

HOROLOGICAL™ TIMES

September 2003



American Watchmakers-Clockmakers Institute

Waterproof Gaskets

Popular Flat Gasket Assortment

#84.302
\$29⁹⁵

Includes 40 sizes – diameter range 16.80 to 37.00mm. A total of 80 pieces. Swiss made. Plastic box, refills available.



144 Piece O-RING Assortment

#84.036
\$36⁹⁵



A popular mix of sizes from ø14.50mm to ø32.00mm, in 3 thicknesses (.40mm, .50mm, .60mm). Total of 144 pieces. In a clear styrene box – Refills available.

"O" Ring & Gasket Speed Lubricator

#42.0758
\$6⁹⁵

A new method of lubricating "O" rings, gaskets and small parts. Simply place "O" rings or gaskets between foam pads and twist cover 1/2" turn. It's that fast! Lubricate "O" rings up to 2-1/2" in diameter. The foam pads are saturated with #747 Silicone grease. A tough, sticky, slippery, waterproof, synthetic grease that resists washout. Great for use on rubber, plastic or metal.



#747 Silicone Lubricant



#747 Silicone Lubricant is resistant to oxidation, thermal degradation and a broad range of chemicals. This synthetic lubricant is odorless, waterproof, and is particularly useful for O-rings and gaskets.

BULK GASKET MIXTURES

O-RINGS for Casebacks

Esslinger & Co.
O-Ring Gaskets
#84.052
One Gross

#84.052 \$6⁵⁰

Flat Rubber CASEBACK GASKETS

Esslinger & Co.
Flat Gaskets
#84.053

50-Pieces Swiss Made

#84.053 \$9⁹⁵

POPULAR O-RINGS

Esslinger & Co.
Popular O-Rings
144-Pieces Swiss Made

This 144-piece package includes 4 each of 36 diameters (14.5mm – 32.0mm). Available in four thicknesses.

#84.144 (.40mm thick)
#84.145 (.50mm thick)
#84.146 (.60mm thick)
#84.147 (.70mm thick)

\$19⁹⁵ each

Esslinger & Co.

1165 Medallion Drive • Saint Paul, MN 55120
80 Years Young - And Growing

phone orders: 1-800-328-0205 • fax orders (24 hrs): 1-800-548-9304

HOROLOGICAL™ TIMES

An Official Publication of the
American Watchmakers-Clockmakers Institute

EDITORIAL & EXECUTIVE OFFICES

AWI, 701 Enterprise Drive, Harrison, OH 45030
Phone: Toll Free 1-866-367-2924 or (513) 367-9800
Fax: (513) 367-1414
E-mail: awi@awi-net.org Web Site: www.awi-net.org
Office Hours: Monday-Friday 8:00 AM to 5:00 PM (EST)
Closed National Holidays

Donna K. Baas: Managing Editor, Advertising Manager
Katherine J. Ortt: Associate Editor, Layout/Design Associate

James E. Lubic, CMW: Executive Director &
Education & Technical Director

Lucy Fuleki: Assistant Executive Director

Thomas J. Pack, CPA: Finance Director

Laurie Penman: Clock Instructor

Nancy L. Wellmann: Education Coordinator

Sharon McManus: Membership Coordinator

Mary Huff: Shipping Coordinator

Heather Kyde: Receptionist/Secretary

Steve Jones: Audiovisual Manager

Gary Richards: AWI-ELM Trust Development Director

HOROLOGICAL TIMES ADVISORY COMMITTEE

Linda Chrysler: Chairman

Chip Lim, CMW, CMC, CMEW

Robert Ockenden, CMC

Robert D. Porter, CMW

Frank Poye, CW

Thomas Schomaker, CMW

Manuel J. Yazjian

AWI OFFICERS

Jack Kurdzionak, CW: President

Jim Door: First Vice President

Frank Poye, CW: Second Vice President

Alice B. Carpenter, CMW, CMEW: Secretary

Mark Butterworth: Treasurer

AWI DIRECTORS

Henry Frystak, CMW

Robert D. Porter, CMW

James Sadilek

Dennis Warner

Manuel Jean Yazjian

James K. Zimmerman, CMW, CMC, CMEW

John Kurdzionak: Affiliate Chapter Director

Joseph Juaira: Research & Education Council Director

Tony Riggio, CMW: Industry Advisory Board Director

IMMEDIATE PAST PRESIDENT

Robert D. Porter, CMW

FELLOW - American Watchmakers-Clockmakers Institute

Robert F. Bishop · Harold J. Herman

James H. Broughton · J.M. Huckabee

Fred S. Burckhardt · Gerald G. Jaeger

David A. Christianson · Benjamin Matz

George Daniels · Robert A. Nelson

Wes Door · Hamilton E. Pease

· Henry B. Fried · Archie B. Perkins

Josephine F. Hagans · William O. Smith, Jr.

· Orville R. Hagans · Milton C. Stevens

Ewell D. Hartman · Marvin E. Whitney

· Deceased

Reprinting and reproduction is prohibited without written permission from the American Watchmakers-Clockmakers Institute. Copyright ©2003 by the American Watchmakers-Clockmakers Institute.

HOROLOGICAL TIMES (ISSN 145-9546) is published monthly and copyrighted by the American Watchmakers Institute, 701 Enterprise Drive, Harrison, OH 45030-1696. Subscription price for the public is \$74.00 per year (\$6.50 per copy). Members subscription is \$30.00 which is included with annual dues of \$74.00. Periodicals postage paid at Harrison, OH 45030 and additional entries. POSTMASTER: Send address changes to HOROLOGICAL TIMES, 701 Enterprise Drive, Harrison, OH 45030-1696.

CONTENTS

VOLUME 27
NUMBER 9
SEPTEMBER 2003

FEATURE ARTICLES

2003 AWI Fellow—David A. Christianson	8
The Levers of American Striking Movements, Part 8	12
By David J. LaBounty	
Strive for Perfection	32
By Clay Minton	
2003 AWI Annual Meeting	38

COLUMNS

The Modern German Clock Movement, By Mark Butterworth	10
Part 37, What's In a Name and Other Trivia	
Technically Watches, By Archie B. Perkins	18
Part 64, The Reassembly of the Repeater Mechanism (Continued)	
As A Clockmaker Turns, By J. M. Huckabee	26
The Clockmaker and His Lathe, Part 4	

DEPARTMENTS

President's Message, By Jack Kurdzionak	2
Executive Director's Message, By James E. Lubic	2
Questions & Answers, By David A. Christianson	4
Ask Huck, By J. M. Huckabee	6
AWI New Members	25
Book Review, By Chip Lim	30
Bulletin Board	34
From the Workshop, By Jack Kurdzionak	36
Affiliate Chapter Report, By Glenn D. Gardner	50
AWI-ELM Trust Update, By Gary Richards	58
Classified Advertising	60
Advertisers' Index	64
AWI Employee Directory	64

EDUCATION

AWI Evening Classes in Clock and Watch Repair	31
Education Update, By Laurie Penman	54
AWI Bench Courses	55
Student to Professional Clockmaker Full Time Training	56

SPECIAL INTEREST

New York State Watch & Clockmakers Association 2003 Convention	34
AWI Health & Benefit Solution Programs	35
First Graduates of the Lititz Watch Technicum	48
57 th Annual WAO Convention	52
AWI Logo Merchandise	59

COVER

This month's cover features David A. Christianson—2003 AWI Fellow.



President's Message

Jack Kurdzionak, CW

Our very productive annual meeting concluded on August 3. AWCI's staff and board all worked together as a team to make this meeting a resounding success. The Chronometer Club held its annual meeting and educational program on Thursday afternoon followed that evening by an open forum round table discussion hosted by outgoing Affiliate Chapter Chairman, John Kurdzionak. At that time, Vice President Jim Door explained the proposed changes to our Constitution and Bylaws. The Affiliate Chapters held their meeting on Friday morning beginning with a very important presentation by Gerald Wilson from Wm. S. McCaw Co. supply house and Bestfit Company. Those who attended learned from Gerry that many Swiss spare parts have

recently steeply increased in cost, sometimes as much as 300%. Watchmakers are advised to be aware that their current stock of spares will be far more costly to replace in the future and they should factor that into their business costs.

The directors met on Friday afternoon and were able to complete almost everything on their agenda before the 5:00 PM recess. All officers were re-elected to another one-year term. Ron DeCorte, Fred Burckhardt, and Wes Door retired from the board and Jim Zimmerman and Jim Sadelik were welcomed to their first meeting as board members. The ELM Trust dinner was held at the very lovely Gruen Time Hill facility, presently used as an undergraduate college, in Cincinnati. The evening's program featured an interesting presentation by Charles Cleves about the Gruen Watch Company.

Saturday was entirely devoted to educational programs and visits to our vendor display area. A buffet lunch was provided courtesy of the vendors followed by a drawing for door prizes donated by those vendors. The President's reception and annual awards Dinner highlighted the day's activities that evening. Three members were honored for their many years of service to AWCI and horology. David Christianson was presented with the AWI Fellow Award, Ron DeCorte was presented with the Lifetime Achievement Award, and Henry Frystak (Mr. Accutron) received the Appreciation Award.

We had some extra time left on the agenda on Sunday morning for a discussion regarding a proposal from management to change our corporate acronym from AWI to AWCI. There were strong points of view expressed on both sides of the issue and it was agreed to appoint a committee to make a recommendation on this matter. Jim Lubic spoke briefly about AWCI and its future possible role as an educational facility before the meeting adjourned.

Although we worked very hard, we still had some free time left for socializing, kibitzing, and sharing our views about horology with all who attended before returning to our homes and businesses. All who attended left with a sense of accomplishment and hope for our future.



Executive Director's Message

James E. Lubic, CMW

AWI is a not-for-profit organization that relies heavily on membership and volunteers. One very important aspect to making AWI work and serving as the organization's grass roots is the AWI Affiliate Chapters. Congratulations to Glenn Gardner on being elected by his peers to represent the Affiliate Chapters on the AWI Board of Directors for the upcoming year. Glenn has been active as a delegate from Wisconsin for a number of years. The Affiliate Chapters give to AWI in many ways, and AWI tries to give back to the Affiliate Chapters in many ways.

One of the benefits that AWI Affiliate Chapters enjoy is the ability to request an AWI speaker for their annual meeting/convention, anniversary or special event. AWI will pay 50% of the cost of having an AWI-sponsored speaker attend, and the hosting Affiliate Chapter pays the remaining 50%. One half of the chapter's membership are required to be members of AWI to qualify for the 50/50 benefit. This does not apply if a chapter requests the AWI President as their speaker. AWI pays 100% of the expenses for the President to attend. If a chapter arranges to have a bench course held in conjunction with their event, and the bench course instructor is asked to be the speaker for their convention, then there is no charge to the chapter for the speaker.

When taking advantage of this chapter benefit all arrangements must be made through AWI. The contact person at AWI for scheduling a speaker at your next Affiliate Chapter event is Assistant Executive Director Lucy Fuleki. Lucy can be reached toll free at 1-866-367-2924, ext. 304, or e-mail lfuleki@awi-net.org. You may also request a copy of the above policy.

There are two other items I would like to bring to your attention. The first one is the AWI acronym. Should it be changed to AWCI, should it remain AWI, or should we drop the acronym completely? This would not involve changing our logo other than adding the "C" to the logo, or removing the acronym completely from the logo. Expenses to make this change would be minimal as we wouldn't purchase new letterhead, etc. until all stock has been used. The American Watchmakers-Clockmakers Institute is incorporated in the State of Ohio and changing or dropping the acronym would not affect our legal status in any way. The opinions I have heard regarding leaving the acronym as is has to do with recognition of the organization; adding the "C" gives recognition to the clockmakers and better reflects who we are today. Dropping the acronym lets the logo speak for itself. Let us know your thoughts by posting them on our yahoo group "AWI Matters" or by writing a letter to the editor.

Secondly, I need to announce that the battery recycling program has been discontinued. The AWI-ELM Charitable Trust will no longer administer this program. It was a great program for many years but due to all the none silver oxide batteries that have become more prevalent and stricter regulations on how to dispose of the none silver batteries, it was decided that the program should come to an end. The ELM Trust hopes that you will still think of them when recycling your batteries by requesting that your recycling company send your check directly to the ELM Trust. This will still be a tax deductible donation.

Watch Battery Starter Set

Build your watch battery replacement sales and profit!

THE KIT INCLUDES:

- Watch Battery Tester for testing high and low drain silver, mercury, and coin lithium watch batteries
- Eveready VHS Training Video, "How to Replace Watch Batteries"
- Energizer Watch/Electronic Battery Cross-Reference Guide
- Energizer Training Booklet, "How to Replace Watch Batteries"
- Battery Size Checker
- Counter Sign measures 2¼"H x 4½"W x 2"D
- 60 Drawer Cabinet
- 175 assorted watch batteries, including 34 different sizes of Silver Oxide and Lithium. (Mercury batteries are not included.) Measures 13⅞"H x 14⅝"W x 6½"D.

No. MCC#1

Bonus!
100 Free
"377" Cells



EVEREADY. Energizer.

© 1997 Eveready Battery Company, Inc.

ORDER TODAY! IN STOCK AND READY TO SHIP!

Now order via e-mail at mccawco@worldnet.att.net



JIDA



The Wm. S. McCaw Company

WHOLESALE JEWELRY

Since 1913

1722 Madison Avenue
Toledo, Ohio 43624
Phone: 419-243-3720
800-472-0200
800-537-0343
Fax: 419-243-0321
800-245-6481



Wholesale Watch Materials • Tools and Findings • Jewelry • Boxes

Questions & Answers

Question

I would appreciate any information you might have regarding this box cuckoo with blinking eyes.

I found:

1. The clock has brass hubs (collars) steel arbors and cast brass wheels with steel lantern pinions.
2. Minute wheel has wooden hubs and a cast brass wheel—steel pins for pinion.
3. The plates are wood with rolled brass bushings.
4. There are not any identifying marks on case or movement.
5. Weights are hollow steel filled with chopped lead.
6. Enamelled dial with painting on sheet of metal.

I conjecture this clock to be made by a cottage clockmaker circa 1830-1840. The pendulum hanger has been replaced with an early American suspension spring. The sprocket on the strike portion has been replaced with a modern cuckoo sprocket. Is there a source I might obtain parts for restoring this clock? What would be the value of this clock?

I also have an 8-day German wall clock, gong strike. Initials DGMS appear on pendulum. Also an eagle (wings spread) seated on time track. Could you identify?

*Michael C. Bush
Dublin, Ohio*

Answer

Your interesting wooden plate clock was manufactured in the Black Forest region of what is now Germany. It is more properly called a German blinking eye picture frame

clock (to be a cuckoo clock it must have a cuckoo).

The wooden plate clocks, which typically consisted of a movement and dial, were usually hung on a wall but some were placed in floor cases. When they originated in the mid-17th century, they were a major part of the original cottage industry in the Black Forest. Wood was readily available, the people highly talented, and the long winter hours in the mountains provided the time for individuals and families to evolve into a widespread, small but effective manufacturing industry, centered in farm houses and cottages throughout the region. These clocks were inexpensive, but dependable and primarily produced for the local families, but over the years the industry evolved into providing relatively inexpensive clocks for the world.

Originally the wheels, arbors, pinions and plates were of wood (with iron pivots). Cast brass wheels with steel lantern pinions replaced the wooden ones (still with iron pivots) sometime after 1730. Milled steel pinions replaced the lantern pinions in the mid-1800s. Milled brass wheels and solid milled pinions came into play around 1900. Early on, the strike train was placed behind the time train, but after about 1830 the strike train appeared next to the time train, like yours. The coiled gong wire and chains came into use after 1800. The picture frame style was in fashion between 1840 and 1850. I would venture to say that your clock would have been made closer to 1850 because of the quality of the painting on a metal plate.

As to your other question: The identity of an 8-day German wall clock



with “DGMS” on the pendulum and an “eagle (wings spread) seated on time track.”

DGMS stands for “Deutsches Reichs-Gebrauchsmuster Schutz”. This is the German patent office’s abbreviation showing that a technical and/or functional improvement to the clock’s mechanical design is protected under the patent laws of 1891.

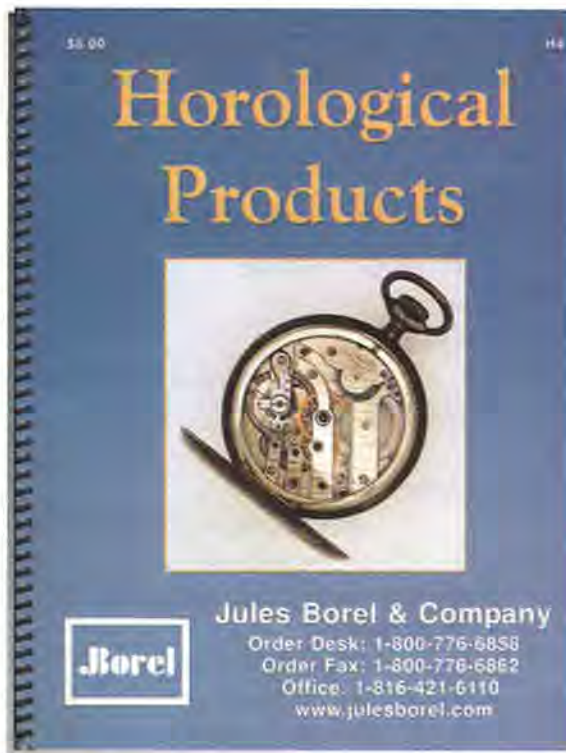
As to the trademark you describe: I couldn’t find a trademark listing specifically as you describe. Do you mean a dial, when you say “time track?” The Friedrich Mauthe Company used a winged eagle atop a disc (or dial) with the initials “FMS” printed on the disc. Kienzler used a winged dial. Gustav Becker used winged hour glass atop a globe. Regulateur Fabrik used a winged eagle atop a dial with “RG:” on it and an anchor behind it. And C J Schlenker used a winged caduceus atop a ribbon as its trademark. Perhaps yours is one of these.

*David Christianson,
CMW, CMEW,
Technical Editor*



We Won't Brag About Our New Catalog.

(We'll Let Our Customers Do It For Us).



"The best I've ever seen." "More informative than anyone else's." These are just a few of the things we're hearing from customers about our new Horological Products Catalog. Over 220 pages detailing thousands of products stocked for immediate delivery. A catalog so packed with detail our customers are telling us it's as much a reference book as it is a catalog. With convenient lay-flat spiral binding, double the parts information and twice the pages of watch tools and supplies of our last catalog, the new Horological Products Catalog from Jules Borel is truly an indispensable source for all of your horological product needs, including:

- Crystals:** 12 pages of money-saving generic crystals, plastic, glass and sapphire.
- Crowns:** 12 pages showing many new types, including 18 K yellow.
- Mainsprings:** New section detailing the more than 600 mainsprings we have ready to ship.
- Watchband Claps and Pins:** Many new varieties, with individual details available now.
- Hands:** Huge array of sizes and styles. 14 pages listing specific sizes.
- Spring Bars:** All Stainless Steel, in all types, sizes and lengths. 4 to 42 mm.
- Batteries:** Cross-reference chart showing sizes, as well as everything in battery changing tools.

Call, Fax, Log-In or E-mail and ask for the new Horological Products Catalog.
 Free with an order, or \$5 for shipping (refunded on first purchase). \$30 minimum order.

Jules Borel & Company

Order Desk: 1-800-776-6858

Order Fax: 1-800-776-6862

julesborel.com/awi



J.M. Huckabee,
CMC, FAWI, FBHI

Ask Huck

Mainspring Barrel Damage

Question

A mainspring broke and the barrel has a bulge in the hook area. I cannot re-hook the new spring. What is the solution to this problem?

Answer

When a spring breaks near the inside end, and was near full-wind, the force often is so great that the barrel is stretched, teeth broken, and the hook damaged.

The ideal solution is a new barrel. However, in most cases, a new barrel is not available.

This means that in order to save the movement, some less desirable choices must be made.

A new hook can be made and placed in another location. Another choice is to remove the hook, and form the bulge inward, and make a new hook for the same location. Still another solution may be to make a new barrel hook slightly longer and secure it in the same location.

You have encountered a problem where an ideal type of repair is just not possible. This is a time that we must invent a way to save the movement that is functional, or we must decline the job.

Every job is not easy. The difficult jobs sharpen our skills, and bring joy to our daily life.

A New Mainspring Barrel Hook

Question

How do you make a new mainspring barrel hook?

Answer

An exact duplicate of the original hook is difficult to make. However, a lathe-turned hook is an easy task, and can be easily secured in the barrel.

The major problem is fitting it to the barrel. For the hook to be secure, the barrel hole must be round and cylindrical. And, the tang of the hook must be a snug fit in the barrel hole. Tang length must overhang barrel surface slightly. Our objective is to upset the outside end, and expand the hook in the barrel hole. This will result in a permanent job.

I lathe-turn the hook from mild steel, or brass with a very thin button head. The spring will hook up easily and the hook is secure.

A round staking block inside the barrel is important to riveting the hook in place. In years past, I made up a group of round steel blocks about four inches long that are used to stake barrel hooks in place. I hold them in a large bench vise. These make the staking job very easy.

Use a hammer and punch to stake the hook in place. This eliminates hammer marks on the barrel.



SUPPORT YOUR LOCAL AFFILIATE CHAPTER

For information on forming a new chapter,
call 1-866-367-2924, ext. 304

**WATCH PARTS, BATTERIES, BANDS,
MOVEMENTS, CRYSTALS & TOOLS**

**YOU CALL,
WE SHIP,
NOW.
PERIOD!**



Mention this ad
and receive
10% OFF
on your first order

800-752-9491

VOICE: 213-627-4914

FAX: 213-627-3522

Email: paylak@sbcglobal.net

510 W. 6th St. Suite 430

Los Angeles, CA 90014

PAYLAK, INC

2003 AWI Fellow — David A. Christianson



“There is no greater honor than to be recognized and appreciated by your peers; and this award certainly demonstrates this recognition and appreciation in a tangible way. I could not have devoted all the time that I have to AWI over the past 20+ years if it were not for the dedicated and loyal staff that I have in my store. And I certainly could not have done all that I have if it were not for my wife, Rhonda. Her support, tolerance and guidance made all the difference in the world. She deserves this honor as much as I. I wish she could have been here to share this evening with me.”

Fellow of the American Watchmakers-Clockmakers Institute is the highest honor awarded by the Institute and its Board of Directors. The award may be conferred on an individual whose outstanding and meritorious contribution to the field of horology on a national or international level has enriched the field of horology. David A. Christianson is the 2003 recipient of the AWI Fellow Award.



Glenn Gardner presents the AWI Fellow Award to David A. Christianson.



David sits at his bench with his grandson Titus.

David Christianson is a second generation horologist. David grew up working in the family store, Christianson Jewelry, Inc., with his father and his sister in Kendallville, Indiana. David attended Purdue University in Lafayette, Indiana where he received a degree in Forestry and Management. After working as a Timber Technician in Wyoming and an Environment Scientist in Colorado, David decided to pursue the career chosen by his father. David attended the Kansas City School of Watchmaking where he received his diploma in Watchmaking and Watch Repair. In 1976 he joined his father in the family business where they worked side by side until 1983 when David took over running the business. David passed the AWI Certified Master Watchmaker exam in 1976 and the AWI Certified Master Electronic Watchmaker exam in 1980. David also earned the Gemological Institute of America Certificate in Diamonds, Colored Stones and Gem Identification and the Queen City Seminars Certificate in Jewelry Making and Jewelry Repairing.

David's dedication and devotion to the American Watchmakers-Clockmakers Institute is immeasurable. David has volunteered his time on many AWI committees including: membership, visual aids, technical book review, *Horological Times*, Perpetuation Fund and certification. David has served as an instructor for Clock Movement Restoration; Gear Wheel Making; Seiko Kinetic; Watch Cases, Bands and Crystals; and Jewelry Repair. He has served on the AWI Board of Directors and was president from 1998-2000. The AWI-ELM Trust has also benefited from David's countless hours serving as both a trustee and chairman. *Horological Times* readers have the opportunity to read David's technical and historical research as he answers members' questions each month in "Questions and Answers." He has also contributed his "Timelocks" and "Novice Watchmaker" series to the *HT*.

As an accomplished writer David's articles appeared in *Professional Jeweler* from 1998-2000. Most recently David authored *Timepieces: Masterpieces of*



David and Rhonda Christianson during AWI's 40th Anniversary Celebration.

Chronometry, published by Firefly Books of Toronto, October 2002. He also wrote *Wristwatches: A Connoisseur's Guide*.

David is an active member of numerous horological groups. David served the Northeast Indiana Watchmakers Guild as President from 1980-1982. As a member of the Horological Association of Indiana he has served as President, Secretary, Treasurer, Director, Editor, Delegate and Alternate Delegate. He served as a member and chairman of the Indiana State Board of Examiners in Watch Repairing and was awarded the Sagamore of the Wabash in 1986. David is a member, craft member and fellow of the British Horological Institute. He is also a member of the National Association of Watch & Clock Collectors and was a featured speaker at their national convention in 2002.

The community of Kendallville, Indiana has benefited from his expertise also. David is very active in his church, Trinity United Methodist. He has served as a bible history teacher, a liturgist, and volunteered on the finance, education, worship and mission committees. He is also a member of the Kendallville Kiwanis Club, Noble County Commercial Land Valuation Commission, Kendallville Investment, Inc., Kendallville Redevelopment Commission, and the Economic Improvement District.

David and Rhonda have been married since 1983 and work side by side in Christianson Jewelry, Inc. They both enjoy the quality time they spend with their first grandson, Titus.



Mark Butterworth

The Modern German Clock Movement

Part 37

What's In a Name and Other Trivia

This is the first time I have exercised a literary license to do an article that doesn't connect directly to the series title, but I hope the reader will find this interesting and entertaining. Names are important to us and large corporations spend millions of dollars on consultants to decide what to name everything from themselves to the products they sell. The most interesting case I know was the legendary Steve Jobs sitting at lunch with his friends at their new company eating an apple and stating "If you guys don't decide on the name of the company by the end of lunch we'll call it Apple Computer." True story.

Names often tell something about ourselves, not just what we do, but how we think. I was never creative and more scientific, so I thought a person should have enough pride to put his/her name on the company and also tell what he does. Our original name was Butterworth Clock Repair. There are hundreds of those around the country only with a different family name or a first name is used. "Watch" can be inserted for "clock." There is a Clockmaker, Clock Dr., Clockworks, Clock Shop, Pittsburgh (insert your city or state name) Clock, Time Shop, and Clocksmith in most states; sometimes the owner gets cute and spells the name with a "K" instead of "C". In my job as a distributor to shops around the country, I have access to a lot of business names, some of which are mundane and others have an interesting background. I like the ones that have a double meaning or interesting history the best:

- The Last Windup—Montana (for Easterners that is horse and cattle country)
- Our Finest Hour—a Churchill admirer
- Doing Time (NY)—retired NY policeman
- Big Ben's (OH)—I never really saw the guy, he may be my size

- In His Time (CA)—a Christian Gospel Song
- As Time Goes By—Casablanca tune
- After Hours (TN)—must be after happy hour
- Time Traveller (CA)—H. G. Wells reader
- Time Machine—same as above
- A Time to Remember (IN)—classic book title by Walter Lord on the sinking of the Titanic
- The Daily Wind—from the newspaper column "Daily Grind"
- Eastern Standard Time—they are not in California
- Mountain Time—ditto
- Passing Time
- Yours, Mine & Hours—title of NAWCC gift shop
- Time Weavers
- Mainspring Clock Shop
- Hour Chime
- Chimes of Time—Elvis Presley gospel song
- Cuckoo-clockologist
- Hands of Time
- Time After Time—The owner said that when he started out he kept doing the same job time after time to get it right so he decided the company would take that name. We have three shops by that name. Hmmm.
- Time On My Hands—The owner's neighbor came over one day and said it looked like he had a lot of time on his hands and would he check out her clock.
- Time and Place
- Elements of Time—title of many college text books with the name "time" changed to the subject matter
- Any Old Time—old phrase
- It's About Time—what my wife says. Must be others too, several of those shops.
- Just Keeping Time
- Timekeepers
- Old Timers—several of those made up of retired gents
- Once Upon A Time—storybook first line
- Old Times
- Time Out—sports fan or harried parent?

Time Period
Timepieces
Treasures of Time
We Do Clocks

Hour Clockworks—nice husband and wife operation
A-1 Clock Repair—A-1 is always the first listing in the phone book. Very helpful in a major city with several to choose from.

In the way of tips, we just received a call this week about one who took the weights off a cable driven clock to move it just a few feet in the customer's home. He did not put any tension keepers on the cable and one of them overlapped. He didn't realize it until back at the shop an hour away and the customer later called stating that the clock stopped. Simple tensioners can be made by taking a small block of (preferably) soft styrofoam and making a slit in it with a thin knife. The pulley can then be wound into the slit up against the seat board and the weight removed.

Speaking of cable, a number of repairers tape the end of the cable to the mounting plate or nipple to make certain it cannot flip out when not under tension.

Make certain that the seat board screws are only hand tightened or snugged with a screwdriver no more than 1/16th turn beyond that point to avoid drawing the clock plates together and putting a bind on a wheel.

A number of clocks will have a second set of plates with a set of subdials for the day, date, and month. Most commonly the Ridgeway clocks with the Hermle 1151-053HS series, but there are others. Before disassembling the clock for repair, set the time to 12 o'clock noon. That way when it is reassembled it can be done at the same time and the dials will change at midnight. The same is true for replacing the unit. Set both clocks to noon.

When identifying Regula cuckoo movements, the pendulum length is measured from the suspension post to the center of the stick, and the dancing table height is measured from the rotating table to the hand shaft.

Clock timers measure the rate of the pendulum, not the clock movement. That is, it will read the same whether the movement is geared for a 11 cm or a 114 cm pendulum.

Final thought: "A good reputation is more valuable than money."—Publius, 42 B.C.



witschi



**FOR WATCHMAKERS
WHO DEMAND THE BEST**
of themselves and their equipment

THE CHRONOSCOPE M1!

Outstanding Features:

- Eleven position automatic microphone with changeable sequence and statistical evaluation.
- Trace Pattern: a simultaneous graph of amplitude and rate for analytical comparison.
- Continuous print of graph on paper for the nostalgic watchmakers among us.
- PC software (optional) transfer of caliber parameter sets, trace pattern on PC with continuous graph on M1.
- GPS optional receiver for calibration of M1 and display of real time.

Witschi Electronic USA Inc.

700 Cinnaminson Avenue, Suite 5 • Palmyra, NJ 08065

Telephone: 1-800-882-7977 For U.S.A., Canada. (All other countries 1-856-829-1179)

Fax: 1-856-829-2266 • Web Site: www.witschiusa.com • E-Mail: voight@witschiusa.com



The Levers of American Striking Movements

Part 8 Wear Problems

David J. LaBounty,
CMC, FBHI

Editor's Note: Unless otherwise noted, the letter references used this month in Part 8 correspond to Figure 28 in "The Levers of American Striking Movements" Part 7, August 2003, page 26.

Anytime there are two independent, moving surfaces, which, repeatedly over time, come into contact with one another, there will be an abrasion and wear of both surfaces. This is especially true of American clock levers and pins. It is important to recognize the problems that wear can cause and how to deal with them. Levers left unrestored can cause a myriad of headaches since wear changes the geometry of the action of the lever causing the movement to work harder to accomplish its task.

I believe that the repair of levers should be part of a thorough restoration process, which includes polishing pivots, bushing worn bearing holes, servicing mainsprings, etc., not just a quick fix to solve the problem. Restoring

levers cannot be done while they are still inside the movement! Be sure to remove the power from all trains before disassembling the movement and take any special notes necessary to aid in reassembly.

Stop/Maintenance Lever (B) and Stop/Maintenance Cam (1): The stop/maintenance lever (B) will show the most wear due to it being in almost constant contact with the stop/maintenance cam (1). If this wear isn't addressed the strike process could become unreliable depending on whether the stop/maintenance lever (B) is riding on the wear spot or not. The rubbing surface of this lever will have to be filed round again and then brightly polished, or replace the lever if less than 50% of the original diameter remains.

The top surface of the stop/maintenance cam (1), although not showing any visible wear, should also be nicely polished. This will provide the least friction for the rubbing surfaces. Special attention should be paid to the stop face in the notch of the stop/maintenance cam (1). This face will develop an indentation due to the hammering action of the stop/maintenance lever (B) as it arrests the strike train. If left as is, the indentation may trap the lever and not allow the strike train to be released. Another condition frequently found is in the upper edge of the notch no longer being square and sharp but tipped round. This is caused by the stop/maintenance lever (B) being out of adjustment and tipping off the top edge of the stop face of the notch as the lever passes during the strike process. A rounded edge will cause the stop/maintenance lever (B) to be bounced out of the notch and result in a run-on condition. It will usually be necessary to file this stop face to correct these conditions but care should be given to the angle at



Figure 34: Wear on the stop/maintenance lever.

which the face is filed as well as how much material is removed. (See Figure 36.) If there is more than one notch in the stop/maintenance cam (I) it will be necessary to ensure that they are treated *exactly* the same. If not, the stop points will be different causing the degree of warning to vary and resulting in “hammer on the rise” or a hammer lever (G) that doesn’t quite drop off of the hammer pin before stop occurs.

Count Lever (C) and Count Wheel (κ): The paddle end of the count lever (C) will show varying degrees of

wear depending on the type of movement. In all cases, however, the wear should be filed out. A combination of the pounding action of the lever and the motion of the count wheel (κ) as it is in contact with the lever, will cause a notch to be cut.

Count Lever (C) and Count Wheel (κ): The paddle end of the count lever (C) will show varying degrees of wear depending on the type of movement. In all cases, however, the wear should be filed out. A combination of the pounding action of the lever and the motion of the

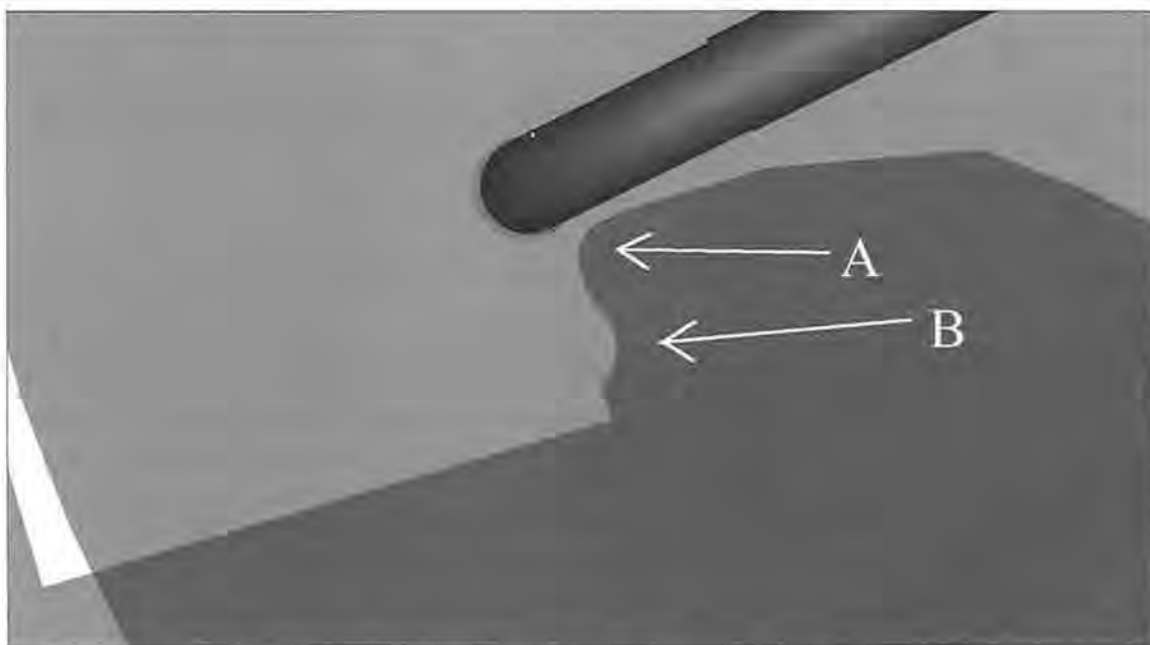


Figure 35: View of the stop/maintenance lever and the stop face of the stop/maintenance cam showing... **A:** The rounded off top edge which could cause strike-on. **B:** The indentation in the stop face which could cause a failure to strike.

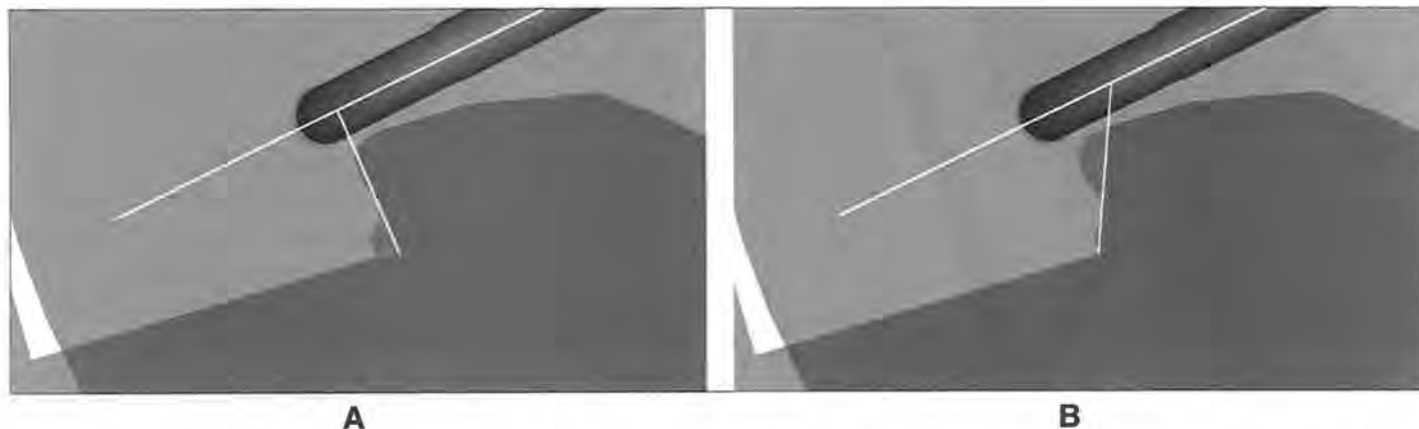


Figure 36. **A**—Correct angle of stop face. Notice the stop face is at right angles to the stop/maintenance lever. Care should be taken to remove as little material as possible. In this example, notice the top edge of the stop/maintenance cam’s stop face hasn’t been completely squared off. Only remove enough material to ensure a reliable stop and eliminate the indentation. **B**—Incorrect angle of stop face. Filing at this angle will cause the stop/maintenance lever to skate off of the stop face.

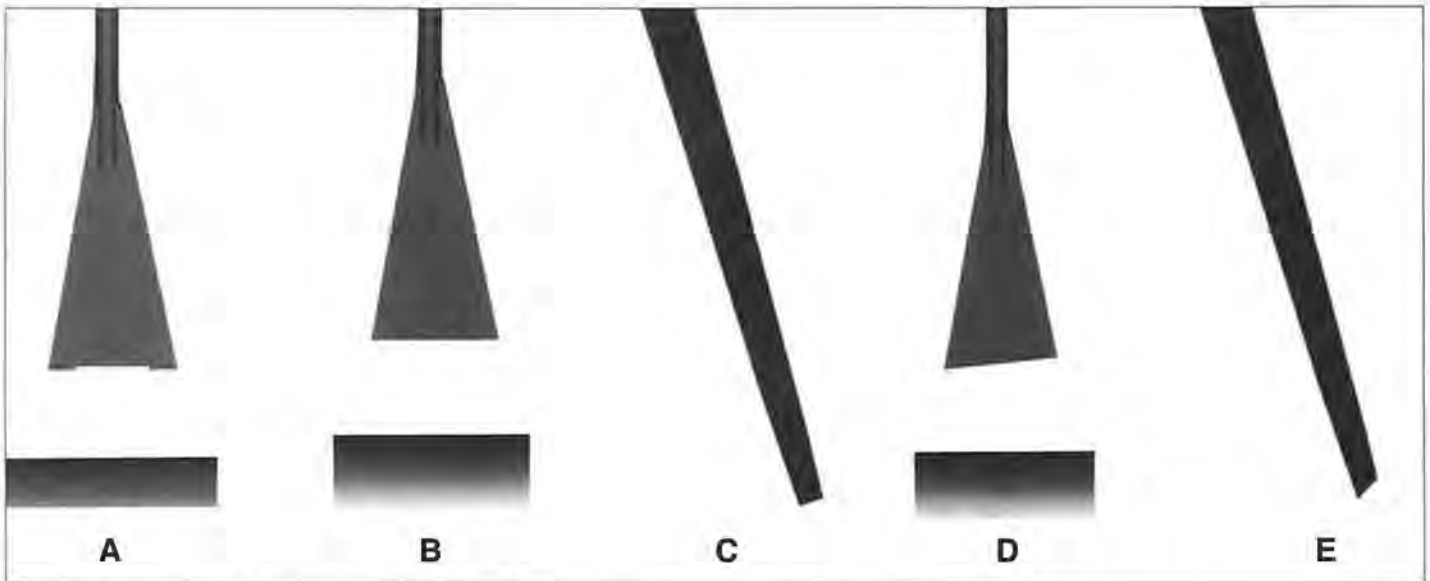


Figure 37. Showing—A-Wear on count lever, B & C-correct shape of paddle edge after filing, D & E-incorrect shape of paddle edge after filing.



Figure 38: Wear on the warning lever.

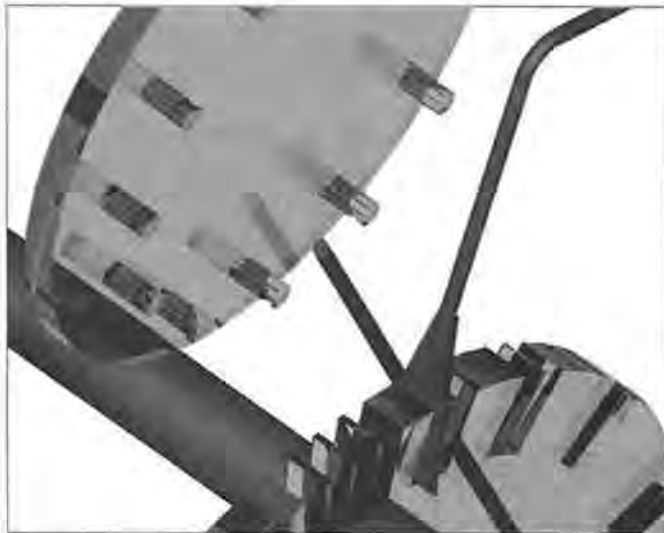


Figure 39: Wear on the hammer pins.

count wheel (κ) as it is in contact with the lever, will cause a notch to be cut in the lower knife-edge of the paddle. Care should be taken to maintain the correct shape of the paddle edge. (See Figure 37.) Watch for burrs on the outer edges of the tip of the paddle following the filing process. The count wheel (κ) may show some wear along the rim and in the stop notches but this should be negligible and more of a polished area than groove. Generally, the count wheel (κ) can be left as is provided the wheel is true and there are no bent teeth.

Lift Lever (D): There is generally no wear on the rubbing surface of this lever but any dimple in the mating lever should be addressed. Examine the underside of the count lever (C) where the lift lever (D) rubs. Check for wear, rough spots, or burrs and polish as necessary.

Warning Lever (E) and Warning Pin: The warning lever (E) will develop an indentation where the warning pin comes to rest. There will also be wear visible due to the slide of the pin down the lever. If not dealt with the movement could stall in warning as the warning pin binds against the warning lever (E). A rounded tip on the lever will be a problem here as well. If the warning pin were to land on the rounded tip of the warning lever (E), the lever and pin could lock and stall the movement. In general, all that needs to be done with the warning pin is to straighten it. Any wear on the pin can be left as is, provided it is not worn more than $\frac{1}{4}$ of its diameter. Also, check for damage as a result of the warning lever (E) tipping the topside of the stop pin due to previous improper adjustment. If the warning pin shows too much wear or damage, replace it.

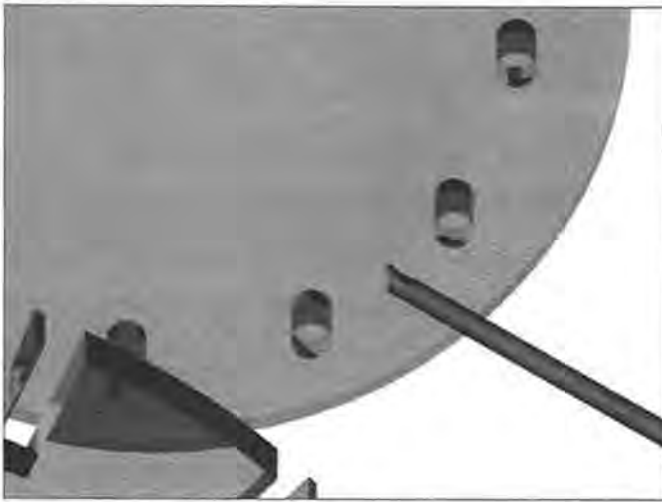


Figure 40: Wear on the hammer lever.

“J” Lever (F) and Strike Release Pins (L): Only slight wear is generally visible in these areas. However, like the warning lever (E) any wear on the “J” lever (F) work face could be a problem. Polish out any dimples, look for rounded tips, and watch for burrs. The release pins (L) may show

wear similar to the warning pin and can generally be left as is. Polishing the wear out of the release pins (L) could cause the strike points between the hour and half-hour to be quite different.

Hammer Lever (G) and Hammer Pins: The hammer lever (G) will develop an indentation and slide wear due to the rubbing of the hammer pins along its surface. The wear should be polished out and the tip checked for improper roundness and burrs. The hammer pins will often show significant wear. This is generally not a problem as the pins are worn evenly throughout and won't affect the rhythm of the strike. Check for bent pins and straighten. If the wear is significant enough to warrant replacement (more than 50% of diameter) all of the pins should be replaced to ensure maintaining the proper rhythm.

Hammer Detent (M) and Hammer (N): Very little wear will be found on the hammer detent (M) as it has a tendency to bend rather than wear and other than a few adjustments (discussed later) it can be left as is. The hammer (N) should be checked for missing or dry, flaking leather

Vibrograf® – B-600





- Mechanical Watch Rate Recorder
- Graph Trace on Large Fluorescent Screen
- Numerical Displayed Data
- Amplitude and Scope Function

**Trade In Your
Old Machine
Today**

VIBROGRAF USA CORP.

504 Cherry Lane • Floral Park NY 11001 • (516) 437-8700 • FAX (516) 437-8708 • www.vibrografusa.com

as well as leather that has been beaten down to the hammer head (N). These conditions will cause a tinny, metal on metal sound. Replace the leather if necessary. A drill bit, just smaller than the hole in the hammer (N) and twisted by hand, works well for “digging” out the old leather. Solid hammers, or those without leather, may show wear in the form of a flat spot due to repeated blows but may be left as is.

Arbor Pivots and Pivot Holes: Lever arbor pivots may be left in as is condition provided they don't exhibit any burrs or other damage that may cause them to stick in their pivot holes. It is not necessary that they have a brightly polished surface since they aren't under pressure and don't rotate more than a few degrees. The pivot holes will generally not show wear and can stand to be a little loose. The hammer arbor pivot hole should be bushed if too loose as this will cause undue noise and irregular tempo in the strike.

Methods of Removing Wear: One of the quickest and easiest methods of removing the dimples, dents, and scrapes from the surface of levers is to take them to the buffer/polisher. White rouge and a felt buff will leave the surface of the lever rounded and shiny. Have respect for the buffer/polisher. A felt buff can grab and twist a lever into something totally useless! Another, safer, method is to round-file the wear off of the lever. Place the lever, worn side up, on the almost closed jaws of a small vise and rotate the lever as you file. Follow up with finer grades of sandpaper or buff sticks until the surface is nice and shiny or finish up at the buffer/polisher. This method takes a little more practice and it is difficult to maintain the roundness. Round filing will generally be necessary in removing the wear on the maintenance lever (B) as the groove is usually deep. Some flatness is OK here as that will produce a larger work surface resulting in longer wear but realize that a sharp stop edge will damage the stop face of the stop/maintenance cam (F). Be sure to remove all polishing compound residue left on the levers before installing them in the movement.

Lever Return Springs: Most levers require a return spring to guarantee a reliable and proper function. The springs should maintain the levers in their proper positions when the movement is inverted but not be so tight or strong as to cause undue pressure on the strike train. The springs should be of light weight brass spring wire (28 - 30 gauge) on all except the hammer lever (G) which requires a heavier brass spring wire (22-24 gauge) to deliver a hard hammer blow. The springs should be of brass instead of steel and wound in such a manner that when the “tail” is pulled, the lever will be forced in the at-rest direction as opposed to the lifting direction. One end of the wire should be wound

around the base of one of the levers and continue around the lever arbor for several turns. The other end should be tied off either on a pillar post, the edge of the plate, or a post specifically designed for the purpose. It is not important which lever on the arbor is used, whether the wire is wound front to back or back to front, or which post/plate the tail is tied to. It is *very* important that the spring works in the proper direction, *not* interfere with the workings of the movement, and is not so tight that it binds the lever arbor when lifted. The best test is that it just holds the lever in its at-rest position when the movement is held upside-down. Old brittle return springs should be replaced before the movement is reassembled. Springs can be tied in place after assemblage but with more difficulty.

Next month “Levers” continues with “Repairing Severe Damage”

Resources and Additional Reading

1. Special “Thank You!” to Jerry Faier, CMC for his training, expertise, and input.
2. Baier, Joseph G. et al. *Questions and Answers of and for the Clockmaking Profession*. pp. 44 - 53, 93. 3rd ed., AWI Press, 1988.
3. Conover, Steven G. “Chime and Strike,” *Horological Times*. AWI Press, October, 1978 - August, 1987.
4. Darnall, J.V. *Restoration of Wooden Movements and Cases: Repairs, Refinishing and Troubleshooting*, 1970.
5. Eckhardt, George H. *Pennsylvania Clocks and Clockmakers*. The Devin-Adair Company, 1955.
6. Goodrich, Ward L. *The Modern Clock*. pp. 297 - 318. 9th ed., North American Watch Tool & Supply Company, 1970.
7. Robey, John. *The Longcase Clock Reference Book*. pp. 217 - 251, Mayfield Books, 2001.
8. Samelius, W. H. *Watch & Clock Information Please!* pp. 93 - 100. Compiled and Edited by Orville R. Hagans, CMW, CMC, FAWI, FBHI, FNAWCC. AWI Press, 1981.
9. Smith, Eric. *Striking and Chiming Clocks*. David & Charles, 1995.

⊙

The
American Watch Guild
announces
the creation of the



International Watch Collectors Society

The Society will provide its members with the following

- Calendar of major watch sales & auctions.
Antiquorum, Christie's, Phillips & Sotheby's
The previews of upcoming auctions.
Reports: photographs, prices and auction results.
- Announcements from significant watch firms of new releases and limited editions.
- Information about emerging new master watchmakers and their creations
- Establishment of regional chapters where the collectors can meet and have guest speakers from noteworthy watchmaking factories.
- Question and Answer service by Stewart Unger, noted watch authority & author.
- Annual meeting at the Concours d'Elegance at the summer Jewelers of America Show held at the Javits Center in New York.
- A book club.
- Plus Free Booklets: *How to Buy a Watch (and its Functions)*
The Care and Service of Timepieces
Where to Find the World's Finest Watches
How to Detect a Counterfeit Watch

Membership	1 year - \$65	2 years - \$120	6 Issues of Collectors Corner per year Invitation to the Concours d'Elegance
Master Collector	1 year - \$120	2 years - \$220	the above plus: 10% discount from the Book Club Rebate coupons from Manufacturers

Membership Application Name _____ Phone _____
Address _____ City _____ State _____ Zip: _____

Make check payable to:

International Watch Collectors Society, LLC

244 Madison Ave., #258 New York, NY 10016 • Fax: 516-374-5060



Technically Watches

Pocket Watches and Their Maintenance

Part 64

The Reassembly of the Repeater Mechanism (Continued)

©2003 (All rights reserved by the author)

Archie B. Perkins,
CMW, FAWI,
FNAWCC, FBHI

Editor's Note: This is the last regular monthly column, "Technically Watches," by Archie B. Perkins. Mr. Perkins said, "It has been an enjoyable 25 years writing for Horological Times. Thank you very much for this opportunity."

To continue the reassembly of the minute repeater mechanism, after the repeater train has been assembled, then the springs and levers are reassembled.

Figure 1 shows the springs and levers arranged on a wire loop in the order of their removal from the watch movement. These parts have been cleaned while on the wire loop. The parts should be reassembled in the following order.

Replace the quarter hammer lever on the arbor of the minute hammer. This is shown being done in Figure 2. *Note: Since the spring for this hammer lever was not removed when the mechanism was disassembled, the end of the spring is now pulled back just enough so the hammer lever will go into position on the hammer arbor.* The end of the spring is then positioned against the hammer lever at the proper place on the lever.



Figure 1

Next, the minute hammer lever is replaced on the minute hammer arbor. This is shown being done in Figure 3. This hammer sits on the hammer arbor on top of the quarter hammer lever.

Now, we replace the minute hammer lever spring. This is shown being done in Figure 4. The spring is shown as the screw is being tightened in the hole in the base of the spring.

Next, we block the repeater train in preparation for winding the repeater mainspring. This is shown in Figure 5. A folded piece of paper is shown being used as a wedge to go between one of the train wheels and the train bridge to block the train.

After blocking the train, then the mainspring is wound fully with a bench key or watch key that fits the square on the repeater barrel arbor. This is shown being done with a watch key in Figure 6. After the mainspring has been wound fully, the repeater train is allowed to run until the mainspring is down one turn before reblocking the train.

Next, the hour rack and gathering pinion are placed in position on the square of the repeater barrel arbor. This is shown being done in Figure 7.

Now, replace the operating lever and its rack so the teeth at the toe of the rack are in the position in the gathering pinion that is shown in Figure 8. The toe end of the rack should be against the stop tooth on the gathering pinion as shown. This is a run-down or stop position for the hour rack.

After this, the "all or nothing" piece is replaced. This is shown being done in Figure 9.

Next, replace the hour hammer lever on the hour hammer arbor. This is shown in Figure 10.



Figure 2



Figure 3



Figure 4

Livesay's

Tampa, Florida Inc.

Wholesale Jeweler & Watchmaker Supplies
Since 1969

L & R Ultrasonics

L & R Quantrex machines offer increased power, greater cavitation, more standard features and the most comprehensive warranty in the industry. L & R has long been synonymous with quality, and now you can take advantage of an unbelievable saving offer. Act now because supplies are limited.

L&R Q90

Features:

- 1/2 gallon capacity
- Tank size 5-7/8"L x 5-3/8"W x 4"D
- 30 minute timer
- Built in heater
- Stainless steel cover
- Illuminated on/off pilot light
- L & R's exclusive "Double Warranty"



Stock No. 231.606

\$216.00

L&R Q140

Features:

- 3/4 gallon capacity
- Tank size 9-3/8"L x 5-3/8"W x 4"D
- 30 Minute Timer
- Built in Heater
- Built in tank drain
- Stainless steel cover
- Illuminated on/off pilot light
- L & R's exclusive "Double Warranty"



Stock No. 231.610

\$328.95

*The entire unit is covered for defects in material & workmanship for 30 months (2 1/2 years) of continuous use. The housing is warranted for 5 years and the tank-to-transducer bonding is covered for 10 years.



2003-2004 Movement Catalogs Available!!!

Your Headquarters For Batteries, Watch Material, Tools, Findings, Bands, Jewelry Boxes, Casting Supplies, Watch Movements, and Much, Much More. Catalogs Available.

Phone Orders

(800) 476-2715

Toll Free 24 Hour FAX Orders

(800) 476-8016

Tampa (813)229-2715 Local Fax (813)221-8016

Email info@livesaysinc.com



9/03



Figure 5



Figure 7



Figure 6



Figure 8

Now, replace the quarter hammer lever on the same hour hammer arbor. This is shown in Figure 11.

Then, replace the hammer lever spring that controls both hammer levers. Figure 12 shows the spring being placed into position and Figure 13 shows the screw being tightened in the base of the spring.

Next, replace the gathering pinion and the finger for the quarter rack. This is shown being done in Figure 14. These parts fit into the square of the repeater barrel arbor. They must be fitted on the square in such a position that the finger is opposite the pin on the gathering pinion when the teeth on the gathering pinion are set correctly in the teeth of the quarter rack for the start of the drive of the quarter rack.

Now, replace the quarter rack. This is shown being done in Figure 15. This lever pivots on a post fastened into the watch plate. *Note: The quarter rack tension spring was not removed during disassembly. Therefore, the end of this spring needs to be pulled back just enough so that the rack can be seated on its post and so the spring will go against the rack to hold tension on the rack.*

When positioning the quarter rack, the slide on the edge of the movement is pulled over all the way to its stop and held in this position while the teeth on the gathering pinion are meshed correctly in the teeth of the quarter rack. To be correct, the first tooth on the gathering pinion should be meshed in the first slot in the rack, as shown in



Figure 9

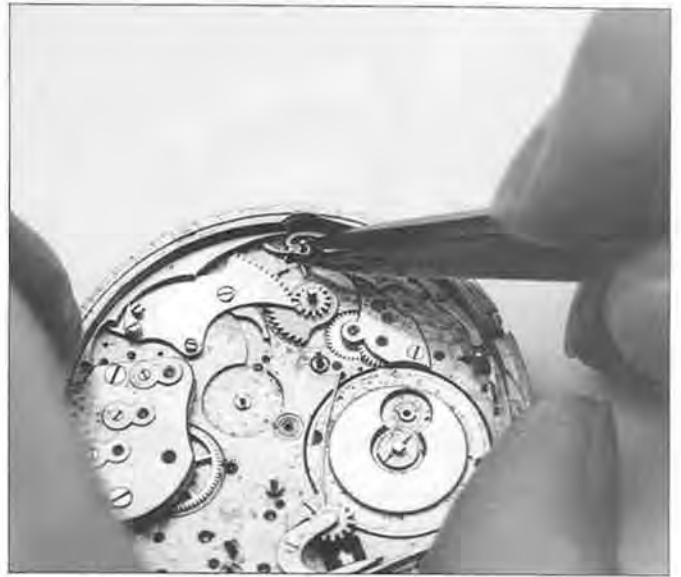


Figure 11



Figure 10



Figure 12



REINTRODUCING OUR NEW "CLASSIC" BB PRESS

**IDEAL FOR INSERTING MINERAL WATCH CRYSTALS
AND FOR CLOSING CASE BACKS AND BEZEL RINGS**

FEATURES

- Heavy Enough for Bench Use
- Steel Handle Ensures Plier-Grip Extension for Pressure Control
- Convenient Spring Return Action
- Large Triangle Knob for a Deeper Thrust and Larger Size Fixtures

**BUY THE BB 505 FOR CLOSING CASE BACKS
NEW LOWER PRICES**

Contact your watch material distributor for more information.

BB505	Press plus BB508 (8 straight /reversible wall fixtures)	BB507	Set of 2 larger straight wall fixtures
BB 502	Press alone	BB509	Set of 8 ladies size straight wall fixtures
BB502B	Press plus BB504 (10 tapered and 3 flat fixtures)	BB510	Set of 4 extra large straight wall fixtures
BB506	Set of 2 supplementary (32.0 mm/34.0 mm) flat fixtures	BB610	Combination of BB Press plus all above fixtures

AMERICAN PERFIT CRYSTAL CORP. 520 EIGHTH AVE. NYC. NY 10018



Figure 13



Figure 15



Figure 14



Figure 16

Figure 15. With the teeth correctly positioned, the finger should be positioned opposite the pin on the gathering pinion as shown.

Next, replace the minute rack. Figure 16 shows this being done. This lever pivots around a tube on the quarter rack.

Now, replace the minute rack spring. This is shown in Figure 17. This spring works against a pin set into the minute rack near the pivot point of the rack.

Next, replace the hour star wheel with its attached hour snail. This is shown in Figure 18. The star wheel assembly fits onto a post which is set into the watch plate.

Now, replace the pawl for the hour star wheel.

This is shown in Figure 19. The pawl is used to index the star wheel each time the star wheel is turned by an index pin or block on the underside of the quarter snail attached to the cannon pinion.

The hour star wheel cock is replaced next. This is shown being done in Figure 20. This cock is used to hold the star wheel on its post.

Next, replace the flirt lever. This is shown in Figure 21. This lever fits onto a post fastened in the watch plate.

Then replace the flirt lever spring as shown in Figure 22. The end of this spring works against a pin set in the flirt lever.



Figure 17



Figure 19



Figure 18

The last part to replace is the cannon pinion assembly which includes the quarter snail, minute snail, and surprise piece. Figure 23 shows this being done.

Oiling the Repeater Mechanism

The repeater mechanism should be oiled as it is assembled like the other parts in the watch. The train wheel pivots are oiled with watch oil after the train is assembled. The pivot points of the levers are oiled with clock oil. The hammer levers are oiled with watch oil where they pivot on the hammer arbors. Clock oil is used where the springs contact the levers where the pressure is great and watch oil is used where the pressure is very little. Oil the

repeater mainspring as well as the pivots on the barrel arbor with clock oil. The repeater pallet escape surfaces are oiled with watch oil. The bearing surfaces on the pawl for the hour star wheel are oiled with clock oil. The pivot point on the operating lever should be oiled with clock oil.

S. LaRose, Inc.

Greensboro, N.C.

ASSORTED WATCH SCREWS
 10 grams - that's over 400 - assorted screws for
 ✓ bracelet and pocket watches. Various types, sizes,
 and taps. Regularly \$4.95.
01-8615B \$4.95 asst.

**SweepZone™ Ultrasonic
 Cleaning System**

L & R has combined the power of SweepZone® cleaning with the bacteria resistant coating of AgION to provide an added measure of cleanliness. SweepZone™ Technology features the "Smart Circuit", a custom engineered electronic component that offers the latest in efficient and complete ultrasonic cleaning. Ag200 comes complete with timer, drain, heater and L & R's double warranty, (2 1/2 years on everything, with a 10 year warranty on the transducer bonding). Outer dimensions: 12 5/8" X 6 7/8" X 8 1/4" tall. Tank dimensions: 11 3/4" X 6" X 4" deep. Capacity 4 1/4 quarts. Manufacturer recommends using a stainless steel basket with their machines. Manufacturer's suggested price \$735.00.
064413 - with timer and heater \$447.00 ea.
CLOCK CLEANING SOLUTION NO. 677!
 Ready-to-use, waterless, non-ammoniated clock cleaning solution formulated to use with L&R clock lube.
Regularly \$35.10



064416S - One gallon free with purchase of 064413 . . .FREE

Orders Toll FREE 1-888-752-7673
 Toll FREE Fax: 1-800-537-4513
 E-Mail: orders@slarose.com • www.slarose.com

S. LaRose, Inc.
 3223 Yanceyville St. • PO Box 21208 • Greensboro, N.C. 27420 USA



Figure 20



Figure 23



Figure 21



Figure 22

Oil the hammer levers where they act on the rack teeth with clock oil. **Do not over oil the repeater parts! Do not oil the surprise piece!** Oil may cause it to stick and not operate correctly.

This concludes the series of articles on the minute repeater. Other minute repeaters encountered may be different in design, but the principle of operation is about the same. The methods of disassembly and assembly may need to be varied somewhat in some cases. With much practice, the operations of disassembly and assembly will become almost automatic to the watchmaker.

Bibliography

DeCarle, Donald. *Complicated Watches*. London: N.A.G. Press, 1956, pp. 123-156.

DeCarle, Donald. *Clock and Watch Repairing*. London: Sir Isaac Pitman and Sons Ltd., 1959, pp. 283-289.

Gazeley, W. J. *Watch and Clock Making and Repairing*. London: D. Van Nostrand Co., Inc., 1959, pp. 282-300.

Hagens, Orville R. and Siebel, Emmanuel. *Complicated Watches*. Denver, Colorado: Roberts Publishing Co., 1945, pp. 41-77.

Haswell, J. Eric. *Horology*. London: Chapman and Hall Ltd., 1951, pp. 220-234.

Lecoultré, Francois. *A Guide to Complicated Watches*. Bienne, Switzerland: Charles Rohr Ltd., 1952, pp. 85-181.





New Members

California

Barbero, Ed—San Anselmo, CA
Celis, Alfredo—Tustin, CA
Dracoules, Raymond—Torrance, CA
Elliott, Steven J.—Encinitas, CA
Lopez, Michael—Fallbrook, CA
Schmitz, Loren L.—San Marcos, CA*

Colorado

Allison, Linda—Golden, CO
Smith, Martin D.—Grand Junction, CO*

Florida

Franks, Melvin—Miami, FL
Garcia, Carlos A.—Miami, FL
Sponsor: Pedro P. Garcia—Miami, FL
Walsh, Delbert—Pompano Beach, FL

Georgia

Ross, Danny—Cordele, GA
White, James—Winston, GA

Indiana

Condon, Daniel—Morgantown, IN
Lamb, Mark E.—Indianapolis, IN
Martin, Jerry—Chalmers, IN
Rostiser, Bill—Carmel, IN

Michigan

Bowen, Robin J.—Wayland, MI
Sponsor: Brien K. Dews—Rockford, MI
Rowe, Sally—Grand Haven, MI
Sponsor: Brien K. Dews—Rockford, MI

Minnesota

LeKander, Brian R.—Stillwater, MN*

Mississippi

Nored, Randy—Hattiesburg, MS

Montana

Hightower, Brett—Great Falls, MT

New Mexico

Greenlee, Jerry—Santa Fe, NM*

Ohio

Howell, John—Cambridge, OH
Ponta, David G.—Reynoldsburg, OH*

Riesenberg, Frederick—Cincinnati, OH
Wiler, Allen—Dayton, OH

Texas

Belcher, Brian J.—Telephone, TX
Broyles, Cecil W.—Spring, TX
Guartucho, Oscar R.—Paris, TX

Virginia

Cosier, George M.—Richmond, VA

Washington

Hale, Deb—Seattle, WA
Rumley, West B.—Kent, WA

Wisconsin

Harding, William P.—Burlington, WI*

Wyoming

Patterson, Richard—Worland, WY

International

Burlan, Claudiu M.—Arad, Romania
Fernandez, Adrian—Abu Dhabi, UAE
Ignatius, Walter—Queensland, Australia*
Ingilizov, Blagoy—Sofia, Bulgaria
Pilbrow, Ian—Taupo, New Zealand

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



This machine gives you an EDGE.



Different grit diamond wheels

It's now **Easy** to put a high-performance cutting **EDGE** on lathe tools, boring tools and dozens more. The resulting edges are so sharp they outperform new tools.

This lets you machine parts to closer tolerances and finer finishes. No special training is required... the technology is built into the Accu-finish machine and wheels.

Special one-of-a-kind tools are **Fast** to make because tool geometry is precisely controlled...makes anyone a better machinist instantly. Accu-Finish grinds carbide, HSS, ceramic and cermet with the same wheel. It can sharpen the smallest, finest tools imaginable.

Accu-Finish®

Series I



**Call NOW and request
FREE Packet #148016**

1-800-835-3519

FAX: 620-343-9640
e-mail: glendo@glendo.com

Glendo Corporation
900 Overlander Road • Emporia, KS 66801



J.M. Huckabee,
CMC, FAWI, FBHI

As A Clockmaker Turns

The Clockmaker and His Lathe According to "Old Huck" Part 4

Introduction

Part 3 of this series introduced The Magic Center Finder and related its function and care. It also had examples of use and the time efficiency importance it can add to our trade.

This part of the ongoing series will detail the tool construction. This could very well be a "First Tool" for those who have recently begun lathe work. A few steps of construction are very critical to the success of the tools; they will be highlighted in the discussion.

The Slide Cup

The slide cup, also often called the bell cup, will be the first item. Here it is made from a piece of 3/16 inch diameter brass about 5/8 inch long. Other diameters may be used.

Chuck and locate an exact center and cut a cup of about 60-80 degrees. Test for an exact center with a pointed object as illustrated in Figure 37. This must be perfect.

I'll make the finished drill from a piece of spring steel wire with a diameter of about 0.047 inch. Pre-drill the slide with a smaller

hole. In Figure 38, I drilled with a # 57 bit with a diameter of 0.043 inch. Drill a through hole.

Now prepare the reamer. Cut a piece of the spring steel wire about 4 inches long and grind to a screwdriver-like shape. Figure 39 shows the idea. Masking tape on the pin vise is marked in two places. That helps to relocate your grinding position. The soft disc is overlaid with 325 grit aluminum oxide paper. Use care not to burn the material. When finished, grind the tip to form a spade drill. This is your reamer, and ultimate center drill.

Look over Figure 40. Ream the hole. Keep the hole filled with oil and frequently clean out the chips. The chips are pushed through the hole. When finished, you have a near-zero clearance fit to the slide cup. If the fit is tight, regrind the spade tip. It must cut full width of the spade.

The Knob

Make a choice for your knob. Wood buttons from a craft store, wood dowel, etc., is suitable. The one here was cut from a dowel.

Locate center and drill a short depth,



Figure 37. The slide cup: locate center and cut a true cup center.



Figure 38. Drill the slide cup with a smaller bit, then ream to finished diameter.



Figure 39. Grind a spade drill that will be used to ream the slide cup.

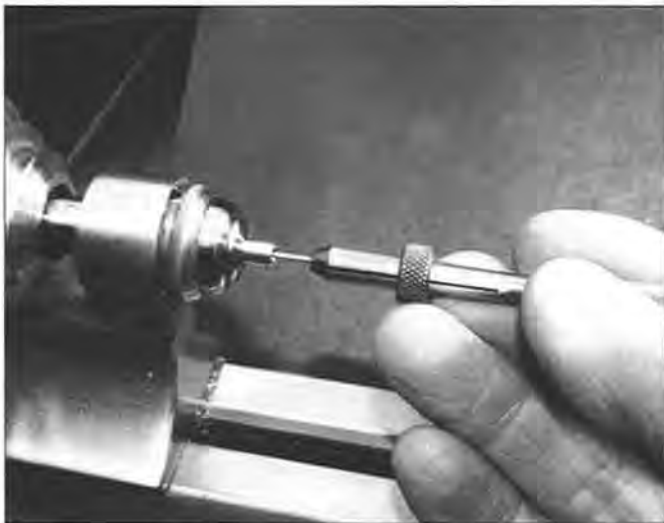


Figure 40. Ream the slide cup with the spade drill.



Figure 41. The spade drill reamer is driven into the knob, point first.

Twin City Supply blows the competition away!



"Duster" can of air

New larger size!

CL970	Per 10 oz can	\$7.00
	Case of 12	\$70.00

Hairspring Cleaner

One Dip Aerosol Spray (replaces CL505)

CL975	6 oz can	\$6.95
--------------	-----------------	---------------

Quartz Movement Cleaner

Safe on plastics.

Price reduced!

CL976	11 oz can	\$12.95
--------------	------------------	----------------

Quartz Movement Sale!



These are just a few of our best selling quartz movements at a phenomenally low prices. Call or write for an up-to-date Price List and Movement Book.



TWIN CITY SUPPLY

www.twincitysupply.net

USA: 800.328.6009 • Fax: 800.328.6001

2230 Edgewood Avenue South
Minneapolis, MN 55426-2823

9/03 HT



Figure 42. Mark the knob in three equal places. Use the collet slit as your guide.

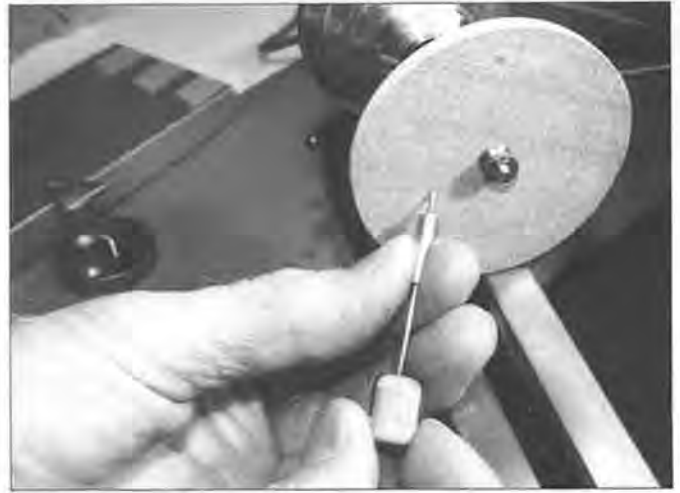


Figure 44. With one eye closed and two knob markers in equal view, grind the triangular drill point.



Figure 43. Assemble the pieces, spin grind a conical point of about 60°.

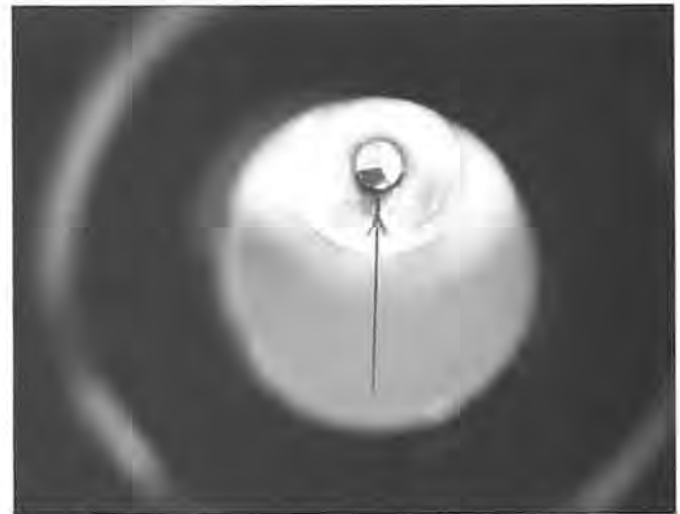


Figure 45. Your triangular point should look like this. View through a 15X eye loupe.

and drive spade drill into the knob. Figure 41 gives the idea.

Mark the knob in three equal spaces. Figure 42 gives one method of locating the markers. These markers will be used to locate grinding the 3-faceted drill tip.

Assemble the pieces and test hold in your hand similar to Figure 47. That gives judgment as to the final length of the drill. Once cut to length, study Figure 43. The objective is to produce a conical point of about 60°. Be very careful to avoid heating the fine-point tip.

Grinding the Triangular Point

Study Figure 44 and its caption. Touch down lightly, advance one position, etc. This point will cut most anything that a file will cut. If it is heated by the grinding it will not cut.

Use a strong glass and study your work. Figure 45 shows this work example. When finished, give your new tool a try. Dip the end in your lathe bed oil cup (if you don't have one, drill one.) Figure 46 shows the oil cup which I drilled in each of my lathes. It is the oiler for all my cutting tools.

The Test Run

Figure 47 was the first test of this unit. A piece of 1/8 inch brass rod was chucked, the end faced, and a slight chamfer cut on the edge.

Press the cup in place. It should run smooth on the chamfered end. Press the knob lightly and retract the cup. Drill point will remain in place and no run-out detected.



Figure 46. Dip your new tool in the oil well of your lathe bed and test its function.

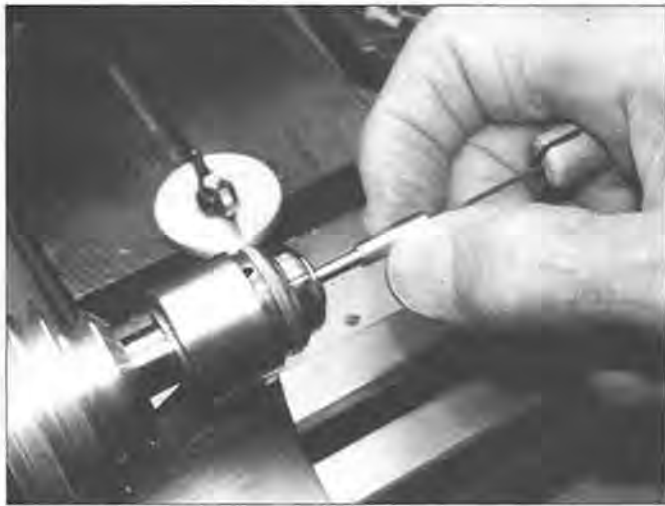


Figure 47. The tool spots a perfect center in less than 5 seconds.

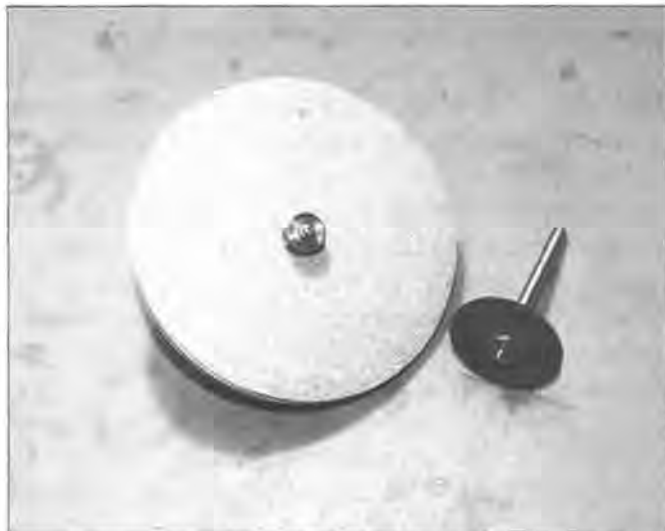


Figure 48. The soft backed grinder and a thin stone were the tools of choice for this job.

And a Caution

The drill point is needle sharp, and delicate. It can be easily crushed or burned. Use oil for lubricant and coolant. Don't attempt to cut a deep hole, just sufficient to start your drill bit.

Figure 48 shows the grinding disc and thin stone cutoff wheel used. These are very fast cutting grinders at high speeds. If there is a pitfall in construction of this tool, it will surely be overheating your drill point.

Looking Ahead

The next part of this series will be an exercise in working brass. I'll go through the turning process of making and installing a pivot bushing in a clock plate. This will be an exercise with materials. Your next step can be in the real clock movement.

Save your *HT* copies, this series will continue with many, many new ideas.



Relentless® Sawblades



Relentless® blades are manufactured in Switzerland from the highest quality steel on the most modern equipment. The result is a blade with flexibility and an unexcelled edge for cutting gold, silver and other metals. Relentless® blades are extra long lasting because they are electronically tempered and are easier to use because they don't wander. Teeth are perfectly angled, uniform and straight. We chose Relentless® "Golden Extras" because they are state-of-the-art to meet all of your cutting requirements. Sold per gross.

SAW-400.02	5/0	SAW-400.05	2/0
SAW-400.03	4/0	SAW-400.06	0
SAW-400.04	3/0		

**Only \$18.95
per Gross!**



Primrose Supplies Inc.

1450 S. Main St. • Salt Lake City, UT • 84115

877-296-1025 • Fax: 877-296-1038

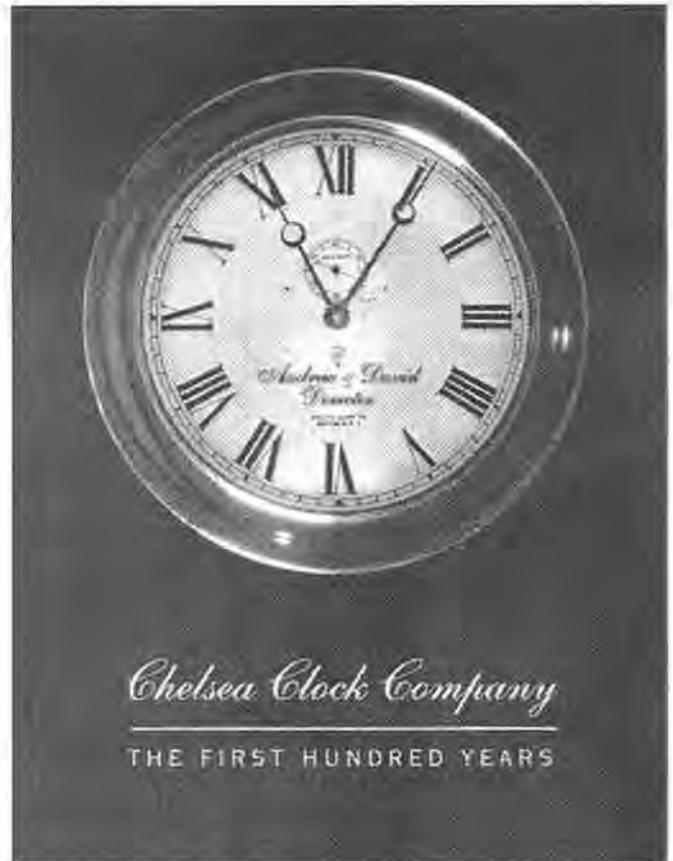
Book Review

By Chip Lim, CMW, CMC, CMEW

Chelsea Clock Company: The First Hundred Years, David D. and Andrew C. Demeter, ISBN: 0-9725111-9-9, Demeter Publications, Ltd., P.O. Box 505222, Chelsea, MA 02150.

Some projects just take time. Released in July, 2003, but conceived two years before the firm's 1997 centennial, *Chelsea Clock Company: The First Hundred Years* provides a hitherto unpublished history of the people and products that have built this uniquely American company. A labor of love by the father and son team of Andrew and David Demeter, this 275-page work is their inaugural effort into the foray of horological research and publishing. Printed in an edition of 1000 copies, this copiously illustrated 22 x 29 cm hardbound volume provides a wealth of material for both the novice and experienced Chelsea Clock (CC) acolyte. The volume is divided into three main parts: a chronology of the company and its owners, a model identification guide, plus a section listing movement type, serial number and sales date information. The Demeters, who reside locally to CC and Chelsea, Massachusetts, conducted numerous interviews and painstakingly searched public and private records in the preparation of this book. Long time tribal knowledge about CC is both corroborated and dispelled, and the depth and scope of fresh information is impressive. After reading the first seven chapters one will have a greater appreciation of just how resilient CC has (had to have) been to emerge from the tumultuous events that have befallen it. Lesser firms would have succumbed.

For many, the 117 pages of reproduced catalogue images with salient details covering the comprehensive range of models, including military and commemorative editions, will be of particular interest. Clocks and barometers are shown in alphabetical order and include the various names that were assigned to each of them over their production period. This should help eliminate the occasional confusion when trying to identify specific pieces. Based on the author's ten years' experience as a CC collector and historian, an indication of each model's rarity is included. The Holy Grail of Chelsea Clocks seems to be the early pendulum regulators and 10 and 12 inch dial ship's clocks. The AWI Orville Hagans Time Collection is indeed fortunate to have among its CC holdings two 12 inch dial specimens, a marine time only model, and a behemoth



base and ball foot ship's bell (one of only a half dozen known examples, donated by this correspondent).

With the increase in public fascination with, and awareness of all things old, serial numbers offer a means to date an 'heirloom.' The sometimes imprecise documentation system used by CC is explained based on a review and distillation of extant sales ledgers and manufacturing records. Beginning with serial number 1 and ending with 499341 (the end of World War II), block listings of movement type, serial numbers and delivery (v. manufacture) dates are compiled. Subsequent entries are in four year increments and show serial numbers only.

Well worth the wait, this treatise is a good read on multiple levels—American social history as well as that of Chelsea Clock, *Time Keepers of the Sea*. This book is available on loan from the Henry B. Fried Library courtesy of this reviewer. ☺

AWI EVENING CLASSES IN CLOCK AND WATCH REPAIR

American Watchmakers-Clockmakers Institute is offering weekly evening classes (10 consecutive Wednesdays) in clock and watch repair. These will be basic instructional classes, loosely structured to adapt to the needs of the students. Watch and clock classes will run simultaneously on Wednesday evenings from 6:00 pm to 9:00 pm at the training facilities at AWI in Harrison, Ohio.

- Instructors: Laurie Penman, Clock Repair
Tom Schomaker, CMW, Watch Repair
- Schedule: Fall Session
September 10, 2003 - November 12, 2003
- Location: AWI Training Facility
701 Enterprise Drive
Harrison, OH 45030
- Cost: \$350 per 10-week session
Registrants must be AWI members
(\$72 yearly membership). Tool and material costs are extra

For further information or to register for a class, contact Nancy Wellmann, Education Coordinator
1-866-367-2924, ext. 303 or e-mail: nwellmann@awi-net.org

706 S. Hill St., #580
Los Angeles, CA 90014


SMITH SUPPLY HOUSE
LOS ANGELES

Tel: (213) 622-1687
Fax: (213) 488-0922

Watch Materials, Supplies & Tools

Watch Battery Distributor

MAINSRING WINDERS



TO FIT ON
LADY'S ROLEX CAL. 1400/2030/2035
2130/2135/2230
MAN'S ROLEX CAL. 1530/3035/3135

\$59.75 each



SMITH SUPPLY HOUSE IS NOT AFFILIATED WITH OR SPONSORED BY ROLEX WATCH U.S.A.
THE ROLEX WARRANTY DOES NOT APPLY TO GENERIC REPLACEMENT PARTS SUPPLIED BY SMITH SUPPLY HOUSE



**YOUR SUPPLIER OF SPARE PARTS FOR ALL BRANDS OF
MECHANICAL AND QUARTZ WATCHES, CLOCKS AND ALARMS**



CALL TOLL FREE (800) 23-SMITH

VISIT OUR WEBSITES

www.smithsupplyhouse.com & www.watchpartonline.com





Clay Minton

Strive for Perfection

Do you really strive for perfection in your watch repairs? Since I am a second generation watchmaker, I was reminded a lot growing up that good watchmakers constantly strive to be perfect in all of their watch repairs. I remember thinking that “jewelers” had it easy. After all, if one prong was a little crooked or a little shorter than the others the customer probably would never even notice! But if you have a balance staff that is a little short or a little crooked—well you know, the customer will notice!! So in my attempt to get it right the first time and truly strive for perfection, I have found that it is the little things that “tripped me up” and caused those dreaded “comeback” watches. So several years ago I accumulated a mental checklist of those little things that really help with getting it done without mistakes. I thought I would share it with you at this writing. So here goes:

1. Always use the correct screwdriver blade size. That would be the one that fits the closest to the slot in the screw head. This will help stop slipping out of the slot and scratching the plate or worse, maybe damaging the coil if working on a quartz watch.

2. Always check the bottom side of the dial before putting it on the just cleaned movement. It is a small thing but many times that little bit of lint or dirt will be stuck on the dial back and you don't need it in the clean movement.

3. Likewise, be sure to check the inside of the case back to be sure it is lint and dirt free. I also check the threads to be sure they are clean. Be sure to do this just before you apply the back.

4. Double check the back gasket for proper fit and correct amount of gasket lubricant. I really like the “O” Ring and Gasket Speed Lubricator that is available at most of the parts houses. It makes the lube process easy. Correct fit of the gasket before and after the case back is applied is a simple visual inspection. Don't take any shortcuts here.

5. Screw-on backs need to be tightened at least twice. I tighten them with the appropriate case wrench and wait a few minutes and then tighten again. It may surprise you that often the back will tighten down after just a short wait. As a general rule I check tightness of high-grade backs at least three times.

6. Snap-on backs must be visually checked. Don't let that snapping sound fool you! Often the back is not properly closed even after you hear the snap. Always visually check—trust your eyes here and not your ears.

7. Make sure crystals and dials are lint free before casing. Double check for fingerprints and stray material just before the movement enters the case. Be sure the crystal does not have any excess cement either on the top or bottom side.

8. Hands—I always level hands and then visually make sure that the hour hand does not touch the dial or the minute hand does not touch any of the markers or numbers. This is especially important with dials that have raised markers. Also, the sweep hand must clear the minute hand in all positions.

9. Check the clasp to be sure it closes correctly. I find that a lot of fold-over clasps need a little adjustment before returning to the customer. If you have to remove one side of the band (I do this when polishing and cleaning) from the fold-over buckle, be sure to mark the correct hole so the watch will fit the customer correctly when they get it back.

10. Be sure the new crown you installed fits the case tube correctly. Also, be sure it is snug up against the case.

Well, there is the top 10 list. There are a few more general rules, like always put in a new power cell even if the new movement you bought has a battery already. The one in the new movement may be 2 or 3 years old.

Remember, attention to the above details will make your life easier and your customers happier. ☺

AWI Home Study Course in Clock Repair

Based on the original correspondence course written and administered by Laurie Penman, AWI's resident clock instructor, this course is constructed to provide information and instruction in a manner that is immediately useful in both learning and practicing clock repair. The course contains 16 lessons. At the completion of each lesson you will receive comments and suggestions from Laurie Penman, and a pass or fail grade. Those who achieve a pass grade in each section will receive a certificate of completion. Mr. Penman will be available to answer questions or offer suggestions to each student.

The AWI Home Study Course in Clock Repair package contains all the material and information necessary to successfully learn the fundamentals of clock repair, including *The Clock Repairer's Handbook* by Laurie Penman and a one-year subscription to Steven G. Conover's monthly publication, *Clockmaker's Newsletter*. Course participants will be invited to attend a 2-day meeting at AWI to confer with Mr. Penman and meet other students.

Contact Nancy Wellmann, AWI Education Coordinator
E-mail: nwellmann@awi-net.org
Phone Toll Free 1-866-367-2924 ext. 303 or (513) 367-9800

VISION • CONFIDENCE • PRECISION

Time to See What You Have Been Missing



- Magnifications Ranging from 2.5x to 8x
- Working Distances from 8 to 20 inches
- Two Flexible Mount Systems
- Call 1.888.773.2790 for your 30-day free trial!
- Mention this ad for an additional discount



Carl Zeiss Surgical, Inc.
One Zeiss Drive • Thornwood, NY 10594
www.zeiss.com/loupes

SUPER WATCH MATERIAL HOUSE SINCE 1972

FERRELL & CO., INC.

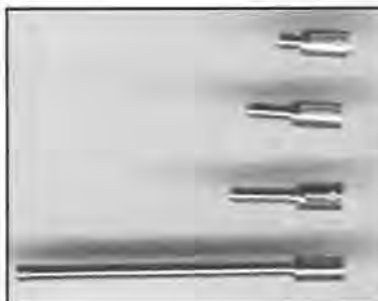
635 Hill Street, #204 Los Angeles, CA 90014

Orders 1-800-523-7534

Information & Inquiries (213) 627-6031

Fax (213) 236-0755

E-mail: ferrellandco@aol.com



Ebel Female Stem Extensions

(generic)

\$9.00 each piece

\$42.00/6 pieces



Tag Heuer Push Buttons

To Fit

Case CG1100 & CA1212
(generic)

\$33.00 each

CALL FOR OUR COMPLETE MOVEMENT & BATTERY PRICE LIST

FERRELL & CO. IS NOT AUTHORIZED BY Ebel or Tag Heuer

BULLETIN BOARD

ITEMS STILL NEEDED

Bulova Watchmaster Model WT Mark II Ultrasonic Watch Cleaner
Michael Kosinenko, Mohrsville, PA, is searching for a schematic diagram for a Bulova Watchmaster Model WT Mark II Ultrasonic Watch Cleaner. This cleaner has a variable speed spin dry unit and a different heating circuit.

L&R Model 728B Clock Movement Cleaner

Greg Bourne, Omaha, NE, is looking for a repair manual for a L&R Model 728B solid state clock movement cleaner (11-quart).

New Hermes Engravograph CA300 Calligraph Attachment

Joseph Verruni, Plymouth Meeting, PA, is seeking information and operating instructions for a Calligraph

attachment for his New Hermes Engravograph. The Engravograph was made by Richardson's, Berkley Heights, NJ.

Pegna Glue

George Costantino, Schenectady, NY, is trying to locate a heat reactive crystal glue he has used for years and found to be superior to all others for certain applications. It is called Pegna Glue and used to be sold through Bergeon along with a kit that included a small heater for curing it. It was widely used by high-grade manufacturers.



Do you have information regarding this month's requests? Do you need information about one of this month's responses? If so, send your information or requests to:

Horological Times Bulletin Board
701 Enterprise Drive
Harrison, OH 45030-1696
Toll-Free: 1-866-367-2924, ext. 307
Phone: (513) 367-9800
Fax: (513) 367-1414
E-mail: dbaas@awi-net.org

**New York State Watchmakers Association
65th Annual Convention
Friday, September 19th and Saturday, September 20th, 2003
Holiday Inn
304 So. Hamilton Street - Gang Mills-Painted Post, NY
607-962-5021**

Please make hotel reservations directly with the Holiday Inn . Request NY State Watchmaker Convention rates, \$75.00 per night
Directions: Route 17/86. Take Exit 44.

We recommend to call for reservations before September 1st

Friday:	AWI Chronograph Course Instructor: Jim Lubic	1:00-3:00	Dynamic Poising Instructor: Dale LaDue
		3:00-5:00	Show and Tell/Micro Mart/Videos
Saturday:		5:00	Annual General Meeting
8:00-9:00	Registration and coffee	6:00	Social Hour
9:00-10:30	American Wood Clocks Proper Repair Techniques Instructor: Amedeo Sylvester	7:00	Banquet to be followed by Speaker: Jim Lubic
10:45-1:00	Replacing a Balance Staff Instructor: Jonathan Rowe		Informal get-together after banquet Ladies Program to be announced

For more information call Bob Walters 607-687-1137

The American Watchmakers- Clockmakers Institute is now offering

brand new health & benefit solution programs
available to ALL members at special rates!

Utilize the buying power of AWI!

Health Insurance for Individuals & Groups with \$15 Generic prescription drug copay, \$10

Vision Benefit, \$5 Million per person limit

Long-Term Care for Home Care, Assisted Living and Nursing Home!

Life Insurance

Dental - Use any dentist, up to \$1,500 coverage limit per person!

Vision - \$15 copay for exam and \$15 copay for lenses!

Disability Income - Short-term and Long-term available!

Retirement, Financial & Estate Planning

Annuities - Deferred Income at the highest yields!

Member Law Services including Business Organization, Commercial & Contract Law,

Litigation, Personal Injury, Mediation, Employment & Real Estate

Personal Insurance - Home, Auto, Excess Liability, Jewelry



*Programs are not available in all states. Plans may vary by state.

**Enjoy these benefits for your company
and employees (full or part time),
your family or just for yourself!**

Call now for a free consultation:

888-450-3040

AWI Health & Benefit Solution Programs

or email help@associationpros.com





Jack Kurdzionak, CW

From the Workshop

You Are Invited

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

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

Photographic Memories

Former AWI director, Bob Macomber, has recently come out of retirement to go back to work as a clockmaker working with his son-in-law, Julien Berg. Bob has been teaching Julien how to solve some of the mysteries of clock repair including reassembling complicated mechanisms. One lesson for Julien was to make a diagram of the clock movement as he took it apart to use as a guide during its reassembly. He appreciated the benefits of having a guide but did not like making the drawings. So before long, Julien purchased a digital camera to avoid making drawings. He now photographs the clock movement as it is taken apart and loads the images onto the shop computer where they can be displayed on the monitor and magnified as much as required by using the computer's zoom feature. The images can also be printed to actually use on the workbench as required. This is a great

idea, especially for those clockmakers who find it difficult to draw.

Watchmakers should not overlook the benefits of having a digital camera in their shops. Taking photos of watches is an excellent way to document defects in cases, crystals, bracelets, and dials. These can be very helpful when the owner of a watch insists that it has been damaged while it was in the shop. If your camera doesn't allow for a close-up of the watch in question, don't despair. Just hold a loupe of about 3X power over the front of the camera's lens and you will be able to take some marvelous close-ups of the watch. The accompanying photo of the reversing wheel mechanism in a Tissot Autoquartz movement is an example of a digital photo taken through a loupe.

Photos taken of dials that need refinishing make a good backup record of how the dials looked before they were lost in the mail or when they are returned from the refinisher with an unsatisfactory new color. Photos of a watch movement that you cannot identify, taken from both back plate and dial side can be e-mailed to your favorite supply house to help the material department identify the manufacturer, speeding up the process of locating the correct spare parts. I have only mentioned a few practical uses of a camera. The actual



number of possible uses of a digital camera in the workshop is only limited by one's imagination.

Are You Denying Yourself a Raise in Pay?

A few days ago I took a pair of dress shoes to Steve, the local cobbler, whom I have known for well over 40 years. We grew up in the same suburb of Boston and now we both have businesses in our adopted town. He repairs shoes and I repair watches. I asked him to replace the soles and heels on my shoes with new full leather soles and good quality heels. He looked at me and said, "Jack, let me save you a few dollars and use only half soles instead of full. You don't need full soles and you will never see or feel the difference when they are worn." I told him I wanted full soles and I was willing to pay the higher price for them. He continued to explain that the suggested lower cost repair, using half soles, was just as serviceable as the higher cost one I was requesting. Would you believe it took a few minutes of friendly persuasion from me to insist that I wanted full soles on these shoes before he agreed to do the more expensive repair? Why would a businessman work hard to sell a lower cost less profitable repair to someone who was already willing to spend a higher amount? It just doesn't make good business sense.

Many watch and clock makers will agree with my friend, the cobbler, because they really try to keep their repair charges at a price point they believe their customers can afford, or are willing to spend, regardless of what the customer wishes. A few years ago, a young man with a Timex watch came to our shop specifically seeking a new crocodile strap for his watch. The sales clerk did his best to discourage him from purchasing a \$79.95 genuine crocodile strap by directing him to lower cost genuine leather one at \$15.95 and extolling the virtues of leather versus crocodile. After the customer left the shop, I asked the clerk, "Why did you try to sell the customer down to a leather strap?" His answer was simple, "I thought the crocodile strap was too expensive for a watch that cost \$29.95. I was embarrassed to sell a strap that cost more than the watch itself."

Fortunately this story had a happy ending for the clerk and the Timex owner, who insisted on buying a \$79.95 strap for that watch. He left the shop with the crocodile strap and the clerk learned that his job was to supply what the customer wanted and not what he thought the customer needed or could afford to spend. More recently, another customer, an age 40 something woman, told me of how she once stopped in a very prestigious Boston jewelry store that has been in business for almost 200 years. The day she visited that store she was dressed casually rather than upscale as many clients visiting that store do. When she asked to see some watches, the salesman immediately brought her the lowest priced watches he had

in stock. When she asked to see the more luxurious lines, he remarked that they were very expensive and asked her if she really wanted to purchase something that costly. She left that store immediately. A few days later she visited my shop, purchased a luxury watch and has since remained a good customer.

Every watchmaker, especially if he is self-employed, must be a good businessperson in addition to a skilled mechanic. If he is to earn more per week, he has to sell not only the labor to make a successful repair, but sell additional products and services to enhance the repair as well as increase the revenue from each job. Are you selling replacement crowns and new gaskets for every water resistant watchcase you service or do you think they will make the repair too expensive for your customers? Are you suggesting an upgrade from round mineral glass crystals to sapphire ones with every overhaul regardless of the original price of the watch? Are you checking each and every water resistant watch for leaks whenever the case is opened or do you test only those watches that you think worthy of testing because of the manufacturer's pedigree? You should be selling services and products such as these to every customer coming to your shop. They come to your shop seeking the best repair possible. Why not sell it to them? You have the skill to do the repair, so make certain that it is done with the best quality products available and that every part required for restoring the watch to its full capabilities is installed. Neither you nor the customer can lose with this approach. The repair is done well, the watch will perform properly, and the customer will be satisfied with a repair well done.

Ask yourself the question. "Am I operating my business as the cobbler who didn't want to sell the higher priced shoe repair or the clerk who lost the sale of a high priced watch? If your answer is yes, you could be costing yourself a well-deserved raise in pay.

Jack Kurdzionak



**HERMLE • KIENINGER • URGOS
H. HERR • REGULA**

from

Butterworth Clocks, Inc.

Why repair when you can replace?

THE LARGEST MOVEMENT SUPPLY IN THE WORLD

FREE PRICE LIST:

Call toll free: 1-800-258-5418

5300 59th Ave. W • Muscatine, IA 52761

E-mail: bci@muscanet.com • Web: www.butterworthclocks.com

SAME DAY SHIPPING • TWO-YEAR WARRANTY

Mark Butterworth

2003 AWI Annual Meeting

Lucy Fuleki

The AWI Annual Meeting was held at the Hilton Greater Cincinnati Airport Hotel in Florence, KY.

Watchmakers and clockmakers came from Washington state, Maine, Texas, Florida, even Canada and many places in between, for four days of talking shop, eating good food, visiting the former Gruen factory, experiencing lectures by experts in the field, having books and videos signed by authors, setting policy for the future of the industry and its schools, and purchasing much-needed equipment from vendors. There was also much glad-handing in the hospitality suite, where it was possible to personally meet and greet the board of directors and its officers and to give them your opinions on issues currently before them.

The Chronometer Club held their fourth annual meeting on Thursday, July 31st. Thirty-five members were in attendance. The chapter reported an 8% increase in membership

this past year. The eGroup participation is currently at 78%. It was announced that Fred Burckhardt is the new Editor of the group's newsletter, "The Communicator." The technical forum that followed the business meeting was entitled "Techniques for Professional Watchmakers" and was presented by Manuel Yazijian.

The Affiliate Chapter Round Table was held Thursday evening.

Gerald Wilson, President and CEO of William S. McCaw Co., Toledo, OH, was the keynote speaker for the Affiliate Chapter meeting on Friday, August 1st. He said that distributors have been lost in the '60s and have not kept up with pricing and technology. If they don't pass on increased costs they will be bought out, he cautioned. The cheapest distributors will be the first to go, causing poor service and stockouts, he predicts.

Wilson described the decline in the various monetary systems and its



The Affiliate Chapter Round Table was held Thursday evening, July 31st. John Kurdzionak, Affiliate Chapter Director, led the group discussion (top photo).



The Chronometer Club technical forum was entitled "Techniques for Professional Watchmakers" and was presented by Manuel Yazijian.

subsequent impact on parts distributors. Manufacturers also began to increase prices. In September 2001, ETA had a 15% increase across the board (for the first time since 1991). Omega increased its prices 12% in October 2001, first time since 1988. Citizen increased prices by 8-10% on July 1, 2003, its first increase since 1993. With the devaluation of the dollar, as well as a lack of volume and increased manufacturing costs, distributors must increase prices to stay viable.

Wilson described the one bright spot as Hong Kong where the



Gerald Wilson was keynote speaker at the Affiliate Chapter Meeting Friday, August 1st.

dollar hasn't changed in 10 years except for a slight gain. Consequently, most movements are funneled through Hong Kong using Hong Kong dollars and converting to U.S. dollars. He said the generic Rolex crystals have actually lowered in price because of this. Wilson quoted his father as saying that everyone wants three things: price, service and quality, "but you get just two."

The ELM Charitable Trust had its annual fund-raising dinner on Friday evening, August 1, 2003, on "Time Hill" in one of Cincinnati's most important Early Tudor Revival landmark buildings. The event proved to be quite successful for the organization itself and fun for all who attended that evening.

The evening began with an escorted tour of the Gruen Watchmakers Guild Building, which was constructed in 1916 by the Gruen family and housed their family business for many years. The old-world nostalgia of a fifteenth-century, half-timbered style building, was captured by the Cincinnati architectural firm Deekin and Burroughs to engage the imagination of the American public. From this Cincinnati location, the Gruen Company made watch cases and managed its advertising and sales. Today, the building houses administrative offices and meeting rooms for the Union Institute

& University, which purchased the historic structure in 1995.

Immediately following the tour of the Gruen Building, the group walked across the street to another historic building that is owned by the Union Institute & University, where a wonderful dinner was prepared and waiting for them. The building where the dinner was held was designed and built in 1921 by Elzer and Anderson, a prominent local architectural firm, for the Procter & Collier Company. Procter & Collier was the marketing firm that was famous for creating

Procter & Gamble's slogan *Ivory Soap—So Pure It Floats*. The Union Institute & University purchased this building in 1989. Because of their unique appearance and historic functions, both buildings have been listed on the National Register of Historic Places by the United States Department of the Interior.

Following dinner, special guest speaker Charlie Cleves showed a Gruen family video to the group and gave an extremely interesting presentation about Gruen watches. To top it all off, Charlie even brought numerous Gruen watches to the dinner from his own personal collection and displayed them so attendees could get a first hand look at some of these historic and highly collectible timepieces. Thank you Charlie for sharing your knowledge of the Gruen family and Gruen watches with us, and for showing us some of your private watch collection as well.

Approximately 60 people attended the ELM Charitable Trust's fund-raising dinner. For all of you who were able to attend this year, we thank you very much and look forward to seeing you again next year. For all of you who were unable to attend this year, we certainly missed you and hope you will be able to join us at next year's event.



Jack Kurdzionak, AWI President, calls the Friday afternoon meeting of the Board of Directors to order.



Top Left: Jim Door, Alice Carpenter and James Zimmerman taking the oath of office.

Bottom Left: Joe Juare, REC Director; Glenn Gardner, Affiliate Chapter Director; and Tony Riggio, IAB Director.

Top Right: Officers for 2003-2004 are (left to right): Jim Door, first vice president; Alice Carpenter, secretary; Frank Poye, second vice president; Mark Butterworth, treasurer; and Jack Kurdzionak, president.

Elbert Lewis, Horology Instructor at Jones County Junior College, Ellisville, MS, and his wife, Dorothy.

The AWI Board of Directors met Friday, August 1st in the afternoon and again on Sunday, August 3rd. Committee reports from standing committees went directly to the board for a vote on requested action. Proposals from the Affiliate Chapter delegates were taken into consideration and in some cases motions passed.

President Jack Kurdzionak appointed a nominating committee consisting of Dennis Warner, Joe Juare and Wes Door to present the slate of officers for next year. Mark

Butterworth was appointed to fill the vacancy left by David Christianson's resignation from the ELM Trust. Alice Carpenter was appointed to replace Christianson on the Perpetuation Committee. This committee oversees AWI's investments. Robert Clarke of Ross Sinclair & Associates, Inc. had announced earlier in the Perpetuation Fund meeting that AWI is in its best financial condition, averaging about 6% on its investment which is in U.S. government securities as required by the AWI Constitution.

Re-elected to the board were Alice Carpenter, CMW, CMEW, Tarboro, North Carolina and Jim Door, Kennewick, Washington. Newly-elected board members were: James K. Zimmerman, CMEW, CMC, CMW, of York, Pennsylvania; James R. Sadilek of Carson City, Nevada; and Glenn D. Gardner of Madison, Wisconsin. Zimmerman took the oath of office on Friday, August 1, 2003. He will serve a three-year term.

James Sadilek was appointed March 17, 2003 to serve the un-expired

term of Marshall Richmond. Sadilek was sworn into office on Sunday, August 4, 2003 and will serve until August 2005.

Glenn Gardner was elected, by the affiliate chapter delegates attending the convention, to the AWI Board on Friday, August 1, 2003. Gardner will serve the AWI Board of Directors as the Affiliate Chapter Director for a one-year term. Gene Bertram was elected Vice Chairman. The request of the affiliate chapters to have an index of *Horological Times* articles available on the web site was approved by the board. A committee will be appointed by President Kurdzionak to handle Affiliate Chapter motions for an Internet watchmaking course to prepare students for passage of the CW and CMW certification and a watchmaker correspondence course, similar to the current clockmaker correspondence course. In response to action taken by the membership committee, the affiliate chapters will be required to have at least 15 members who are also AWI members before a \$400 reimbursement will be given the chapter for delegate attendance at the annual meeting. Delegates must attend all affiliate chapter and board meetings at the annual meeting. An amendment by Jim Door allowed exceptions to this final directive by the AWI Executive Director on an individual basis. The affiliate chapter chairman is charged with verifying the attendance.

Current directors and officers are:

- Jack Kurdzionak, CW, President; Stoneham, MA
- Jim Door, First Vice President; Kennewick, WA
- Frank W. Poye, CW, Second Vice President; Paris, TX
- Alice B. Carpenter, CMW, CMEW, Secretary; Tarboro, NC
- Mark Butterworth, Treasurer; Muscatine, IA
- Henry Frystak, CMW; Linden, NJ
- Robert D. Porter, CMW, Immediate Past President; Ellisville, MO
- James R. Sadilek; Carson City, NV
- Dennis Warner; Cedar Park, TX



Gruen Watch Company building on Time Hill.



AWI members begin their tour of Time Hill.



Jim Sadilek stands in front of the reconstructed bronze hooded fireplace in the building's foyer.



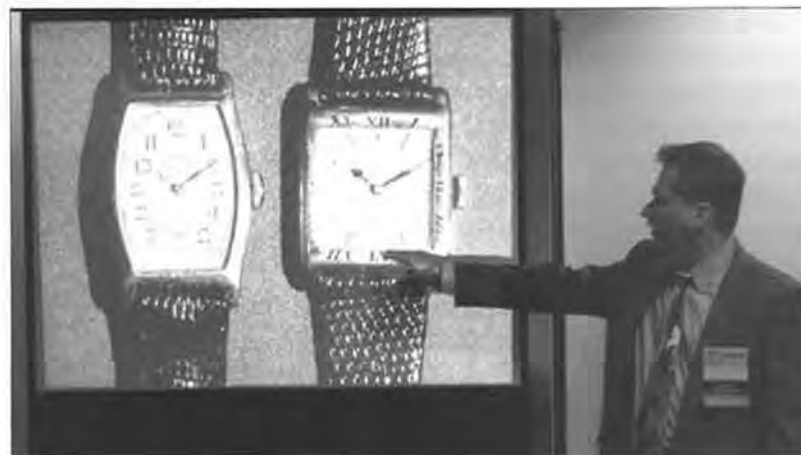
The tour began in the foyer of the former Gruen Watch Factory.



*Top: Foyer chandelier.
Bottom: Original Rookwood tile in the foyer.*



Ben Conner, Houston, TX, views the rafters in the top floor of the Gruen building.



D.C. Chambers, Lafayette, IN, and Mary Ann Olding, Architectural Historian, discuss the rafters from the original Gruen factory.



Charlie Cleves presented the history of the Gruen family following the ELM Trust Dinner. He displayed his personal collection of Gruen watches and memorabilia.



Edith Burckhardt, Ft. Worth, TX, and Jack Kurdzionak, Stoneham, MA, view the period picture of suffragettes.



"Citizen Eco Drive" by Jay Spring, Director of After Sales Service, Citizen Watch Co. Jay discussed Eco Drive recharging, identifying a problem, and the unique service the Eco Drive involves.



"Rolex Watches" was the subject of discussion in Charlie Cleves' sessions on Saturday. Attendees were able to examine the watch samples provided by Charlie.



"Making & Repairing Chapter Rings" was taught by Laurie Penman.



Greg McCreight spoke on "Modern Technology in the Horological World."



Jerry Faier's sessions covered "Simple Tools to Aid the Bench Work of Clock and Watchmakers."



Dr. Matt Clark presented "Watch Patents." The sources, searching, and use of patents for horologists was discussed.



"Digital Photography" drew a large crowd. Lee Frederick, Pete's Photoworld, was the instructor.



The Cas-Ker Company, Cincinnati, OH, was represented by Pat Cassidy, Scott Schwartz and Lou Esselman (not pictured).



Terry Kurdzionak, Eckcells, Stoneham, MA



Mary Huff and Donna Baas were busy during the Trade Fair selling books, T-shirts, and videos at AWI's table.



Gerry Wilson, Wm. S. McCaw Co., Toledo, OH, discusses watch parts with Jim Sadilek, Carson City, NV.



Chris Gaber, Gaber & Company, Pittsburgh, PA, displayed a large assortment of material for purchase.



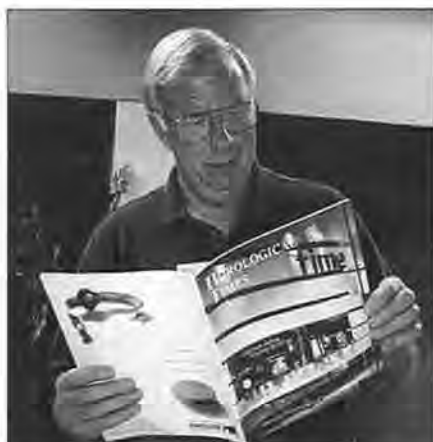
Jerry Faier, Glendale, AZ, and Mark Baker, Damascus, OH, talk with Ron Price of Price-Less Ads.



The Saturday luncheon, sponsored by the vendors, was enjoyed by all!



Tony Voight, Witschi Electronic USA, Inc., Palmyra, NJ displayed many of Witschi's popular testers.



Brad Wellmann, Cincinnati, OH, takes a break from the education sessions to read the August Horological Times.

- Manuel Jean Yazijian; Montreal, CANADA
- James K. Zimmerman, CMEW, CMC, CMW; York, PA
- Glenn Gardner, CMW, Affiliate Chapter Director; Madison, WI
- Joseph Juare, Research & Education Council Director; St. Paul, MN
- Tony Riggio, CMW, Industry Advisory Board Director; Westport, CT

Action proposed by the Finance Committee, supported by the Membership Committee, and approved unanimously by the board of directors mandates that effective immediately, the following rates are in effect for our various levels of AWI membership.

- Regular - \$74/year
- Student - \$37/year
- Life - \$2,220. No payment plans accepted for life dues. The rate is based on 30 times the regular dues rate, and will change as the regular dues rate changes.

- REC - \$100/year
- Affiliate Chapters - \$100/year
- IAB - \$100/year
- Retired - no longer exists
- Family - no longer exists

In place of the retired/emeritus rate plan, there are now two new "Senior" rates. They are as follows:

- Ages 70 through 79 - 90% of the regular rate, or \$66.60
- Ages 80 and up - 80% of the regular rate, \$59.20

Proof of age is required to obtain these senior rates. AWI will accept a photocopy of official state or federal ID. Social Security card copies will not be accepted since no birthdate is shown. AWI cannot accept: credit card copies, library card copies, NAWCC or other membership card copies, etc. Only verifiable state or federal IDs will work. These could include military IDs, government employee IDs, driver's licenses, state IDs or other official IDs with a birthdate shown. Members can mail, fax or e-mail a photocopy of these various IDs. Only one form of ID is required, and we will keep it on file. If the member is concerned about their Social Security number or driver's license number being shown, they are permitted to cover it up or black it out prior to sending it to us. All we need to see is the member's name and address, their birthdate, and from where the ID was issued. If members are unwilling to provide this proof, the senior rates will not be honored. Senior AWI members won't have to provide this every year, just the first time they apply for this rate.

These rates took effect as soon as the board voted to implement them. Current members at the retired membership level are NOT grandfathered in on the two senior rates. They must provide proof of age, or pay the full regular rate. Both of these senior rates do have full voting rights. Membership Committee Chairwoman Terry



Kurdzionak said the senior rates put AWI more in line with senior discounts offered elsewhere.

Jerry Faier announced that the Education Committee is implementing the new certifications and is planning to have the new program ready by the end of 2003. Ron DeCorte and the Certification Committee are working closely with the Education Committee. Dr. Vince Schrader said that "certification is about establishing high standards." He added that AWI refers to itself as the premier horological organization in the world and this implies high standards. The modernization of a code of standards, professional work ethics and appropriate work environment are required for high standards. A certifying body such as AWI has to be very clear what is required in its designations by setting solid, defensible, high standards. "We have people in this room who are legendary in the field of horology," he added. He believes AWI must make statements on education, assessment and certification to reflect its standards because "The times they are a'changin'."



The *Horological Times* Committee was praised by Executive Director Jim Lubic for establishing guidelines for contributing articles to the magazine. President Kurdzionak praised the magazine as looking the best it has in years.

The board approved a motion presented by Manuel Yazijian, as chairman of the Technology Committee, to



Glenn Gardner congratulates Ron DeCorte (right) recipient of the AWI Lifetime Achievement Award.

Top Left: Gene Bertram presents Gerald Kincaid the Affiliate Chapter of the Year Award. Kincaid accepted the award for the Horological Association of Maryland.

Middle Left: Dennis Warner presents the AWI Appreciation Award to Henry Frystak as Sue Krzemienski looks on.

Bottom Left: Fred Burckhardt gives David Christianson an Appreciation Award on behalf of the AWI-ELM Trust.

accept the bid of Interactive Solution International (ISI) for \$60,000 to make AWI's web site an "aggressive presence" and to increase membership. There will be a members-only section, industry links, referral directory, advertisements, and discussion groups. Affiliate chapters will have their own space as will the ELM Charitable Trust museum. The cost of the web site will be amortized over a four-year period.

Treasurer Mark Butterworth presented the budget report. He said that last year's \$1 million budget had an \$18,000 shortfall. Next year's proposed budget is again for \$1 million. Forty-three percent of this budget comes from the Perpetuation Fund income. Butterworth said this is "extremely high" and stressed the importance of gaining new members to increase revenue. The budget was unanimously approved by the board.

Discussion about changing the AWI acronym to AWCI met with strong opinions pro and con. President Kurdzionak will appoint a committee of two clockmakers and two watchmakers to pursue the topic. He suggested that members be asked in the *Horological Times* to bring their comments to the board. How about it folks? You can reach the board by sending a letter to the editor of the *Horological Times*, commenting on AWI matters, or sending an e-mail to awiboard@awi-net.org. It was agreed that the members should be the final arbiters.

Jim Lubic asked the board for direction as to AWI having a full-time training school. Lubic stated the school should allow one-week programs for AWI members.

President Kurdzionak will appoint a committee to find out who is selling spare parts and also a price survey committee to put together questions for a survey.

First Vice President Jim Door and the Constitution and Bylaws Committee was commended for its revisions and updates to the AWI Constitution, Bylaws, and Policy Manual. The revisions will be put before the membership for a vote on the spring 2004 election ballot.

During the awards banquet on Saturday night, Ron DeCorte received the Lifetime Achievement Award; Henry Frystak received the AWI Appreciation Award; and David Christianson was presented the AWI Fellow Award. Glenn Gardner presented the awards, along with emcee Fred Burckhardt.

Gene Bertram presented the Affiliate Chapter of the Year award to the Maryland Horological Society.

Mark Baker presented ribbons to chapter winners who submitted the most batteries in various categories. This is the last year the AWI-ELM Trust will collect batteries.

Mark A. Baker, ELM Trust Battery Contest Chairman, reported the following results of the 2003 ELM Trust Battery Contest:

Total pounds received 590 $\frac{1}{3}$

Division 1

1st	Horological Society of New York	52 $\frac{3}{4}$ lbs.
2nd	Ohio	40 $\frac{1}{2}$ lbs.
3rd	Illinois	35 $\frac{3}{4}$ lbs.

Division 2

1st	Indiana	136 $\frac{1}{4}$ lbs.
2nd	North Carolina	100 $\frac{1}{4}$ lbs.
3rd	New Jersey	85 $\frac{1}{2}$ lbs.

Division 3

1st	Arizona	20 $\frac{1}{2}$ lbs.
2nd	Mississippi	9 $\frac{3}{4}$ lbs.
3rd	South Carolina	5 lbs.

Division 4

1st	Idaho	11 lbs.
2nd	Canada	10 $\frac{3}{4}$ lbs.
3rd	Montana	2 $\frac{3}{4}$ lbs.

Grand National Champion - Indiana 136 $\frac{1}{4}$ lbs.

This year's vendor show was well attended. Approximately 120 people were present for the Trade Fair and luncheon, and members showed their support by purchasing many items.

Thanks again to our convention sponsors: Cas-Ker Co.; Gaber Co.; Eckcells; Price-Less Ads; The Verdin Co.; Witschi Electronics; and Wm. S. McCaw Co. Thanks also to our door-prize donors: Eckcells; Orbita Corp.; Euro Tool, Inc.; Wm. S. McCaw Co.; and Timesavers. Daniel Nowak won the one-year free membership from AWI.

Next year's mid-year meeting will be held in Harrison, Ohio, on February 28 and 29. The annual meeting will be August 5-8, 2004 at a site to be announced. Mark your calendars and plan to take advantage of one of your primary membership benefits. Ask your IRS tax consultant about the benefits of business-related travel.



First Graduates of The Lititz Watch Technicum

The Lititz Watch Technicum, Lititz, PA is pleased to announce the first graduating class of its watchmaking program. The students have successfully completed the school's intensive program and all necessary exams, and now hold a diploma that includes the internationally recognized WOSTEP certification.

The curriculum at the Lititz Watch Technicum consists of 3,000 hours of theoretical and hands-on instruction from an experienced faculty. Students learn micromechanics as well as the repair of simple and complicated timepieces, including manual wind, automatic and electronic watches and several types of chronographs.

They are also required to build their own school watch as a didactic link between the micromechanics and repair section of the program. Graduating students have received comprehensive training and are prepared to provide quality service of high-grade watches.

The Lititz Watch Technicum is a WOSTEP partnership school (Watchmakers of Switzerland Training and Education Program). WOSTEP is located in Neuchâtel, Switzerland and is an independent and neutral institution recognized as a center of competence in the field of watchmaking and is an essential link in the chain of success that Swiss horological products enjoy on international markets.



(L-R): Top Row: Hermann Mayer, Principal, Lititz Watch Technicum; Stephen Schwartz, Student; Ronald Landberg, Student; Alan Kidder, Student; Bottom Row: Joshua Lake, Student; Rebecca Wilkinson, Student; Laura Martin, Student; Brigitte DeGroff, Student; Charles Berthiaume, Director, Lititz Watch Technicum

The WOSTEP Partnership, which has been in existence since 1992, currently collaborates with fourteen schools in eight countries. This program aims to improve and standardize training internationally within the field of watchmaking. The program at the Lititz Watch Technicum ended with an 18½ hour WOSTEP final examination which included the overhaul of three watches—automatic, electronic and chronograph—as well as a theory test. Students who pass the final examinations in a WOSTEP-approved school are awarded a special certificate that is recognized throughout the world as a superior qualification in watchmaking.


The Lititz Watch Technicum is a not-for-profit foundation that is fully subsidized by Rolex. Each year the Technicum accepts twelve students. Applications for the fall of 2004 are currently being accepted. More information can be obtained at www.lititzwatchtechnicum.org <<http://www.lititzwatchtechnicum.org/>> or by calling (717)-625-3787.

TIME CONNECTION, INC

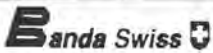
724 South Hill Street, Los Angeles, CA 90014
Toll Free 1-888-847-7770 FAX; 1-213-624-2679

The NEW Time Connection, Inc. 2003-2004 Catalog is here!

The all new 2003-2004 catalog available now. With over 140 pages of products, reference guides, charts, and indexes; the Time Connection catalog is a must for watch & jewelry professionals. Featuring complete listing of watch & jewelry Tools and supplies. Movement pictures with cross reference guide, Rolex, Omega, Tag Heuer, Seiko & Citizen Related Items, and much more.



No.	MAXELL	RENATA
364	0.17	0.20
371	0.32	0.32
377	0.17	0.20
379	0.28	0.28
395	0.34	0.35
1216	0.49	0.69
2016	0.39	0.45
2025	0.39	0.45
2032	0.39	0.45




Swiss Leather Strap Deployment Buckle, with White Stitched. Buffalo Grain

Size: 16, 18, 19, 20, 22, 24mm
Color: Black, Brown, Honey, Blue

Stainless Steel Buckle: 16 to 22mm \$8.95
24mm \$10.00

Yellow Buckle: Black only 18, 19, 20mm \$10.00

Satisfaction is guaranteed



Free Catalog with Your Order

OTTO JULES FREI & BOREL

126 Second St., Oakland Ca. 94607

Phone 800-772-3456
Fax 800-900-3734
E-Mail info@ofrei.com

QUALITY WATCH & JEWELRY SUPPLIES FOR GENERATIONS SINCE 1930

Visit our Web Site
Shop On-Line for over 8,000 items

➔

**Request a
Horological
Parts &
Supplies
Catalog
Today**



Watch Repair Tools, Parts and Supplies



**Bergeon
5500C
Case & Crystal Press**
Reg. \$159.00
Sale \$144.00



**Moebuis 9010
Synt-A-Lube**
Reg. \$16.50
Sale \$12.98

The Best Tools from the Best Companies.
We will work with you to supply you with hard to find tools and supplies.





Just a sample selection of the items on Sale this month. Visit our web site or contact us for a complete list.

Orders Desk 1-800-772-3456 Tech & Info 510-832-0355 Fax 1-800-900-3734



Glenn D. Gardner,
CMW

Affiliate Chapter Report

As your newly elected Affiliate Chapter Chairman, I would like to take this time to introduce myself. My name is Glenn D. Gardner. My home is in Madison, Wisconsin, where I have lived my whole life. I am a second generation watchmaker, graduate of the Milwaukee Area Technical College watchmaking program in 1969. I apprenticed under my father and became licensed to practice watchmaking in 1970. I was employed in a jewelry store from 1970 to 1990. From 1990 till April 2002, I operated a trade watch repair shop out of my home. In 1996 I started doing grandfather clock house calls, as there seemed to be a great need in the Madison area for this service. April 2002 brought a whole new adventure for me. I had been repairing watches for a Time Shop and was given the opportunity to buy out the shop. I am now owner of the Dykman's Time Shop in Madison, we carry and service watches and clocks.

My first AWI convention was in 1973, as a delegate to the Affiliated Chapters. I have served the Wisconsin Horological Society as Vice-president for 2 years, President for 2 years and as Secretary for 21 years. Over the last 30 years I have represented Wisconsin as a delegate or alternate to the Affiliated Chapter approximately 20 times.

The theme for the weekend was "The times they are a'changin'." This last year was a busy year for all committees of AWI. The reports showed it and many changes are in the works. The constitution, bylaws and policy manual are being updated and changed. The education and certification committee took steps to consolidate and redo the whole program. Membership worked on new categories including a retired status. The technology group worked hard to find a new company to make our web site bigger and better. The finance committee put a balanced budget together which passed unanimously. If you missed this convention, you missed a great one showing that the American Watchmakers-Clockmakers Institute is changing for the better.

We had 18 chapters represented this year :
Indianapolis Horological Society:
Delegate: D.C. Chambers

Horological Association of Maryland:
Delegate: Gerald Kincade
Massachusetts Watchmakers-Clockmakers Association: Delegate: John Kurdzionak
Minnesota Watch & Clockmakers Association:
Delegate: Doug Thompson
Horological Society of New York:
Delegate: Ben Matz
New York State Watch & Clockmakers Association: Delegate: Mark Mongillo
North Carolina Watchmakers Association:
Delegate: Mack Shuping
Watchmakers/Clockmakers Association of Ohio: Delegate: Monroe Troyer
Watchmakers Association of Pennsylvania:
Delegate: James Zimmerman
Capital Area Watch & Clockmakers Guild:
Delegate: Ben Conner
Horological Association of Virginia:
Delegate: Lloyd Lehn
Wisconsin Horological Society:
Delegate: Glenn Gardner
AWI-NAWCC Chapter 102:
Delegate: Dick Vanaria
The Chronometer Club:
Delegate: Ewell Hartman
Watchmakers Association of New Jersey:
Delegate: Henry Frystak
Metro St. Louis Watchmakers Association:
Delegate: Gene Bertram
Horological Association of Indiana:
Delegate: Steve Settle
Washington State Watchmakers & Clockmakers: Delegate: Tom Payne

If your chapter is not listed maybe you could represent them next year. The meeting is August 5-8, 2004. If interested, you or your group will receive up to \$400 reimbursement to attend if you fulfill the requirements. Please contact me and we can talk about it.

Your vice-chairman is also a longtime Affiliated Chapter Representative from St. Louis, Gene Bertram. Gene and I plan to keep more in touch with each chapter. If you have any questions or you would like to write an article about your chapter's activities please let me know. This is your column and we want to use it to relay information about AWI chapters. ☺

COME ONE ! COME ALL!
TO THE
KARL FARNLACHER
MEMORIAL
AUCTION

Sunday, October 5, 2003

at the
**AMERICAN LEGION HALL SOUTHWAY
POST 144**

**3253 SOUTH HIGH STREET
COLUMBUS, OHIO**

Auction starts at 12:00 NOON

Doors open at 9:30 AM

Any items you wish to sell should be brought with you the day of the sale. Bring items early so that potential bidders will be able to look them over prior to sale time.

Special Note: All Sales Are Final
\$2.00 donation collected at the door

For Additional Information Contact:
Mark A. Baker~Damascus, Ohio~
(330) 537-3939, 10A.M. to 5:30P.M.
Email <bakerclock@voyager.net>

CLOCKS

The International Magazine for Clock Collectors & Restorers



- ▶ Clock repair
- ▶ Restoration
- ▶ Clockmaking
- ▶ Laurie Penman...

...and **MORE!** Every month at a special price for AWI members of \$74 (normal price \$79). Just fill in the form below and send it to us at: Splat Publishing Ltd, 28 Gillespie Crescent, Edinburgh EH10 4HU, UK. Tel: +44 131 228 6388.

Fax: +44 131 229 5550. E-mail: enquiries@clocksmagazine.com

Title.....First name Last name..... AWI No

Address.....

.....Zipcode..... Country

Cardholder's name (as it appears on the card)

Card No Expiry date

Signature Today's date

Visit our website at: www.clocksmagazine.com

AWI-ELM TRUST BATTERY RECYCLING PROGRAM HAS BEEN DISCONTINUED

Due to all the none silver oxide batteries that have become more prevalent and stricter regulations on how to dispose of these batteries, it was decided that the program should come to an end. The ELM Trust hopes that you will still think of them when recycling your batteries by requesting that your recycling company send your check directly to the ELM Trust. This will still be a tax deductible donation.

57th Annual WAO Convention

By Mark A. Baker, Convention Committee

The 57th annual convention of the Watchmakers/Clockmakers Association of Ohio was held July 18th and 19th, 2003 at the Fairfield Inn & Suites, Columbus, Ohio. Twenty-seven people were in attendance. With the talents of speakers Larry Blanchard and Mike Wentzel plus three material displays on hand, a good time was had by all.

Members elected to a three-year term on the Board of Directors were Charles McKinney, Monroe Troyer and Jack St.Cyr. Officers elected for the coming year are President: Monroe Troyer; Vice President: Harvey Mintz; Secretary: Jay Barber; and Treasurer: Mark Baker. Jacob Montgomery was appointed Executive Secretary. We congratulate these individuals on their

election and thank them for their willingness to volunteer and serve their state association.

Saturday morning, Mike Wentzel gave us a very interesting presentation on repairing enamel pocket watch dials. Mike detailed the methods he has developed to make long-lasting repairs to chipped and broken enamel dials, and the tools and materials he uses.

Saturday afternoon Larry Blanchard was on hand to give us some procedures to correct an Accutron that gains time with a 1.55 volt cell in it. The AWI video department was on hand to tape Mr. Blanchard's presentation. The video, Accutron & Silver Oxide Cells, is listed on this month's *HT* mailing envelope.



Mike Wentzel demonstrates repairing enamel pocket watch dials.



Larry Blanchard explains the procedures to correct an Accutron that gains time with a 1.55 volt cell.



Monroe Troyer (left) presented Chuck Atchison with the Past President Pin.



Newly-elected officers are: Monroe Troyer, president; Harvey Mintz, vice president; Jay Barber, secretary; and Mark Baker, treasurer.



Larry Blanchard was guest speaker at the 2003 banquet.

We are grateful to have had three material distributors with us this year. Bill Fust from the *Wm. S. McCaw Co.*, Lou Esselman from *Cas-Ker Co.* and Chris Gaber from *Gaber & Co.* were on hand with a verity of supplies, parts, tools and material assortments for us to see and buy. THANK YOU to these companies for their support.

We must thank the following companies and individuals for their generous donations of door prizes to this year's convention.

- American Watchmakers/Clockmakers Institute
- Black Forest Imports, Inc.
- Cas-Ker Co.
- Hermle Black Forest Clocks
- International Dial, Inc.
- Merritt's Antiques, Inc.
- Vibrograf U.S.A. Corp.
- Wm. S. McCaw Company
- C. David Pierce

Thank you to Albert Brehl, Jack St.Cyr, Jim Broughton, Chuck Atchison, Bob Allis and the others who helped make this a successful convention. ☺



CHRONOS
IF YOU LOVE WATCHES,
YOU'LL LOVE CHRONOS

- \$22.50 - One Year
 - \$42.00 - Two Years
 - \$60.00 - Three Years
- Foreign subscribers add \$10 per year. (U.S. Funds drawn from U.S. bank only)
- Check or money order enclosed
 - Charge my Visa or MasterCard
- Card No. _____
Exp. Date _____
Signature _____
Phone _____
Name _____
Address _____
City _____ State _____
Zip _____ Country _____
Company Name _____
Type of Business _____

Chronos Magazine is published 6 times per year for the connoisseur of luxury timepieces. Each issue presents the finest watches and clocks of today as well as exploring premier vintage collections.



WCR
Watch & Clock Review
THE INDUSTRY'S
MOST-USED
PUBLICATION

- \$19.50 - One Year
 - \$35.00 - Two Years
 - \$50.00 - Three Years
- Foreign subscribers add \$10 per year. (U.S. Funds drawn from U.S. bank only)
- Check or money order enclosed
 - Charge my Visa or MasterCard
- Card No. _____
Exp. Date _____
Signature _____
Phone _____
Name _____
Address _____
City _____ State _____
Zip _____ Country _____
Company Name _____
Type of Business _____

Watch & Clock Review is published 10 times per year and is the industry's most-used publication—the only one in North America devoted to watches and clocks. Get the one convenient source of industry news features including eight annual directory issues.



Laurie Penman

Education Update

End of the summer session of evening classes, we've seen a fair range of clocks again, some bad but the great majority of them good. Early American, 19th century German, French and British (reverse alphabetical order for modesty's sake) and a lot of more modern mantel clocks, cuckoo clocks and Westminster chimes. During the ten weeks we had short lectures on recoil escapements both solid and bent strip; deadbeat escapements, the proper meshing of gears and how this is affected by worn pivots and pivot holes. We got a great deal into ten weeks and everybody seemed to enjoy it.

The next session begins in September, which is also the month in which we offer the first week of an eighteen-week course of instruction in clock repairing. That course is structured and aims to produce clockmakers capable of taking their Clockmakers Certification examination. In fact it goes further than that but because two years practice as a Certified Clockmaker is a stipulation before taking the Master Clockmaker's Certification the examination for the latter will have to wait. What is important, of course, is that apart from having the expertise to make clock parts and repair clocks, the student also needs at least two years practice in the profession before

claiming to be a Master Clockmaker. Details of the course were advertised in the *HT* last month and are repeated this month on pages 56-57, so there is no point in my going over the details again. However, let me just state the overall objective.

The AWI Clockmaker's Course will accept students with a modest skill in handling small tools and who have a strong interest in becoming clockmakers. We will teach them the proper handling of tools; center lathe turning; dismantling, examining and assembling of clock movements; proper bushing and repivoting; gear cutting; "depthing" gear trains; adjustment and repair of common escapements; adjustment of antique and modern striking mechanisms; the same for antique and modern chiming mechanisms and a good parcel of other clockmaking skills.

In addition the design and history of clock movements—subjects that become necessary immediately a customer asks, "How old is it? Is it worth repairing?"

We believe that the course will provide young men and women (or people who are changing careers), a very good grounding in clockmaking skills and expertise; and fit them for worthwhile employment, and self employment.



Participating in the 10-week summer clock session were: Walt Hedglin (seated), Jerry Freitag, Brad Wellmann, Laurie Penman (instructor), Mike Garber, Jody Clark, and John Voegerl.



EDUCATION

Bench Courses

To schedule a Bench Course in your area please contact AWI for complete information. A list of available Bench Courses is printed here for your convenience. To register for Bench Courses, please mail, phone, fax or e-mail your registration and payment information to: **American Watchmakers-Clockmakers Institute, 701 Enterprise Drive, Harrison, OH 45030-1696; Toll Free 1-866-367-2924, Phone (513)367-9800, Fax (513) 367-1414, E-mail: educate@awi-net.org** PLEASE NOTE: Registrations are limited and will be selected by the earliest date received. Please include a check or charge card number (Visa, Mastercard, Discover or American Express), card expiration date, signature and phone number. All registration fee checks and charges are processed immediately upon receipt. **DEADLINE FOR REGISTRATION IS 30 DAYS BEFORE THE SCHEDULED DATE OF THE COURSE.** *Indicates Bench Courses held in conjunction with a convention or purchased by an AWI Affiliate Chapter. For more information on these specific courses, please refer to the contact information provided for each class.

DATE	CLASS	INSTRUCTOR	LOCATION	FEE
SEPTEMBER 2003				
6-7	Beginning Lathe	Robert Porter	Minneapolis, MN	\$250.00
20-21	Clock Escapement	Jerry Faier	St. Louis, MO	\$250.00
OCTOBER 2003				
11-12	Cuckoo Clock Repair	Rick Dunnuck	Baltimore, MD	\$250.00
18-19	Basic Pocket Watch Repair	Alice Carpenter	Nashville, TN	\$250.00
18-19	Atmos Clock Repair	Jeff Hamilton	Tallahassee, FL	\$250.00
NOVEMBER 2003				
8-9	Beginning Lathe	Robert Porter	Dallas, TX	\$250.00

AWI BENCH COURSES

Advanced Clock Repair

Beginning Lathe

Clock Case Repair

Clock Escapements

Cuckoo Clock Repair

ETA Products

Filing & Flat Polishing

400-Day Clock Repair

Hairspring Vibrating

Introduction to American Pocket Watches

Introduction to Clock Repair

Introduction to Quartz Watch Repair

Lathe Program

Mechanical Watch Repair

Micro Lathe Operations

Mechanical Chronograph

Organize Your Work Habits for Success

Platform Escapements

Repair of the Atmos Clock

Repair of the Bulova Accutron

Seiko Kinetic Quartz Watch Repair

Sequential Chime

Servicing ETA Quartz Chronographs

Striking Clocks

A Study of the Deadbeat Escapement

Swiss Auto Quartz

Student to Professional Clockmaker

Full Time Training in Clockmaking

Instructor: Laurie Penman
AWI - Harrison, Ohio

The American Watchmakers-Clockmakers Institute is offering a complete 18-week course in clockmaking for modern and antique clocks. The course instructor is Laurie Penman. This course will take students from complete beginner to the Certified Clockmaker examination. At the end of that time, successful students will be qualified to work as an entry level professional clockmaker.

There is a great need for fully trained clockmakers who can deal with modern clocks and antique clocks, and the course aims to provide clockmakers who can fill that need. However this is **not** a restoration program; it teaches the right approach to the repair of antique clocks but restoration is a larger subject altogether and relies extensively on experience of antique clocks in addition to a knowledge of techniques and correct procedure.

We have arranged the program in two sessions of nine weeks each, with a break from Thanksgiving to mid-January.

Tools Needed by Student

The AWI workshops are fully equipped but it is important that the student begins to assemble his or her tool box. To begin, it is expected that students will possess the following:

Assortment of files:

Twelve inch medium cut flat, ten inch single cut fine flat, half round and round in medium cut, six inch medium cut in half round, round, flat, triangular, odd oval, four inch (needle files) flat, half round, round, odd oval, triangular, knife-edge, square, barette in medium and fine cut.

Good quality files last for years and produce a better finish than cheap files. They will have a country of origin stamped on them. Good files come from America, Britain, Canada and Sweden (including Finland). These are available from many clockmaking suppliers and engineering suppliers but make sure of the country of manufacture.

Good, inexpensive diamond files in 600 grit and 900 grit may be bought from Eternal Tools Ltd. (www.eternaltools.com).

Broaches:

A selection of clock cutting broaches (smooth broaches are not needed) covering hole size of about 1mm to 4mm diameters are available from clockmaking materials suppliers.

Screwdrivers:

An ordinary screwdriver with a quarter inch wide blade and one with an eighth of an inch blade. A set of "clock maker's" screwdrivers. Again good ones last longer than cheap ones.

Cotton gloves for handling polished brass.

A small bottle of synthetic clock oil - there are many makes. The important thing is that they should be synthetic.

A half-pound ball peen hammer.

Cotton cloth for polishing and handling brass.

Progress Reports

There will be a brief weekly progress report on each student and occasional written tests where appropriate. However, this is for the benefit of the student and instructor, the qualification aimed for is Certified Clockmaker. The examination for this takes place at the end of the course.

Phase 1: September 22-26, 2003 (five days)

The first week will be spent on acquiring skills with hand tools. Filing accurately, polishing metal, soft soldering, hard soldering, hardening and tempering steel. Drilling and broaching holes to size. Lectures on heat treatment, finishing of metals, and the basic metallurgy of brasses and steel.

Phase 2: September 29-October 3 & October 6-10, 2003 (ten days)

Lathe work is a very important skill for a clock repairer, both for actual clock repair techniques and for the making of tools needed for clock repairing. Students will learn to grind lathe tools for turning and boring, make simple

devices for holding work true for machining, produce punches and other small clockmaker's tools. As an exercise in machining and techniques learned in Phase 1, the student will make their own depth tool - an instrument that is expensive to buy and an excellent test of machining and fabrication accuracy.

Phase 3: October 13-17, 2003 (five days)

Bushing clock plates, pivoting and repivoting arbors for modern clocks and antiques with hardened pinions and arbors. The importance of a high polish on pivots and pivot shoulders, accurate bushing and "invisible" bushing or plugging. Students will also rebore dismantled wheels and mount them on new collets. Lectures on gear meshing, the effects of wear on center distances. Lantern pinions making and repair.

Phase 4: October 20-24 & October 27-31, 2003 (ten days)

The stripping of the first clock movements - modern striking clocks. We will cover the cleaning, inspection and re-assembly of the movements after bushing, remounting wheels and repivoting arbors. Faults discovered in each movement will be discussed by the class. Lectures on the subjects of friction, wear on levers, looseness of moving parts, lectures on gear tooth forms and calculations. Clocks will have their faults properly logged and corrections applied as if they were for actual customers. Methods of dealing with incoming clock repairs and the paperwork entailed.

Phase 5: November 3-7, 2003 (five days)

The testing and time rating of clocks. Spring and weight drives and the differences in timekeeping. Suspension springs, silk suspensions, Black Forest suspensions. Faults of pendulums and suspension springs, fast clocks, slow clocks - what are the causes? Applying the correct pendulum length. The effects of differences in the stiffness of springs ancient and modern. Cleaning mainsprings removing and inserting springs. Lectures on train ratios and pendulum lengths, unusual pendulums.

Phase 6: November 10-14 & November 17-21, 2003 (ten days)

Recoil escapements. Escape pallets and verges will be repaired and adjusted. We will also make replacement escapements and verges for a wide range of clocks. Fault of escape wheels, repairing and making escape wheels for recoil escapements. Accuracy and reliability of recoil escapements. Lectures on the design of the pallets and the variations possible from the "square" escapement to the very short span found in boudoir clocks. Errors that are acceptable and those that are not. The limits of acceptability. Modern escapements and antique ones.

Break

Phase 7: January 19-23 & January 26-30, 2004 (ten days)

The striking mechanism in American and European clocks from the 18th century to the present day. Modern German, Black Forest antique and modern, British long case and wall clocks, French round movements and simple carriage clocks, 19th century German (W&H, etc.) wooden clocks. In addition to studying the operation of the striking mechanisms, students will also make replacement parts: lifting levers, warning levers, count plates, count hooks, rack hooks, etc.

Phase 8: February 2-6 & February 9-13, 2004 (ten days)

Repairing and making racks and pinions and gathering pallets. Lectures on striking train design. The weaknesses of the various systems.

Phase 9: February 16-20 & February 23-27, 2004 (ten days)

The Westminster chimes - quarter striking, cuckoo clocks and 400-day clocks. These three are amongst the most popular clocks and frequently come across the clockmaker's counter. A wide range of these clocks will be disassembled and repaired and their faults discussed. Lectures on history and variations. Antique and modern clocks will be dealt with.

Phase 10: March 1-5, 2004 (five days)

The amount of time that a clock repairer may spend on a repair is governed by two factors, his or her skills and the customer's willingness to pay for the repairs entailed. Repairs during this week will concentrate upon the time taken for various tasks with the aim of making the student aware of the commercial aspects of the trade.

Phase 11: March 8-12 & March 15-19, 2004 (ten days)

Repairs to cases, dials and hands. Engraving, waxing, silvering, drawing paper dials, repairing brass and painted dials. Making hands in steel and brass. Repairs to brass, wooden, cast iron and marble cases. Restoration of color and finish. Lectures on history of dials.

Taking the Certification Examination

It has probably been noticed that the standard reached in the course is higher than required by the clockmaker's certification. It also covers the expertise needed for the master clockmaker's certification, however that certificate also requires two years of experience as a working certified clockmaker and consequently must wait upon the student's growth of experience.

Cost: \$400 per week (5 days)

Contact Nancy Wellmann, AWI Education Coordinator

E-mail: nwellmann@awi-net.org

Phone Toll Free 1-866-367-2924 ext. 303 or (513) 367-9800





Gary Richards,
Director of
Development
AWI-ELM
Charitable Trust

AWI-ELM Trust Update

News That Is Worth Your "Time"

I must admit that I was excited to see the photo of the 1766 book *Elements of Clock & Watch- Work* gracing the cover of the July 2003 edition of *Horological Times* magazine. In case you don't recall, this is the historic book that the AWI-ELM Charitable Trust has been reproducing and selling as part of its "Friends" of the Trust fundraising campaign. This beautifully reproduced historic book can be acquired by interested individuals two ways. The first is by becoming a "Patron" of the AWI-ELM Charitable Trust at the \$1,000 level. At this level, patrons receive numerous member benefits from The AWI-ELM Charitable Trust in addition to the book. Or, you can simply purchase the book outright for \$500, without becoming a "Patron" of the Trust. But remember, however you choose to purchase the book, you are still making a generous donation to the AWI-ELM Charitable Trust and we greatly appreciate your support. And don't forget, because the AWI-ELM Charitable Trust is a not-for-profit organization with 501(c)3 status, your contribution may be deductible from federal and state income taxes. Please contact your accountant for more information. I am pleased to report that there has been a great deal of interest in the book to date and that sales of the book have been healthy. If you would like to own your own personal copy of this book or would like to give one away as a gift (i.e., Christmas, birthday, etc.), then call me toll free at 1-866-367-2924, ext 315, and I will be happy to tell you more about the book and how we can get one to you fairly quickly. You won't be sorry you did. And remember, it is never too early to start your Christmas shopping, as Christmas is now only three months away.

In this and future editions of *Horological Times*, I am going to be incorporating something new into my column that I am going to call The AWI-ELM CHARITABLE TRUST WISH LIST. In it, I will list specific items that either AWI or The ELM Charitable Trust could desperately use or would greatly

appreciate. Or, I may list non-specific items that we could use in our History of Time Museum, in our Horological Resource Library, etc. I may even list specific projects and the approximate dollar amount needed to fund the project in future columns. This is much like a child's Christmas list, except this wish list is for not-for-profit organizations like our own and the adults who administer them on your behalf. So here is our first wish list and the items that we need, could use and/or would greatly appreciate from you, our friends, supporters, neighbors and professional colleagues.

We need, could use or would greatly appreciate the following:

1. Atmos clocks;
2. American-made time and strike movements;
3. Any books related to horology or horological crafts for our Horological Resource Library; and/or
4. Any museum-quality watches, clocks, tools or timepieces that we could permanently display in our History of Time Museum

And don't forget, these in-kind gifts from you can be just as important as cash donations to not-for-profit organizations like The AWI-ELM Charitable Trust, so please keep that in mind. In return for your generosity, we will immediately send you a professional letter of acknowledgement that you can use to your advantage when you file your state and federal income taxes next year. So the next time you clean out that closet, basement or attic of yours, please keep us in mind. Your in-kind gift/donation could help us out a great deal and benefit you at the same time. What else could you ask for? In the meantime, I will certainly think of more items that we need, could use, or benefit from. You may see the items listed above in next month's and future editions of *Horological Times* magazine and will most definitely see additional items listed in future editions as well. Thank you in advance for your consideration and generosity. We hope to hear from you soon. ☺

AWI LOGO MERCHANDISE

AWI Apron - Navy twill apron with three front pockets, neck strap and waist tie
\$27.50 each

AWI Cap - Blue denim. **\$5.00 each**

AWI Logo Ceramic Mug - 15 oz Blue Campfire mug with white logo
\$9.45 each retail \$8.50 each AWI members

AWI Logo Ceramic Mug - Set of 4 - 15 oz Blue Campfire mugs with white logo.
\$34.95 per set retail \$31.45 per set AWI members

AWI Logo Embroidered Patch - 3" round patch. Sew or iron on. **\$5.00 each**

AWI Logo Embroidered Patch Rocker (use with 3" patch) **\$2.00 each**
 Designations available: Certified Clockmaker, Certified Master Clockmaker, Certified Electronic Watch Technician,
 Certified Master Electronic Watchmaker, Certified Watchmaker, Certified Master Watchmaker

AWI T-Shirt - Hanes heavyweight 100% cotton white t-shirts with blue and gold logo. Available
 in Small (S), Medium (M), Large (LG) & Extra Large (XL) **\$7.50 each**

AWI Sweat Shirt - women's sizes only Large (LG) & Extra Large (XL) **\$20.00 each**

AWI Membership Lapel Pins (former logo) **\$8.00 each**

AWI Certified Member Lapel Pins (former logo) **\$10.00 each**
 Designations available: Certified Clockmaker, Certified Master Clockmaker, Certified Electronic Watch Technician,
 Certified Master Electronic Watchmaker, Certified Watchmaker, Certified Master Watchmaker



Name _____ AWI Membership No. _____
 Address _____
 City _____ State/Province _____ Zip/Postal Code _____
 Country _____ Phone _____ Fax _____

Item(s) Ordered	Quantity	Size / Designation	Cost	Total

Send to: AWI 701 Enterprise Drive Harrison, OH 45030 Phone 1-866-367-2924 ext. 301 E-mail: orders@awi-net.org Or visit our website: www.awi-net.org	AWI MEMBER SHIPPING FEES		Subtotal _____
	If your order total is:	Shipping is:	Sales Tax 6% Ohio residents _____
	Up to \$15.00	\$ 5.00	Shipping Fees _____
	\$15.01 - \$45.00	\$ 7.00	Order Total _____
	\$45.01 - \$80.00	\$ 9.00	
\$80.01 - & Over	\$11.00		

Enclosed please find my check/money order in the amount of: _____
 Please charge my credit card: American Express Discover MasterCard Visa
 Signature _____ Exp. Date _____

Classified Advertising

Regulations & Rates

Ads are payable in advance 90¢ per word, \$1.00 per word in **bold** type. Classified display ads are \$40.00 per column inch, 2 1/4" wide. Ads are not commissionable or discountable. The publisher may, at the publisher's sole discretion and for any reason and without notice, decline to publish or republish any ad, in which case any fees submitted or paid for such ads shall be returned or rebated to the advertiser. The publisher reserves the right to edit all copy. Price lists of services will not be accepted. Confidential ads are \$10.00 additional for postage and handling. The first of the month is issue date. Copy must be received 30 days in advance (November issue closes for copy on October 1st).

HOROLOGICAL TIMES

701 Enterprise Drive
Harrison, OH 45030
Toll Free 1-866-367-2924, ext. 307
Phone (513) 367-9800
Fax (513) 367-1414
E-mail: dbaas@awi-net.org

TRADESMAN

POCKET WATCH & MARINE CHRONOMETER REPAIR

General repair and restoration of antique and complicated watches. Custom parts fabrication including staffs, verge staffs, stems, levers, and springs. Located in Massachusetts. Matt Henning, CW (413) 549-1950; www.henningwatches.com

DIAL REFINISHING



BEFORE AFTER

Quartz Conversions
Diamond Dial Conversions
Emblem & Name Personalization

Write for Brochures
INTERNATIONAL DIAL CO., INC.
58 W. SUGARTREE
P.O. BOX 970
WILMINGTON, OH 45177
(937) 382-4535

ELECTRONIC INSTRUMENT SERVICE

We are Factory Authorized Service for:

- VIBROGRAF & PORTESCAP
- TICK-O-PRINT & L&R

We service all makes of ultrasonics, all makes of watch rate recorders, and related equipment. 25 years experience.

190 Deepstone Drive San Rafael, CA 94903

Used Equipment Bought & Sold
For Information



HAMILTON ELECTRIC WATCH REPAIR

Expert, experienced service on all Hamilton 500 and 505 Electric watches. Hamilton electric watches and parts always wanted. René Rondeau, P.O. Box 391, Corte Madera, CA 94976. Tel: (415) 924-6534. E-mail: rene@hamiltonwristwatch.com

WHOLESALE WATCH REPAIR SHOP located in Pensacola, FL. Call for price list (850) 944-3323 or (850) 501-8162.

VINTAGE POCKET WATCH RESTORATION.

Twenty years experience, guarantee, free estimates. The Escapement, P.O. Box 522, Pooler, GA 31322; (912) 330-0866

GLASS CRYSTALS

For pocket watches and wristwatches. For price list/order blank: Send SASE to Mel Kaye, Box 322, Basking Ridge, NJ 07920.

CLOCK, MUSIC BOX MAINSPRINGS, GEAR PINION CUTTERS, MATERIAL & PARTS CUSTOM MADE. TANI ENGINEERING, 1852 St. Rt. 44, Atwater, OH 44201; (330) 325-0645. Catalog \$3.00.

Watch Wheel Repivoting

Staffs & Stems Custom Made
Philip J. Stoller, Certified Watchmaker
510 E Washington St., Suite 202
Bloomington, IL 61701 (309) 820-0592
pstoller@mailstation.com

OK Rotors

Phone: 330-628-9655

Fax: 330-628-9255

E-mail: okrotors@neo.rr.com

ALVIN KRUTOLOW FOR ROLEX SERVICE

Master Watchmaker, 47 years experience. Awarded technical certificate from Rolex in 1977. Service includes case & bracelet refinishing & waterproofing of case. All watch parts are genuine Rolex. We specialize in the repair of high-grade watches & clocks. Not affiliated with Rolex Watches, Inc. USA. Ask for Alvin or Marcus, (203) 792-4539.

ATMOS

Service & Repair - Original Parts Only

- 2-year Warranty on Labor
- Lower Prices on Parts
- Faster Turnaround

Clockmaster, Inc.

2537 So. Brentwood St. Louis, MO 63144

1-800-837-1545

(314) 968-1010

HOROLOGICAL MACHINING COMPANY

Pinions, wheels, gears, staffs, stems, barrels, levers, jewelery. We balance wheels, staffs & hairsprings. Adams Watch Repair (417) 257-1345.

FENDLEY & COX

WHEEL AND PINION SPECIALIST

1530 Etain Rd., Irving, TX 75060

RICHARD COX 972-986-7698

www.fendley-cox.com

DIAL REFINISHING CO. FAST SERVICE,

FINEST QUALITY, quantity works welcome. Specialize on changing dial feet positions to fit the quartz movement. Send your works to: **KIRK DIAL OF SEATTLE**, 4th & Pike Bldg., Suite 625, Seattle, WA 98101; (206) 623-2452.

DENNIS KAYE

108 Corgy Drive • Cary, NC 27513
888-363-9510

Porcelain Dial Restoration
Watch • Pocket Watch • Clock

Platform Escapement Repair

Atmos Parts & Service

400-Day Clock Repair

Kundo Coil/Electric Clock Service

Prompt Reliable Service . . . Guaranteed
Call Us or Visit dialrepair.com

CLEANING, RESTORATION & PART MANUFACTURING FOR ALL TYPES OF CLOCKS & WATCHES

We service and restore all types and grades of watches and clocks. Patek Philippe, Piquet, Vacheron & Constantin, Rolex, LeCoultre, Omega, Accutron, mechanical (all complications), tuning fork, electric, quartz, fuses, alarms, repeaters, chronographs, chronometers, wristwatches, pendant watches, and pocket watches. Antique or new. Also all styles of clocks: Atmos, cuckoo, 400-day, electronic, and quartz. Special repairs welcome. Staff manufacturing, repivoting, stem manufacturing (regular and oversize), gear cutting, etc. Free estimates. Fast turnaround time. 37 years experience in watch and clock restoration and parts manufacturing.

J.S. Park, CMW, CMEW
Member AWI & NAWCC
Satisfaction Guaranteed

TIME WORLD

1240 Arbor Place Mall
Douglasville, GA 30135
(678) 715-7707
Mon-Sat 10-9 Sun 1-6

Micro Drills and Taps
Precision Swiss made Collets
Special loupes, Achromatic, and Aplanetic
Complicated Watch Restoration
Web site:
<http://www.concentric.net/~Rdecorte>
or call us
Ron DeCorte Ltd. +1 419 381 1081

GOLD PLATING SERVICE Tank-Barrel-Brush Plating

One piece or 10,000 pieces
Quick and Quality Service

Call 1-800-256-0692

Samson Technology
Corporation

2240 SW 70th Ave. #E
Davie, FL 33317

E-mail: sales@samson24k.com

INDEX WHEELS FOR WATCH & CLOCK-
MAKERS LATHES. Made to fit your lathe. CNC
produced. Sold in sets or made to your specs.
Peterson Clockworks, 138 W. George St., St.
Paul, MN 55107-2754; (651) 224-2121.

ARTICLES FOR SALE

W.R. Smith "how to make" clockmaking books:
Skeleton Wall Clock; *Grasshopper Skeleton
Clock*; *Lyre Skeleton Clock*; *Modelmaking Tools
& Techniques*; *Workshop Techniques*; & all
John Wilding books — \$45 each, postpaid. WR
Smith, FBHI, FNAWCC, CMC, CMW, CMEW, 8049
Camberley Dr., Powell, TN 37849. Phone (865)
947-9671. E-mail: WRSmith2@aol.com, Web:
<http://horology.magnet.fsu.edu/wrsmith.htm>

If You Repair Clocks . . . you need our all new Catalog #28.



Timesavers

Box 12700
Scottsdale, AZ 85267 • USA
480-483-3711 / 480-483-6116
info@timesavers.com / www.timesavers.com
Our 152 page Catalog #28 is \$3 post paid

eckcells
Your battery connection and more . . .
379 Main Street Stoneham, MA 02180
NOW SUPPLYING MAINSPRINGS (NEWALL)
For American-made watches
\$3.50 each, \$10 for 3, \$36 per dozen
COMPLETE LINE OF SEITZ JEWELS
EVEREADY, RENATA & MAXELL BATTERIES
Competitive pricing, monthly battery specials
MC/VISA
TOLL-FREE 800-514-1270 PHONE
TOLL-FREE 800-690-3303 FAX

DASHTO INC./TOM MISTER
<http://www.dashto.com>
Huge and everchanging selection
Used and new horological items
Sold by internet list only
TOOLS/EQUIPMENT
MATERIALS/ASSTS/PARTS
POCKET/WRISTWATCHES
WATCH MOVEMENTS
WATCH CASES & DIALS
WATCH BRACELETS/BUCKLES
MUCH MORE
WE BUY & TRADE ALSO
tom@dashto.com
<http://dashto.org>

STUCK FOR A MOVEMENT?
or a watch part? Call Don Kroker's Watch
Movements. (559) 229-8423 or write 4325 No.
5th St., Fresno, CA 93726.

Boley style lathe, both head & tailstocks, 20
collets, motor. (707) 869-1370.

CLOCK & WATCHMAKERS TOOLS By J. Malcolm Wild, England

Depthing Tools, Milling Spindle, Jacot Tool,
Division Plates, Mainspring Winder, Staking Tool
All tools craftsman-made.
Also Thornton Wheel & Pinion Cutters
for both clocks and watches

Send \$10.00 for 50-page catalog to:

JMW (Clocks)
Prop. J. Malcolm Wild, FBHI
12 Norton Green Close, Sheffield S8 8BP
England
Fax No. 01144 2740295
US Contact Call (570) 937-3301

TEC Specialties Fine dials and labels



Catalog with refund coupon \$4.00 ppd
www.tecspecialties.com

Jim Zarling PO Box 5042
South Williamsport, PA 17702-0842

FULLY
WARRANTED
Watch Timers & Cleaners
FACTORY REBUILT WATCH
TESTING EQUIPMENT
Call or Write for details:
Tel: (516) 437-8700
Fax: (516) 437-8708
VIBROGRAF U.S.A. CORP.
504 Cherry Lane, Floral Park, NY 11001
www.vibrografusa.com

SPEIDEL WATCHBANDS - Metal, Leather, Plas-
tic. 2000 pieces for \$1,000. (831) 338-1370.

Regula and H. Herr cuckoo movements. Com-
plete selection. Great pricing. Examples: 1-day
R25: \$30, 8-day R34: \$45. Also factory stopper
new Hermle, Urgos, and Kieninger at 60% OFF
our regular wholesale prices. Call Butterworth
1-800-258-5418.

W.R. Smith 2-hour Workshop Videos (VHS or
DVD): *Graver Making & Hand Turning*; *Wheel
Cutting*; *Pinion Making & Depthing*; *Workshop
Procedures*; *Tooling the Workshop* — \$60
each postpaid. WR Smith, FBHI, FNAWCC, CMC,
CMW, CMEW, 8049 Camberley Dr., Powell, TN
37849. Phone (865) 947-9671.
E-mail: WRSmith2@aol.com, Web: <http://horology.magnet.fsu.edu/wrsmith.htm>

SHERLINE PRODUCTS

10-25% OFF

Free catalogs upon request.

Order Today to Beat

Sherline's Oct. 1st Price Increase

Starrett Collets Now Available

ANTIQUE CLOCKWORKS, LTD.

P.O. Box 201, Loretto, MN 55357

Toll Free 877-643-7698

E-mail: info@AntiqueClockworksLtd.com
www.AntiqueClockworksLtd.com

TOURS

Henry B. Fried Memorial — 31st Annual Horo-
logic Tour: Italy (Milan — Private Collections,
Poldi-Pezzoli Museum; Meet H.O.R.A.; Bergamo
— Antique Market; Italian Riviera — Luxoro Horo-
logic Museum, Absolut Glass Clocks Manufac-
ture, Florence — Galileo Museum Of Science;
Rome) Mediterranean Cruise (Sorrento-
Correale Museum, Capri, Messina — Astronomi-
cal Clock; Malta — Astronomical Temples; Malt-
ese Clocks; Santorini, Ephesus, Athens — Old-
est Water Clock, Olympia — Birthplace of the
Olympic Games, Corfu, Dubrovnik, Venice) April
17-May 04, 2004. Brochure? 1-800-262-4284
or www.horologytours.net

HELP WANTED

Technical

UNIQUE IDEAS AND AN UNYIELDING PURSUIT OF INNOVATION, SET US APART.

Already established as the world's largest manufacturer of Swiss timepieces, Swatch Group U.S. is expanding its after-sales service facility in the Weehawken, NJ area. We believe in creating a work environment that is fun, exciting and challenging. Every second can bring you closer to your goals, so join us, as we currently have multiple opportunities available for Watchmakers with varying years/types of experience:

WATCHMAKERS

Desired candidates must have experience with all aspects of repairing high-quality watches, containing mechanical and quartz movements; and be detail oriented with the ability to work in a team environment.

Mechanical Watchmakers will possess a formal watchmaker education and a minimum of 3 years experience in a high-grade watch repair facility (WOSTEP certification is desirable).

Quartz Watchmakers will possess completion of a recognized watch repair program or a minimum of 2 years experience repairing high-grade quartz watches.

In addition to opportunity for professional growth and advanced technical training, SGUS offers a generous compensation package and comprehensive benefits program. For immediate and confidential consideration, we invite you to forward your resume (complete with salary requirements) to: Fax: 201-271-4796, E-mail: recruit@swatchgroup.com.

SWATCH GROUP U.S.

www.swatchgroup.com

EOE m/f/d/v



CLOCK REPAIRMAN

Willing to relocate to So. California. Proficient with Hermle, Kieninger and antique mechanisms. Please send resume to: 1003 E. Imperial Hwy., Suite E3, Brea, CA 92621

Salesman Needed

Importer of Swiss Name-Brand Watches. Must be knowledgeable on all aspects of watches.

Please e-mail your resume to: gobindh@aol.com

BUSINESS FOR SALE

Due to family health concerns, Clock Shop Sale. Hundreds Clocks, Thousands of Antiques; Parts, Tools, many books, everything you can think of relating to Antique Clocks, including the nearly 4,000 sq' historic pub building with huge attached 22' Public Timepiece. Wonderful opportunity for a big change of pace, on a major highway nestled between St. Petersburg & Sarasota, FL. Tremendous repair business potential. Take all or part... \$330-550,000 Mark Peer 941 721 1801 Email: mark@markoftime.com

WANTED TO BUY

ATTENTION RETIRED WATCHMAKERS

Call us before you sell your parts, tools, and watches. We have helped over 125 watchmakers in the last three years to dispose of their accumulations. When you're really ready to sell, we're ready to buy! Phone (727) 327-3306. Ask for Jeff or Nancy. E-mail: jeffnancy@watchfinder.com

Small CHELSEA or WATERBURY movement needed to fit miniature carriage clock, 2"H x 1½"W x 1"D. (919) 369-9800 dennis@diarepair.com

WATCH MATERIAL DISTRIBUTORS

Please call us if you are interested in selling your business.

All replies confidential.

Contact Pat Cassedy

Cas-Ker Co. (513) 674-7700

WE BUY ENTIRE WATCH COLLECTIONS

Call Toll Free
1-800-426-2344
203-366-2500



Ron Fried,
President

"I look forward to
giving you honest
and reliable service."

SPECIALTY METALS REFINING COMPANY, INC.

1915 Black Rock Turnpike
Fairfield, CT 06430

Members:

Better Business Bureau
Jewelers Board of Trade

216 Consecutive Ads

We pay 97% of market for karat gold scrap (any amount)! Also, buy filings, gold fill, sweeps, silver, platinum! Immediate 24-hour payment return mail! Ship insured/registered mail to: AMERICAN METALS COMPANY, 253 King St., Dept. HT, Charleston, SC 29401. Established 1960. Phone (843) 722-2073.

BUYING OLD ROLEX WATCHES

Explorer, Submariner, Sea-Dweller, GMT, Milgauss, Bubbleback, Cosmograph, Chronograph, Speed King, Oyster, any partial watches, movements, dials, crowns, signs, clocks, anything Rolex.

Call Don Meyer 1-800-833-3159

BUYING WATCHMAKER ESTATES, TOOLS, MATERIAL, MOVEMENTS, POCKET WATCH COLLECTIONS, in Midwest and Western USA. Larry, larjones@earthlink.net, (970) 263-8807, Box 84, Whitewater, CO 81527.



We also fit glass crystals to
Openface, Hunting, and English
chain drive watches.
Complete watches, dials,
movements, case springs for sale.

G F Specialties

1-800-351-6926

P.O. Box 170216

Milwaukee, WI 53217

**IT'S TIME
TO SELL
A WATCH**

TOP PRICES PAID!

ROLEX • PATEK PHILIPPE
VACHERON & CONSTANTIN
AUDEMARS PIGUET
BREITLING • CARTIER
& OTHERS

*When you're ready to sell
Call Toll Free*

1-800-842-8625
Always prompt payment!

WINGATES
QUALITY WATCHES

P.O. Box 59760 Dallas, TX 75229-1760
In Texas 972-392-7676

ACCUMLATIONS WANTED!!
Buying Watchmakers' Stock of Old Watches,
Cases, Movements, Watch Material, all types
of wristwatches from common brands to all
the famous makers.

Serious buyer. Serious offers.
Don Meyer 1-800-833-3159
12900 Preston Rd. #325
Dallas, TX 75230
E-mail: donmeyer@hotmail.com

WANTED: One set watch & clockmaker tools,
lathe, wheel cutter, staking tool set, etc. (810)
359-2948



Horological Times Annual Binders

Preserve a full year's volume of
your *Horological Times* in this
handsome, embossed 12-spine
binder.

\$14.00 each

Horological Times Back Issues

1977 through the present
Limited quantities and some issues
may no longer be available.

1-5 \$6.25 each
6-12 \$5.75 each
13+ \$5.00 each

*AWI members receive a
10% discount on back issues*

**To order contact AWI at
1-866-367-2924 ext. 301
or visit our web site
www.awi-net.org**

American Watchmakers-Clockmakers Institute Industry Advisory Board Members

Bulova Watch Co.
H.E. Carnasion
Woodside, NY

Butterworth Clocks Inc.
Mark Butterworth
Muscatine, IA

Cas-Ker Co.
Lou Esselman
Cincinnati, OH

Cooper & Co., Inc.
Al Cooper
Cincinnati, OH

DRS Inc.
Joseph Borella, Vice President
New York, NY

Esslinger & Co.
Bill Esslinger
Saint Paul, MN

**Jewelry Industry Distributors
Association (JIDA)**
Andrew Avery
Chevy Chase, MD

S. LaRose Inc.
Greensboro, NC

Livesay's
Henry Livesay
Tampa, FL

Wm. S. McCaw Co.
Gerald Wilson
Toledo, OH

Richemont NA
Willem Van Kempen
New York, NY

Societe Suisse de Chronometrie
Anne Thierrin
Neuchatel, Switzerland

Sy Kessler Sales Inc./Renata U.S.
Henry Kessler
Dallas, TX

Tiffany & Co.
Michael Biondolillo
Flushing, NY

Tourneau
Anthony Riggio
Westport, CT

Watch & Clock Review
Bert Kalisher, Editor
Hewlett, NY

Witschi Electronics USA, Inc.
Tony Voight
Palmyra, NJ

Advertisers' Index

American Perfit Crystal Corp. 21 (212) 246-8292	Frei & Borel 49 (510) 832-0355	Primrose Supplies, Inc. 29 (801) 485-3908
Borel & Co., Jules 5 (816) 421-6110	Glendo Corporation 25 (800) 835-3519	Smith Supply House 31 (213) 622-1687
Butterworth Clocks, Inc. 37 (800) 258-5418	International Watch Collectors Society 17 (516) 374-5060	Time Connection, Inc. 49 (213) 624-2675
Cas-Ker Co. inside back cover (513) 674-7700	S. LaRose, Inc. 23 (336) 621-1936	Twin City Supply 27 (952) 545-2725
Chronos/WCR 53 (303) 296-1600	Livesay's, Inc. 19 (813) 229-2715	Vibrograf U.S.A. Corp. 15 (516) 437-8700
Clocks 51 011 01 31 228 6638	Maxell Corp. back cover (201) 794-5900	Witschi Electronics USA Ltd. 11 (800) 882-7977
Esslinger & Co. inside front cover (651) 452-7180	McCaw Co., William S. 3 (419) 243-3720	Zeiss Surgical, Inc. 33 (914) 681-7359
Ferrell & Company 33 (213) 627-6031	Paylak, Inc. 7 (800) 752-9491	

AWI Employee Directory

James E. Lubic, CMW
Executive Director
Education & Technical Director
1-866-367-2924 ext. 310
jlubic@awi-net.org

Lucy Fuleki
Assistant Executive Director
1-866-367-2924 ext. 304
lfuleki@awi-net.org

Thomas J. Pack
Finance Director
1-866-367-2924 ext. 311
tpack@awi-net.org

Donna K. Baas
Managing Editor/Advertising Manager
1-866-367-2924 ext. 307
dbaas@awi-net.org

Nancy L. Wellmann
Education Coordinator
1-866-367-2924 ext. 303
nwellmann@awi-net.org

Sharon McManus
Membership Coordinator
1-866-367-2924 ext. 302
smcmanus@awi-net.org

Mary Huff
Shipping Coordinator
1-866-367-2924 ext. 305
mhuff@awi-net.org

Heather Kyde
Receptionist/Secretary
1-866-367-2924 ext. 301
hkyde@awi-net.org

Gary Richards
AWI-ELM Charitable Trust
Development Director
1-866-367-2924 ext. 315
grichards@awi-net.org

Laurie Penman
Clock Instructor
1-866-367-2924 ext. 318
lpenman@awi-net.org

Steve Jones
Audiovisual Manager
1-866-367-2924 ext. 308
sjones@awi-net.org

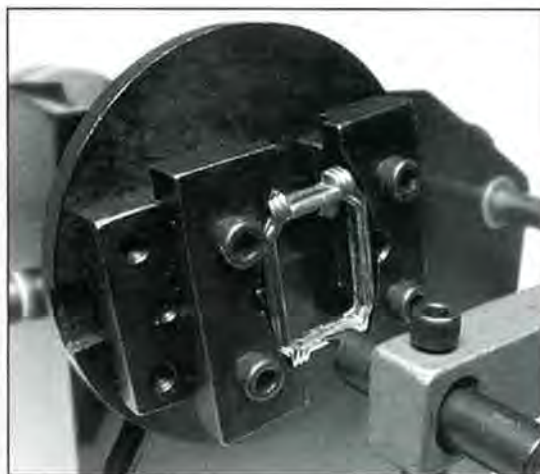
American Watchmakers-Clockmakers Institute
701 Enterprise Drive, Harrison, OH 45030
Phone: Toll Free 1-866-367-2924 or (513) 367-9800
Fax: (513) 367-1414
E-mail: awi@awi-net.org
Web Site: www.awi-net.org
Office Hours: Mon-Fri 8:00 AM to 5:00 PM (EST)
Closed National Holidays

If you are looking for watch crystal repair made easy and affordable, you have found it . . .

The Schohl Crystal Cutting Machine



New



Turn the wheel at the front of the machine, and as bezel shape is traced directly . . .

The Schohl Crystal Cutting Machine was developed to be able to duplicate any flat watch crystal pattern. It is capable of cutting complex shapes so that even the most delicate watches can be repaired in minutes.

Easy to use - you don't have to be a watchmaker or have any special skills or schooling to start making watch crystals right away. The entire crystal cutting process takes from 7-10 minutes. Watch crystal is repaired in 20 minutes while the customer waits, and shops! Make watch crystal repair more than a customer convenience - make it a profit center.

An affordable machine that makes any shape mineral glass watch crystal in minutes in your own shop, most for less than \$2.00 each. Includes practice blanks. Measures 7 1/2" H x 11" W x 10" D. Made in USA.



. . . the diamond point etches the shape onto a 40mm mineral glass blank. Break off and lightly sand or grind.

- 590.865 Schohl Crystal Cutting Machine **\$975**
- 590.866 Replacement Diamond Point Stylus **\$39.95**
- 40mm Mineral Glass Crystal Blanks **\$1.00 ea**



Cas-Ker Co.
 2550 CIVIC CENTER DR PO BOX 31167
 CINCINNATI OH 45231-0167

CALL 1-800-487-0408
FAX 1-800-487-5848

LOCAL PHONE 513/674-7700 FAX 513/674-0600

Shop our web site: www.casker.com





THOSE WHO PUT
THEIR NAME
ON THE OUTSIDE,
PREFER OUR NAME
ON THE INSIDE.



EARN
GREAT PRODUCTS
WITH MAXELL
BATTERY REWARDS.

The more you buy, the more you earn.
Limited time offer.

Some restrictions apply.
Ask your representative for more details.

QUALITY. INNOVATION. LONGEVITY.

maxell 

THE WORLD LEADER IN MICRO BATTERY TECHNOLOGY