VENTURA COUNTY
Chrono Times
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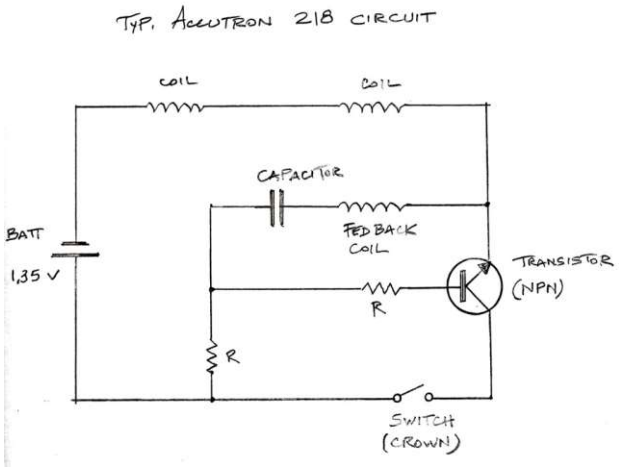
The Wonder Days of The Accutron

by Henri Bonnet

When I purchased my first Accutron tuning fork wristwatch, in the early seventies, I thought that it was truly a masterpiece of horological engineering. Thirty five years later, I am ever more impressed with the amazing ingenuity and elegance in the design of this wonderful timepiece.

To begin with, my Accutron tuning fork wristwatch still works perfectly, thirty five years later, just the same as the day I bought it, in spite of the fact that it has never been serviced. This, to me, is due to the astonishing simplicity of the electronic and mechanical design of the basic Accutron timepiece. Its electronic circuit could not have been made simpler. In my high school days when I built elementary AM radios, the electronic circuits I drew then were substantially more complex than that of the Accutron wristwatch. Consider for a moment, the typical Accutron electronic diagram: it consists of a simple oscillator, including a transistor, a couple of resistors, a capacitor and a coil system. The mechanical side of the watch is not only simple, but amazingly ingenious. It consists of a tuning fork, a relatively simple ratchet system, and a reduction geartrain to move the hands.



Here is how the Accutron tuning fork wristwatch works in a nutshell: the battery powered electronic oscillator induces an alternating magnetic field in two tiny electromagnets, which in turn cause the tuning fork to vibrate at a frequency of 0.36 kilohertz. The tuning fork tines (legs) are connected to a pair of jeweled pawls acting on a ratchet wheel, thereby converting linear to circular motion. From there, a simple reduction geartrain carries the circular motion to the hands.

However, there is a huge difference between an Accutron geartrain and that of a regular mechanical watch. In a typical mechanical watch, the motive power is stored in a steel spring which is tightly wound into a barrel. From the barrel, the multiplication geartrain transmits power to the escapement mechanism which keeps that power in check, releasing it at equal intervals to keep time. Like all mechanical fast moving, low torque devices, such as a balance wheel escapement, proper operation is dependent on overcoming friction and thereby requires constant and quality lubrication to stay accurate.

In the Accutron movement, the motion starts with the vibrating tuning fork, and from there to a reduction geartrain, which in turn moves the hands at the desired rate. Because it is a reduction geartrain, there is virtually no strain on the gears, the pivots, or the bearings. In addition, there is a very low operating speed for these components. This being the case, the Accutron movement requires little or no lubrication, which is the weak point of all the other types of mechanical wristwatches. It is no wonder that my Accutron tuning fork wristwatch still operates perfectly, even after thirty-five years, without any servicing.

For those of us who insist on superlative accuracy, on the level of seconds per day, a simple mechanical regulation method is also provided. Even the battery is installed in the watch with uncommon forethought. The battery seam is oriented towards the back of the watch, so that any potential leakage is less likely to contaminate and damage delicate portions of the movement. It must be remembered that thirty five years ago, watch batteries were significantly more prone to leakage than they are today.

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PRESIDENTS MESSAGE

By Mike Schmidt

"Old Clocks & Watches & Planes… Oh My!" and Old Cars and Hot Dogs too!

Reminder! Bring your cameras to the Annual Mart for some great photo ops. Our members, Kathi and Clay Sheffrey, and their car club group, are coming with some neat old cars to complement the display of World War II aircraft at the CAF Air Museum.

Be sure to take a tour of this wonderful museum. There are two hangars and the tarmac. The second hangar, where rare airplanes are in restoration, can only be accessed with a docent. The docents are pleased to take you through both hangars to see the airplanes and aviation displays. They have some great stories to tell you. They have a recent story to tell about the Museum's Grumman F-8F 2 Bearcat. For the table holders, a great time to take the tour will be after the mart closes. You will be able to enjoy the museum and observe a landing of fighter planes coming from the Chino Air Show at 4PM.

Food at the Mart will be provided by Mort Schectman and "Morts Mobile Gourmet"

We have sold most of our tables, but have the ability to add more tables. If you need a table or wish to add to what you have let Ernie know. May 13 is the deadline to secure a table. Call Ernie Jenson 805 482-6021 or, e-mail:erniejenson@roadrunner.com

A consignment table will be available if you have one or two timepieces to sell. A silent auction will be held from 1:00 PM-2:00 PM

Congratulations to all the NAWCC members who have completed the recent Field Suitcase Classes:

F102 Apr. 3-6 Coordinator Paul Skeels. Dave Clarkin, Glen Webb, Laurie Conti, Lex Rooker, Mostyn Gale, Dick Henderson, William Frank

F200 May 1-4 Coordinator Alan Davis. Crawford Sachs, David Rubright, Glen Webb, Jessie Lyman, Lex Rooker, Tim Harriman, William Frank.
"Kudos" goes to instructor Ray Marsolek, and his biggest supporter, wife Alvina. This is Rays 8th FSW class for chapter 190

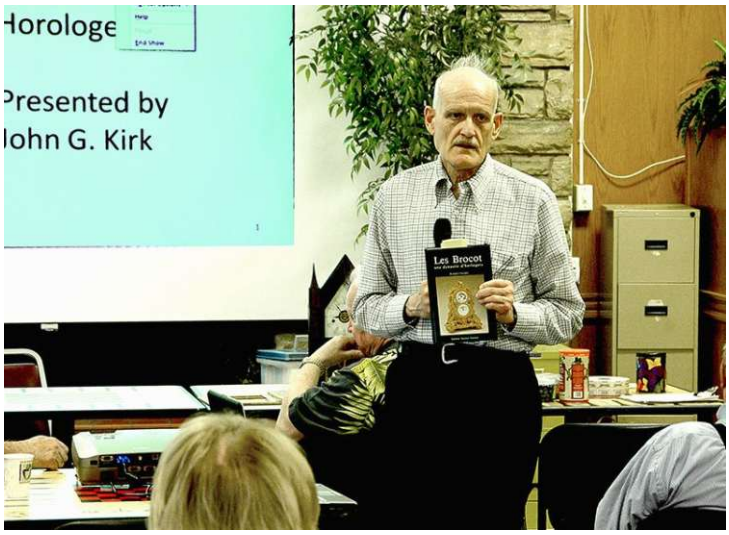
Future Educational Opportunities:
FSW 201 August 7-10 Beginning Lathe - Mike Schmidt coordinator 805 988-1764 email EagleCreekClocks@msn.com

If you have interest in clock repair, or know someone who does, we are compiling a list of students for a beginning clock repair class. Contact Mike Schmidt.
e-mail EagleCreekClocks@msn.com

See you at the Mart,

Mike

Faces Seen At The April Meeting



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In most other electronic wristwatches, the battery is installed with the seam facing the movement. Even with today's modern watch batteries, leakage is not uncommon. In the recent past, I have had a couple of electronic wristwatches ruined beyond repair as a result of battery leakage.

The Accutron tuning fork wristwatch was developed by Max Hetzel for the Bulova Watch Company, and the watch began to be sold to the public in 1960. It subsequently underwent numerous improvements, until production ceased completely in 1977.

It is not entirely clear why Bulova stopped producing the Accutron, but it would not be unreasonable to assume that the Accutron tuning fork wristwatch, like its mechanical counterpart, was supplanted by the new and proliferating quartz technology. Although mechanical timepieces have for the most part fully recovered from the impact of the quartz revolution, the Accutron tuning fork technology apparently has not. It has, for all practical purposes, completely disappeared from the horological scene. This is a real pity.

Accutron tuning fork wristwatches are sometimes available today as vintage timepieces, but it is rare to find one in anywhere close to a decent condition. Since spare parts have long been unavailable, repairs must be performed only through the cannibalization of other Accutron movements.

As a wristwatch enthusiast and collector, I have over the years acquired several Accutron tuning fork timepieces, in addition to my first one in the early seventies. To me, the Accutron tuning fork wristwatch has become the symbol of a new era when electronics began to conquer the industrial, as well as the consumer world. The seventies was the decade that ushered in the pocket calculator, the personal computer, sophisticated cameras, color television, and the Accutron tuning fork wristwatch, among others. I consider myself fortunate to have been part of that unforgettable period, when the entire country was enthralled by the new and exciting emerging electronic technology; a period when man first stepped on the moon and the entire world has changed rapidly ever since. During those wonder years, the Accutron tuning fork timepiece appeared not only in spacecrafts headed for the moon, but I am proud to say, that it was strapped to my wrist as well. The Bulova Accutron tuning fork wristwatch is the only electronic timepiece I know of that is not considered disposable, and it has, by now become a classic. Is it not time for Bulova to revive the wonderful Accutron tuning fork technology? I, for one, believe that it is long overdue. What do you think?

The photos are of my first Accutron wristwatch. Note the picture of the movement and observe the thoughtful orientation of the battery. The simple schematic diagram of the Accutron wristwatch was copied from an old Accutron service manual.

FOR SALE

Very small verge watch by Lepine, Paris. Late 18th century. Plain solid gold case. Running. $25.00

Large gold case repeater signed Breguet et Fils. Verge movement. Excellent condition. $100.00

Lovely watch by Dufulga, Geneve. (1775) Gold case decorated a quatre coloeurs with enamel medallion of cupid & woman. White dial with gold hands, verge movement. Excellent condition. $150.00

Skeleton movement made by T. Bathwell, London 1790. Silver case with crystal front and back. Running $10.00

Before you get too excited and start calling for instructions on where to send your checks, I need to tell you that these were items offered for sale in the 4th issue of the bulletin back in February 1944. Wouldn't you like to take a little "shopping" vacation to that time?

Chapter 75's Mini Mart

Sunday, July 26th

In the Granada Pavilion at

Granada Hills

See our website for more info

or contact Robert Gary at: 805 388-1694

e-mail: Robertsclocks@verizon.net

Tales From the Bench

by Ferdinand Geitner

A Nice Bejewelled Watch

A very nice pocket watch from the early 1800's with jewels (saphires) set into the hands and surrounding the beautiful, miniaturized enamel painting on the back cover. It had a Verge Escapement, that would not run very well and needed attention. Verges are usually quite forgiving and work often even badly set up or adjusted.

After dismantling the movement it became clear that it had been worked on recently with good intentions but not completely successful,

If one looks closely at the balance bridge there is a key hole shaped upper bearing with a polished steel end plate for the top pivot screwed onto it. On closer examination, it became apparent that part of the top pivot had broken off and only a short stump remained. Someone decided to insert a new jewel hole into the balance bridge, therefore lowering the bearing for the upper (remaining) pivot.

There were also some ink markings on the bridge edges and corresponding plate locations to show which is the right or left side of the bridge.

Not a bad idea except there was no end stone/plate and the pivot got stuck when the watch was turned dial up. After adding an end stone to the configuration, it worked like a charm.

Another fact to point out is that on watches of that period screws are not necessarily interchangeable and the screw from the left side of the balance bridge does not fit the right side and vice versa.

Enameled case back

Jeweled hands

Jeweled case

Don't Forget!!

This is the month that we have our annual Mini Mart at the Camarillo Airport. There will not be a meeting at Ventura College.

100's of Antique Clocks & Watches for sale

Tour the CAF Museum and view the restored WW II aircraft

ADMISSION SCHEDULE

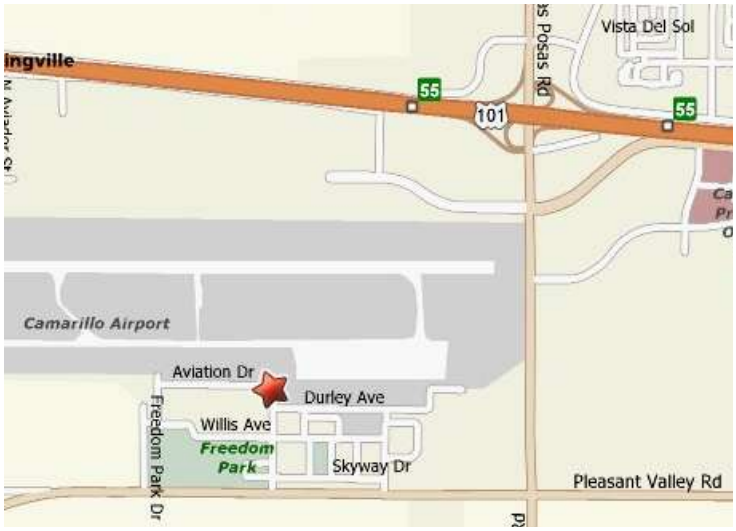
10:00 - 10:30 • • • Sellers Set-Up

(Only NAWCC Members May Sell)

10:30 - 12:00 • • • NAWCC Members Only

12:00 - 2:00 • • • Open to The Public

The CAF hangars are located at the Camarillo Airport in Camarillo, CA. The airport is just off Highway 101in Camarillo. Take the Las Posas exit and go south to Pleasant Valley Road. Turn right and take a right onto Eubanks Street (2nd light) into the airport. We are on the corner of Eubanks and Airport Drive. Look for the *C A F* sign on the hangar.



Welcome New Member

Robin Campbell

Happy Birthday

George Antinelli, Henri Bonnet, Ronald Boogren, Russel Frey, George Gaglini, Mostyn Gale,

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
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805-497-8381 or 805-647-0699
e-mail: **theclockgallery@adelphia.net**

The Tic Toc Shop
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Restorations
& Appraisals.

Ken McWilliams
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Jorge Montoya
Complete Watch Service Center
Repair & Restore all American & Swiss watches.
12 years as a Rolex technician. We maintain a complete shop with all the latest equipment.
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E-mail: jorgemont2001@netzero.net

PACIFIC COAST CLOCKS
In business since 1977.
Sales and Restoration of both new and antique clocks. Repair of all types of mechanical clocks.
Loren Miller proprietor.
4255 E. Main St., No. 15, Ventura, Ca. 93003
(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

WATCH REPAIR TOOLS & MORE!
I will have a huge selection of watch repair tools and other items from my latest estate buy at the Chapter 190 meeting.

Dave Coatsworth
dave@daveswatchparts.com

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***

I'm looking for a five inch piecrust bezel for an Ansonia clock.
Contact:
Tom McKnett
805-444-6383

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**
(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**

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

NEXT MEETING
MAY 17
AT THE CAMARILLO AIRPORT

May 2009 Issue

Hope to see you there!

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.