



## RE-IMAGINING CLOCKS

*Highlights of the Presentation by Bob Roan at the January 20, 2008 meeting of Chapter 190, NAWCC as interpreted by Jeanette Barcroft.*

Clocks have always been more than just mechanical devices. Time has a hold on us through our imaginations. Time is nature's heartbeat and clocks capture that rhythm, which is one of the reasons we collectors love them. In the beginning our clocks were sundials and places like Stonehenge were regarded with awe and reverence as they marked the passage of time on an annual cycle. Then we built town clocks that coordinated the lives of hundreds of people in a daily cycle. Now we have atomic clocks linking entire continents to the same nanosecond pulse.

To Bob Roan, this progression has serious implications; "We have moved from a time with a beginning, middle, and end that spanned the age of the universe to a clock pulse with a beginning, middle, and end all crammed into a nanosecond. This inversion of time from infinity to zero created a very different psychological landscape which I believe has mirrored into life, making it uprooted and frenetic."

component elements, Bob has abstracted each into an autonomous unit of his surreal clocks hands. They can move independently from each other, they can rotate in any direction, as well as exchanging functions (e.g., the hour hand can become the minute hand), the pendulum can swing erratically.

Extending his explorations from the mechanical into the electronic, Bob has developed sophisticated circuitry and programming which allow him to craft ever more complex and playful clocks. He combines common LEDs and 7-segment displays in novel configurations and then displays time in a dazzling assortment of formats. The standard 12 and 24 hour/60 second format, as well as a metric system dividing the day into 10-10-10 and 10 as well as a Tresleyan time dividing it into 30-30 and 30.

According to Bob: "Clocks are precise, accurate, and consistent, feeding our psychological thirst for certainty and truth, the bedrock of steady, reliable substance, which we are taught to crave. Clocks are the glasses we use to see into time. Our prescription has changed dramatically in the last fifty to a hundred years. That is where clockmakers like you come into re-imagining that prescription by re-inventing clocks. This is a post-modern clockmaker's toolbox, containing mythologically infused, visually appealing, intellectually robust, and downright cool clock movements and faces. The clockmaker's new tools for designing the look and motion of clocks won't be the same when we're through with them." ■



Intrigued by these developments, Bob has used his fascination with such seemingly disparate subjects as electronics, mythology, and the interconnection between time and clocks to design and build a number of kinetic sculptures that explore all three.

By dissecting the concept of "clock" into its



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## PRESIDENTS MESSAGE

By Mike Schmidt

A lot of events have transpired since January. The rains have blessed us, Super Bowl, political debates, “Super Tuesday” February 5, the stock market-up or down, the recession or not. We are very fortunate that we have a hobby or avocation where we can occasionally get away from all the noise. Excuse me; I think I just made an oxymoron.

The January FSW 200 class was completed and we are scheduling another FSW 200 class for April 11-14. We have some folks, who were on standby for the first class. If you think you would like to attend you can contact me, coordinator, Mike Schmidt at: 805 988-1764 • or Email me at: [EagleCreekClocks@msn.com](mailto:EagleCreekClocks@msn.com).

The need for clock and watch repair education has been very evident by the strong attendance at the classes and workshops. The Chapter is looking for a permanent location to have workshops or classes, preferably free or very cheap. If anyone has a place or can help in this endeavor please let me know.

Chapter 190 is preparing for its first annual Mart. The Mart will be May 18 at the Camarillo Airport. We have partnered up with the Commemorative Air Force Southern California Wing. They have a wonderful “WORLD WAR II AVIATION MUSEUM”. Our Mart will be held in the museum surrounded by fully restored and operational War Aircraft. The facilities consist of two massive hangars. The Museum Hanger contains exhibits and artifacts, wing library, and a number of vintage war birds. Aircraft are restored in the Maintenance Hanger by dedicated volunteers; many of whom are themselves WWII vets. The museum will have docents that will be available to show you both the restored aircraft, aircraft that are in restoration progress, and all the museum artifacts. The price of Mart admission will cover the Mart and Museum. This is a unique experience and one you will not want to miss.

The early before meeting workshop for February will be “*Measuring and selecting mainsprings for clocks and watches and a discussion on watch and clock spring winders*”. That is Sunday February 17th at 10:00am.

The program for February will be “*Correct Setup and Troubleshooting of Striking Mechanism*” presented by Ferdinand Geitner

I hope that you all had a chance to attend the Greater Los Angeles Regional. Please bring and share the Clocks, watches, tools or great stuff you purchased. We all want to hear your GLAR experiences and see your interesting great buys.

See you all at the meeting.

Mike

## Happy Birthday

Dan McKinnon,  
is our lone birthday for February.



# Tales From the Bench

by Ferdinand Geitner

After cleaning, polishing pivots, bushing holes and setting up the chimes of German clock movements in a “perfect” textbook way, they sometimes lock up infrequently and will not chime the next sequence after chiming and locking, for no apparent reason.

The lock up is never on the same chime sequence so it's not usually the set up of the locking disks/ levers. But, as always, there is a reason. The last pinion is usually quite small in diameter with may be six or seven teeth and may have a little (barely noticeable) more play (movement) in it's bushing. The Wings of the governor are supposed to slip a little and keep turning after the train has stopped (locked), releasing the energy of the fast rotating wings which control the speed of the chime. (hammers on the gongs)

Some of the governors have spring loaded wings which expand after speeding up and some also have added weights on the wings. During cleaning the parts sometimes are a little rough and dry so the wings almost

seize up on the shaft. When the train (and governor) stop turning after chiming, the wings (some with extra weights) and their pinion stop suddenly and the pinion locks (jams) against the warning wheel teeth. The force almost tries to push the pinion teeth out of the warning wheel. The next time the clock tries to activate (release) the chime, the governors pinion is not resting freely and the low energy at the warning wheel may not be enough to start it.

After reexamining the clock, checking end shake and tension of the wheels and turning the chiming train, the mechanism seems to operate without any problem, so the cause of the lockup is often hard to pin down. It does not lock up 'all' the time.

The solution is quite simple. Check the tension of the friction springs on the governor and one may even apply some slight lubrication if necessary on some of the larger heavier Wings with brass blocks and double springs. The governor has to slow down the chiming/striking train sufficiently and then, after locking, the wings should keep spinning a few more revolutions to disperse the built up energy after stopping. ■

## Faces from our January Meeting



# THE COAXIAL ESCAPEMENT

by Henri Bonnet

"A watch's greatest enemy is the watchmaker". This may sound outrageous and provocative, but it is not an idle statement, especially when made by the best watchmaker I have ever known. When I first heard the remark, I took it somewhat with a grain of salt.

It was only years later that I fully realized how right this pronouncement has been. The mere process of dismantling and reassembling a watch is enough to damage it, even when done by a competent watchmaker. It is all a matter of degree. Now, what is it that brings a watch to a watchmaker in the first place? The record shows that the vast majority of watches brought to the watchmaker do not have anything actually "broken" in them. They simply ceased being accurate, or stopped working altogether, because of excessive friction, acquired over time, primarily due to the deterioration of their lubricant. In the past it was recommended to bring a working watch back to the watchmaker every three years, or so, in order to "service" it, which entailed total disassembly, cleaning, oiling, and reassembly, as well as adjustments, if needed. I personally never followed this recommendation, and serviced a watch only when I was dissatisfied with its time keeping function.

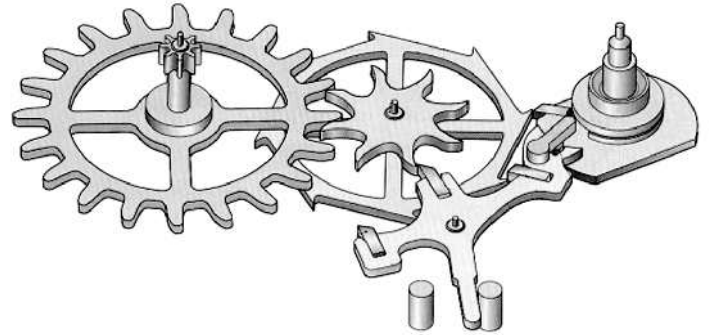
Be as it may, wouldn't it be nice if someone could produce a watch that never needed servicing, or, short of that, needed it, say, only once every ten years or so? Let's examine this proposition. Since a watch timekeeping accuracy is adversely affected by friction, could we possibly eliminate friction altogether? The fundamental laws of physics tell us that this is indeed impossibility, and that friction could, at best, be reduced.

The science of tribology, which is part of mechanical engineering, is entirely dedicated to that purpose. The watch industry among others, has addressed the problem of friction for a long time and with encouraging results, I must add. It has done so, primarily by improving the properties of the lubricants in a watch, as well as by using jewels at critical points where friction is expected to substantially affect accuracy.

Only in the past decade or so, have we started to see the results of additional efforts in that area, in particular with the perfection of the coaxial escapement, among others. The lever escapement originally invented by Thomas Mudge in 1757, and later perfected into the Swiss lever escapement, has served the watch industry well for over two hundred years, and can still be found in the vast majority of the quality watches available today.

In the Swiss lever escapement, we find two pallet stones, (not counting the roller jewel). Each of these two stones serves a dual function: it locks the escapement wheel between oscillations (beats) as well as imparts the required impulse to the balance wheel, via the roller jewel, for the next beat, in the opposite direction. By looking closely at the club foot shape of the escapement wheel, it becomes apparent that the impulse function is achieved through sliding friction between the pallet stones and the escapement

wheel feet. Now, mechanical friction comes in various forms, but sliding friction is the most severe kind, when applied to watches. As we all know, sliding friction is what is used in brakes when the purpose is to stop a car. However, there exists another more benign type of friction, called tangential friction, akin to the one experienced in the gear train of a car or in ball bearings. If one could design an escapement that would replace sliding friction with tangential friction, one would go a long way towards reducing friction in a watch's escapement, and thereby, perhaps eliminate the need for lubrication entirely.



This is precisely what George Daniels had set out to do when he invented the coaxial escapement, some thirty years ago. Nevertheless, it was only in 1996 that we saw the first commercial versions of this escapement appear in wristwatches available to the public.

This relatively new escapement is known in the industry as "coaxial". In a nutshell, how does a coaxial escapement work? To begin with, Daniels has added two pallet stones to the escapement mechanism, one in the center of the pallet fork itself, and the other, he mounted via a special collar on the balance shaft. By doing so, he separated the locking function of the escapement work, from that of the impulse. The two external (end) stones on the pallet fork are used exclusively to lock the escapement wheel between beats, while the center stone is used solely to impart impulse to the balance wheel, indirectly, by means of the roller jewel. The impulse to the balance wheel in the opposite direction is imparted directly, by the fourth stone mounted via a collar on the balance shaft itself. To make this whole mechanism work, Daniels also had to provide two separate escapement wheels, one mounted on top of the other, on a common shaft, hence the designation "coaxial".

The upper escapement wheel has a dual function: it receives power from the gear train to run the escapement, as well as activates the indirect impulse function, via tangential contact with the center pallet stone. The lower escapement wheel also has a dual function: it is used to lock the escapement between beats, as well as imparts direct impulse to the balance wheel, in the opposite direction, via the collar mounted jewel on the balance shaft itself. This second impulse is achieved through tangential contact as well. Of course, the escapement wheels now have somewhat of a different shape in order to accomplish their present function.



(Continued from page 4)

But most importantly, the impulse in both directions is now performed, not by sliding, but this time, by tangential friction.

The net result is, that by practically eliminating the sliding friction of the pallet stones on the escapement wheels, Daniels also hoped to reduce, if not eliminate altogether, the need for lubrication of the escapement works.



This coaxial escapement is currently being fitted on Omega's De Ville series wristwatches, and from personal experience, I am happy to say that it performs with great accuracy, and that it seems to be able to retain its accuracy over time.

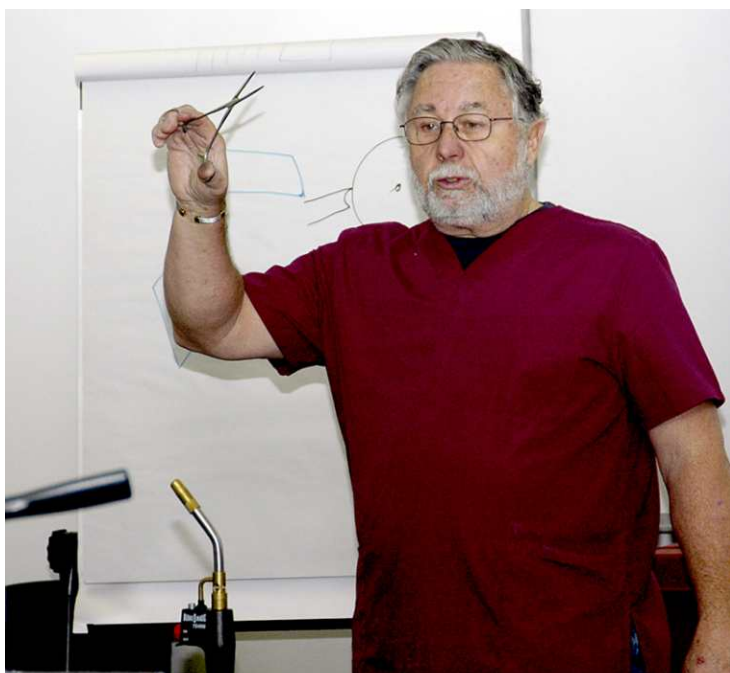


*Omega De Ville coaxial escapement watch from my collection.*

The coaxial escapement continues to be improved upon, both in its design, as well as in the choice of material for its construction. Besides Omega, other Swiss manufacturers are perfecting their own version of the coaxial escapement. It is gratifying to know that some of the major producers of contemporary wristwatches are making quantum leaps in their effort to improve the accuracy of their timepieces.

Perhaps the day will soon come, when a trip to the watchmaker for the sole purpose of servicing a working watch, will be a thing of the past. And we all know what that means! Don't we? ■

## The NAWCC F101 Suitcase Class



## Ventura Chapter 190 people

Each issue of our newsletter will feature members of our chapter with a short biography or some of their horological interests to help us get to know them better.

### Henri Bonnet

By George Gaglini



Born in Paris, France, Henri Bonnet came to the United States to attend City College of New York where he earned his degree in Mechanical Engineering.

United Parcel Service was fortunate enough to recruit him right out of college and to hold onto him until he retired. At UPS Henri developed factory automation methods and procedures that helped to machine read and sort millions of parcels and direct them to their destinations through the UPS distribution system.

It wasn't until he was around twenty years old that Henri got his first wristwatch, a Longines Automatic. That marked the beginning of a forty-plus year quest to collect as many wristwatches as he could. In the beginning, he would take apart his new acquisitions to see how they worked. Later, there were just too many in his expanding collection to disassemble.

When his prized watches began losing time, Henri knew he needed a watch cleaning machine. Rather than spending the thousands of dollars on a professional cleaning machine, he invented his own and it works beautifully. When you look closely at it you see many familiar household items like jars, and fasteners. But, through his mechanical aptitude and genius, these common items become a fine, functioning automatic cleaning system. (The July 2007 issue of Chrono Times featured an article on Henri's watch cleaning machine.)

Around eight years ago, Henri and his wife Ruth came to California to retire, settling in Santa Barbara. His two children are married and live in Delaware and Georgia. An NAWCC member for the last twenty years, he searched for a local organization and in time found the new Chapter #190. Here he can compare notes and enter into discussions on micro mechanisms with so many others with common interests.

Henri has authored many articles in our newsletter, including this issue.

**A CLOCK WORD PUZZLE**  
By Ken McWilliams

**FIND THE VERTICAL, HORIZONTAL OR DIAGONAL PATH TO A 25 LETTER ANSWER. USE EACH LETTER ONLY ONCE.**

①	S	T	M	A		clue: What is the greatest, most anticipated event of the year and it's coming to us in May?  The solution can be found upside down below
T	I	H	I	R		
H	C	E	N	②		
P	A	R	9	I		
T	E	1	0	M		

① □ □ □	□ □ □ □ □ □ □	□ □ □
□ □	□ □ □ □ □	□ □ □ □ ②

**The next Meeting & Mart for Chapter 190**  
**Will be February 17, 2008**  
**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**  
**"How to Correctly Setup and Troubleshoot Striking Mechanisms"**  
 Presented by Ferdinand Geitner

*Let the expert demystify this often baffling problem.*

**SHOW & TELL**  
**"GLAR Clocks & Watches"**  
*Bring your latest find from the greater L.A. regional*

*"It is the chapter 190 mini mart"*  
**The solution to the clock-word puzzle is**  
**The solution to the**

*Welcome New Member*

**Tom Musselman**



# CLASSIFIED PAGE

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

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## SERVICES OFFERED

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### ***The Montecito Clock Gallery***

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**Ferdinand Geitner**, mbhi, owner and operator

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## FOR SALE

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Eight feet tall with three inch full columns on a solid  
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***Runs & Looks Perfect.*** \$5,000

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## WANTED

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### ***- Chronometer -***

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inner box and gimbals; outer box not essential.

Please contact: Giorgio Perissinotto

E-mail: [giorgio@spanport.ucsb.edu](mailto:giorgio@spanport.ucsb.edu)

*(I'm teaching in Spain so there is no local California phone)*

### ***- Watch Repair Tools -***

I'm just starting out and need just about everything.  
I would prefer to purchase an entire collection of old  
watchmaker's tools.

Please contact:

*David Clarkin* **Tel: 805-988-4384**

***Antique French*** 2 or 3 dial calendar clocks.  
***Antique English*** 2 or 3 gear-train skeleton clock.

Loren Miller, **Pacific Coast Clocks**

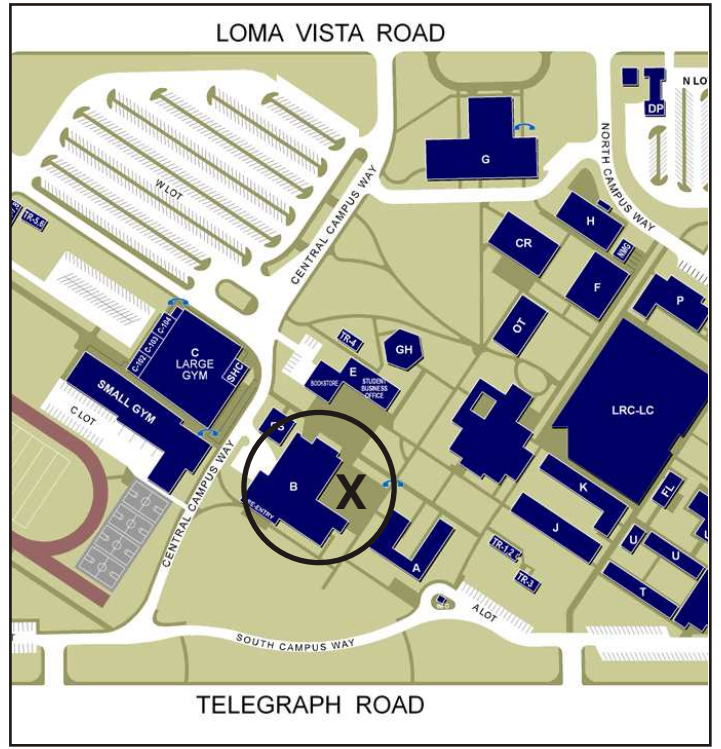
4255 E. Main St., No. 15, Ventura, Ca.

Located in Firehouse Plaza (Main St. & Telephone Rd.)

**Tel. 805-650-8800**



**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 athletic field.**



*Hope to see you there!*

**February 2008 Issue**

**FEB 17**  
**NEXT MEETING**

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

**Chrono Times**