CHAPTER 190 N A W C C

VENTURA & SANTA BARBARA COUNTY

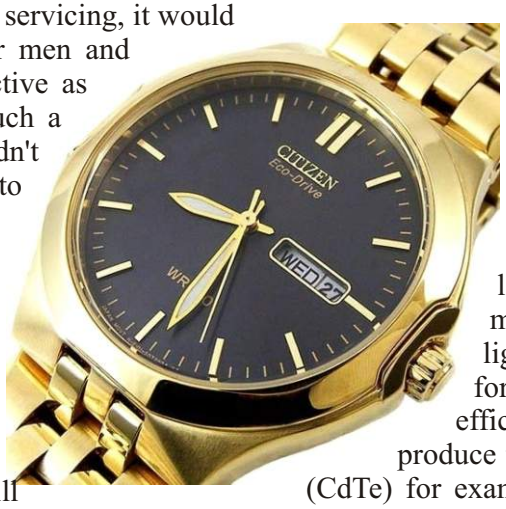
Chrono Times

Newsletter for Chapter 190 of The National Association of Watch and Clock Collectors November 2011

The Ultimate Wristwatch

by Henri Bonnet

If you could imagine the ideal wristwatch for our technologically progressive world, what would such a timepiece be like? It would certainly tell the time with utmost accuracy, be comfortable to wear, be always reliable, require no periodic maintenance adjustments or servicing, it would come in a large variety of models for men and women, it would be esthetically attractive as well as priced affordably. Right? If such a wristwatch was available today, wouldn't you rush to your nearest watch retailer to buy one?



Well, the good news is that a wristwatch like that already exists. It is called the Citizen Eco-Drive. It is fitted with an accurate quartz movement that will never, ever need a battery replacement. It is powered by the most dependable and abundant energy source on earth: light. In addition, the watch will even remain powered for a period in excess of six months if placed in total darkness, such as at the bottom of a desk drawer. Not to mention that it will at once resume its accurate timekeeping immediately upon being re-exposed to any light source. Can anything be better than that? Hardly.

We owe this wonderful technology to Albert Einstein who first explained the photoelectric effect for which he received the Nobel Prize for physics in 1921. At least half a dozen other physicists did notice the photoelectric effect around the same time, but none could explain it. As part of his study of the atom, Albert Einstein discovered the quanta property of light.

He postulated that light consisted not only of waves, but also of discrete energy quanta, later called photons.

He found that this energy wasn't proportional to light's intensity, but rather to its frequency. He discovered that by exposing certain materials, to (high frequency) ultra-violet, light, photons (energy) would be absorbed and a proportional number of electrons would be knocked off the surface of the material into its surroundings. Since the negatively charged electrons would be ejected and dissipated, the material would acquire an equivalent positive charge. The resulting charge imbalance would cause electrons to move from within the material in an attempt to restore the balance, thus engendering and electric current. Once the photoelectric effect was scientifically explained, engineers could now create practical applications, such as powering various electrical devices by light. Since the earth's atmosphere absorbs most of the (high frequency) ultra-violet light radiated from the sun, the materials used for practical applications had to be extremely efficient. Soon manufacturers were able to produce thin, 0.2 mm wafers of cadmium telluride (CdTe) for example, with roughly 20 percent efficiency. Later on, significantly more efficient compounds would be produce

Several major watch producers in Japan, Switzerland and Germany capitalized on this new technology and began manufacturing light powered quartz timepieces. The photoelectric wafer itself was incorporated into the dial of the wristwatch and when exposed to light would generate enough electricity to charge a small storage cell (usually lithium ion). When fully charged the storage cell could power the watch for over six months in total darkness. In an attempt to differentiate itself from its competitors who flooded the market with battery powered quartz timepieces, the Citizen Watch Company of Japan made a substantial investment in developing light powered wristwatches.

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PRESIDENTS MESSAGE

By Mike Schmidt

Special congratulations go to all of the students who recently completed the, November FSW 104 "Introduction to Weight and Fusee Driven Clocks," Workshop with instructor Ray Marsolek. This special group of 10 students has now completed 2688 hours of Field Suitcase instruction. The students include class Coordinator Paul Skeels, Lex Rooker, Dan Kerker, William Frank, Richard Henderson, Richard Brinser, Steven Schecter, Mostyn Gale, Kathi Sheffrey, and Glen Webb.

Our program this month will be presented by Les Lesovsky. Les who is a member of Chapters 75, 116, 133 and a few other chapters has been a strong supporter and a special friend of Chapter 190. Les signed our original Chapter Charter and encouraged the establishment of Chapter 190. He is the "go to" man when you have questions about any electric clock, or any other clock for that matter. His generosity is well known by all of us who have had the privilege of knowing him. Les will present a program titled "Time for Sale" The story of the beginning of accurate public timekeeping in America.

HAPPY HOLIDAYS TO ALL!

I thank all the many members and friends who have shared in the work, given donations, and supported "Ventura and Santa Barbara Counties Chapter 190. I wish you all the very best.

This newsletter and this month will complete Chapter 190's 5th year. I look forward, and I hope you will too, to a new year and all the opportunities it brings.

Please continue your support of Chapter 190 with a new membership or renewal for 2012.

Mike Schmidt

Happy Birthday

November: Dave Coatsworth, Ferdinand Geitner, Jim Gilmore, Ernie Jenson, & Bryan Mumford.

December: Gene Corriden, Dutch Friou, Gary Girod, Bob McClelland, Bill Robinson, & Daniel Weiss

Continued from page 1

Such timepieces are not only different, but quite exceptional, due to their extended longevity (between 20 and 30 years). In addition they don't require a single battery exchange over their entire life span. The technology was perfected in the mid-nineties and some light powered wristwatches appeared on the horological market at the time. It took about five additional years of perfecting the product to arrive at the wonderful Eco-Drive timepieces available today. Although other watch manufacturers, such as Junghans of Germany also dabbled in light powered wristwatches, none devoted the technological and marketing effort comparable to that of the Citizen Watch Company of Japan.

Citizen Eco-Drive timepieces can nowadays be purchased in a large array of models for men and women, including calendars watches, chronographs, diver's watches, and ultra thin dress wristwatches. Some models even automatically adjust for different time zones, as well as for daylight saving time. Today, Eco-Drive wristwatches are Citizen's best selling products by far, and are available the world over. They are usually priced mid-range, anywhere from a hundred, to around five hundred dollars, depending on the model. This is very competitive indeed if you consider the cost of periodic battery exchanges in a regular quartz wristwatch, over the life of the timepiece. To say nothing of the hassle involved, as well as to the uncertainty of not knowing when a replaceable battery will quit on you. So, for those of you who desire a wristwatch that tells the time accurately, reliably, and above all requires no particular attention, the Citizen Eco-Drive timepiece could indeed be your perfect companion. Not to mention the ecological benefits of reducing the need and expense of battery disposal. Finally, consider the enormous satisfaction you might derive from wearing a wristwatch powered by the sun! Could this conceivably be the wristwatch of the future? Time will tell.

Educational Opportunities

At the roundtable workshop of the October meeting, Lex Rooker presented a small portion of his prepared courses for beginning clock repair. His presentation of animated theory and explanation with handouts of the American two train clock movement was so well received by all who attended that an overwhelming demand was requested of Lex for a 1 day workshop to present more of his prepared course. This is a really neat, easy to understand, clock theory review for all members regardless of your level of repair knowledge, a "Clock Boot Camp."

"Clock Boot Camp" Saturday, January 21.
This will be a visual instruction and animated theory and discussion on the American Clock Movement. This will be a one day workshop at the Ventura "Dudley House Museum." Set aside this day, a flyer with more details is coming soon.

The following workshops will also be scheduled for 2012:

Sherline Lathe Workshop- advanced tool making.

F510 Clock Camp I- This is 2 day course for students who have completed the F101 and 102and want a Refresher course of that material

F511 Clock Camp II- This is a 2 day course for students who have completed the 103 and 104 and want a refresher course for that material

FSW 102- Time & Strike with spring Barrels and rack/snail striking

FSW 302- Beginning Wristwatch Repair.
A 4 day workshop offered January 27-30, 2012 coordinator Weber Wang 626-336-2870 email weberwang@hotmail.com
2 openings remain.

FSW 502- The Atmos Repair Course
If you are interested in the 3 day workshop please contact Coordinator George Gaglini 805-647-6463 or email ggaglini@roadrunner.com

If you have an interest in a workshop or horological subject, please make your interest known to me or a Board member. You can find all of the Field Suitcase Classes with information presently offered on the NAWCC website. If you do not see a subject covered please let us know.

The Time Train Of The S. B. Tower Clock

by Mostyn Gale

Fundamental to clock design is, of course, the time train gearing. A nice feature of this clock is that the large size of the gears makes it very easy to count the teeth. During the restoration that Chapter 190 has been doing on this clock I have had the opportunity to count and document the time train details. Some people may be curious as to how the gravity escapement affects the normal equations for determining the designed rate for the clock. As we shall see it is quite straight forward.

The beats per hour (bph) for most common clocks is calculated by multiplying the gearing ratios of all the wheel assemblies in the train and then multiplying this answer by 2 to account for the fact that each escape wheel tooth strikes both pallets as it makes one full rotation (there is twice the number of "beats" for each rotation than there are teeth on the escape wheel).

beats per hour = $X \times Y \times Z \times E \times 2$

where:

X = (*number of teeth on the main wheel*)

$$Y = \frac{\text{(number of teeth on the 2nd wheel)}}{\text{(number of leaves on the 2nd wheel pinion)}}$$

$$Z = \frac{\text{(number of teeth on the 3rd wheel)}}{\text{(number of leaves on the 3rd wheel pinion)}}$$

$$E = \frac{\text{(number of teeth on the escape wheel)}}{\text{(number of leaves on the escape wheel pinion)}}$$

The only difference between the double-three-legged gravity escapement of our tower clock and the calculation described above is the escape wheel.

On the tower clock, the escape wheel is really the double-three-legged structure (see photos).

You will notice that it is made up of two sides, each side having three legs. Each set of legs is offset from the other by 60°. In addition, the pallets (one of each gravity arm) are not lined up with each other but each is designed to stop and release one side of the escapement legs. Because of this construction, each "tooth" (pallet) of the "escape wheel" only touches one of the pallets in a full rotation – thus no need for the factor of 2 multiplier.

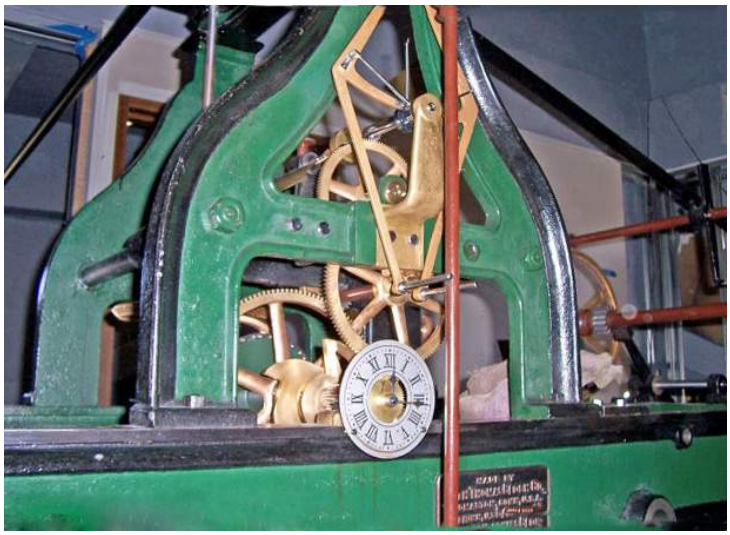
In our tower clock:

$$X=128, \quad Y=\frac{120}{16}=7.5, \quad Z=\frac{120}{16}=7.5, \quad E=\frac{6}{15}=0.4$$

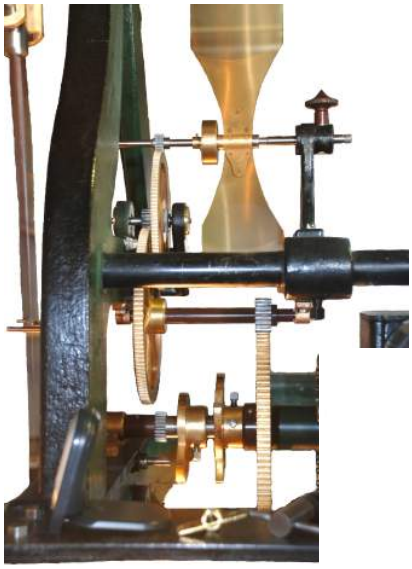
Therefore the bph of the Seth Thomas clock is as follows: beats per hour = $128 \times 7.5 \times 7.5 \times 0.4 = 2880$

We can verify that this is right because the Seth Thomas order for the clock says that this was designed to be a 1.25 seconds per beat clock.

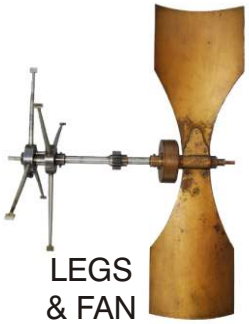
$$\frac{60 \text{ sec per min} \times 60 \text{ min per hour}}{2880 \text{ beats per hour}} = \frac{3600}{2880} = 1.25 \text{ sec per beat}$$



PENDULUM SIDE OF CLOCK



SIDE VIEW



LEGS & FAN

ARMS

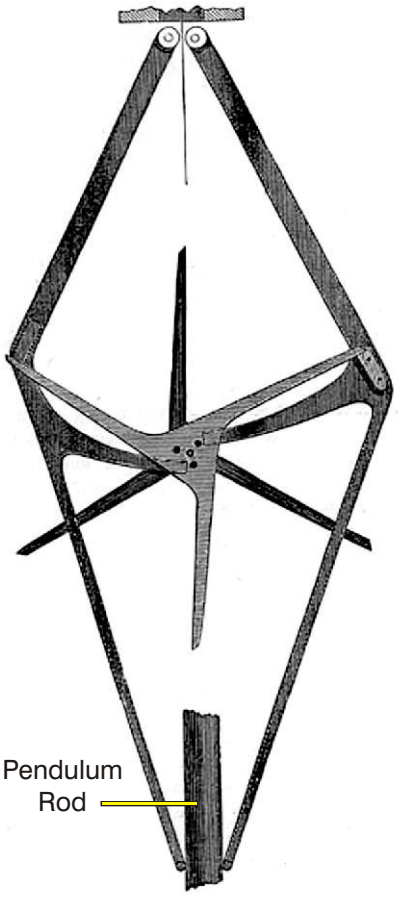


ILLUSTRATION OF A GRAVITY ESCAPEMENT

Tales From the Bench

by Ferdinand Geitner

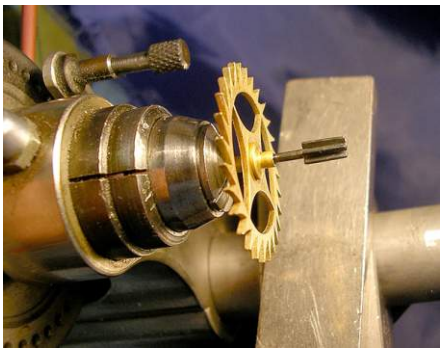
Taming The Tough Ones

Thinking outside the box is a popular expression but I have to apply this concept to many repairs I'm confronted with. Getting known for this creates another phenomenon, rather than having a "normal or average" workload of routine and complex repairs, the "impossible and unusual" tend to find you more and more, which makes it a little difficult to keep normal schedules (but it also makes life more interesting and challenging).

An escape wheel from a Vienna regulator with a broken pivot came my way recently. It is actually quite a common occurrence as the steel is very hard and the pivots are thin (0.5mm) and long, so during assembly when one is trying to align the pivots with the bearings, the slightest slip or twist will snap the pivot right off.

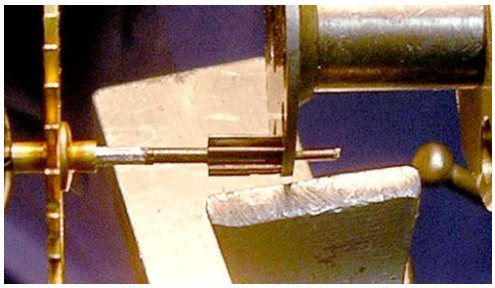
The difference here was that someone tried to replace the pivot by drilling a hole into the pinion to secure a piece of steel. Unfortunately the hole was drilled off center (see picture) and this makes it very difficult to recreate a pivot centered with the shaft and pinion which is essential for the correct functioning of the escapement.

There is not much material to drill and secure a replacement pivot so one cannot drill a much larger hole to try and center the off center first hole in the pinion (which was large enough already). So what's the answer? I can not change the position or eccentricity of the hole so I focus on the pivot. By making the hole as large as possible, and securing blue (spring) steel I have a pivot sticking out at a slight angle. Now I center the pinion in my lathe-pivoting attachment and turn the larger, eccentric pivot round, and true, not the easiest procedure.



If it is necessary to make the pivot a fraction smaller to get a nice round central pivot one can always replace the bush to fit the pivot correctly.

Now, a short description of the correct pivot replacement procedure!



Any shaft secured in the lathe which does not fit fully into the chuck (see picture) needs an opposite center to eliminate flexing.

The opposite center is a conical hole (various sizes available) which leaves room for a sharp pointed cutter (graver) to cut a conical hole to start a drill into the shaft. The cone has to be perfect otherwise the drill will start off center. One can see if there is a little point in the center of the cone (see picture).

Another problem could be the drill! If it has been re-sharpened unevenly, it can wander off center as one half of the drill cuts more then the other side. The hole will be larger than the drill size also.

Happy re-pivoting ■

The next Meeting & Mart for Chapter 190 is November 20, 2011

Sellers may start setting up at 11:30

The Mart is open from 12:00 til 1:15

The Meeting starts at 1:15

PROGRAM

"Time For Sale"

Presented by Les Lesovsky

"The tail of public time keeping in America"

SHOW & TELL

Any item you would like to share"

Chapter 190 People

by Ernie Jenson

David Perez

David Perez has always had an interest in clocks, watches, motorcycles, cars, planes and even Stirling Cycle engines.

David graduated from the University of Texas at Austin with a degree in electrical engineering and worked for Delco Electronics, the military division of General Motors, designing AC/DC switching power supplies and other video and analog electronics for military aircraft, and ground based vehicles. He even got to drive an early prototype of a GM electric vehicle designed at the Goleta facility in the early 1980's. What acceleration!

David has always been enamored with everything mechanical. He started fixing motorcycles as a youngster and during high school was the designated "teacher's helper" in auto shop class. "I told the instructor that I was going to learn how to use every tool in that class, and I did!" I really got good at rebuilding engines and my favorite part was refurbishing the heads. I strived to make every valve seal perfectly, grind the valve seats precisely and recondition the valve guides to like-new tolerances. I wanted to learn how to port and polish the intake and exhaust runners but ran out of time and I was off to the US Air Force Academy in Colorado Springs to become a fighter pilot. Eyesight problems caused him to change schools and continue his education in Texas.

David is presently working for an engineering consulting firm that engineers solutions for military ground vehicles. "We're trying to ensure that those young men and women are protected as much as possible from those IED's (Improvised Explosive Devices) being used so frequently in Iraq and Iran. "I wish there wasn't a need for this!"

David is a volunteer mentor for the Dos Pueblos High School Engineering Academy. The curriculum revolves around a lot of "hands on" training to give youngsters a feel for real-world engineering. We compete against hundreds of other teams in the FIRST Robotics competition held every year. We usually do pretty well. Only 6 weeks are available to design and build a competition robot then ship it to the regional match, usually Long Beach or San Diego. If we do well in the regional match then we qualify for the international competition in St. Louis. We spend many nights working until the wee hours of the morning to get this robot completed. It's got to work and there are no excuses if there's a failure. Virtually all of the parts of the robot, including gears for the transmissions, are made by the students. We don't have the ability to build the computers. Those are provided by National Instruments. Check out the FIRST website for some video of the robots in action.

He is presently building a Stirling cycle engine – "Vickie" designed by Jerry Howell of Colorado Springs, CO. (Jerry has recently passed away but his designs are still available through his son at http://www.model-engine-plans.com/.) Seeing this engine for the first time made we want to build it and after a long conversation with Jerry, I was hooked. The only problem was that I had no lathe, no mill, no machining tools nor experience. Hence started the long quest to acquire everything I needed to get this endeavor off the ground. He's also working on restoring his first pocket watch, an Illinois Currier. "It needs quite of bit of work and I'm going to have to learn how to make a balance staff and repair a few of the jewels, but that's just part of the fun." ■

The House Call

by Gary Girod

I had a job recently on an 8 ft Waltham tubular chime grandfather clock located in a large ranch style house. After the repair, lube and adjustment, I was coming down the ladder when the owner said, "That's great, and now how would you like to work on something a little different?" Sure, if it keeps time or has gears, I said.

He took me to a barn that had been converted to a recreation hall. The only animal in it was his dog, a golden lab. In the middle of the barn, on a table, was a 1933 penny slot machine. "I've been working on this off and on for over 3 months and I'm stumped. All my house guests want to play the slot machine," he said.

He then left me to the task at hand. I began to look it over, lubed it and generally got acquainted with all the gears, wheels, decelerators and bushings. In about 10 minutes, after following the coin slot through its cycle to eliminate slugs, I took out a jammed penny with needle nose pliers and it worked perfectly.

The owner was surprised but very pleased that I had fixed it so quickly, and so was I. Now I'm able to add "slot machine repair" to my resume.

The Extra Page

Faces Seen At October's Meeting

Photos by Bill Robinson

This Month's Mini-Workshop

At 10:30AM,

"Strike Train Warning Fly and Dial Repairs"

will be led by Paul Skeels and George Antinarelli.

THE WORKSHOPS ARE ALWAYS FREE!

CLASSIFIED PAGE

This page is dedicated to advertising for Chapter 190 members. It is, of course, free to members.

SERVICES OFFERED

The Montecito Clock Gallery
Restoration, repair, sales of clocks and watches.
Ferdinand Geitner, mbhi, owner and operator
Now located at 1187 Coast Village road, unit l0a
Montecito (one block from old site)
(805) 565-9097

The Clock Gallery
Serving All of Ventura County
Precision Repair - Service - Restoration
Grandfather - Wall - Mantel - Marine Clocks
House Calls • Packing & Moving
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e-mail: **theclockgallery@roadrunner.com**

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Restorations
& Appraisals.

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Sales and Restoration of both new and antique clocks. Repair of all types of mechanical clocks.
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(Located in Firehouse Plaza at Main St. and Telephone Rd)
Monday through Saturday 10:00 to 6:00 pm.
Tel. 805-650-8800

FOR SALE

BEAUTIFUL
3 WEIGHT VIENNA REGULATOR.
$1,500
Contact:
Royce Hulsey
818 889-8665

MicroSet Timers
for Clocks and Watches
Precision electronic timing tools for clock and watch repair with many unique features. Prices start at $250. Full information is on the website:
www.WatchTimer.com
Mumford Micro Systems
3933 Antone Road
Santa Barbara, CA 93110
(805) 687-5116

WATCH REPAIR TOOLS & MORE!
a huge selection of watch repair other items from my latest buy at the Chapter 190 meeting.
Dave Coatsworth
eswatchparts.com

I will have tools and estate

dave@dav

WANTED

URGENTLY NEEDED, VISIBLE ESCAPEMENT MOVEMENT
French type-platform escapement (no pendulum)
Winding hole spacing of 38.9 mm, (1.53“)
Repairable, other details available on request.
Bob Reichel, welchdoc@yahoo.com ***Ph: 1-206-364-7374***

Antique French 2 or 3 dial calendar clocks.
Antique English 2 or 3 gear-train skeleton clock.
Loren Miller, **Pacific Coast Clocks**
4255 E. Main St., No. 15, Ventura, Ca.
Located in Firehouse Plaza (Main St. & Telephone Rd.)
Tel. 805-650-8800

- Chronometer -
Hamilton 21 Marine Chronometer in running condition, with inner box and gimbals; outer box not essential.
Please contact: Giorgio Perissinotto
E-mail: **giorgio@spanport.ucsb.edu**

The Chapter 190 meetings are held the third Sunday of each month. (No meeting in December)

We will meet in the cafeteria on the Ventura College campus. The cafeteria is located in building "B", east of the gym and

November 2011 Issue

THIS IS THE LAST MEETING OF 2011
NO MEETING OR NEWSLETTER FOR DECEMBER.

NEXT MEETING
NOV 20

Chrono Times
If Undeliverable return To:
17738 Superior St. Unit 21
Northridge, CA 91325

MEMBERSHIP APPLICATION

For Ventura & Santa Barbara Counties Chapter 190 of the NAWCC

☐ ***NEW*** ☐ ***RENEWAL***

PLEASE PRINT CLEARLY

Date: _____

Name: (First) _____ (Last) _____ Phone: _____

Street address: _____ City: _____ State: _____ Zip: _____

E-mail: _____ Birth Day: (Month) _____ (Day) _____ NAWCC # _____

Membership in the NAWCC is required

Person to contact in the event of an emergency: Name: _____ Phone: _____

What is your clock/watch interest?
(Check all that apply)

☐ I collect clocks ☐ I collect watches ☐ I have a basic understanding of ☐ clocks ☐ watches and have repaired a few as a hobby.

☐ I have studied ☐ clock ☐ watch repair via books, videos, or by attending classes. I repair clocks mostly as a hobby.

☐ I have been repairing ☐ clocks ☐ for over 5 years and am familiar with many types of movements. I repair clocks for pay and as a hobby.

☐ I have a well equipped shop and can repair most ☐ clocks ☐ watches. I have an extensive knowledge of clock/watch design, function and repair techniques. Most repairs are for pay.

☐ I am a serious collector of ☐ clocks ☐ watches and have a very good knowledge of their history, models and value.

Why do you want to be a member of Chapter 190? _____

Would you like to volunteer in helping Chapter 190 achieve its goals? ☐ Yes, how can I help? ☐ No, not at this time

Membership in Ventura chapter 190 of the NAWCC requires that you also be a member of the parent organization, The National Association of Watch and Clock Collectors. If you are not a member, you may join online by going to their website at www.nawcc.org, or you can contact us and we will send you an application.

Chapter dues run from January 1st to December 31st. Annual dues are $25.00 for immediate family.

Please make checks payable to;

Chapter 190 NAWCC

Mail this form & check to:

Ernie Jenson

25 Norma Ct, Camarillo CA 93010

Family membership dues $25.00 _____

Membership includes spouse and other family members.
Other members names.

_____

_____

_____

NOTE: Spouse or family members do not have to be a NAWCC member when accompanying the primary member to chapter events.

Signature _____

FOR CHAPTER USE

Date received _____ Amount received $ _____ Member ID number; ☐

☐ Added to mailing list. Date _____ Membership card sent. Date _____

Notes: _____