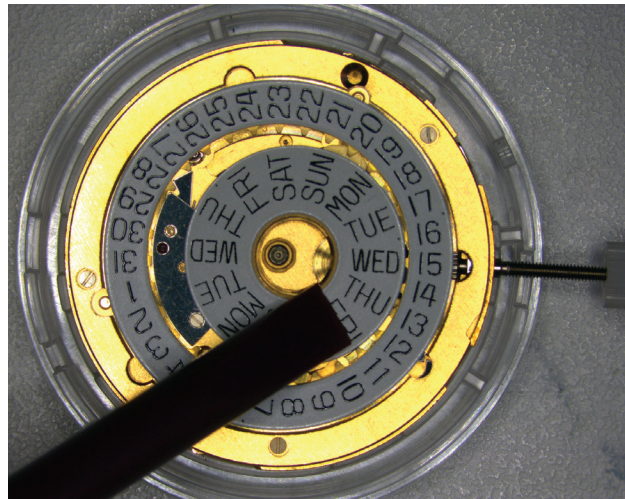


Fig. 6. Use a plexi stick to adjust beat error.



Fig. 7. A plexi stick aids in placing a calendar disc.



**Check barrel arbor endshake.** Use a plexi stick to check a barrel arbor endshake within the barrel. Screw the pointed end of a stick into the barrel arbor a quarter-turn clockwise. While holding the barrel stable, gently pull on the plexi stick. Make sure you always use finger cots. Holding the barrel in this method heightens sensitivity, allowing you to assess even the smallest amount of movement, Figure 8.

**Flex a barrel cover to flatten it.** Place the pointed end of the plexi stick in the barrel arbor hole. You must make sure the stick is straight and perpendicular to the cover. Apply pressure while the cover is supported on the barrel closer's concave side. You can push the plexi stick on the exterior to reduce

endshake, and you can push on the interior to increase endshake. You can follow the same procedure for the barrel drum, Figures 9-10.

**Check depthing adjustment.** Use a plexi stick to check the depthing adjustment between the chronograph wheel and the oscillating pinion of the ETA 7750 movement. With the chronograph on, use the plexi stick to apply pressure to the back side of the clutch. Hold the clutch against the eccentric to see if the center chronograph wheel stops. This test will help determine if the depthing adjustment between the center chronograph wheel and the oscillating pinion is truly safe, Figure 11.

Fig. 8. The point of the conical side of the plexi stick is used to check the barrel arbor endshake.

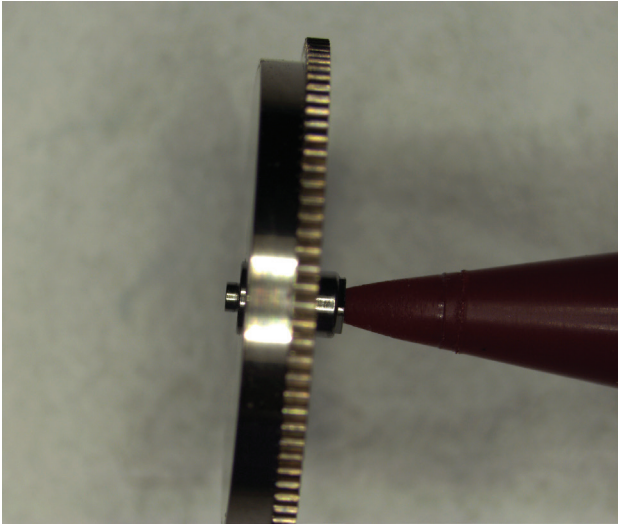


Fig. 9. Use the concave side of a barrel closer and press the cone end of the plexi stick into the barrel arbor hole, deflecting the cover as needed to reduce or increase endshake.

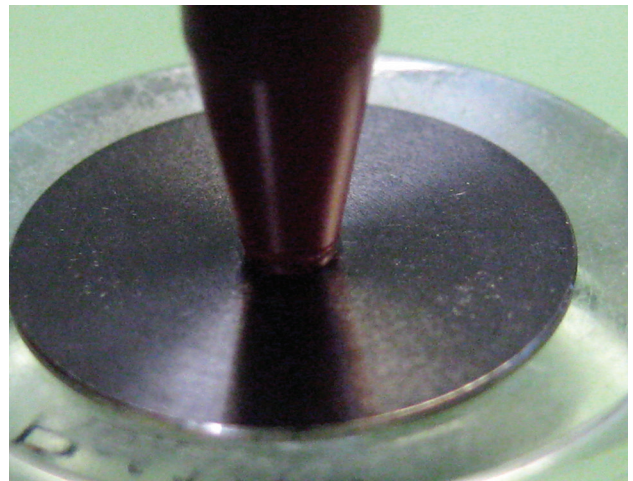


Fig. 10. The plexi stick should be straight and perpendicular to the barrel cover.

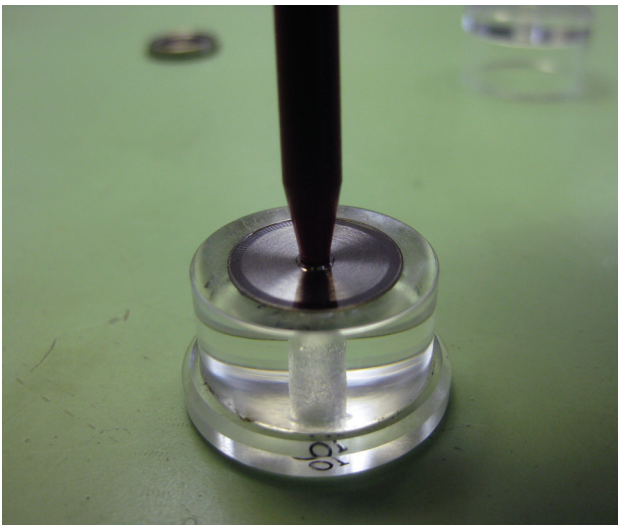
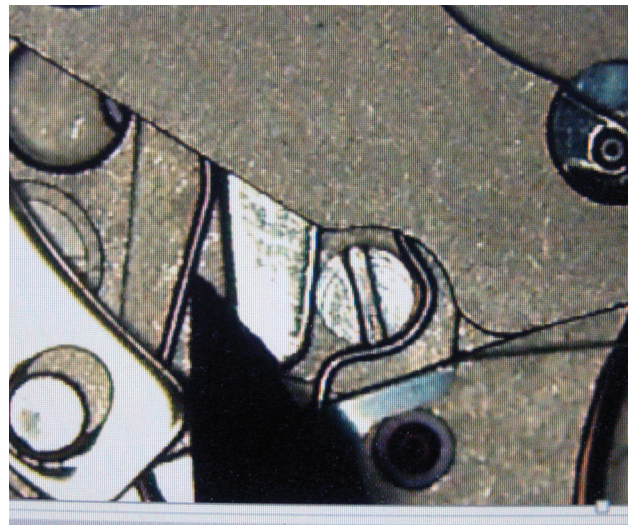


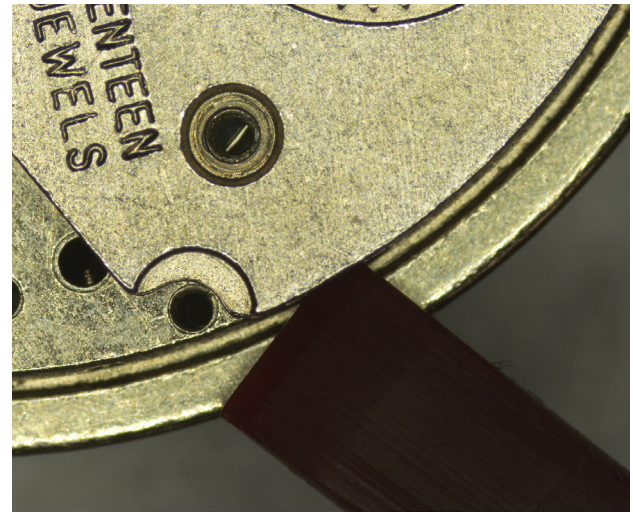
Fig. 11. Use the plexi stick to apply pressure to the back side of the clutch.



**Remove bridges.** You can remove bridges without scratching them by inserting the blade end of the plexi stick into the bridge cutouts, Figure 12.

**Adjust balance endshake.** Use plexi sticks to adjust balance endshake. First, check that all the jewels and settings are correct and that you do, in fact, need to bend the bridge. With the balance complete removed, reattach the balance bridge to the movement. Secure it with its screw. You can lift the bridge with the plexi stick to add more endshake. You will need an additional stick, or a staking tool punch, to provide a fulcrum to raise the leverage point for the stick. You can decrease the endshake by applying pressure to the top of the bridge in the direction of the main plate with the blade end of the plexi stick. The pressure will flex the bridge. Once the bridge has been flexed in the appropriate direction, you will place the balance (still unconnected) onto the main plate and reattach and completely screw down the balance bridge to check

Fig. 12. Insert the blade end of a plexi stick into bridge cutouts for easy removal.



the endshake. Once the correct endshake is achieved, you can reconnect the stud and center the hairspring, Figures 13 and 14.

Fig. 13. Apply pressure to the top of the bridge to decrease endshake.

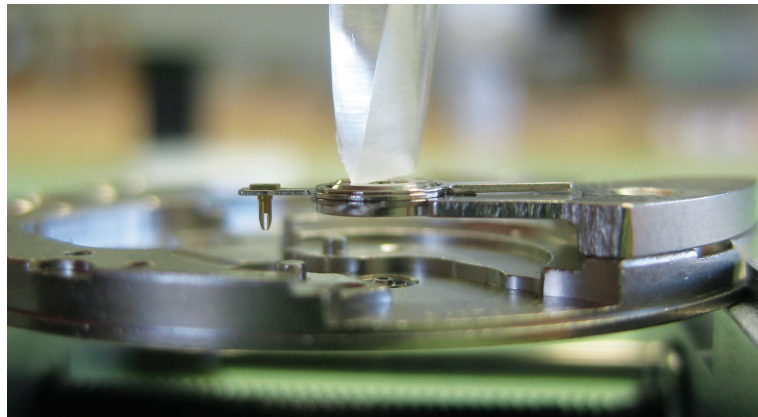
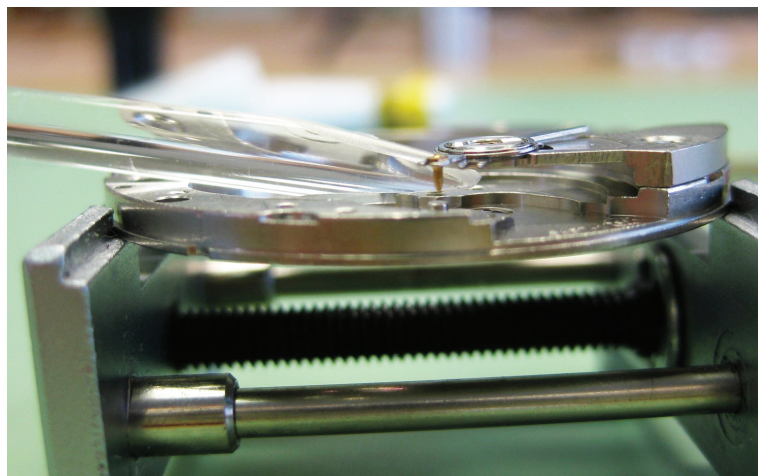


Fig. 14. Lift the bridge to add endshake. Ensure you are lifting the bridge and not the regulator or stud holder.



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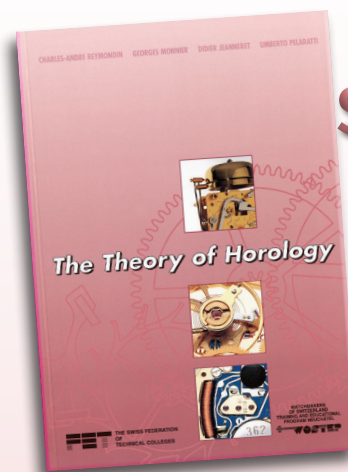
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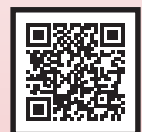
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# The EPHJ-EPMT-SMT Trade Show

By Kathy Ortt

**T**he EPHJ-EPMT-SMT trade show for the high-precision industry runs from June 18-21, 2019, at Palexpo in Geneva, Switzerland. Organizers of the trade show say they are on target to welcome 800 exhibitors and 20,000 manufacturing professionals. Participants come from the main high-precision industries of watchmaking and jewelry, micro technologies, and medical technologies.

The EPHJ part of the trade show is for the watchmaking and jewelry trades. Participants are involved in a variety of areas: training, creation, design, CAD, raw materials, machinery, tooling, manufacturing, microtechnology, control devices, components, packaging, displays, management, marketing, communication, consulting, and services. EPMT welcomes Swiss and international companies involved in micro and nanotechnology. Application areas include watchmaking, aeronautics, automotive, metrology, optics/photonics, automation, and robotics. SMT

serves experts from the medical device industry and all trades involved in the production line of medical equipment, from research and development to subcontracting.

Though medical technology and watchmaking appear to have little in common, EPHJ-EPMT-SMT allows experts from across the fields to come together and share ideas. In 2017, organizers of the EPHJ-EPMT-SMT trade show joined with the Fondation Inartis to launch a two-stage challenge, the world's first Watch MedTech Innovation Challenge. In the first step, ideas were submitted to a jury, chaired by Benoît Dubuis of Fondation Inartis. The nominated project teams received a grant of CHF 5,000 (about \$5,000) for an initial development of their ideas. In 2018, four nominated project finalists were announced: Sy&Se Microsystem Technologies, Kejako SA, Positive Coating SA, and Swiss Motion Technologies SA.



The 2019 EPHJ-EPMT-SMT is expected to draw large crowds, as in this photo of the 2017 trade show.

A panel at the 2017  
EPHJ-EPMT-SMT.



From the four entrants, two had suggested applications in the medical field. Sy&Se Microsystem Technologies and Positive Coating SA had projects that could possibly be applied to the watchmaking field as well. Sy&Se Microsystem Technologies proposed an alternative to glue, called impulse current bonding (ICB) technology, which produces exceptionally strong, leak-tight assemblies. Positive Coating SA developed a technology called atomic layer deposition, which allows vacuum deposition of nanometer-thick layers of metal oxides and has many possible uses.

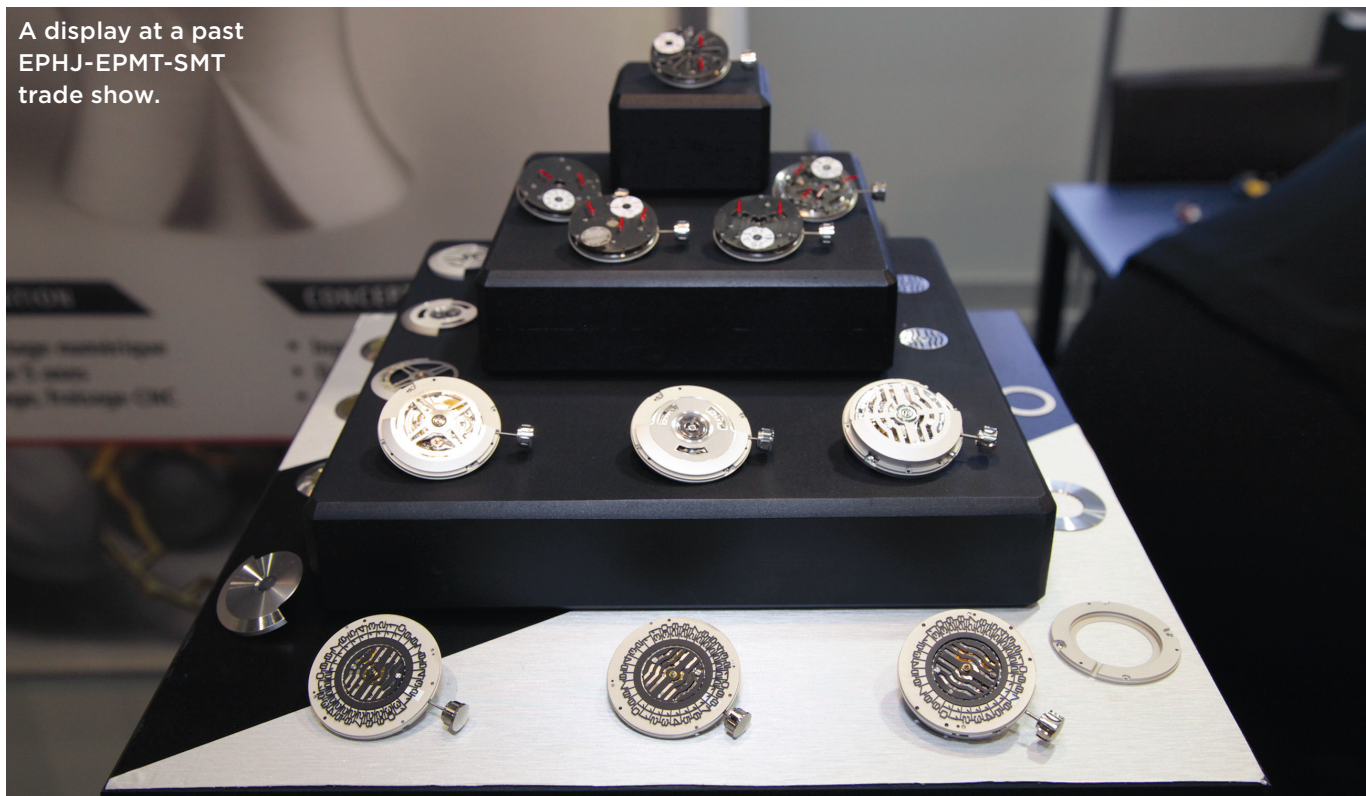
The winning project will be announced prior to the 2019 EPHJ-EPMT-SMT trade show.

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Photos courtesy of EPHJ-EPMT-SMT

A display at a past  
EPHJ-EPMT-SMT  
trade show.



# In Summary

By Kathy Ortt

## Auction of George Daniels's Grand Complication Pocket Watch

Coming up for auction is a marvelous and rare timepiece by a highly revered watchmaker. The George Daniels Grand Complication Pocket Watch will be auctioned in the Phillips Geneva Watch Auction: Nine. The auction will be May 11 and 12 in Geneva, Switzerland. George Daniels personally used this hand-

made pocket watch and never sold it during his lifetime. The Grand Complication watch has an instantaneous perpetual calendar with retrograde date and minute repeater of Daniels's design and uses a co-axial escapement.

According to Roger Smith, "This magnificent Grand Complication ranks as one of George Daniels's seminal works. It is the second-to-last pocket watch he completed and therefore has the additional renown of housing George's greatest contribution to horology, the aforementioned co-axial escapement." In his lifetime, George Daniels made 23 pocket watches and four wristwatches. George Daniels died in 2011. The auction house expects the watch to bring in excess of \$1.5 million.



George Daniels's Grand Complication comes up for auction.

## Shinola Produces Mechanical Automatic Watch

In April 2019, Shinola began to sell their first mechanical automatic watches in their Runwell collection. The watches use a Swiss Sellita SW200-1 movement and come in 39.5mm or 45mm cases. The back of the watch has a small portal for viewing the Sellita oscillator. Price range for the Detroit-made watch is \$1,095-\$1,295.

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<https://usa.watchpro.com/shinolas-dream-of-making-mechanical-watches-in-detroit-comes-to-life/>

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[www.barrons.com/articles/rare-pocket-watch-to-hit-auction-01553115889](https://www.barrons.com/articles/rare-pocket-watch-to-hit-auction-01553115889)



Shinola's dream of making mechanical automatic watches in Detroit comes to life.

Photos courtesy of Phillips.

**W**elcome to Meet the Candidates, 2019. This annual feature gives each candidate for the AWCI Board of Directors the opportunity to introduce themselves to the membership prior to the annual mailing of the election brochure and ballot. These introductions are printed without editing as received from the candidates. This year there are four (4) candidates vying for a seat on the Board of Directors. Candidates are listed in alphabetical order. Two (2) directors will be elected, each for a three-year term. The two who receive the most votes will join the current AWCI board members in October and replace two outgoing board members.

During 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 two questions posed by the Board of Directors.

Ballots can be cast online or returned via the mail. A ballot return envelope will also be included in the mailing. The return envelope will be addressed to the certified public accountant responsible for counting the votes and certifying the outcome of the election. All ballots returned by mail must be in the ballot return envelope and postmarked 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, requests, or other information in the envelope.



## Andrew DeKeyser, CW21

I come from a line of tool and die makers, mechanical engineers and mechanics. My first exposure to micromechanics and horology was by accident as a sophomore in high school. My mentor, Arnold VanTiem, was heading the only high school program focused on watch and clock repair. He had a manual wind watch running under a camera that was projected onto a large TV. When Mr. VanTiem brought us around and he handed me the tiny machine that had been projected larger than life-I was hooked.

In 2005 I attended the Lititz Watch Technicum where my skill and passion for horology deepened. Upon graduation in 2007, I received WOSTEP Certification, AWCI CW21 Certification, the LWT Diploma, and the Rolex Watchmaker Award. I then apprenticed with Rolex for 10 months in Lititz. I decided to move to Burlingame, California to work for a jewelry store from 2008 to 2013. After growing my interpersonal skills I decided to start my own business repairing watches and making clocks in Sisters, Oregon under the roof of Beacham's Clock Company and the tutelage of Ed Beacham.

I am currently serving AWCI on the *Horological Times* Committee, as Chairman of the Watch Education and Standards Committee, member of the CW21 administration and assessment team and occasional author of an article in the *Horological Times*.

How do you make a watch? Just use precision. This is the most simple, yet difficult to implement answer that I often received from my first year instructor, Michael Pahl. The challenges facing AWCI are similarly simple to define but difficult to tackle. It is my desire to work with my colleagues to tackle these challenges and serve the professional horologist.

Mechanical things need love and attention to continue to function as they were designed- just like an organization of professionals.



## Charles L. Smith, CW21

I have been a watchmaker for 58 years, starting my career as an apprentice in 1961. I joined AWi, before it became AWCI, in the early 80s to network and keep abreast of the industry. In 1985 I served as President of the NC Watchmakers and remain a member. I currently serve on the Constitution and BiLaws Committee for AWCI. Education has been consistent throughout my career and I continue to attend AWCI classes and training offered by the major brands. In 2010, I received my CW21. My motto is that you are never too old to stop learning because in our profession, change is inevitable.

Today, I specialize in high end watch repair at my shop in Mocksville, NC. I pride myself in maintaining high standards and quality repair which I attribute to my having a large customer base. My greatest career achievement was my apprentice being accepted at Lititz Watch Technicum and being named their top student.



**Craig Stone, CW21**

The horological profession is something I did not consider until the job that I held at Marriot corporation as an accountant and auditor was about to be assumed by a computer. Growing up in a family that restores and modifies cars as a hobby it is not hard to understand the curiosity I have, towards anything mechanical. While doing some clock assembly with a partner in South Bend Indiana I decided to try and do some work on clock mechanisms. I found that I needed to get some additional education. I took the giant leap and left Marriott and went to Gem City

College. I graduated with diplomas in watchmaking and Clockmaking. I then went on to work at two different Official Rolex Jewelers for 10 years. I then took an even greater leap and started my own business. I am the owner of the Illinois Watch Company we are an independent watch repair shop and do a variety of work including vintage repeaters, antique pocket watches, chronographs, wrist watches and most modern watches. It has never been boring or a drag to come to work and see these little mechanical marvels in action.

In 2009 I started becoming active at AWCI taking multiple classes and gaining a huge respect for the quality of education and knowledge they are passing on the students there. I took and passed the CW21 exam in 2010. Since then I have had a thirst for the knowledge that I had started to obtain. I have taken multiple classes at AWCI. Took and passed the OWME1120 certification from Swatch group. I went to Switzerland and took Henrik Korpela’s restoration class at his school in Le Locle. I have interest in continuing the educational process of myself by assisting in creating new courses at AWCI.



**Scott Walters, CW21**

In 2003 I joined AWCI as a hobbyist. Tom Schomaker was teaching evening classes on introduction to watch repair that I attended. Tom’s passion for watchmaking, and encouragement helped me land my first job as a watchmaker. After working a few years, I was accepted into WOSTEP.

As my skills grew, the opportunities were unlimited. After graduating I apprenticed with Swiss Watchmakers & Co. in Miami, then worked at King Jewelers in Miami. While developing skills, I attended AWCI classes which helped me attain my CW21, and subsequently a phenomenal position at Schiffman’s Jewelers, Winston-Salem NC. So I went from knowing fundamentally nothing about watchmaking to being a full time bench watchmaker. And I’m still learning daily. In continuing my education at manufacturer’s requests I also attained the OWME certification and others.

My goal for the future of AWCI is to grow the membership through educational opportunities like the Build a Watch Class. While the mobile classroom travels, we can provide intense courses for bench watchmakers. There are many collector groups that want to understand what we do, and getting them to join AWCI is important. The few schools that are left should be marketed to more, so we gain them as members also. We are an educational institute wanting to promote what we do, so let’s do that. People are interested in what we do. We should encourage interest in horology at any skill level.

New members are just that, new. I was new, you were new. The mobile classroom is new. What a stellar opportunity to grow membership, while educating all levels of interest. Let’s not squander the opportunity to grow AWCI.

Thank you for the opportunity to serve, I would appreciate your vote to serve on the Board of Directors of AWCI.





# From the Workshop

By Jack Kurdzionak, CW21, FAWCI

## Baselworld 2019, the End or the Beginning?

As I have for the past 25 years, I arrived at the Messeplatz in Basel, Switzerland, to visit Baselworld on its opening day. That day, March 21, was unlike any other opening day that I could remember. There were so many obvious visible changes from last year that I was stunned. The familiar crowds were gone, as well as the two restaurant buildings that once occupied a prominent position directly in front of Hall 1. A quick glance across the street revealed a large construction site that was the former location of an entire city block with a hotel, shops, and restaurants. Figure 1 shows how the street looked in 2017, and Figure 2 shows the street in 2019. That was merely the beginning. Immediately upon passing through the turnstiles to Hall 1, visitors were met by four well-dressed greeters passing out the Baselworld

newspaper. After walking past the greeters, the view of the Hall was vastly different. Gone was the entire Swatch Group pavilion with its numerous brands and the Swatch Group restaurant where the sales force from Swatch Group entertained clients with meals and light snacks. Other brands including Movado Group, Ulysse Nardin, Corum, Maurice Lacroix, and Raymond Weil were gone. In their place were two large lounge areas. One for members of the press and the other for Baselworld visitors. Large portable gardens featuring a lush lawn with either a live tree or a flowering bush growing in the grass filled empty space formally occupied by various watch brands, Figure 3. There were several collectible cars on display, such as this classic Porsche, Figure 4. To further fill the space, there was a new restaurant in the area once occupied by the Swatch Group restaurant. In addition to the previously mentioned lounges and the gardens, there



Fig. 1. Buildings stood across the street from Baselworld in 2017.



Fig. 2. Current-day construction changing the corner across from Baselworld.



Fig. 3. Baselworld incorporated temporary interior gardens into their design.



Fig. 4. Collectible cars were displayed for attendees to enjoy.

was a large champagne bar and lounge on the main floor sponsored by Moët and Chandon, Figure 5. It was apparent that Baselworld had taken numerous extraordinary steps to utilize space that in past years would have commanded premium rent for the week from the various missing watch brands. Stepping into the perimeter of the Hall, a visitor was virtually alone in the cavernous corridors that once fronted displays from watch companies, Figure 6. Although they did their best to fill as much space as possible with only 30% of the vendors and about 50% of the visitors that were there in 2016, it was still distressing to see this year's exposition when contrasted to what it once was in the recent past.

A few of the major watch brands were still there to greet the guests as they entered the Hall. TAG Heuer, Patek Philippe, Chopard, and Zenith were on the right with Bulgari, Hublot, Rolex, and Tudor on the left. Breitling and Oris were with a few smaller brands scattered at the rear section of the Hall. The rumor, according to well-placed sources at Baselworld, was that this was the final year for Breitling at that venue. After exploring the main floor of Hall 1, I ventured upstairs to floor 1. Numerous smaller artisan brands occupied about 25% of the space on one end of that floor with a larger proportion of space in the middle section dedicated to jewelry displays rather than watch-related displays. At the opposite end of the floor there were large displays by Ronda, Bulova, Casio, Miyota, Citizen, and Tutima.

What I did find to be most interesting were the two separate booths utilized by Seiko. One was for the Seiko brand and the other was for Grand Seiko, which is now a separate brand. I spoke with a Seiko representative who took the time to explain the new Seiko strategy. The traditional Seiko brand will still be in the market with retail price points from about \$200 to \$2,000. These watches will be in both quartz and mechanical executions. Grand Seiko watches will be priced from approximately \$4,000 to \$50,000 and up. These watches, with sophisticated mechanical and quartz movements, will be crafted in dedicated workshops in Japan and marketed to discerning clients who want the best technology and highest quality possible. Grand Seiko is taking direct aim at several prestigious Swiss brands by producing these hand-finished pieces, often cased in karat gold or platinum, which Seiko says will rival or better the quality of almost any Swiss-made product.



Fig. 5. Moët and Chandon sponsored a champagne bar.



Fig. 6. Lonely corridors at Baselworld were the norm.

This is not Seiko's first venture into the higher price range. They gave it a try about 25 years ago with the Lassale brand, which was soon discontinued. This time they appear to be very serious about penetrating the luxury watch field. There has never been any question about Seiko's dedication to quality engineering and design of their products. The only question this writer has is, "Can they sell an expensive watch in the USA?" The marketplace will answer that question in the near future by the reception it gives to this new brand.

For distribution in the US, the Seiko and Grand Seiko will be sold through separate sales channels. I asked for a business card for each of those brands. Interestingly, the business cards only differed in the corporate name. They shared the same New Jersey address, phone, fax, and email addresses.

Only two of the three floors of Hall 4, known as the Hong Kong Pavilion, were open. The lower floor was totally closed, Figure 7. In the past, all three floors of this hall were filled with vendors of machinery, tools, supplies, and equipment. At that time, it was easy to spend an entire day just perusing the products on display. This year, there were only a handful of suppliers of watchmaking tools that included Beco Technic, Ernst & Friends, and Petitpierre. The remaining vendors were displaying Asian watches, jewelry, and packaging supplies. There was a particularly interesting display from Singapore that featured

watch winders for the sophisticated collector. These were not ordinary desktop watch winders that keep a couple of automatic watches wound while not being worn. Rather the external appearance of these winders was that of a large, home-security safe. Internally, they housed gangs of watch winders which could wind dozens of automatic watches simultaneously. They are available in a variety of finishes from fancy gloss to being totally clad in leather with the interior fittings having a high-gloss walnut finish. Although they resembled a security safe, their construction revealed, in most cases, they were just big steel boxes with numerous watch winders. There was one model priced at \$25,000 that featured a 45-minute fire rating and an anti-drill plate behind the lock which is UL rated, and it weighs over 900 pounds. This vendor's display did provide a sense of some of the accessories available to sophisticated watch collectors.

The final two photos accurately describe the visible changes that have taken place at Baselworld this year. Figure 8 shows a nearly vacant pavilion that contrasts to past years when it was so crowded that walking in a straight line was nearly impossible. Figure 9 was taken during lunch hour at a nearby restaurant on Friday and shows how the change in attendance has affected one of the multitude of businesses that depended upon Baselworld for extra income. In the past there was a line of people at the door waiting to be seated for lunch. This year that line was gone and there were plenty of empty seats waiting for patrons.

Next year's Baselworld will be later in the spring to run in conjunction with the SIHH watch exposition in Geneva. The two shows will run sequentially beginning next year. SIHH will be first from April 26-29 and immediately followed by Baselworld from April 30-May 5. The two shows' calendars have been synchronized until 2024. The management of Baselworld has recognized the need to refocus and restructure Baselworld to accommodate the current and future marketplace. The old Baselworld format, which was so successful for many years, is now out of date. In their press release, the Baselworld management has promised to make the new Baselworld a relevant event for representatives of the watch, jewelry, precious stones, and technology sectors, as well as journalists, bloggers, and market influencers. In addition to welcoming dealers and collectors, Baselworld will have a digital



Fig. 7. The lower floor of the Hong Kong Pavilion was not needed.



Fig. 8. Baselworld pavilion was nearly vacant.



Fig. 9. A restaurant that once served large Baselworld crowds.

platform with numerous information, service, and networking tools throughout the year. The plan is to transition Baselworld into more of a consumer show for watch lovers and collectors, something that would distinguish it from the invitation-only SIHH. Apparently, there is no longer enough business potential to have Baselworld singularly focused upon buyers for the watch and jewelry industry. In addition to the traditional Baselworld buyers, the management hopes to attract enough collectors and end consumers to increase attendance and vendor participation to again make a visit to Baselworld worthwhile. I believe I have witnessed the end of the old Baselworld in my recent visits there and hope to see the beginning of a new Baselworld as it adapts to the recent changes in the industry.

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**Jack Kurdzionak**, watchmaker and watch material specialist, owned a Boston-area watch sales and service shop for 40 years. He has a BS (Northeastern University, 1967) and has studied at ETA, WOSTEP, BHI, SGUS, and AWCI, and works for Eckcells Watch Materials.

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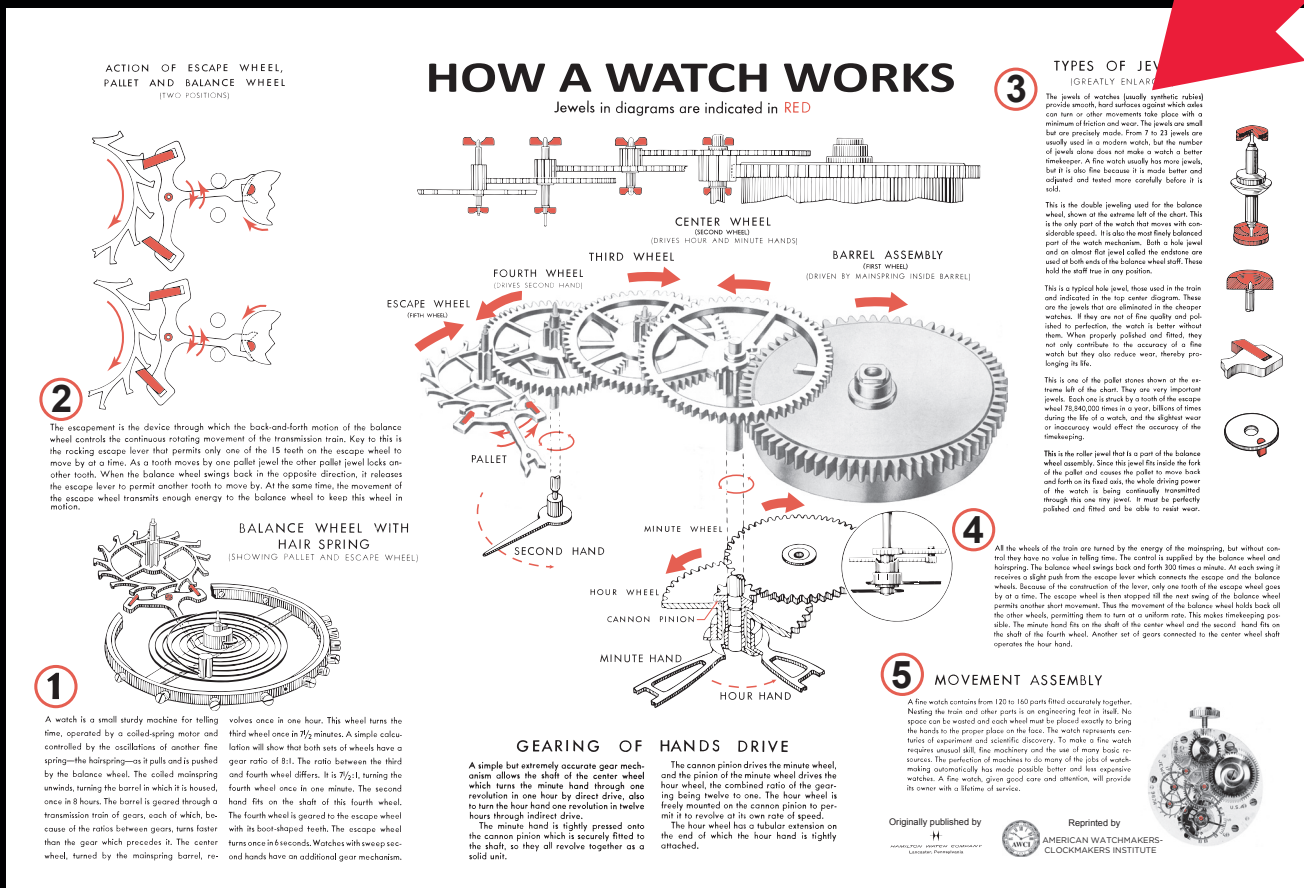
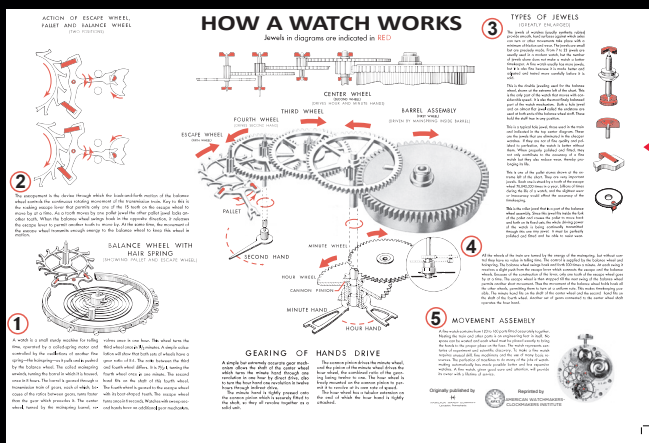
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On the Road:

# Visiting America's Horological Museums



By Kathy Ortt

This month, we are covering two museums that are very well known to horologists. The National Watch and Clock Museum is dedicated solely to horology and probably known to most readers. The Smithsonian Institution offers some horology-related exhibits and so much more within its 19 world-class museums. Eleven of these museums are on the National Mall, six are in the DC area, and two are in New York City.

## Horology Museums in the Mid- and South-Atlantic States

**The National Watch and Clock Museum (NWCM)** is located in Columbia, Pennsylvania, in Lancaster County, less than two hours from Philadelphia, Baltimore, Washington DC, and Scranton/Wilkes-Barre, and is operated by the National Association of Watch and Clock Collectors (NAWCC).

The National Watch and Clock Museum opened in 1977 with fewer than 1,000 items. Today, after several expansions and a current count of 12,000 items, the museum is recognized as the largest and most comprehensive horological collection in North America. The museum's international collection covers a wide variety of clocks, watches, tools, and other time-related items. Nineteenth-century American clocks and watches make up their largest collection. Additional collections

include early English tall case clocks, Asian timepieces from Japan and China, and timekeeping devices from Germany, France, the Netherlands, and Russia. The exhibits cover the history of timekeeping technology from early nonmechanical devices to today's atomic and radio-controlled clocks.

According to Meghan Kennedy, collections assistant, "Many of the clocks in the museum are in working order. In fact, our gallery attendants wind most of them on Wednesdays. We do this only for clocks that we are confident will continue to work without having major issues. If a clock breaks, we decide if a professional evaluation is in order. However, as is the policy in most museums, we often decide not to fix a broken timepiece. We use the analogy of the axe: If the wood handle breaks and you replace it, and then the metal head breaks and you replace it, you no longer have the same axe."

NAWCC has a mission to educate the world in the art and science of timekeeping. Their vision is to be the premier educator in timekeeping and preserver of timepieces. "We are currently building an Education Collection, which would give researchers hands-on experience with objects in that collection. We are in the process of curating it and finding the best physical space in our building," says Kennedy.

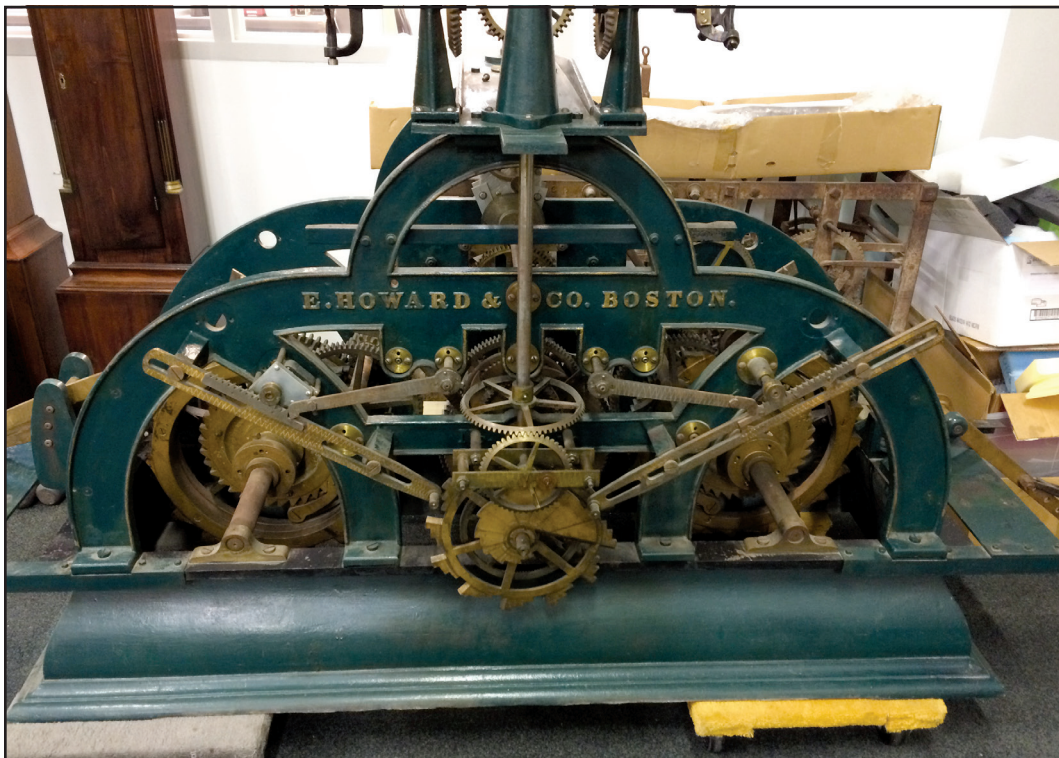
If you are interested in getting more involved with NWCM, they have opportunities for volunteers and

interns at the museum but not just for horologists. These include museum tour guides, gift shop attendants, as well as collections, administrative, events, marketing, and publications assistants.

The National Watch & Clock Museum is located at 514 Poplar Street, Columbia, Pennsylvania. For more about this museum and detailed directions, hours, tours, and admission prices visit <https://nawcc.org/index.php/museum> or call 717-684-8261 (Option 3).



Hamilton Grade 936 Pocket Watch, Serial #1, ca. 1896, Hamilton Watch Company, Lancaster, Pennsylvania. This pocket watch was donated in 1979 along with many others in the collection. It is a size 18 pocket watch with a full plate and 17 jewels, along with a Roman numeral dial with red Arabic numerals on the outer circle. This movement was not finished until April 21, 1896 and was never sold. According to the first volume of Hamilton ledgers, the first movement finished was No. 59, on November 21, 1893. NWCM is thankful for the former Hamilton employees and other individuals who saved paperwork and watch paraphernalia from when the company closed its doors. Hamilton is now owned by the Swatch Group.



E. Howard & Co. Trinity Church Tower Clock, ca. 1905. When installed in 1905, the clock had a weekly wind mechanism with time, chimes, and hour-strike, with a 13-foot pendulum. This tower clock was used in Trinity Church on Wall Street in New York City from 1905 to 2006. The clock was used to ring in the New Year before the city's New Year's Eve celebration was moved to Times Square. In 1960, the clock was given an electric mechanism; it was converted completely to electric in 1979. The Trinity Church, although damaged in the attack on September 11, 2001, was used as a refuge for those caught in the debris. Before NWCM received it as a donation, the tower clock was on display in Trinity Church's office building.



Raingo Astronomical Orrery. The Raingo Orrery clocks, a dozen or so of which are known to exist, were made in the early 19th century. Four were commissioned by England's King George IV for his four sons, but Raingo also made a few for the French nobility. One of the four remains as the property of the Queen of England at Windsor Castle. A small number were made with a music box base (as is this one); the rest were made on a simple round platform of Amboyna wood with the Orrery mechanism on a platform at the top. In all cases, the clocks can be set to show the current positions of the moon and earth around the sun; the objects can also be advanced with a crank to show their motion independently.

The Orrery was loaned to the NAWCC National Watch & Clock Museum in July 2018 by the American Clock and Watch Museum (ACWM) of Bristol, Connecticut. It is currently on display in the European Gallery. The clock was donated to the ACWM by the W. H. Nicholls estate, which had purchased it from the Paul M. Chamberlain estate. Chamberlain discusses the clock in his famous book, *It's About Time*.

Images courtesy of the NAWCC National Watch and Clock Museum

## The Smithsonian Institution

In 1980 the National Museum of History and Technology became the current National Museum of American History. American history is emphasized in all exhibitions. The staff of the National Museum of American History wants visitors to see, through their horology exhibits, how we as a nation look at aspects of time in the US. They don't emphasize clocks and watches, but how people measure, use, think about, and behave in time. When the Smithsonian has an exhibit that refers to time, they look at how Americans came to live by the clock, and what it is about our social and industrial ways that make us so time conscious.

A watch that belonged to Helen Keller is an example of a Smithsonian-curated watch that could make one wonder how its owner interpreted time. The touch watch was given to Keller by John Hitz, superintendent of Alexander Graham Bell's Washington DC establishment for the deaf, the Volta Bureau. Another watch that typifies American history is a horse timing stopwatch called a chronodrometer. It's a very early Waltham stopwatch that was made in the 1850s, when Waltham was the only company making watches in the US. These are just two examples of horology items at the Smithsonian Institution. I asked curator Carlene Stephens about others.

### Q & A with Carlene E. Stephens, Curator, Division of Work & Industry National Museum of American History Smithsonian Institution

What are the more important horological items on display in the National Museum of American History?

We have two clocks that I can think of right off the top of my head. We have an exhibition called *American Stories* on the second-floor east, and on the second-floor west we have a second clock in an exhibit called *American Democracy: A Great Leap of Faith*. In *American Stories*, we have a very important 18th-century four-sided clock made by Joseph Ellicott. It was desirable to have this masterwork from the 18th century in the exhibition. The clock in *American Democracy* is a very unusual clock. It's been called the Great Historical Clock of America. It's about 13 feet tall, covered with scenes, automated and painted still scenes, of one person's idea of the greatest events in American history. If you know the Strasbourg cathedral

clock, it's 60 feet tall and has important events of the Christian history of the world. The clock in *American Democracy* was made in imitation of that. George Washington reviews the minutemen, and so forth and so on. The curator of the *American Democracy* exhibit thought this was a very important material piece of how we as a nation decide what are important events in our shared history.

What is interesting about the exhibit in the National Air and Space Museum?

It's called *Time and Navigation: The Untold Story of Getting from Here to There*. It starts with the coming of the clock to navigation at sea. There are a few pre-clock navigation instruments, but it's mostly the introduction of the sea clock, and the dividing machine that makes the sextant possible. Then, navigation in the air covers all the weird kinds of timekeepers and instrumentation required when the whole environment changes. The speed and environment changes when going from sea to air. We also cover navigation in space, and then we bring it right up to the present with inventing GPS. So, there are atomic clocks for GPS satellites overhead, and atomic clocks for submarine navigation. There are special aviation watches, hour angle watches, displayed there that belonged to Captain Philip Van Horn Weems and Charles Lindbergh.

Do you have personal favorites among the horology items?

Generally, my favorites change from day to day and are the pieces with great stories associated with them. In the *Time and Navigation* exhibition, we have a chronometer said to be the first seagoing chronometer made in the United States. It was made by William Cranch Bond in 1812. He copied a French type of chronometer with a falling weight rather than an English style because we were at war with the English. He couldn't get spring steel. There was an embargo. And so, this chronometer has multiple levels of wonderful pieces of information that you can say about it. Both technically and in terms of who used it and for what reason. It went to sea only once. Bond instructed the captain how to rate the chronometer.

I also love prototypes. We have lots of prototypes: Hamilton Electric, Bulova Accutron, and the steps leading up to the Hamilton Pulsar. These three watches basically helped make the transition from the mechanical to the electrical in the world of watches.

The Great Historical Clock of America  
on view in the American Democracy:  
A Great Leap of Faith exhibition.

Courtesy of the National Museum of American History



For more about these museums and their different locations, detailed directions, hours, tours, and admission prices visit [www.si.edu/museums](http://www.si.edu/museums) and [www.si.edu/spotlight/clocks-watches](http://www.si.edu/spotlight/clocks-watches).

In future installments, we will cover museums in the Midwest, the southern US and the West Coast.

If any of you have visited horological museums in the US, we'd like to hear from you. Please email [editor@awci.com](mailto:editor@awci.com). Happy travels on the horological highway to America's timeless treasures.

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**Kathy Ortt** is an editor of the *Horological Times*.

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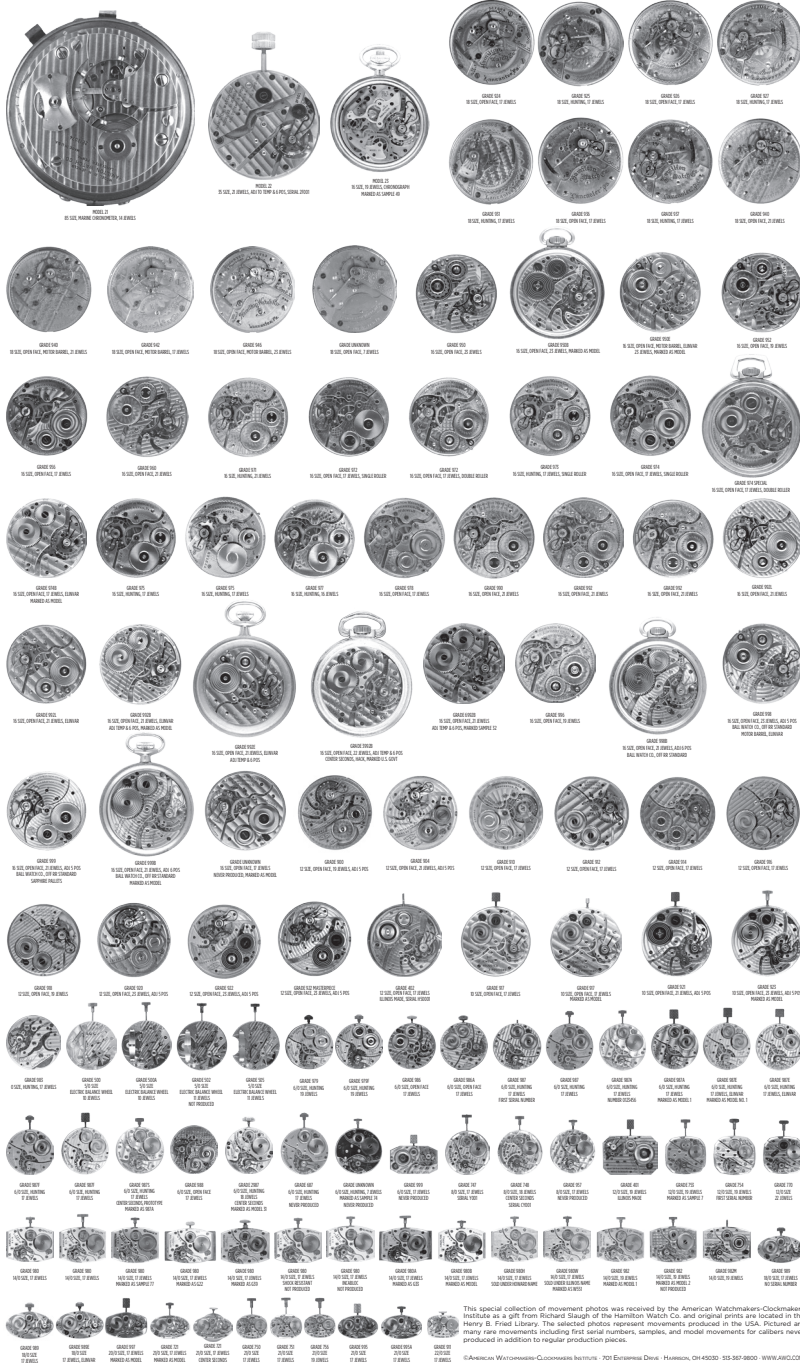
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## Minnesota Clockmakers Guild (MCG)

Elroy Anderson presented the April program about Mainsprings: Measurement, Handling, Removal, Installation in Barrels, Cleaning, and Lubrication. For March, Elroy Anderson presented Aluminum Structural Framing. He explained and demonstrated how to work with and use the different types of connectors for clock and movement testing. Anderson showed different setups for clock testing designs. Anderson finished his presentation with a brief video of using the aluminum structural framing with the DeKalb High School tower clock he restored.

FlexMation donated door prizes for the meeting. Ivy Booth, Susan Wood, and Lenard Mayzel won flashlights. Materials for a test stand were also donated. Ron Widenhoefer and Mark Purdy won the test stand materials.

For Show and Tell, Lenard Mayzel shared a Junghans chiming clock movement and had questions about timing the chimes. Ken Danner shared a pinion with a loose, rotating wheel and asked how to hold it tight on the shaft.

## FUTURE MCG MEETINGS/TOPICS

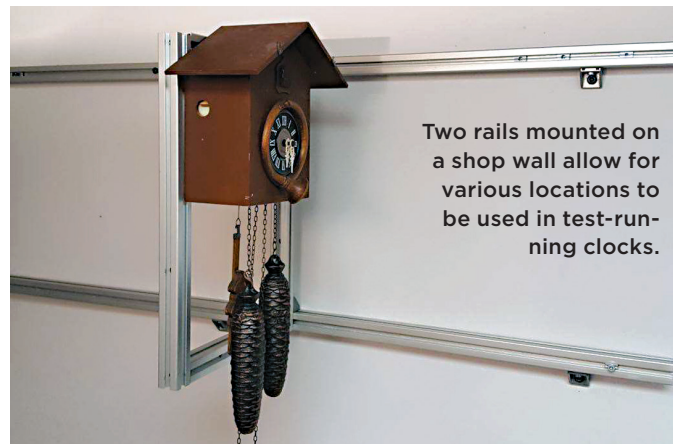
May 4-5, 2019—Joint MCG—MWCA Symposium

May 25, 2019—OTL Meeting—TBD

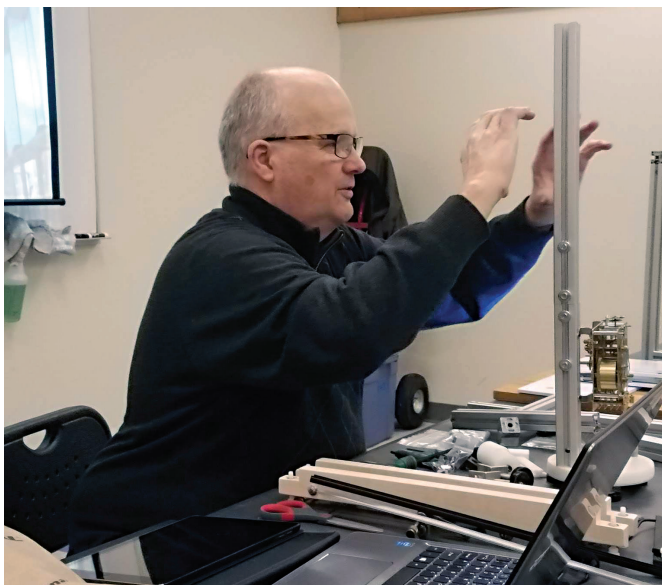
June 6, 2019—MCG Meeting—TBD



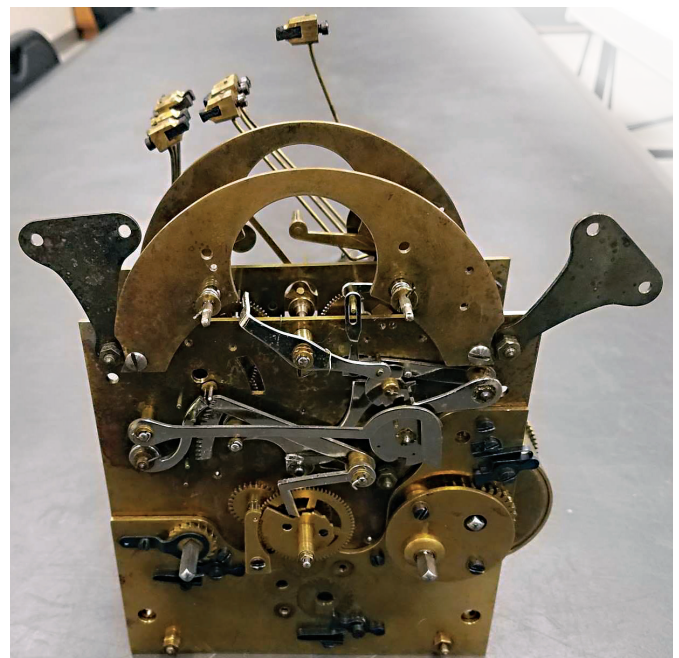
Different arrangements of structural framing to hold movements and shelf clocks, plus a small table stand.



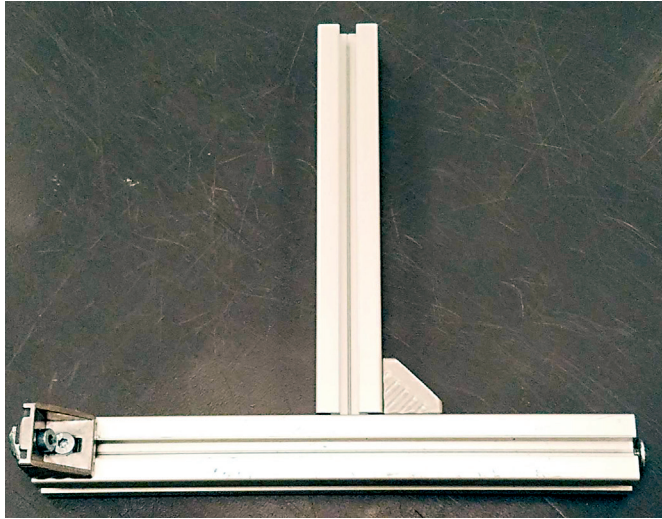
Two rails mounted on a shop wall allow for various locations to be used in test-running clocks.



Elroy Anderson shows how he can adjust the height of a movement for easy access using structural framing.



Lenard Mayzel shared a Junghans chiming clock movement and had questions about timing the chimes.



An assortment of angle brackets and T-nuts show how the accurate alignment of the framing is retained.



Ken Danner shared a pinion with a loose, rotating wheel.

## MCG OFFICERS

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## Horological Society of New York (HSNY)

*The following information was obtained from The Horologist's Loupe, submitted by Carolina Navarro, Director of Public Relations, HSNY, Copyright©2019. Published by the Horological Society of New York, Inc.; all rights reserved.*

The Horological Society of New York celebrated its 153rd year at the 2019 Gala and Charity Auction on April 17, 2019. The annual Gala and Charity Auction was an opportunity to look back at HSNY accomplishments, recognize talented watchmaking students, and bid on incredible watches and ephemera. A selection of extraordinary timepieces, exceptional experiences, and horological miscellanea were up for bid, with all proceeds benefitting HSNY's ongoing educational programs.

In April, HSNY's traveling education courses had stops in Silicon Valley and Houston, Texas. HSNY's traveling education courses are four-hour, hands-on experiences taught by expert watchmakers. Students can expect to work closely with instructors, who cover material from the Horology 101-103 classes taught weekly in New York City. May courses will be held in Seattle, Washington, hosted by The Rainier Club; Los Angeles, California, hosted by F.P. Journe; and Toronto, Canada, hosted by Moe Jaber at the University of Toronto.

## HSNY OFFICERS

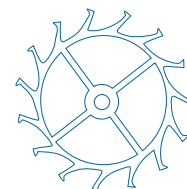
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## Capital Area Watchmaker and Clockmaker Guild (CAWCG)

*Central Texas Affiliate Chapter - American Watchmakers-Clockmakers Institute (AWCI), [www.cawcg.org](http://www.cawcg.org)*  
CAWCG's annual auction will be May 4. In April, CAWCG presented the class, Introduction to the Swiss Pocket Watch. Instructors were Glen Morehead and Dennis Warner. The course introduced students to a basic wind-up Swiss pocket watch. Each student worked with a 16½ ligne, 12 size movement. The movements were totally disassembled, each part named, movements were reassembled, and the purpose of each part explained. Methods of servicing watches were discussed. The watch used in the course was the ETA 6497-1 (Unitas) 17 jewel, 16½ ligne Swiss watch with lever escapement. All parts for all the exercises were supplied by CAWCG.

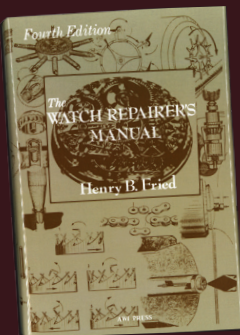
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Written by Henry B. Fried, dean of American watchmakers, BHI Silver Medalist, and honored teacher, this book is the perfect reference for the beginner, the trade watchmaker, hobbyist, collector, or anyone interested in horology.

To order, go to the online store at [www.awci.com](http://www.awci.com).

**Recommended reading  
for CW21 certification**



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### Hairspring Adjustments

April 27 – 28

### Introduction to Pocket Watches I

May 4 – 5

Contact the Education Department at 717.684.8261, ext. 237 or [education@nawcc.org](mailto:education@nawcc.org).

Check out [www.museumoftime.org](http://www.museumoftime.org) for more info.



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[www.hs-ny.org](http://www.hs-ny.org)

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336-768-1857 (fax)  
[mshupingwm@earthlink.net](mailto:mshupingwm@earthlink.net)

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[fleege@zoominternet.net](mailto:fleege@zoominternet.net)

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[bakerclock@voyager.net](mailto:bakerclock@voyager.net)

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[jones\\_grace@hotmail.com](mailto:jones_grace@hotmail.com)

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Jay Holloway, Secretary  
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[www.cawcg.org](http://www.cawcg.org)

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Do you enjoy spending time with other watchmakers and clockmakers?

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for more information log on to [awci.com/about-us/affiliate-chapters](http://awci.com/about-us/affiliate-chapters)

## President’s Message

more like an open-house event. The grand opening of the mobile classroom will be at JCK Las Vegas, where it will be parked inside, right in the middle of the watch lounge surrounded by watch brands. This is an amazing opportunity that JCK has given us, and I highly encourage any of you who can make the trip to come to Las Vegas and see it for yourself. I have been to JCK Las Vegas every year for the last 10 years, and I have yet to see anything this cool on the showroom floor. We will be holding short seminars inside the classroom and giving tours in between. Most of the people who come to JCK are owners or employees of jewelry stores. One of the main goals of exposing them to the mobile classroom is to show them the capabilities and benefits of training their employees, whether it be salespeople or watchmakers and clockmakers. We expect the schedule of the mobile classroom to be substantially planned out by the time it leaves Las Vegas.

If you can’t make it to the Bay Area or to Las Vegas, you still have an opportunity to see it. The best opportunity would be to arrange a Build-a-Watch or Build-a-Clock event in your city. You would be amazed at what kind of interest you can get just by asking around your immediate circle of influence. We are hosting these events not only in big cities but also in small cities that we normally wouldn’t think could support a full event. So, if you want to see the mobile classroom sooner rather than later, you can always try to schedule something in your area.

## Executive Director’s Message

866-367-2924 so we can arrange for it to visit your city. If you are willing to help us locate a high school where we can introduce some young people to the world of horology, that would help us a lot. We have established a goal to conduct a career-exploration event in all 48 continental states, and we won’t be able to do it without your help.

You can check out the latest mobile classroom schedule at [www.awci.com/mobile-classroom](http://www.awci.com/mobile-classroom).

We are always open to new ideas of where to go, so please reach out to Jason Champion, CW21, at [jason@awci.com](mailto:jason@awci.com) or 866-367-2924 to inquire about bringing the mobile classroom to you.

Sometimes it might seem like we talk about change a little too much, but for as much change as we are enduring, there is just as much that remains the same. We don’t implement these changes lightly, and we only make them when we feel it is necessary to secure a better future for the institute. I appreciate every member who has stuck with us through all of these recent changes. We still offer great education courses and certifications exams at headquarters. You can still check out any books from the library at no charge. We still have the largest library of online technical guides. The magazine is continuing to be delivered on time every month with great content from the best contributors. The find-a-professional referral directory continues to get thousands of hits a month from the general public looking for a local watchmaker or clockmaker they can trust. Even with all the new things we are doing, we still continue to offer all the great benefits we have all along.

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For more details go to  
<https://awci-jobs.careerwebsite.com>  
Job ID: 47534437

## Lee Michaels Fine Jewelry

Louisiana

Seeking a highly qualified and experienced watch repair technician at our Louisiana store locations including our Shreveport store and Lakeside Mall store in New Orleans, Louisiana. We are a family owned business with 9 premier locations in Louisiana, Mississippi, Texas and New Mexico and a Rolex authorized retailer.

For more details go to  
<https://awci-jobs.careerwebsite.com>  
Job ID: 47490392

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Master watchmaker wanted for the largest seller of fine pre-owned watches in the world. See [www.grayandsons.com](http://www.grayandsons.com) for watches we buy, sell, and repair. Minimum 10 years experience repairing Patek Philippe, Rolex, Audemars Piguet, Piaget. Experience in chronographs, perpetual calendars, auto movements & lathe work. \$82,500/year plus benefits.

Please fax or e-mail your resume to  
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## Chicago Clock Company

Chicago Clock Company has been in business for 102 years, proudly as a family owned business. Seeking a qualified Clockmaker/Horologist to join our team.

For more details go to  
<https://awci-jobs.careerwebsite.com>  
Job ID: 46050325

## Marina Bay Watch Company

Marina Del Rey, California

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For more details go to  
<https://awci-jobs.careerwebsite.com>  
Job ID: 47232462

help wanted

## Palace Jewelers

Flourishing business for 87 years is looking for a competent watchmaker. Must have experience in disassembling and cleaning of mechanical watches as well as changing quartz movements, replacing crystals, changing batteries and doing link adjustments. Only motivated candidates need apply. Please contact Tricia at 810-653-0522 or email [Tricia@palacejewelers.com](mailto:Tricia@palacejewelers.com)



MARKET STREET DIAMONDS  
Georgetown, Washington DC  
1906

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Contact Dino 301-633-4321  
[DinoLonzano@gmail.com](mailto:DinoLonzano@gmail.com)

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For more details go to  
<https://awci-jobs.careerwebsite.com>  
Job ID: 46611728

Check out other  
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# Classified Ads

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AWCI HT classified advertising fees/rates and minimum schedule remain the same as last year. **We request that you put all classified advertising on a credit card.** We accept MasterCard, Visa, American Express and Discover. If you require a physical invoice and 30-day terms, your rates will be higher due to the additional costs incurred in labor, supplies and carrying charges.

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- \$1.10 per word
- Classified "Display" ads with art borders: \$47.50 per col. inch (2.25" wide)
- Blind ads – add'l \$15.00 per ad

#### For Paper Invoicing...

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- Blind ads – add'l \$16.50 per ad

### Minimum Schedule: 3-Month Minimum

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### Deadline: 30 days before the first of the month in which you plan to run your ad.

**Note:** If you place a recruitment ad on the [www.awci.com](http://www.awci.com) Career Center as a combo online/HT ad, there's no need to resend the ad to us. The website system is automatic.

### To Place Your Ad:

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Call: 866-FOR-AWCI (367-2924) • 513-367-9800



### Horological Times Advertising Policy & Editorial Policy

#### Advertising Policy for the Horological Times

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Editorial material and letters of opinion are invited, but reflect the opinions of the authors only and do not represent the views of the American Watchmakers-Clockmakers Institute (AWCI), its directors, officers or employees. AWCI reserves the right to edit all submitted materials and is under no obligation to accept any submitted materials for publication. The approval procedures are available from AWCI and at [www.awci.com](http://www.awci.com). The appearance, reference, or advertisement of any product or service in this publication shall not be deemed an endorsement of such products, methods or services by AWCI, its directors, officers, or employees.

#### Publisher's Standards

AWCI makes a concerted effort not to publish any advertisement which promotes or depicts practices not in harmony with our professional Standards & Practices for Watchmakers & Clockmakers. The advertisement of generic parts, tools, and materials is allowed when such advertisement does not possess any trademarked image, brand, or name. Advertisers can refer to the items by name, function, quality, size, and description. Genuine parts can be advertised as such in accordance with the advertiser's relationship and agreement with the manufacturer.

We encourage advertisers to reach out to our members and market goods and services which will help them to professionally service their clients and represent themselves in a way which will "reflect positively on him or her, on the AWCI, and the entire watch and clock repair industry, including all of its participants."

– AWCI Code of Ethics

# awci directory

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