

# HOROLOGICAL TIMES™

ADVANCING THE ART, SCIENCE & BUSINESS OF HOROLOGY

August 2012



AMERICAN WATCHMAKERS-  
CLOCKMAKERS INSTITUTE



## **This Month's Focus: Lubrication**

*Modern Watchmaking Lubricants*

**Repair of the Arbor in LeCoultre Caliber P812**

*The Mysterious Pivot Hole*

**Affiliate Chapter News**

*Questions & Answers on Vintage Timepieces*

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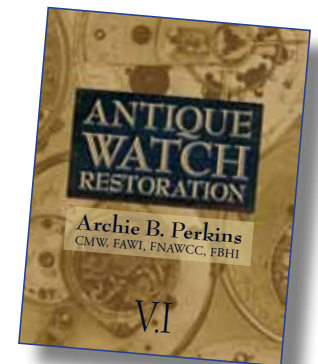
### Archie Perkins:

### *Antique Watch*

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**DOUG THOMPSON, CW21**



***“If the world was perfect, it wouldn’t be.”***

Yogi Berra

There are concerns raised by AWCI members over the past few months regarding watch repair brokers. I hope the following will clear up some of the misunderstandings regarding two of them.

## **WATCH REPAIR BROKERS**

### **watchrepair.net**

The owner has been a Regular member of AWCI since 2008, and he has been in attendance at IAB meetings, as meeting minutes will show. Since IAB meetings are open, any AWCI member may attend an IAB meeting. The IAB meets in-person at the AWCI Mid-Year and Annual meetings.

In the distant past, the public would call the AWCI office to find a watch technician close to them and the office would offer assistance. Members may also call the office in order to find other members close to them or search the online Referral Directory for that information.

Contact information for watchmakers in specific geographic areas around the country was requested by watchrepair.net (no member list was shared), but those members contacted were never under any obligation to provide services for the company. It would have been an opportunity to accept or decline involvement. Any agreement reached was between the member and watchrepair.net.

AWCI was never part of any agreement process and neither AWCI nor its employees have ever received, or asked to receive any financial compensation for providing contact information. No endorsement or partnership agreement has ever existed between watchrepair.net and AWCI.

### **WatchFacts.com**

WatchFacts.com is currently an IAB member that provides nationwide horological services. It is a relatively new company and its name was just trademarked in June of 2012. It was originally formed due to an unfortunate situation in which the owner pur-

chased a watch that was not authentic. Being a serious watch aficionado, the owner decided to create a company that would examine and authenticate (if possible) previously-owned watches in order to offer the public some peace-of-mind when purchasing those types of watches, much the same way CARFAX® tries to inform used car buyers. To provide these services, he needed to develop a network of skilled technicians with repair experience. The WatchFacts.com owner came to us. Part of the WatchFacts.com process could involve the repair of these watches, as well.

It appeared to be a positive situation for the consumer and AWCI members: Those offering their services to WatchFacts.com would be listed on that website, creating another marketing opportunity for our members. Remember, this was at a time when our old Referral Directory was up on the old website (which had a very poor search feature), before the possibility of the new website with a NEW Referral Directory.

An endorsement agreement was originally signed with this company in December of 2010 by Executive Director Lubic. The subject of WatchFacts.com had been discussed with the President and other Board members before and after the agreement was signed. Prior endorsement agreements had been discussed with the Board and signed by the Executive Director without a motion from the Board. The BOD allowed the Executive Director to handle these agreements as long as they were examined by legal counsel, which they all have been. The WatchFacts.com program and an agreement with that company were discussed at the November 29, 2010 conference call, eight days before the endorsement agreement was signed. No motion was made regarding the endorsement agreement, just as with any of the other signed endorsement agreements. Was this a mistake? In this instance, yes, due to the exclusivity of the agreement regarding the promotion of technicians engaged by WatchFacts.com. The original purpose was intended to be a positive one for the public and AWCI members. How such an agreement would impact the members should have been examined further before the agreement was signed. In response to the situation the BOD has passed the following motion:

“Move that all contracts with companies, organizations and entities that AWCI intends to enter into an agreement must be presented to, and have the



BY JAMES E. LUBIC, CMW21

### **Our New Mission Statement:**

**The American Watchmakers and Clockmakers Institute:  
*Advancing the Art, Science and Business of Horology.***

AWCI is the focal point for education and information in the horological industry. We serve three fundamental groups:

1. We educate and inform the public to help them understand the need for our members' services.
2. We educate watch and clockmakers in the highest standards of traditional methods, as well as the latest technologies. Our goal is to help improve our members' skills and business practices, and to assist them in evolving their business model to promote future growth.
3. We work as a liaison with industry to develop valuable programs and services that benefit watch and clockmakers, retailers and suppliers.

We are an advocate for: Professionalism, ethical principles, health, safety and environmental standards for the horology industry.

Looking to the future, I believe AWCI must have a new Strategic Plan that meets the needs of our members at the same time it accomplishes our new Mission. The Board is now considering a budget for the upcoming year that includes funds for implementing a new Strategic Plan. The plan will include surveys of our members, surveys of industry, and studies of the market. This research will ensure we address each group's future wants and needs. It will also help the Board and the Staff to set goals for moving forward.

If this project is approved, we ask that you respond to the various surveys that will be involved in the research portion of the Strategic Plan. We need your input to make AWCI a strong trade association that meets the needs of the horology industry, both now and in the future.

#### *President's message continued*

approval from, the AWCI Board of Directors. This includes all agreements that are formal in nature, such as Affinity agreements, Confidentiality agreements, Non-compete agreements, Non-circumvention agreements, and Endorsement programs."

What, if anything, was exchanged between AWCI and WatchFacts.com as a result of the endorsement agreement? Very little. An article was written about the company in the October 2011 *HT* issue and with the exception of that article, nothing else, not the membership list nor any money has ever been exchanged. No money has been received by AWCI, as WatchFacts.com is in beta mode and is not going "live" until later this summer or fall. Any AWCI member associated with WatchFacts.com, enters into an agreement on their own, completely separate from AWCI.

Many affinity and/or endorsement agreements (but not all) involve some type royalty to an organization. Usually a set level of member participation is required, either the number of people involved or a specific annual dollar amount for a royalty to occur. Due to the level of member participation, AWCI re-

ceives less than \$500 in total annually from all of its current endorsement agreements.

The Executive Director has not received any financial compensation in connection with the endorsement agreement with WatchFacts.com. Additionally, the agreement with WatchFacts.com and AWCI has recently been terminated.

### **CONGRATULATIONS TO THESE NEW CW21'S!**

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BY DAVID J. LABOUNTY, CMC, FBHI

# An Introduction to Lubrication: A Controversial Subject

**H**orologists have long been searching for the perfect lubrication. This includes everything from whale oil and nose grease to *lignum vitae*, a self-lubricating wood. Many different lubricants and methods have been tried in an attempt to find the one magical substance which will outperform all others. Perhaps it is an inherent trait of clock and watch-makers that we strive to provide the best for our customers, and as a result, are valiantly continuing the search.

Sometimes, a particular lubricant will produce excellent results and the search can be relaxed for a time. However, it seems good things don't last; lubricants come and go, and the search continues. Modern oils and greases offer exciting possibilities, but as with anything new, there are bound to be controversies. The perpetual questions always are:

What lubrication do I use?

When and where do I use it?

How much do I use?

These are all topics which will produce multiple answers for the same application. And, the discussion of these topics will often become heated among horologists! So, why is lubrication such a controversial subject? There are three causes of controversy:

Tried and true vs. new

Cost

The ever-increasing number of opinions

Many horologists rely on tried and true lubricants that have a good track record over several years,

and these are often the lubricants they were originally taught to use. It may be human nature that there is sometimes an unwillingness to try anything new, especially on a timepiece that is not your own, if long-term results can't be proven. It's your reputation which is at stake, after all. Try to push a new product on some, and they will push back until the "tried and true" is eventually gone from the market, or the new product has been around long enough for the uncertainty to disappear.

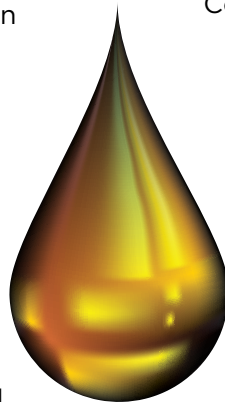
Others are of the opinion that the new stuff is great and are more than willing to make the switch. Introduce these two differing opinions to one another, and there is likely going to be friction!

Cost is often another factor. The question, "Why pay a lot of money for clock oil, for example, when oil from the auto parts store is a fraction of the cost?" This question can be frequently asked among hobbyists and professionals alike. The underlying desire to use alternative lubricants is to not only provide the customer with quality, but to do so at a reasonable expense. However, this can again cause many arguments between those who use alternative oils and those who would never use anything except clock oil.

And then there is the internet to fuel the fire. Lubrication experiments of all sorts are freely discussed in open forums. Discussions can now be inter-continental, and the more opinions there are, the more controversial the topic can become. Beginners, professionals, and hobbyists alike can all express their opinion online and share the results of using various oils. The effects of long-term use of alternative lubricants can be quickly found and the pros and cons easily weighed. In fact, there is currently so much information available on clock oils and alternative lubricants on the web that it is difficult to keep up with all of the different ones now being used.

The subject of lubrications will always be controversial due to the fact the industry is constantly progressing. However, discussions and controversies can be productive, as well as informative. And while some may become heated, it should be considered healthy to have an abundance of both. ♦

*Editor's Note: AWCI does not endorse specific products or methods of lubrication.*



# Modern Watchmaking Lubricants

The reduction or, better still, complete elimination of friction in the functioning of mechanical timepieces is an issue of utmost importance. Abraham-Louis Breguet is quoted as having once said, “Give me the perfect oil, and I will give you the perfect watch.” Two hundred years later, proper and effective lubrication of a timepiece still remains the Achilles heel of watchmakers in our never-ending quest for horological perfection.

The following is an overview of modern lubricants used in watchmaking.

## Keeping Up To Date

While manufacturers have made leaps and bounds in the quality, consistency, and longevity of materials and lubricants used in the field of horology in the last half century, it is all for naught if the watchmaker or watch technician who repairs these timepieces is not aware of them. While lubrication (particularly of the barrel, escapement, and balance assembly) may be the greatest weakness in the effective timekeeping of a mechanical watch, one of the watchmaker’s greatest strengths is to continually keep informed on industry improvements and changes in this area.

Theories, technologies, and generally-accepted practices for the lubrication of mechanical timepieces is always changing. The information presented here is current as of July, 2012 and will no doubt evolve further in the years ahead. The recent introduction of DRIE (deep reactive ion etching) silicon parts in a number of recent prototypes and some production models is likely to eliminate the need for lubrication of the escape wheel teeth and pallet stones in modern timepieces, in much the same way that treated Nivaflex mainsprings eventually eliminated the need for mainspring greases like Moebius 8200. (DRIE is often referred to in the industry by its French name “silicium.”)

## Preparation

Prior to lubricating a watch, the timepiece should first be pre-cleaned, then entirely disassembled, including the removal of all cap jewels and setting parts. The barrel of the watch should always be completely disassembled and the barrel walls of automatic watches cleaned manually with a disposable, absorbent material such as a Q-tip. Fran Wilson Nail Tees® (<http://amzn.to/MRStP6>) are particularly effective. Dirty barrel drums can also be suctioned out, with the small bench vacuum system employed in most modern watch service facilities, using a vacuum head designated for the task that has been dipped in solvent. Older graphite and molybdenum disulfide based lubricants used on the barrel walls of automatic watches are particularly insoluble. It is best to try to remove as much of this lubricant as possible before washing in a watch-cleaning solution.



**Figure 1: Pegging out a jewel prior to final cleaning to ensure that all traces of previous lubrication that may have dried inside the jewel are removed.**

Once the watch movement has been fully disassembled, the inside of each jewel should be cleaned with sharpened pegwood, the worn parts replaced, and any necessary adjustments made (Figure 1). Arrange the parts carefully in partitioned cleaning baskets and put them through a final cleaning. Extra care must be taken in consulting technical documents supplied by the manufacturers to ensure that any specially-treated parts not intended to be washed are set aside. The mainspring, ball-bearing mounted rotor, and reversing wheels of a number of calibers fall into this category.

BY JONATHAN EDWARDS

After proper cleaning, the parts are ready for any specified surface treatments (such as Fix-O-Drop), followed by re-assembly and lubrication. Any shortcuts in the effective and proper removal of the previous lubrication will always result in less than optimal performance when the job is done.

## General Lubricants



Figure 2: Moebius Synt-A-Lube 9010 Oil.

### Moebius Synt-A-Lube 9010

Moebius 9010 is oil that used to be employed throughout the going train on some calibers. It is now commonly agreed upon among modern watch manufacturers that it is best suited for application to balance jewels and escape wheel jewels. (See Figure 2.)

### Moebius Synt-HP

Moebius Microgliss D5 was used widely by most manufacturers around the turn of the millennium, but has since been supplanted by the currently more expensive and further refined line of Synthetic High Pressure lubricants (Synt-HP for short) developed by Moebius. The line is offered in four varieties of differing viscosity aimed at spanning the gamut of mechanical timepieces, from small and delicate movements to larger workhorse movements like the ETA 7750 (Figure 3).

The Synt-HP series offers excellent aging stability, providing consistent viscosity over a longer period of time than Microgliss D5. It also offers a higher resistance to pressure, with superior lubrication and adherence capacity. Synt-HP 500 is suitable for pivots of the going train of small, delicate movements. Synt-HP 750 and 1000 cover mid-



Figure 3: Synt-HP from Moebius comes in four varieties of differing viscosity.

range movements, and Synt-HP 1300 is designed to address the friction needs of more powerful, high-torque movements and is even recommended for posts and setting components by some manufacturers. Moebius Synt-HP lubricants are colored red by default, but are also available in a clear variety.

### Rolex MR4

Rolex MR4 is highly viscous grease, recommended for use on the winding and time-setting works of a watch. (See Figure 4.)



Figure 4: A highly viscous grease, the Rolex MR4 is for watch winding and time-setting works.

### Jismaa 124 and Moebius 9501

Both of these lubricants are synthetic greases recommended for medium-pressure, high-friction surfaces. They are used mainly for lubrication between the canon pinion and driver, as well as on some components of chronograph systems.

### Molykote® DX

This is a mineral-based, adhesive lubricant that can handle very heavy loads (Figure 5). Molykote® is less fluid than Moebius lubricants and will not drip or run. White in color, it is easy to tell exactly where the lubricant has been applied, although it can be almost invisible when applied in thin films. This lubricant is particularly well suited to meet the friction needs of certain applications in mechanical chronograph systems.



Figure 5: Molykote DX is a mineral-based adhesive lubricant.

## Lubricants for Automatic Barrels

### Klüber P125

Composed of a dry lubricant suspended in a carrier fluid, Klüber P125 is thick, highly viscous, black grease used to lubricate the barrel wall of



automatic watches (Figure 6). Although Klüber does not disclose the exact type of dry lubricant used in P125, the active ingredient appears to be molybdenum disulfide or a similar lamella-structured material. These types of lubricants are interesting in that



Figure 6: Klüber P125 is a form of grease used to lubricate the barrel wall of automatic watches.

friction is decreased as load and surface speeds increase. Such properties allow the lubricant to help hold the bridle of the mainspring against the barrel wall until the load-bearing threshold of the material is met. When the stored energy in the mainspring increases as it is being wound, the pressure applied by the mainspring bridle against the barrel wall eventually compresses the molecules in the lubricant

to such an extent that the weak bonds within its molecular structure break temporarily and “slip” across the stronger bonds. This sudden drop in friction, in turn, allows the spring to glide against the barrel wall until the power stored in the mainspring dips back below the load-bearing threshold of the lubricant.

## TEPA

Not to be confused with tetraethylenepentamine, which is a hazardous, pale-yellow chemical that goes by the same name, TEPA is a proprietary barrel wall lubricant developed by Rolex (Figure 7). Whiter in color than Molykote DX and of similar viscosity, TEPA grease is a far cry from the black, molybdenum or graphite-based lubricants of decades past. It is both cleaner and easier to handle than Klüber P125 and other barrel wall greases like Moebius 8201 or 8301.



Figure 7: A proprietary barrel wall lubricant developed by Rolex, TEPA is easy to handle.

As with all greases intended for use on the barrel wall of automatic watches, TEPA holds the bridle of the mainspring to the barrel wall until its load-bearing threshold is met, at which point it allows the mainspring to slip (Figure 8).

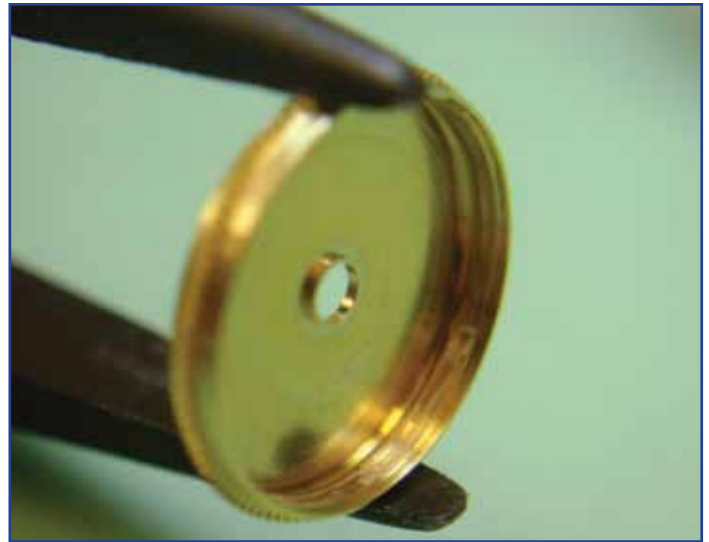


Figure 8: TEPA grease can be applied along the barrel wall more cleanly and easily than other automatic barrel greases.

## Escapement Lubricants

### Rolex RL-2

Rolex RL-2 is proprietary escapement grease developed by Rolex. Prior to RL-2, two different lubricants, which will be discussed next, were necessary to lubricate watches that ran at either a low or high frequency (Figure 9). Moebius 941 was tailored to low-beat calibers, while its thixotropic alternative, Moebius 9415, was created specifically for high-beat watches. Rolex RL2 replaces both of these lubricants as a stable, high-performance, escapement grease.



Figure 9: Rolex RL-2 escapement grease eliminates the need for two lubricants.

RL-2, like Moebius 9415, is a thixotropic grease. In simple language, this means the grease liquifies (be-

BY JONATHAN EDWARDS

comes less viscous) and becomes more slippery when hit with force. Thus, when a tooth of the escape wheel comes quickly into contact with the pallet fork, the grease adapts to the force and helps to provide a smooth, near frictionless surface for the escape wheel tooth to glide across. RL-2 has a more uniform consistency than Moebius 9415 and displays excellent staying power on epilame-treated surfaces. It offers all of the benefits of 9415, while still allowing enough “give” to be suitable for use on low-beat calibers where Moebius 941 would otherwise be necessary.



Figure 10: Moebius 941 is ideal for use in low-beat watches.

### Moebius 941

This lubricant is designed for use in low-beat watches. Use at the friction plane that exists between the pallet jewels and teeth of the escape wheel (Figure 10).

### Moebius 9415

Moebius 9415 is another thixotropic lubricant intended specifically for high-beat escapements. Its physical properties allow it to remain in place while absorbing impact and providing lubrication for the rapid and forceful blows of the escape wheel teeth in watches with a beats-per-hour count of 28,800 and higher.

## Special-Purpose Lubricants for the Automatic System

### Lubeta V105

Lubeta V105 is a dry, waxy lubricant suspended in a clear, sweet-smelling liquid similar to that used as the carrier fluid for the ink in ball point pens (see Figure 11). Its name is a concatenation of “lube” and “ETA” as the formula was developed by the movement manufacturer ETA SA. The product was designed to simplify the lubrication of the reversing wheels in ETA calibers, while also helping to prevent over lubrication, which can be detrimental to the proper functioning of the automatic system.

Lubeta V105 is applied by submerging the reversing wheels into the solution for several seconds and then removing them to dry. Excess fluid should be



Figure 11: Lubeta V105 leaves behind a waxy film to lubricate reversing wheels.

blown off with a hand blower and the parts left to dry underneath a bell cover for 15 minutes. Due to the nature of the carrier fluid in which the lubrication is suspended, contact between a freshly coated part and solvent-sensitive materials (such as plastic) should be avoided.



Figure 12: Lubeta V105 and V106 are produced by ETA SA for lubricating specific parts within the watch.

### Lubeta V106

This lubricant is similar to the V105 product. However, Lubeta V106 is a lubricant produced by ETA SA specifically for the lubrication of the ball bearings used in oscillating weights (Figure 12).

## Concluding Remarks

The proper application of lubrication is just as, if not more, important than the choice of lubrication being applied. Consultation of technical guides, training courses, and the insights gained through the experience of revisiting

watches you yourself have serviced in years past are all valuable means of honing and perfecting your technique.

# modern watchmaking lubricants

BY JONATHAN EDWARDS

As this is a subject matter that is constantly evolving as advancements are made in the types of products that are available to us as watchmakers, a "living" version of this article is available online at <http://bit.ly/watch-lubricants>.

Jonathan Edwards is a contributor to Horological Times and [www.watchmakingblog.com](http://www.watchmakingblog.com). He operates the English half of [www.alliancehorlogere.com](http://www.alliancehorlogere.com), an open-source and editable reference for watchmakers to share technical information online. You can follow Jonathan on [Twitter@UnderTheLoupe](https://twitter.com/UnderTheLoupe). ♦

*Editor's Note: AWCI does not endorse specific products or methods of lubrication.*

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BY JACK KURDZIONAK, CW21



## Doing Time Rather Than Keeping It

About 40 years ago, the late Irving Cohen invited me to join the then vibrant, Massachusetts Watchmakers Association (MWA). I was flattered that the members of this highly skilled group of watchmakers would even consider inviting such a novice as myself to be a member of their group. In those days, the MWA's membership numbered over two hundred people, most of whom earned a living in some facet of the watchmaking profession. It took me a while to meet many of the members, even though we met nine times a year.



One evening in the late 1970s, we held our election of officers for the coming year. That election was a memorable one. A member by the name of James V. (Vinnie) Costa was running for office (treasurer, if I remember correctly). I remember him as a man of slight build with silver hair whose appearance resembled that of my Uncle Harry. Before the evening was over, a boisterous controversy erupted. Vinnie lost the election by secret ballot. Then, someone looked into the wastebasket and found the ballots, counted

them again, and announced that Vinnie had actually won the election. The official vote counters had deliberately cheated Vinnie out of his victory that particular evening.



The people counting the votes actually had the best of intentions when they tampered with the ballots. What I did not know at the time, but most of the members did, was that Vinnie was one of the eleven men who pulled off the Great Brinks Robbery in January, 1950 that netted the gang \$1.5 million and landed the entire gang in state prison for that robbery. Their crime was the largest cash haul of any robbery until that point. Vinnie served out his time, and as part of his rehabilitation, he went on a work release program to study watchmaking at a Boston trade school. Once out of prison, Vinnie opened a repair shop in his home in a Boston suburb and proceeded to join the MWA.

The vote counters that evening did not want Vinnie to serve the MWA in any responsible position, so they thought cheating was the right step to take. Vinnie never did take his office and the several members involved in the fraud resigned immediately after that evening's fiasco. The next day I went to the public library (we had no Google or internet then) and borrowed a book about the robbery. Sure enough, in the book was a photo of a Vinnie Costa who was the same Vinnie Costa who lost the election the night before.

As a postscript to this story, Vinnie passed away several years later and I was able to purchase his Vi-

BY JACK KURDZIONAK, CW21

brograph MU700 and Portescap automatic watch winder. The watch winder was in our shop for many years until we replaced it with a newer model. We gave the winder a name and called it Vinnie. Vinnie wore every automatic watch we serviced for a quarter century, and when a customer asked how well his automatic watch was running after repair, we always said Vinnie was wearing the watch, and if he was satisfied, the watch would be ready for delivery. Some customers would ask, "Who is Vinnie?" and we took a few minutes to explain the story as we pointed to the auto winder hanging on the wall.

I also recall speaking with the late Don DeWolfe who sold that equipment to Vinnie. He was well aware of the celebrity status of his customer and told me that Vinnie paid cash for the equipment. Don always wondered if the money was part of the never-recovered Brinks loot.

## *Let's Kill All the Lawyers, from Shakespeare's Henry VI*

In this story, one particular lawyer took a proactive stance and did the killing rather than be killed. In our story about a customer, almost twenty years ago the shop telephone rang and I took the call. The caller identified himself as Seth Bader, an attorney from New Hampshire. He asked if we could supply a glass door for his Atmos clock. I told him it would be no problem. All he had to do was to provide the serial number and caliber of the clock and we would be pleased to supply a replacement glass door for his clock. The conversation was civil until he asked for the price of the glass. I told him the price and the verbal exchange went downhill from there. He went on to tell me that this piece of glass was nothing special. He would have it cut and fit at his local hardware store for a few dollars, and there was no way he would pay us some outrageous price for a piece of glass. He even intimated that we might be guilty of price gouging him with our outrageous prices. No problem, I told him. Please go to the hardware store and get a piece of glass. I forgot about the phone call until he called again a few months later.

Although he was not apologetic, he did concede that his hardware person could not cut that piece of glass. He acceded and agreed to buy the genuine glass door. He sent the clock to us for positive identification. We ordered a glass door, fit it to the clock, and shipped the clock back to him. Was this the end

of story? Of course not, and as the late Paul Harvey would say, "Now the rest of the story."

About a year later I was in our New Hampshire cottage with the TV tuned to the single broadcast station we were able to receive. I heard the following news flash: New Hampshire attorney, Seth Bader, arrested for the murder of his former wife, Vicki Bader. At the same time he was dealing with us to repair his clock glass, he and his teenaged stepson murdered Vicki and transported her body over the state line into Maine where he buried her in an obscure location. Although he was a suspect in her disappearance, there was no hard evidence indicating he was involved. That was until their son began talking to the police. Over a year had gone by before the police arrested Seth for Vicki's murder. Seth also had a girlfriend who was involved somehow in the murder plot. The prosecutors immunized her and she testified at his trial, which led to a first-degree murder conviction. He is now serving a life term in New Hampshire state prison. I picked up a New Hampshire newspaper at that time and saw a picture of Seth (I had never met him personally) standing in his law office proudly displaying an Atmos clock on his desk. I guess Seth had some confusion with Shakespeare when he became the killer instead of the victim.

If you wish to read more about this interesting customer, please obtain a copy of the book, *Legally Dead* which was authored by the husband-and-wife team of Kevin Flynn and Rebecca Lavoie. Berkley Books published this in October, 2011. ♦



# Repair of the Arbor in the LeCoultre Caliber P812, Part 1

The vintage LeCoultre Caliber P812 exhibits a unique oscillating weight arbor. The upper pivot with its pinion is robust and quite unbreakable (see Figure 1). The design of the lower pivot with its long post increases the risk of breakage, not so much from normal use, but from mishandling during servicing. This watch came to me for repair of the arbor only, and I did not know how the breakage occurred (Figure 2).



Figure 1



Figure 2



Figure 3



Figure 4

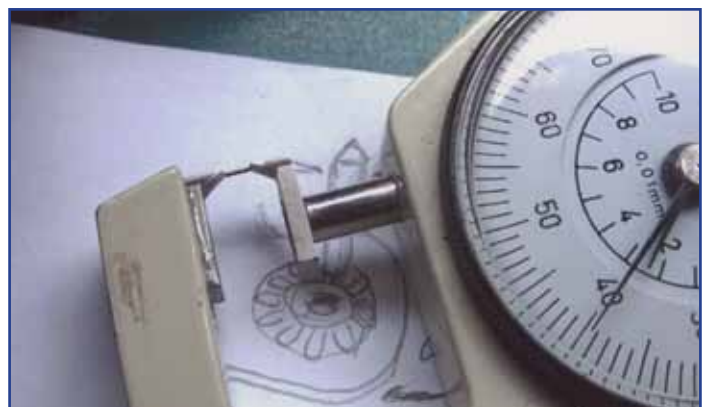


Figure 5

Preliminary to the repair, I took measurements of the broken arbor. Looking closely at Figure 2, it became evident that the arbor tip was larger in diameter than the rest of the arbor. A hand-drawn sketch allowed the dimensions to be used as a reference. Figure 3 shows the tip diameter measurement to be .435 mm. The shaft diameter measures .405 mm (Figure 4), and the total length is 2.4 mm (Figure 5). With the

# repair of the arbor in the lecoultre caliber p812

BY DALE LADUE, CMW21

dimensions, including the opposing pivot diameter noted in Figure 6, I decided to drill through the pinion to insert a new arbor. (Caution: Always remember to wear the proper eye protection when turning metal at the lathe.

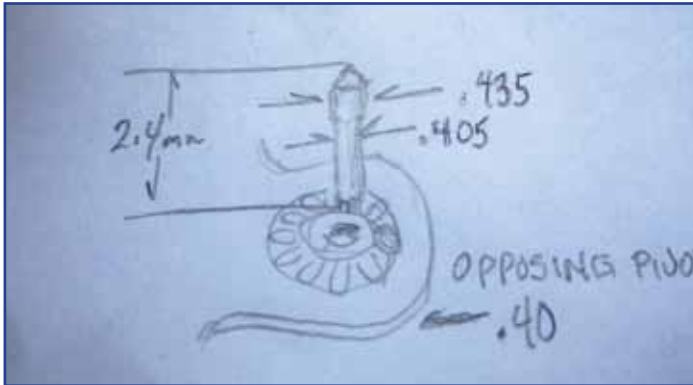


Figure 6



Figure 7



Figure 8

In order to form a perfectly-centered hole through the pinion, a hole was drilled in a brass rod as it was spun in the lathe. The hole was then bored out true with a carbide cutter mounted in a slide rest (see Figure 7). The pinion was frequently tested in order

to create a tight sup fit of the pinion, as shown in Figures 8 and 9. To ensure stability, the pinion was shellacked in place as shown in Figure 10.



Figure 9

Once the shellac cooled, a perfect center was turned as the lathe was spun slowly (see Figure 11). The close view in Figure 12 shows the perfect center,



# repair of the arbor in the lecoultre caliber p812

BY DALE LADUE, CMW21

as well as the ample amount of metal in the middle of the pinion. This allows a somewhat larger diameter hole than the original arbor diameter. A carbide spade drill was created with a diameter of .49 mm as shown in Figure 13. The drill was held in a pin vise and supported in the tailstock of the lathe as shown in Figures 14 and 15. Part Two on page 20 will complete this project with a slight change to the original plan. ♦



Figure 13



Figure 10



Figure 14



Figure 11



Figure 15



Figure 12



BY LAURIE PENMAN

## The Mysterious Pivot Hole

Forgive me, but this is going to be one of those pieces that begins, "When I was in the States," (Steven Conover and I held a few workshops in his home town of Reading, Pennsylvania in 1999). It is not really intended as self-advertisement, it just happened that way.

The meat of one of the lectures was concerned with the sort of work that came into a British workshop and the way in which we tackled the various problems. I decided to take an old longcase movement with me that I thought was typical of the usual work. A local antique dealer and friend provided the clock (I have quite a lot of work from his shop), and I decided not to examine the movement at all, but leave it just as it was and make my first examination at the

first lecture. I accepted it, packed it in a box, and put it on one side for the trip. It was a considerable addition to the other movements and tools I was taking with me. Actually, there were several occasions when I regretted taking so much metalwork along, mainly while galloping between gates at the Pittsburgh hub (without benefit of one of those little vehicles equipped with a "hide" function that have their home in some dark recess of the hub).

However, when the time came to open the box in front of an audience, it suddenly became all worthwhile. The movement contained one of the most remarkable faults that I have ever come across in a clock. As I held it up and turned it around in my hands, I suddenly realized that one of the arbors was wildly out of parallel with the others. It does not seem too bad in the photograph (Figure 1) because I could not get a well-lit view in the direction that showed the error in full. Examination of the front plate showed that one end of the third arbor had been moved towards the center line. In fact, it almost was on the



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# the mysterious pivot hole

BY LAURIE PENMAN

center line. Figure 2 shows the new position and the old—and empty—hole. (Figure 3 is a close-up view.)

Passing the movement around and discussing it gave me at least an extra half-hour of entertainment that I had not counted on. Why had the pivot hole been moved? Well, it was obvious that the wheel was a replacement; in fact, the whole arbor was a replacement, a “repair,” where some clock repairer in the past had adopted the modification in a moment of despair. What’s more, he had succeeded! The clock actually worked.

Life is very unfair sometimes. If I make an error of a few thousandths of an inch in placing a pivot hole, the clock stops. This fellow got away with three-eighths of an inch!

I had neither the equipment nor the time to carry out a repair in Reading, so it had to wait until I got back to Totnes in Britain. I took no photographs at the time, just my usual repair notes, and I had to rely on drawings to illustrate the work. My notes do not show the count of the center wheel, presumably because it had not been lost, and I carried out the train calculation in my head (it is a simple exercise, after all).

To begin with, here I will calculate the count of the wheels in the upper train (from center arbor to escape wheel arbor). The pinion for the third wheel has eight teeth, the escape pinion has seven leaves,

the escape wheel has thirty teeth, and the pendulum beats sixty times a minute (most probably). That leaves two wheels that are unknown (because I do not have a note of the center wheel count and the third wheel is a “foreigner”).

From our usual formula and substituting A & B for the two unknowns we have:

$$\frac{A \times B \times 2(30)}{8 \times 7} = 3,600; \text{ therefore } A \times B = \frac{3,600 \times 56}{60} \text{ \& } A \times B = 60 \times 56 = 3360$$

Now, I can use a 60t wheel and a 56t one, or I could see if any other whole numbers will multiply together to give 3,360.

There is 70 and 48, then 80 and 40, and there may be others. However, I am discounting both of these because the third wheel is so much smaller than the center wheel, and the pivot holes in the clock plates clearly show that this was not so, originally. The leaves on the two pinions appear to have the same tooth size. If that is correct, the center distances of center wheel to third pinion and third wheel to escape pinion (after subtracting the pitch circle radius of the pinions) should have the same proportions as the wheel counts which is 60 : 56. Do not expect that I can produce precise dimensions at this point, but I should be able to settle on one or another of these possible pairs of wheel counts.

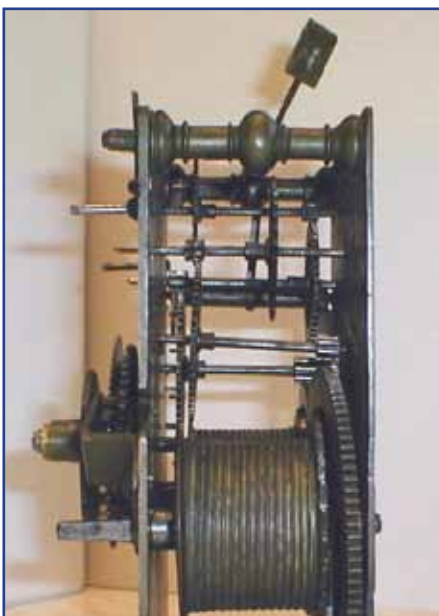


Figure 1



Figure 2



Figure 3

# the mysterious pivot hole

BY LAURIE PENMAN

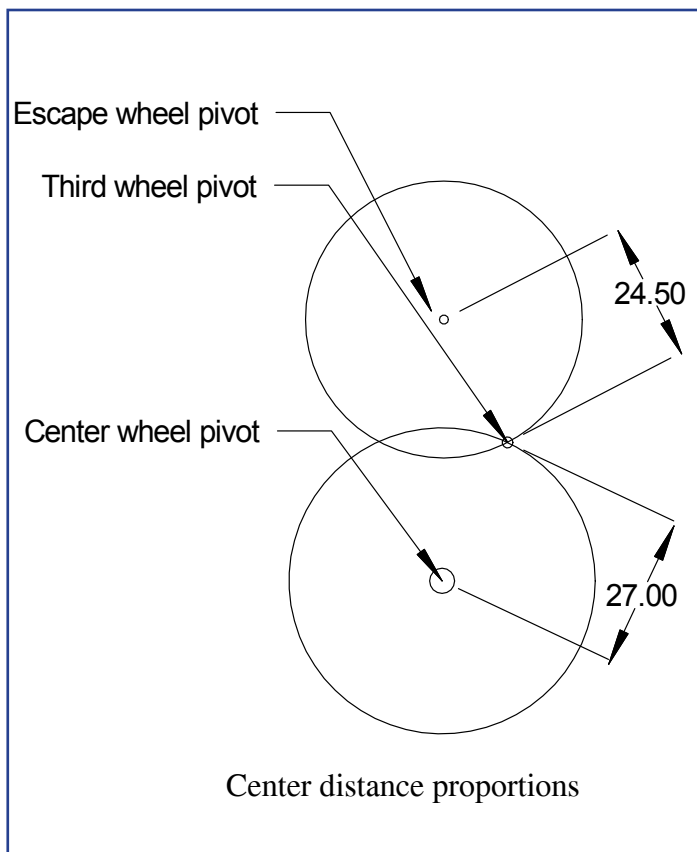


Figure 4

Figure 4 is a schematic of the wheels and pinions with proportions taken from the photograph in Figure 2. Since the photo was not taken square to the face and centered on the center arbor, any measurement has to be approximate and involve a certain amount of guesswork. Nevertheless, I am fairly confident that the figures derived, 24.50 and 27.00, are good indications of the center distances.

The distance between centers is the sum of the pitch radii of the pinion and the wheel in a meshing pair. This little formula will enable me to decide whether the wheel count above is reasonably close to the original (when the center distances were established).

Just to show that my discarding of 70t and 48t was reasonable I will calculate the ratio between the two center distances. This was:

$$35 + 4 \text{ divided by } 24 + 3; 39 \text{ divided by } 27 = 1.444.$$

$$\text{The chosen counts were } 60t \text{ and } 56t; 34 \text{ divided by } 31 = 1.097$$

Now, the figures extracted from the photograph were 27 and 24.5 (27 : 24.5) and the ratio of center to third arbor and third to escape arbor 1.102, which is considerably smaller than my first trial of 70t and 48t. On the other hand, the chosen counts of 60t and 56t come pretty close. Given the errors in taking measurements from a photograph, I am now sure that the original wheels were 60t and 56t. The actual dimensions of the wheels can be calculated by measuring the pinions' pitch circle diameters and using those. The distance between centers to arrive at pitch circle diameters for the two wheels, (center distance equals pinion pitch circle radius, plus wheel pitch circle radius).

These figures may be a little confusing, but all I have done is use the photograph to establish the proportions of the two missing wheels (center and third). Then I chose two counts that fitted that proportion and, when matched with the existing pinions, gave a beat-per-hour of 3,600. Incidentally, this number of beats is "not necessarily so." If the clockmaker had used a 6t escape pinion instead of a 7t, he would have settled for a pendulum that beat slightly more or slightly less than a nominal 3,600 (depending on the counts of the wheels).

Oddly enough, it seems no one ever notices that the second hand on their longcase clock completes a minute's revolution in fifty-six seconds, or some other time span close to the expected sixty. ♦

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# Mandatory Parts Exchange for Service of the 2135

This chart was provided by Michal Blaszczyk, CW21. It was part of the information shared at a March, 2012 Chronometer Club event held at Lititz Watch Technicum. During this two-day event, courses were conducted for attending Chronometer Club members by AWCI's watchmaking instructor, Thomas Schomaker, CMW21.

Technical Information for Mandatory Parts Exchange During Service of 2135:					
Part Name	Part Number	Old Design	New Design	Problem Solved	How to Check
Mainspring Barrel	2135-310	Drum with cover/lip.	Drum with lid (snaps into barrel drum, not over barrel wall)	Situations where barrel opens and causes rubbing on mainplate.	Visual inspection after removal of barrel complete.
Setting Lever	2135-220	Two Part with yellow screw.	Single unit, no screw.	Screw could loosen and fall into movement	Visual inspection while case is open.
Corrector Mechanism	2135-668*	Flat tooth system that rotates date indicator forward and backwards	"Saw/Wolf" tooth design that only rotates date indicator only forward	Interference with old style date finger that could damage date indicator wheel.	Pull crown out to position 1, date setting position, and see if date indicator rotates both ways.
Date Wheel	2135-624	Slot smaller to fit first generation post from unlocking yoke cam	Slightly larger slot to fit post from Unlocking yoke cam	Incorrect alignment and fit of date finger, date wheel and unlocking yoke cam.	No visual way. Expect to replace in junction with corrector mechanism.
Date Finger	2135-623	Looks more like a wheel with one or two posts.	Looks more like a spring than a wheel.	Used to be able to damage teeth of date indicator.	No visual way. Expect to replace in junction with corrector mechanism.
Unlocking Yoke Cam	2135-630	Post is slightly smaller on first generation.	Post slightly larger to fit Date Finger.	Design location of new date finger.	No visual way. Expect to replace in junction with corrector mechanism.
Yoke for Cam	2135-633	Sides are more flat.	Sides have a slight curve to them.	Prevents yoke for cam from incorrectly seating on Unlocking Yoke Cam.	No visual way. Expect to replace in junction with corrector mechanism.

## LETTER TO THE EDITOR:

### THE DIFFICULTY IN CLEANING SWISS PIVOT FILES

Letter Submitted by Member, Bob Little, CC, CW

Just read the great article on pivot finishing in the latest *HT*, written by Laurie Penman. In the article he mentioned the difficulty in cleaning the Swiss pivot files. I have a very easy way to clean fine files. This is the procedure:

1. Clean the file by washing in acetone or lacquer thinner to remove traces of oil, then dry.

If it has a plastic hand, slide the handle off.

2. Take a clean coffee cup and fill it with enough undiluted white vinegar to allow complete immersion of the file teeth (about  $\frac{3}{4}$  cup).
3. Heat it in a microwave until you see small bubbles form inside the cup. (if you see rapid bubble, the vinegar is too hot.) Immerse the file in this and continuously scrub the file on all sides and edges with a new hard-bristle nylon toothbrush. The bristles should be trimmed down to about  $\frac{1}{4}$ " in length.
4. Remove and check the file every minute or so. You may need to reheat the vinegar and repeat

the scrubbing process. Scrubbing time could be between 5-10 minutes total.

5. When done, wash with detergent and dry.
6. Rinse in alcohol and dry.
7. Coat completely with oil and let soak overnight.

Except for the final soaking in oil, the whole process can be done in less than an hour while you are doing other work.

I have several notes on this process: Do not use any acid stronger than white vinegar. Do not let the file soak without scrubbing. Anything stronger than white vinegar will not work on very fine teeth; it will dissolve them. I use Dexron® automatic transmission fluid (Type II or III) on the file and burnishers. When you use a wet file, apply the automatic transmission fluid to the entire length of the file, and take only one slow stroke on the pivot, and then wipe filings and oil off using a lint-free 300-caliber rifle cleaning patch, and then re-oil. Doing this, the file does not load up with metal nearly as fast, and for really scored pivots, only one full stroke is needed. You will be able to judge; slightly scored pivots only take a partial stroke. You have to wipe the file after each stroke or the metal filings will impact the next stroke.

After cleaning a loaded-up file and using ATF on the file, I have found that further cleaning as described above is very infrequently needed. Also, learning to keep the file steady and flat to the surface will greatly extend the file life. I had two old pivot files that were basically unusable. After I cleaned them with vinegar and used ATF I have not noticed any loss of file performance.

## REPLY FROM AUTHOR, LAURIE PENMAN

Thank you for writing, Bob. I have never actually used the vinegar file-sharpening method. . . . The preferred method in the fitting shop [in which I apprenticed] was French chalk to dress the file first and a piece of hard 60/40 brass to clean it, but use whatever works best for you. ♦

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# Repair of the Arbor in the LeCoultre Caliber P812, Part 2

In Part 1 (on page 12 of this issue), the pinion was mounted true in the lathe and a centered hole was drilled with a .49 mm carbide spade drill. I originally had planned to drill completely through the pinion and turn both the upper and lower pivot to the noted dimensions. Drilling slightly more than halfway through the pinion, I decided to insert the long lower pivot. I felt that there was enough metal in the pinion to more than adequately support the arbor. This would also allow me to work on only one side of the pinion, rather than dismounting, remounting, truing and turning the opposite pivot.



Figure 17



Figure 18

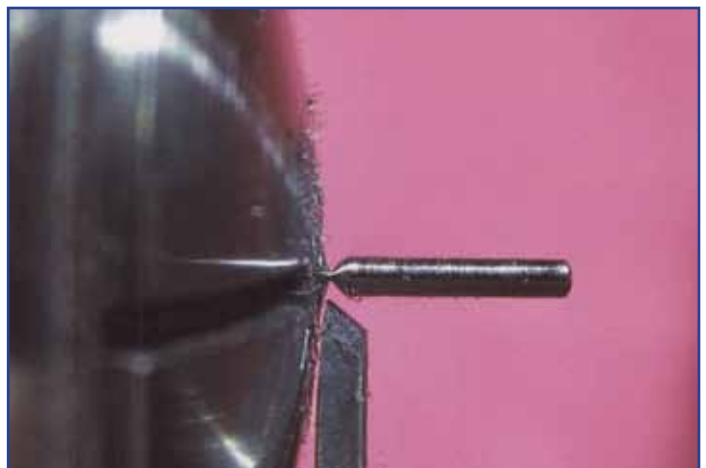


Figure 19



Figure 16

A blued piece of steel was ground down with a slight taper until the tip just entered the hole in the pinion as shown in Figure 16. The tip measured .51 mm which corresponds to the hole diameter. The .49 mm drill cut a hole .02 mm larger as expected. Refer to Figure 17.

The new arbor was turned down to a friction fit in the pinion and longer to accommodate for the hole depth (see Figure 18). A back taper was turned as

shown in Figure 19. A small amount of red thread-locker (permanent) was applied to the tip of the new arbor which was then inserted into the hole (see Figure 20).

When the motor was momentarily switched on, the new arbor broke free and then the arbor was carefully tapped fully in place as shown in Figure 21. After allowing the threadlocker to set, the arbor was turned down from .51 mm for a proper loose fit in the center wheel (see Figure 22).

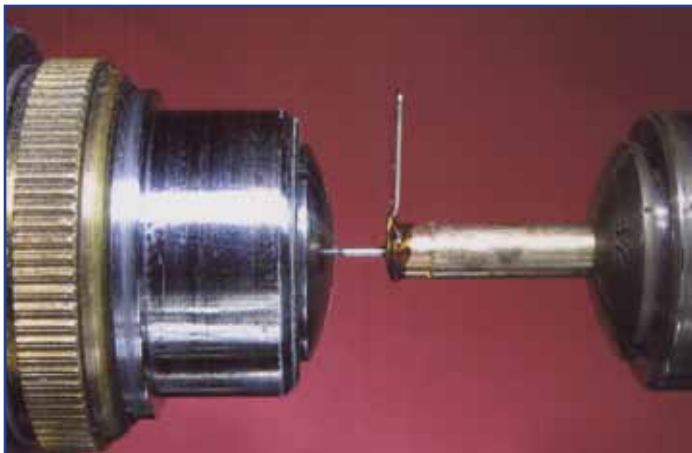


Figure 20

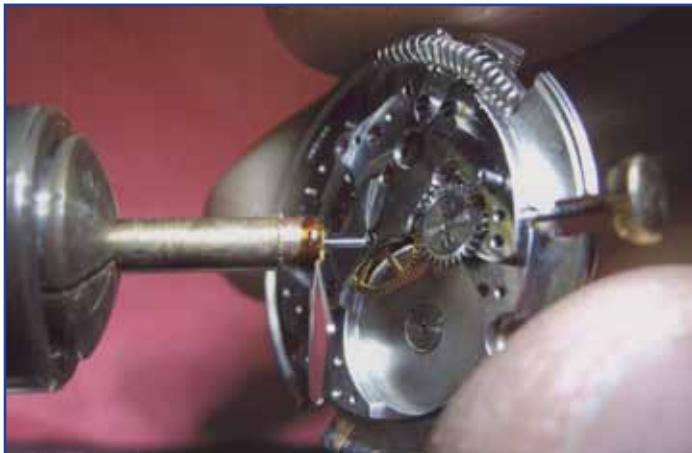


Figure 21



Figure 22

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# repair of the arbor in the lecoultre caliber p812, part 2

BY DALE LADUE, CMW21

As experienced in the drawing, the fore-end is the bearing surface and the mid-section is relieved by a few hundredths of a millimeter. The mid-section was turned down and the bearing surface was burnished with a jasper slip, see Figure 23. The finished arbor as shown in Figure 24 was checked for proper fit before removing from the lathe (see Figure 25).

Heating the brass fixture softened the shellac and released the pinion. The new arbor in place with shellac, infused in the pinion, is shown in Figure 26. The arbor plate was placed into a Pyrex® test tube with a small amount of alcohol (see Figure 27). The alcohol was heated to lukewarm temperature by inserting the test tube in hot water. I had reservations about “boiling out” the shellac because of heating and possibly weakening the threadlocker. It takes much more heat than just lukewarm to weaken permanent threadlocker. After the shellac softened and partially dissolved, the remainder was picked free.

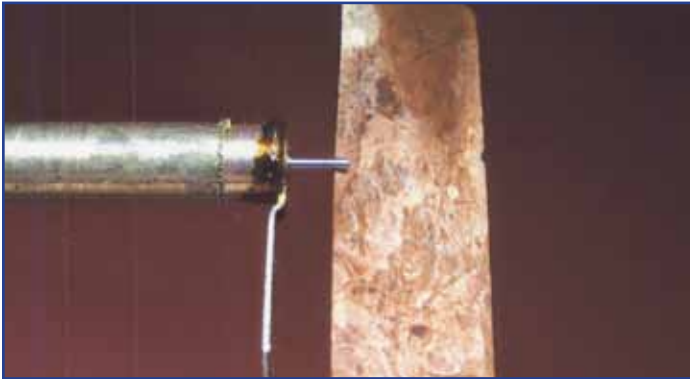


Figure 23

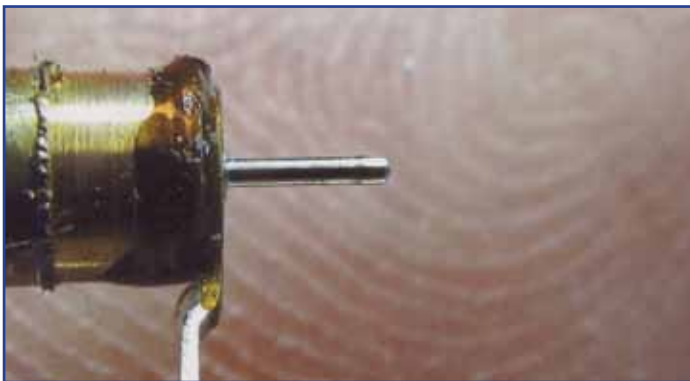


Figure 24



Figure 25

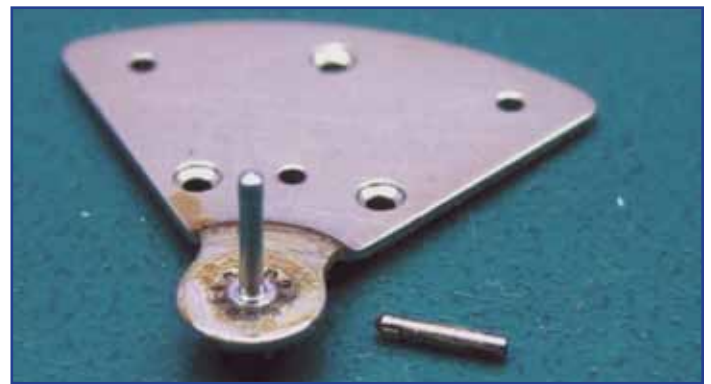


Figure 26



Figure 27

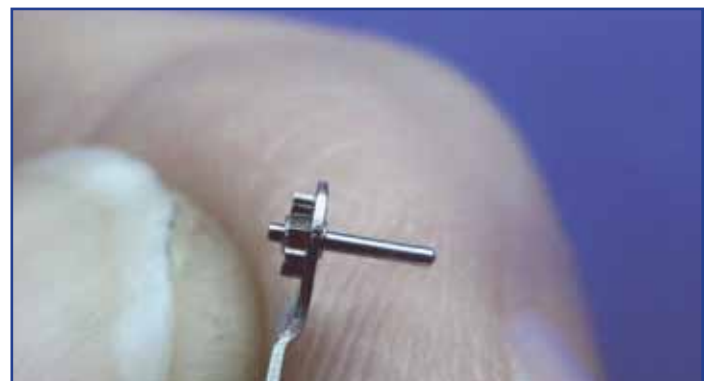


Figure 28



# repair of the arbor in the lecoultre caliber p812, part 2

BY DALE LADUE, CMW21

A final few minutes in the ultrasonic tank eliminated all the residue (see Figure 28). This project produced a very nice-looking piece indiscernible from the original. The saying, "The proof is in the pudding," makes more for a nice-looking pudding; however, the proof really is in the "tasting." I have confidence that this arbor, shown in a plain view in Figure 29, is as strong as the original. Testing the weight and arbor for absolute freedom is shown in Figure 30. The final test, though, is "on the wrist." ♦

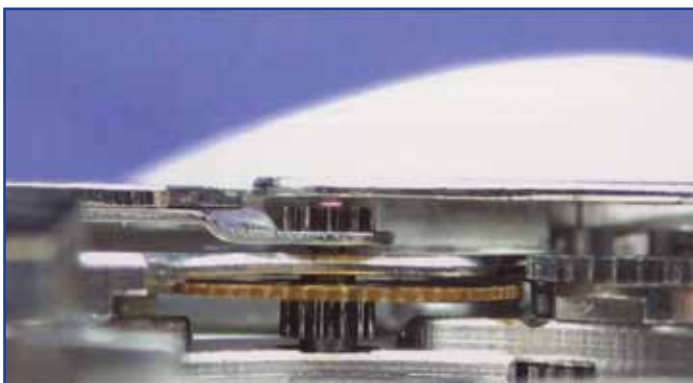


Figure 29



Figure 30

Dale LaDue, CMW21, is a second-generation watchmaker-clockmaker who has been a contributing writer to the *HT* for many years. A graduate of the Gem City School of Horology, he has been in business in the Rochester, New York area for nearly 30 years.



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## New Release: Longines Conquest 24 Hours

Longines has a historic tradition marked by the continual elegance and performance of its products. Founded in the town of Saint-Imier, the famous Swiss watchmaker is celebrating its 180th anniversary with the introduction of the Conquest watch.

This Conquest line is an emblematic selection of three styles within the Longines Sport Collection. The design of each watch contains the subtle fusion of performance and elegance, including the most demanding technical characteristics.

The new Conquest 24 hours now adds a second time zone, a tool used by pilots crossing different time zones in both directions. As the sun was not always visible as a point of reference, instruments were needed that could immediately indicate the correct part of the day. With a 24-hour dial, navigators had no problem.

With its water-resistance to 5 bar (50 m), this model is not only a reliable partner in the air, but also under water. The Conquest 24 hours meets the most demanding requirements of travelers, sportsmen and -women, and those searching for a reliable, attractive watch.

### Technical Features:

- Elegant stainless steel case; 41 mm diameter
- Self-winding mechanical movement
- Sapphire glass with anti-reflective coating
- Black, silvered or blue dial with 2 applied Arabic numbers and 9 applied indices
- Rhodium-plated hands with Super-LumiNova show hours, minutes and seconds; date is indicated at 3 o'clock
- Lateral protection of crown



## “Angelus” is Daniel Strom’s Third Mystical Work

Following on from dragon and skull designs in his first watch and accessory collections, the third Angelus collection by Daniel Strom is somewhat more restrained with angels adorning the sculpted case. A creation into which the watchmaker has breathed all the spirit of Agonium – watches that do not simply tell the time, but also express our existential questions—is the symbolic significance Strom gives to Time. The angels embody the bridge between the material and symbolic worlds in the Angelus line.



Strom certainly has an eye for detail. Plated onto an original mould, gold, silver, platinum and palladium are crafted by the expert strokes of the goldsmith, giving rise to unique pieces. The case of the Angelus is embellished with a wealth of details, curves, incisions and finishes. Feathers twirl around the crown – a symbol reflected on the lugs. The two sides of the case feature two reclining angels and a crouching messenger, wings spread out as if ready to fly. Behind the anti-reflective, domed sapphire crystal, the white or dark mother-of-pearl dial contrasts with the Roman numerals and golden, polished hands. Like the Memento Mori or Draco, three hands count the hours, minutes and seconds. At the heart of the timepiece, a second case surrounds the automatic ETA 2824 movement.

## Technical Features:

**Movement:** Mechanical self-winding Calibre ETA 2824

**Functions:** Hours, minutes and seconds

**Case:** 925 solid silver, 18K gold, palladium or platinum; stainless steel inner case; anti-reflective, domed sapphire crystal; water-resistant to 50m / 5 ATM

**Dial:** White or dark mother-of-pearl; gold-toned or white polished steel hands

**Strap:** Brown, blue, black or white alligator leather with 925 solid silver, 18K gold, palladium or platinum Angelus pin buckle

**Price:** Starts around USD \$10,000 for the 88-piece limited-edition 925 solid silver model and ranges up to USD \$61,000 for the 12-piece limited-edition platinum model



# GemOro Introduces Extra-Precision Platinum® PCT Pocket Carat Scales

The engineers at GemOro have created a new generation of superior carat scales with unique features, style, precision and durability. These extra-precision carat scales are available in two affordable-priced versions (PCT101 and PCT251) with both offering the accuracy of 0.005ct, and a capacity of 100ct or 250ct. The scales weigh in ct, g, dwt, oz, ozt, gn and even feature a small parts counting function. They have a convenient 4-button control panel, an EZ-grip rubberized paint finish, digital pushbutton calibration. The low-profile flip-up draft shield easily expands to accommodate the weighing of large stones or parcels.

These scales have a 5-year replacement warranty and come in a rubberized compact carrying case. They include a calibration weight, Swiss-style diamond tweezers, diamond scoop, stainless steel weighing platform, (4) AAA batteries, and a universal voltage 100-240V AC adaptor. For more information contact GemOro at 800.527.0719 or at:

[www.gemoroproducts.com](http://www.gemoroproducts.com).



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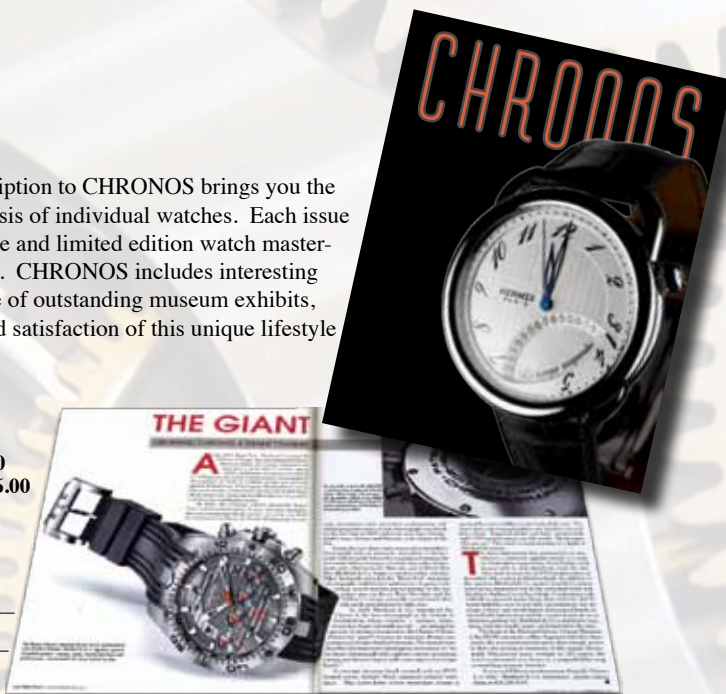
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## Upcoming Affiliate Chapter Meetings in Texas



Southwestern watch and clock enthusiasts are invited to join the Capital Area Watch & Clockmaker Guild (CAWCG) in Texas for their upcoming Affiliate Chapter meetings. Their next few meetings are as follows:

August	Don Bugh	TBD
September	Dennis Warner	TBD
October	Mary Ellen Bell	Horological Travels
November	David Arnold	TBD

Join CAWCG to network, learn and socialize with fellow horologists. Dinner: 5:00 PM – 6:00 PM, Program: 6:00 PM. Location: Pok-E-Jo's Smokehouse, 2121 Parmer Lane (near Metric Blvd.) Austin, Texas. Please contact Jay Holloway, Secretary, for more information: [jholloway@suddenlink.net](mailto:jholloway@suddenlink.net).

## Minnesota Clockmakers Guild

In June, the Minnesota Clockmakers Guild (MCG) meeting included a presentation and samples passed out by Amy Bezdichok from 3M Commercial Adhesive products. She included demonstrations and explanations of what adhesives to use and when and how to use them.

Ron Widenhoefer shared his latest clock creation, a skeletonized shelf clock with a fascinating double-axis tourbillon escapement for greater accuracy. Richard Zielike had a pendulum with broken rod holders to be glued together. Ivy Booth shared a number of interesting auction items she acquired and ask for help identifying the items and their usage.

In July, the MCG featured drill-sharpening techniques by Ron Saboe. He shared his Darex grinder and examples of multi-faceted drill point grinds.

### Upcoming meetings include:

August 2 - Video - TBD

September 6 - Lathe Tune-Up Tips

To RSVP or for more information, please contact Secretary, Dean Ziegenbein - 952-322-4776 or via e-mail: [dpz72@hotmail.com](mailto:dpz72@hotmail.com).



Amy Bezdichok of 3M Commercial Adhesives demonstrated using a small amount of anaerobic thread locking adhesive (Loctite) to retain a nut on a bolt.



Ivy Booth sharing two interesting items to be identified: A hand length/diameter measuring tool and a weight winding stop.

BY AARON RECKSIEK, CW21

## ***Affiliate Chapters, continued***

### **Florida Annual Convention**

The FWCA Annual Convention will be held October 26, 27, & 28, 2012 in Tampa, Florida at the Hilton Garden Inn. A bench course on high-grade watch repair will be offered by AWCI's Instructor, Tom Schomaker. Please e-mail Matt Hritz for more information: fathertimeinc@yahoo.com. Or, see their website at: www.fwcaonline.com

### **Horological Association of Virginia Upcoming Events**

August 19 - HAV Board Meeting, Ivy Creek Nature Center, Charlottesville, Virginia

November 4 - HAV Seminar: A presentation on a clock built entirely of wood.

November 18 - HAV Board Meeting at Ivy Creek

February 24, 2013 - HAV Board Meeting at Ivy Creek

May 3, 4, 5, 2013 - HAV Convention in Roanoke, Virginia. There will be clock and watch seminars, etc. For more information contact: spalen@crosslink.net

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## **In Remembrance: Nino Gonzales, CMC**

By Aaron Reckseik, CW21

Nino Gonzales, Certified Master Clockmaker, an AWCI lifetime member, and a member of the Capital Area Watchmaker and Clockmaker Guild of Texas (CAWCG), passed away Tuesday, June 26, 2012. He was 84 years old.

Nino Gonzales holds a special place in AWCI members' and CAWCG members' hearts. Nino encouraged many new horologists to continue learning throughout their entire lives. He possessed an extensive amount of knowledge, but he never felt he was done learning. Nino did not act as if he had all the answers; he was always seeking improvement and more knowledge. He encouraged attendance

at Guild meetings, welcomed new visitors, and even taught different AWCI and CAWCG classes. Possessing a sense of pride in his work, he was always going the extra step beyond what was required. Nino, as a Certified Master Clockmaker, was considered by all to be a true professional, both in his breadth of knowledge, and in his dedication to quality. It was Nino's openness and willingness to help others that endeared him to so many. Nino never discouraged others; he would simply show them the way he did things. If a student had a good idea, Nino would be quick to praise the new approach.

While Nino was helpful, he did want students to learn. Although he helped prepare others for the challenges they would face, he would never tell the whole story—to leave out part made it a lot of fun to learn. He kept things lighthearted, so that his fellow horologists not only learned, but had a good time, as well. Nino Gonzales will be missed by all who knew him. He cannot be replaced, but others can honor his memory by trying to follow his example. CAWCG has set up a scholarship for future clock training classes which will pay for one student in a class, In the Name of Nino Gonzales. If you'd like to donate to the fund contact: jholloway@suddenlink.net.

## **In Remembrance: Donald B. Shumaker**

Donald B. Shumaker, 63, passed away Wednesday, May 31, 2012. He was born in Mechanicsburg, son of Benjamin and Marie Shumaker of Enola, Pennsylvania. Surviving are his wife Mary, two daughters, Jessica Buchtel and her husband John, and Maggie Cypher and her husband Shawn. Also surviving are his brother, Robert Shumaker and wife Judy, and his sister, Eileen Scott.

He graduated from Bowman Technical School for Clockmaking in Pennsylvania in November, 1971 and was the owner of Shumaker's Clock Repair in Altoona for 36 years. His love of old clocks began when his grandfather took him to a clock shop in Enola when he was a boy. He enjoyed working on all kinds of clocks, including anything from street clocks to Rolls Royce automobile clocks, or even a clock from a World War II fighter plane. He enjoyed making service calls in people's homes and many of his customers became his friends. Donald was a loyal supporter of AWCI and an active member who will be greatly missed.

## 2012-2013 Schedule (through March)



### Brand and Caliber-Specific Training - 2012

These special classes (5 CEUs each) are offered only to CW21 and CMW21 AWCI members:

Aug 27 - 31 - Caliber R3035

Sept 10 - 14 - Caliber R3035

Oct 15 - 19 - Caliber R3035

\*Nov 5 - 9 - Omega (Dan Fenwick) SWATCH GROUP US, Instructor

Feb 11-15 - Caliber R3035

Mar 11-15 - Caliber R3035

5-day block: \$875.00



### AWCI Academy of Watchmaking

Sept 17-21 Modern Mechanical Chronograph 7750/7751 (5 CEUs)

Sept 24-28 Modern Automatic Watches (5 CEUs)

Jan 28 - Feb 1 Balance Staffing & Timing (5 CEUs)

Mar 4 - 8 Quartz Watch Repair & Testing (5 CEUs)

Mar 18-22 Basic Watch Repair

5-day block: \$875.00



### CW21 Exam Schedule

Aug 6-9 Lititz WatchTechnicum, Lititz, PA

Aug 13-16 North Seattle Comm. College, Seattle, WA

Oct 1-4 AWCI Training Facility, Harrison, OH

Dec 3-6 OSU Institute of Technology, Okmulgee, OK

Feb 4-7 AWCI Training Facility, Harrison, OH

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**TO REGISTER FOR CLASSES OR EXAMS, please call toll-free 1-866-FOR-AWCI (367-2924), ext. 303 or e-mail: [dott@awci.com](mailto:dott@awci.com).**

BY DAVID CHRISTIANSON, CMW21, FAWI

## QUESTION:

This pocket watch is silver. The inside of the case is stamped with a crown next to a moon sliver, a peacock, 0,800 E.P., and 73693. The movement is stamped 71843. The watch is not currently working, and the case is getting very thin and is in fair-poor condition.

Stephanie Lucas, Linda Pounder's Jewelry,  
Spokane, Washington

## ANSWER:

Your pocket watch is known as a Swiss railroad watch with enameled cartouches for the first twelve hour numbers and an outer numerical ring for the second twelve hours of the day. The watch is stem wound and pin set, an arrangement that was in common use in Europe between 1870 and 1900. Your watch houses a Swiss bar movement that was machine-made and machine- and hand-finished. The style of the movement and its finish also suggest this same time period. The hairspring stud style suggests a Western Switzerland origin.

The inside back cover of the case (called the cuvette) tells us that the watch's movement has an anchor-shaped lever escapement (ancere), 15 train jewels (15 rubis) and a straight-line winding mechanism (ligne droite remontoir).

You noted the quality marks on the inside of the watch case. The "peacock" mark that you see is actually that of a "grouse," the Swiss assay mark for 0.800 silver. The "0.800" also indicates an 80% silver content for the case. The E.P. would be the case maker's mark and the "73693" would be the case's serial production number. Your watch was apparently exported to Germany for sale because it bears the German mark for silver: the "crown and crescent moon."

Unfortunately, I do not give valuations through the auspices of AWCI but I can suggest using the latest edition of the *Complete Price Guide To Watches* by Richard E. Gilbert, Tom Engle and Cooksey Shugart, available at most book stores and on-line. You might also try doing an internet search (including Ebay and other auction sites) using the information you now have about this watch.

**Send your Questions to *Horological Times***  
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866-367-2924 ext.307





BY DAVID CHRISTIANSON, CMW21, FAWI

## QUESTION:

Can you tell me the history of this tall case clock, possibly produced by Elisha Kirk?

Mr. Lapidés

## ANSWER:

This is quite an interesting puzzle.

Elisha Kirk was, indeed, a clockmaker in York, Pennsylvania, from 1780 until his death. Markers' lists record his death as 1790, but a family genealogy records his death as April 11, 1791. Although he only lived for 13 years following the completion of his apprenticeship in 1778, he reportedly produced at least 120 clocks. He was considered one of the best clockmakers in York County. Apparently, only three of his clocks have been documented: A 30-hour clock No. 95; a tall case clock made jointly by himself and his apprentice, Jonathan Jessop (Jessop), and numbered by both as Kirk's No. 67 and Jessop's No. 1; and a walnut-cased, one-weight tall clock which was No. 12.

It is highly unlikely that a well-regarded maker who clearly marked and numbered all three known examples of his work would inconspicuously mark a clock in the lower right-hand corner of the dial. And then there is the matter of the date on the dial 33 years after his death.

You noted in later correspondence that your family tradition says your clock was made in Zanesfield, Ohio, a village near Bellefontaine in Logan County. The village of Zanesfield was platted in 1819 and grew from that time, but remained (even today), a very small village. According to the *History of Logan County*, (where your clock was purportedly made) there were no clocks in Logan County until Yankee clock peddlers made their appearance in 1818. The nearest clockmakers were downriver in Dayton, Hamilton, Xenia, Lebanon and Cincinnati.

Could it be that the Elisha Kirk on your dial was the dial painter? There was a painter (not necessarily a dial painter) by that name in northwest Ohio in the early 1800s. Perhaps it was repainted or touched up

in 1824, 13 years after the clock was made? Or could it be that a family member felt, for one reason or another, that the clock could have been made in Pennsylvania by Elisha Kirk and recorded this name on the dial in 1824 to help establish its provenance? Or could it be that your clock was made in Zanesville, a town northwest of Marietta, Ohio, on the Muskingum River, which had an active clockmaker at the time your clock was made?



## Early Clockmaking in America

Clockmakers, primarily from Great Britain, began arriving at the major seaport cities in the colonies in the early 17th century. Tall case clocks were imported into the American Colonies until the early 18th century when immigrant clockmakers started making their own clocks. Styles followed the general trend found in Great Britain, but with some local distinctive features. Cases were often made of types of lumber not used in Britain, like cherry wood or American walnut (usually solid wood rather than veneer). Movements were very similar to those made in Britain, because the basic components came from England.

The demand for American tall case clocks declined sharply in New England after about 1820, although they continued for another 10 years in Pennsylvania, Maryland and Ohio.

Clockmakers in Pennsylvania and Ohio usually bought wheels, plates and other parts which they finished and built into clocks. There never was a cottage industry in America, as there was in England that could supply these wheels, plates and other parts. But it was never a matter of mass-production, since every clock was individually made. An average clockmaker in America might make four or five clocks in a year.

The fact that these early American makers bought their parts does not diminish their skills and talents as actual clockmakers. The pre-made parts simply aided the maker in his efficiency to a degree, although the parts themselves

could not create a finished clock without considerable finishing, fitting and adjusting. Usually, additional parts the maker needed would have to be made by hand, even to the extent of beating out his own brass sheets or even substituting iron.

BY DAVID CHRISTIANSON, CMW21, FAWI

The American clockmaker seldom made his own cases, relying, instead, on the local cabinet maker whose skills varied from good carpentry to exceptionally fine cabinet work. But whether the case was beautifully made or a clumsy attempt, it largely reflected the character and pocketbook of the original owner for whom it was made.

Case styles in America followed British fashion since most of the very early clockmakers emigrated from the British Isles. As a broad generalization, the New England states of Connecticut, Massachusetts and further north were settled by the English, thus reflecting the southern English tradition of flat-tops, dome-tops and crestings. Pennsylvania and Ohio and neighboring states were largely settled by the Scots and Irish, along with pockets of Germans and others from the Continent after the Revolutionary War. Swan-neck pediments were largely used in this area, reflecting their popularity back home.

In America, very basic cases were still being made into the early part of the 19th century. These simple rural cases were made of painted pine, birch, poplar, cherry, maple and black walnut, rather than the oak used for their English counterparts.

American cases often have proportions that seem out of proportion when compared to classic English cases. Hoods and bases often appear overly large in comparison to their trunks, and the doors often appear too narrow for the width of the trunk. Arch dials were often used on American clocks, even the most basic of the rural-made clocks in very simple cases.

## Analysis of Your Clock

Your clock has a brass, English-style movement. The majority of tall clocks were made in the English-style in North America from 1770 to 1840. These earlier brass movements, handmade from components imported from England, were too expensive for most people in frontier Western Pennsylvania and Ohio at the turn of the 19th century.

Brass movements nearly disappeared in the wake of the much cheaper shelf clocks with factory-produced wooden movements made in Ohio or assembled there from Connecticut-made movements beginning around 1810. These wooden movements were then supplanted by even cheaper factory-produced shelf clocks with brass movements in the late 1830s.

If we look more closely at your clock's dial, we can make a pretty good determination of its age. Painted white dials seem to fall into the narrowest of date categories of any other component of the earlier tall case clocks. White painted dials made around 1770-

1800 primarily used Roman hour numerals and Arabic minute numbers, typically at 5-minute intervals, as your clock. Of course, this generalization refers to clocks made in England. Just as there was a time-lag in styles used in London versus those used in the Provinces (areas outside London), there was a lag from the time a style of dial was introduced in England until it was available for use in North America. Once the white dial industry was up and running in England, they eventually exported their dials to North America.

George Eckhardt, *Pennsylvania Clocks and Clockmakers* (Devin-Atlas, 1955) noted that the vogue for white painted dials began in Pennsylvania after 1800; the average Pennsylvania clock was made between 1800 and 1830; and the dials of 1800-1825 used shell patterns in their corners (like yours) along with geometric and abstract patterns during this period.

## Ohio Clockmaking

Clockmaking came to Ohio shortly after the first influx of settlers in 1790. The state proved an appealing frontier that attracted clockmakers and other artisans, especially after it gained statehood in 1803. The state did draw a number of brass tall clockmakers, but the demand for their products was not great. In fact, early handcrafters generally farmed or pursued other businesses since there was little demand for expensive, handmade tall case clocks. Those Ohio timepieces that were made were probably produced on special order and in very limited quantities. Very few, if any, would have been made on speculation and placed in shops for sale.

I do know that there were about 40 clockmakers in Ohio in the very early 1800s. They came primarily from Pennsylvania and Connecticut down the Ohio River and ventured inland following one of five major rivers: The Mahoning River in the Northeast corner of the state; the Muskingum River in the southeast; the Scioto River in the south central portion reaching north to Columbus; and the Little Miami and the Great Miami Rivers in the southwestern corner of the state. The east fork of the Great Miami runs southwest from Bellefontaine and Zanesfield (Logan County) down to Cincinnati.

With all of this information about this particular



BY DAVID CHRISTIANSON, CMW21, FAWI

movement and dial, I can comfortably date your clock in the very early 1800s. I tend to believe family legend and family records, especially when they reflect the physical evidence of the clock itself. Your records fall more in line with the apparent age of your clock than does Elisha Kirk, who died before the white painted dial came into common use in Pennsylvania and Ohio.

## Family History

Your clock came down through the family on your mother's side. From the genealogy chart that you sent me, I see that one branch of your family has been in Logan County, Ohio, since at least 1854 and probably before when your maternal great, great, great grandfather passed away. Branches of your mother's side originated in Maryland, Pennsylvania, North Carolina and Virginia, all early clockmaking states.

In a letter from your maternal grandmother, Avis M. Fisher, she identifies the clock as her grandfather's clock. He would have been Jonathan Thomas, born in 1805 in Mount Pleasant, Jefferson County, near the Ohio River on the extreme eastern border of Ohio and Pennsylvania. He came to Logan County, probably via the Ohio and Miami Rivers, and was married in 1830. His parents (her great, great grandparents) came from North Carolina.

Since your clock was probably made about the time that Jonathan was born, it was probably acquired by his father, Jesse (your great, great, great grandfather) possibly in Steubenville, a city just north of Mt. Pleasant where there were four brass tall case movement makers. Jesse Thomas was married in North Carolina in 1797 before your clock was probably made. He moved to Eastern Ohio before 1805 when his son was born.

## Conclusion

Just as I can comfortably say that your clock was made in about 1805, I can also comfortably say that it is an example of an Ohio-made tall case clock, handmade from rough English components just before the advent of factory clock production and the demise of the handmade clock in America. It was very probably made in eastern Ohio, very possibly in Steubenville or maybe even Zanesville in the south-central part of the state, instead of Zanesfield. ♦

## References:

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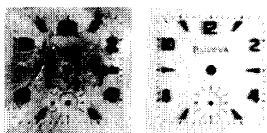
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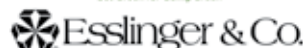
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