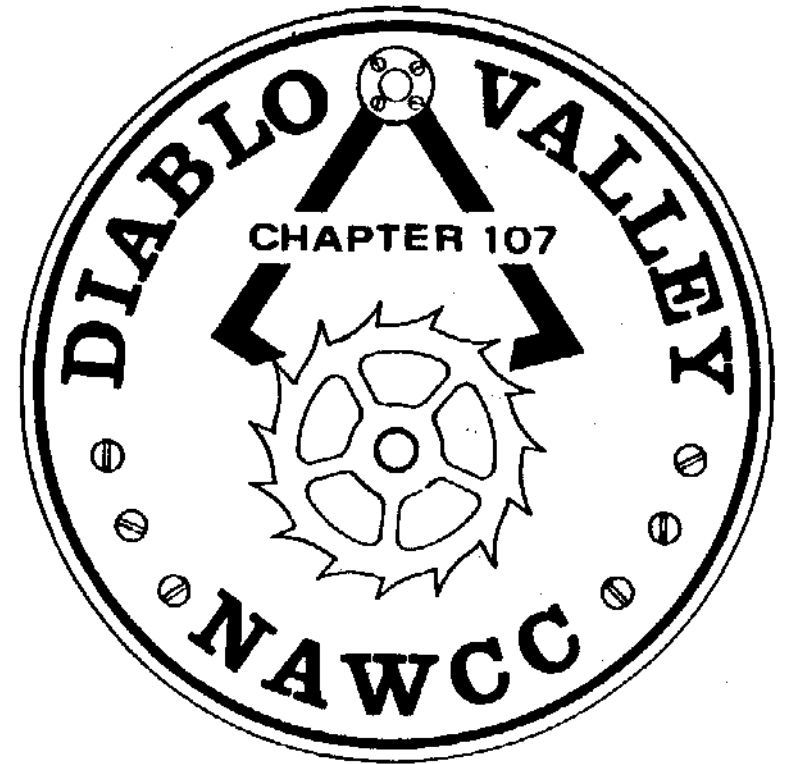


BULLETIN



August 2010
Volume 190

DIABLO VALLEY

Chapter 107

National Association of Watch and Clock Collectors

Chapter Established March 5, 1978

"Accent on Education"

OFFICERS

President	Chip Kumparak	408-499-4538	chips@garlic.com
Vice Pres.	Mike Kookan	925-933-1257	mgkookan@yahoo.com
Vice Pres.	Jay Taylor	510-522-2409	4nutnut@att.net
Secretary	Ross Smith	925-820-2180	mainuse@msn.com
Treasurer	Walt Hubrig	925-685-0260	dottiewalt@astound.net
Past Pres.	Tom Kochmann	925-228-8436	kochman3@aol.com

DIRECTORS

2010	Gareth Busher	925-686-5983	
2010	Roy Holman	510-530-5428	royholman@gmail.com
2010-2011	Jack Coulter	925-284-1031	
2010-2011	Dean Thomas	925-455-0929	dno337@att.net
2010-2011	Bob Wahrer	925-462-4912	bob_wahrer@yahoo.com

COMMITTEE CHAIRS

Display	****open****		
Editor	Price Russ	925-937-9231	gpruss@pacbell.net
Library	Nile Godfrey	925-449-2127	jng3@aol.com
Mart	****open****		
Membership	Earl Watrous	510-569-4175	efwatrous@yahoo.com
Nominating	****open****		
Photo	Sophia Gardner	510-531-7565	
Program	Mike Kookan	925-933-1257	mgkookan@yahoo.com
Program	Jay Taylor	510-522-2409	4nutnut@att.net
Raffle	Jack Coulter	925-284-1031	
Refreshment	****open****		
Tool Library	Walt Hubrig	925-685-0260	dottiewalt@astound.net

Meeting Notice

Annual Picnic and White Elephant Auction August 8, 2010

Meet 11:30, Feast 12:00
Auction after Lunch

Grange Hall
743 Diablo Road
Danville

See page 5 for more details

Picnic

1. The chapter will provide the meat, soft-drinks, plates, cups, utensils, and napkins.
2. Please bring one of the following based on the first letter of your surname:

A-G Salad or veggies
H-R Chips/dips/cut fruit
S-Z Dessert



White Elephant Auction



This is your opportunity to get rid of your horological excess and acquire lots of new treasures. No item is too humble for this grand affair. Contribute to the fun by participating. All funds go to support the chapter.

President's Message

Hello my Chapter 107 friends....

Well it appears that the Grange Hall is the best location for this year's Chapter Picnic and White Elephant Auction. So, if anyone is concerned about the weather for the picnic – No Worries!! We'll be enjoying an air conditioned venue this year!!!

Now is the time to pick through your clocks, and your clock repair area & supplies and bring ALL of your excess items for our Annual White Elephant Auction!! Kindly remember that this auction benefits your Chapter, and supplements our bill paying, hall rental for our meetings and even helps offset our Christmas party! So, dust things off, dig through your tool boxes, drawers and your clock junk boxes (we all have at least one!!) and bring a few things down for an afternoon of fun for everyone. I've heard through the grapevine that some items have been donated already, and thanks to Earl Watrous for getting a start on pre-numbering and listing those items, but that's just a drop in the ocean, so we need you to bring your items just as badly as every other year!!

I realize that for some regular meeting attendees this may sound like me beating the same drum again, but Chapter 107 truly needs additional members. Look for our little ad to be coming in a few weeks in the newspaper – The Independent in the Bulletin Board.

If anyone isn't on the email mailing list for the CA representative of the NAWCC, and would like to get monthly updates from National & their meeting notes, please email me & I'll get you some reading material. Membership on the National level is down annually 8-10% the last couple years, so it is 'imperative' that we all bring in one new member. Other Chapters have 'formal' membership drives to do just that. No Excuses- Bring One New Member. I appreciate your willingness and understanding to keep our Chapter going!

See you at the picnic-

Chip

Editor's Page

I want to thank Bob Wahrer, Earl Watrous, and the late Joe Kanter for contributing articles for this issue. I also want to thank Lee Thomas for his donation to the auction. Earl sorted and cataloged these items - see below. As you will understand when you see the collection, this was a significant effort. Thanks Earl.

If anyone wants to volunteer to conduct the auction, let me know. Otherwise you are stuck with me again as your auctioneer. As you have learned from the meeting announcement, this year we are trying a somewhat different format for the picnic including catered meat. I'm sure the officers and board members would appreciate learning what you think of this approach. At a minimum, we should critique the picnic at the October meeting.

It is not too early to start thinking about the December luncheon. Should we have it at Back 40 again? If not where do you suggest? Let's try to take a few minutes at this meeting to discuss it.

Price

PICNIC AND AUCTION

We are trying some changes this year including meeting in the Grange Hall rather than a member's yard, not cooking on site, and reducing the number of food items being provided by the Chapter. The Chapter will provide barbecued chicken, hot links, soft drinks, and cold water. The chicken will be from Back 40. Chip is preparing the links. As usual members are being asked to bring the items listed on page 3.

The auction should be very exciting. Lee Taylor has very generously seeded it with a substantial number of items including complete clocks, parts, cases, movements, tools, and so on. These will be auctioned in 39 lots! When we add in the items the rest of the members bring, it should be a busy affair.

ACCURACY OF A CHEAP QUARTZ WATCH

Bob Wahrer

Back in January, I purchased a quartz wrist watch for \$4.99. At that time, I set the watch to my "Atomic" clock which is regulated by the 60KHz signal received from the NIST station WWVB. I was amazed that the watch kept excellent time for more than two months. On March 14th I set the watch as accurately as possible to daylight savings time. (+/- 1 sec.) The watch was checked frequently and found to remain within 1 second over a period 3 months. This got me into investigating the means used for adjusting low cost quartz movements.

A quartz crystal resonator is very stable. The variation in frequency (going rate) due to temperature, battery voltage, aging and other causes is typically better than 1 ppm (parts per million). This is less than 0.1 seconds per day. However, the accuracy to which a quartz crystal can be manufactured economically is 30 ppm. An error of 30 ppm would result in the watch gaining or losing as much as 2.5 seconds per day. This could accumulate into an error of more than 15 minutes during a year. Except for novelty or toy watches, this time keeping error would not be acceptable for an item that we expect to run for more than a year before changing the battery. Therefore a means for adjusting the going rate of the watch is necessary.

Earlier quartz watches had an adjustable "trimmer" capacitor to accommodate the variations in manufacturing quartz crystals. This could then be adjusted for accurate time keeping by setting the crystal frequency to exactly 32,768 Hz. The integrated circuit, IC divides this frequency by exactly 32,768 to produce 1 pulse each second to drive the step motor. The trimmer capacitor was not a perfect solution for use in a wrist watch due to its size and cost. Furthermore, an inexpensive trimmer can degraded the time keeping stability since it is likely to be affected by temperature and mechanical shock. Almost all quartz watches produced during the last 15 years do not use a trimmer capacitor to set the going rate. Instead, a method called "inhibition compensation" is incorporated into the IC.

With inhibition compensation, the crystal frequency is not adjustable, and is intentionally made to operate slightly above 32,768 Hz. The IC is programmed to periodically skip (or inhibit) the counting of the number of crystal pulses necessary to provide correct time keeping. The inhibition correction is applied periodically. The time period in which the inhibition correction is applied depends upon the grade of watch.

In lower cost watches, the inhibition correction is applied every 10 seconds, which can correct to better than 0.1 seconds per day. These lower cost IC's are programmed by cutting copper traces to the IC. The example shown in the photo has 5 extra terminals to the IC. These can be connected to



inhibit the counting of up to 31 crystal pulses during every 10 seconds. The result is that the motor receives 9 pulses in slightly less than 9 seconds and the tenth pulse is delayed sufficiently to arrive at exactly 10 seconds. This adjustment is easily automated in production. When the watch module is first assembled, all 5 connections to the IC are intact. The module is energized on automatic equipment and its rate is checked. A controller determines which connections must be opened to provide the best timing and then the proper copper leads on the module are cut open automatically to provide the correct compensation. The photo shows that one of the traces to the IC has been cut by punching a hole in the circuit board.

More expensive watches may have an inhibition correction applied at longer intervals to provide a proportionally closer correction. The IC in these watches is programmed by writing to an internal memory.

In addition to inhibition compensation, the IC used in most current watches contains additional circuitry which greatly extends the battery life. This will be described in a future article.



Jason Evans & Earl Watrous



Leonard Boone & Dale Gardner



Leonard Boone & Jack Coulter

June 2010 Meeting

Photos by Sophia Gardner



Chip Kumarak - speaker



Roy Holman



Nile Godfrey



Bob Wahrer & Price Russ



Jerry Konicek, Dean Thomas, & Clarence Kobel

SMALL BRUSHES

Earl Watrous

Following up with the April 2010 Bulletin's technical tidbit about inexpensive small toothpick style brushes, similar brushes have been used successfully cleaning lantern pinions, pinion leaves and other hard to reach nooks and crannies. Some of these tiny tooth brushes come with integral handles, while others are refills needing a makeshift handle. These tiny brushes are available at store pharmacy sections in a variety of diameters and stiffness. The photograph of one in a pin vise is called a Medium Proxabrush Refill. A common tooth pick is shown for size comparison.



On a slightly larger scale, but still to be considered a small brush that can be used on clocks, are disposable makeup brushes, to be found at department store makeup counters. Apparently, an assortment of disposable makeup applicators is available for makeup application on the passerby. I found two brushes to be horologically useful and shown below.



The disposable "mascara" applicator is a versatile brush. The brush dimensions are one inch long by approx. 1/4" diameter, tapering to a tip. The brush has a twisted wire center, making the brush easy to shape for those hard to reach places. Since these brushes are disposable, I find that after repeated use, the plastic handles separate from the brush. A pin vise makes an excellent handle to hold the brushes' wire center. These mascara brushes vary slightly in size and style at the different stores. Also shown below is an all plastic version of the mascara applicator.

I have found that the beauty counter disposable makeup brushes are free for the asking. The attendants at the counters are pretty cooperative. Try Sephora, Macy's and Nordstrom.

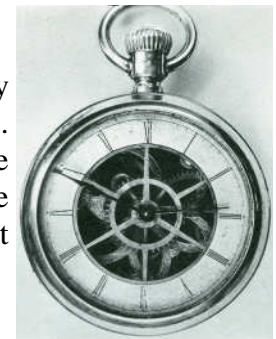
Wait. Don't Tell Me!

The picture on the right is a Black Forest "cuckoo" clock from about 1900. Franz Anton Ketterer is widely credited with inventing the cuckoo clock in 1730. This claim was originally included in the date list reproduced on page 13. Why is it unlikely to be true?



Who is this man and how does he figure into the history of the cuckoo clock?

This watch designed by Daniel Azro Ashley Buck was introduced in December 1878. What makes it historically interesting? (There was also a Vermont congressman with the same name a generation earlier. I have not been able to establish their relationship - *ed.*)



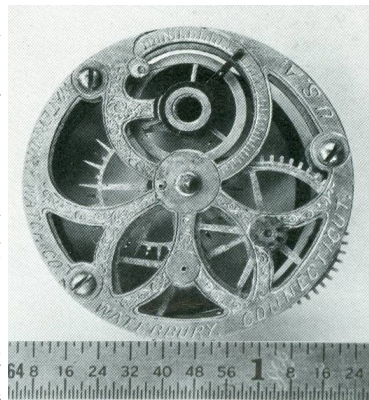
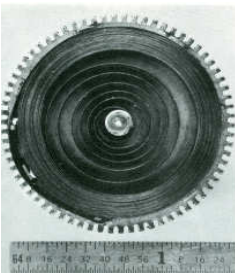
OK, Now Tell Me.

Franz Anton Ketterer was born in 1734 and died in 1806. For this reason, it is unlikely he invented anything in 1730. The earliest description of a clock fitting the description of what is commonly called a cuckoo was written in 1629. It described a clock previously owned by Augustus, Elector of Saxony (1526-1586), the man pictured. It is not known when the first cuckoo clocks were built in the Black Forest. They were being made there by the middle of the 18th century but did not become a major market segment until the late 19th century. A Theodor Ketterer was a respected maker at this time. Coincidentally an American, Charles Ketterer, produced a now famous apostle clock at about this time, but that is another story.

The Benedict and Burnham Manufacturing Company was established in 1843 in Waterbury, CT to provide brass to button makers. They became interested in applying brass to clocks and watches. This led them to form the Waterbury Clock Company in 1857. They also had the idea of producing a low-cost watch. In 1878 they marketed the Daniel A. A. Buck watch for \$3.50, while other domestic watches sold for over \$10. This venture led to the formation of the Waterbury Watch Company in 1880. By 1896 a watch could be purchased for \$1.

Buck's watch was a rotary in which the movement turned once per hour. It had a duplex escapement and only 58 parts, about half the usual number, and no jewels. One of the interesting features of this watch was the 9 foot mainspring that required 150 half turns to wind.

Not surprisingly it was known as the "long wind". This model remained in production until 1891.



IMPORTANT DATES IN HOROLOGY

- 1700: Clocks appeared in homes as mark of prosperity
- 1704: Nicholas Facio pierced rubies and sapphires for use as bearings for balance staff pivots
- 1715: George Graham perfected the dead beat escapement
- 1721: George Graham's mercury compensated pendulum was first used
- 1725: John Harrison invented the grid-iron pendulum
George Graham perfected the cylinder escapement
- 1726: Ebenezer Parmelee built oldest surviving American tower clock in Guilford, CT.
- 1740: Mahogany introduced for British clock cases
- 1750: Round dials introduced for shelf clocks
Edward Duffield made Philadelphia's first town clock
- 1765: Pierre Le Roy invented compensated balance
Center seconds hand introduced

Continued on page 15

CHAPTER LIBRARIES

BOOK: The Chapter book library is located at **Classical Clocks and Antiques**, 1086 E. Stanley Blvd., Livermore. Contact **Nile Godfrey** (925-449-2127) for more information.

VIDEO: Chapters 107 and 5 share a DVD video library. Contact **Price Russ** (925-937-9231) for information.

TOOL: Contact **Walt Hubrig** (925-685-0260) or **Price Russ** (925-937-9231) for information on the tools and parts available for use by Chapter members.

NOTICES FROM MEMBERS

(The Bulletin accepts notices from Chapter members for all items/subjects horological - wanted, for sale, giveaway, services, and so forth. There is no charge. All you have to do is supply copy to the editor.)

CHAPTER #107 MEETINGS

Second Sunday of the Even Numbered Months

Mart: 10:30AM
 Chapter: 12:00PM
 Board: after the Chapter Meeting

Future Meeting Dates

October 10, 2010	December 12, 2010
February 13, 2011	April 10, 2011
June 12, 2011	August 14, 2011

We want to keep our members coming to the chapter meetings on a regular basis. If you have problems with transportation to and from meetings, let a director or officer know so we can help you find a carpool.

Only NAWCC members can participate (buy or sell) in our Mart. Be prepared to show your current membership card.

Other NAWCC Chapter Meetings in Northern California

Chapter	Meeting Address	Meetings
De Anza #94	Odd Fellows Lodge 20589 Homestead Rd Cupertino, CA	2 nd Sunday even months (except April)
Monterey Bay #70	Live Oak Grange Hall 1900 17th Ave Santa Cruz, CA	3 rd Sunday odd months
Sacramento #71	Sacramento Garden Center 3330 McKinley Blvd. Sacramento, CA	4 th Sunday odd months
San Francisco #5	Boys and Girls Club 401 Marina Blvd. San Leandro, CA	2 nd Sunday odd months

DIRECTIONS TO CHAPTER MEETINGS

(except August and December)

743 Diablo Road, Danville

Take Interstate 680 to the Diablo Road exit in Danville. Go east on Diablo Road for 0.6 mile. The Grange Hall will be on your right. Parking is available in the front and rear. Enter from the front; *i.e.*, street side. Facing the building from the street, there is a ramp on the right side for handicap and cart access.

Important Dates - continued from page 13

- 1793: Eli Terry began making clocks near Plymouth, CT
- 1797: Eli Terry awarded patent for an "equation clock" with two dials, sun time and true time
- 1800: Production of wooden clocks began in the United States
- 1802: Simon Willard patented his "Improved Timepiece" better known as the "banjo clock"
- 1809: Eli Terry and Seth Thomas established partnership
- 1810: Seth Thomas and Silas Hoadley bought Terry's Plymouth clock shop
- 1812: Eli Terry opened an experimental shop producing inexpensive wooden shelf clocks
- 1813: Seth Thomas set up his own shop in Plymouth Hollow, CT
- 1816: Eli Terry patented a pillar and scroll shelf clock with a thirty hour wooden movement. Chauncey Jerome made cases for Terry
- 1817: Joseph Ives applied for patent for "looking-glass" clock

Closing Thought

Time heals what reason cannot

– Seneca (4 BC - 65 AD)