Chrono Times

NAWCC Chapter 190 Newsletter

Ventura and Santa Barbara Counties
July/August 2016

PRESIDENT'S MESSAGE
By Ken McWilliams

Hello fellow members and friends. We did not have a meeting in June due to Father's Day, but we will be back and ready to go in July. Pat Fitzgerald will lead the free pre-meeting workshop at 11 AM. The program for July is going to be a great one. Ferdinand Geitner will be presenting "Repairing Platform Escapements". This should be a very interesting program. As long as we're on that subject, the platform escapement repair workshop is finally a reality. Ferdinand Geitner will be instructing this workshop on September 24 and 25th at the Dudley House Museum. If you signed up last year for this workshop, you will have to do it again. Enrollment will be starting from scratch, and space is limited. Look for the workshop flyer in this newsletter for more details.

I would like to give a shout out to a few of our board members who have recently encountered some of life's challenges, and let them know that they are in our thoughts. George Gaglini, our past president, is recovering nicely from shoulder surgery. Ernie Jensen, our number one Chap-

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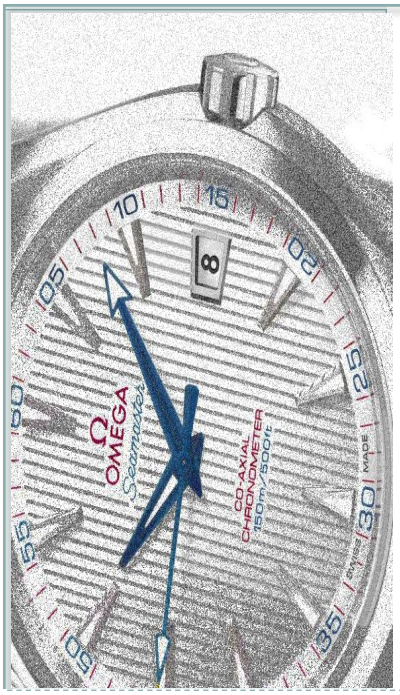

PRESIDENT'S MESSAGE
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ter 190 goodwill ambassador, is on the mend, and we hope to see his smiling face back soon. Susan and Robert Gary have both been tested. Robert is recovering from a very serious illness and Susan, while caring for her husband Robert, was also caring for her gravely ill mother. Her mother recently passed. These are good, resilient people who have contributed greatly to the success of our chapter, and will continue to do so in the future.

This will be David Perez's last newsletter. David's employer is requiring him to travel more, and simply will not have the spare time to produce our newsletter. I would like to thank David for the great job that he did for us, and especially for giving me a break from that job for a while. I produced the Chrono Times for nine years, and it looks like you're going to be stuck with me again. That is, unless one of our members would like to take a shot at becoming our editor. Let me know if you are interested.

"Ferdinand Geitner will be presenting "Repairing Platform Escapements"

Chapter 190 will resume its annual mart next year. It will be held on February 19, 2017 at the Ventura Fairgrounds, in a larger building with better lighting and air conditioning. We anticipate having approximately 125 tables. As usual, we expect a sellout. Donna Gaglini, and Sue Gary have already begun planning this event. We will be looking for helpers to assist these young ladies in the near future. Look for a flyer with more details in our next newsletter.

Last month I brought up the possibility of having Chapter 190 field trips in addition to our regular meetings. I have not received a single suggestion or comment on this subject. I can only conclude, that there really is no interest, and will abandon the idea.

I hope to see you all at the July meeting.

Ken McWilliams

FLOWER CLOCK

BY KEN MCWILLIAMS

The Ventura Star had an article recently about a new clock in Camarillo. This is not an ordinary clock; it is what is known as a flower clock. The article says that there are only 13 clocks like this in the United States.

This one graces the Camarillo Plaza shopping center located at 1775 E. Daily Dr. The shopping center was recently renovated and the working flower clock was installed at that time.

The clock face is 13 feet in diameter and is located in front of Fitness 19. The clock powers up for 6 seconds every minute, just enough time for the minute hand and when necessary, the hour hand to click forward. If you're in the area, stop by and check it out.

The newly renovated "Flower Clock" in front of Fitness 19 at the Camarillo Plaza Shopping Center in Camarillo, CA.

THIS MONTH'S MINI WORKSHOP

Starts At 11:00 a.m.

Metal Polishing and Some Handy Aids in Getting an Even Finish

Presented By

Pat Fitzgerald

All are invited to share and ask questions on all clocks and watches.

CHAPTER MEETING CALENDAR

17 JULY MEETING

REPAIRING PLATFORM ESCAPEMENTS
BY
FERDINAND GEITNER

21 AUGUST MEETING

THE DUEBER-HAMPDEN WATCH COMPANY
BY
DAVE COATSWORTH

DETERMINING THE AGE OF MAINSPRINGS

By Mostyn Gale

In 2014/15 I attended West Dean College in England to obtain a Master's degree in Conservation Studies. My research explored methods for determining the age of a mainspring in an effort to raise awareness of the historic value that a mainspring contributes to a clock. My thesis posed the question, "C*an the manufacturing date of a mainspring be determined?"* If a mainspring manufacturing date can be determined, it may lead to retaining the mainspring rather than discarding it, thus preserving important historical information.

I conducted a survey of practitioners, connoisseurs and other horologists which showed that 90% of what are perceived to be weak mainsprings are replaced as part of a repair or restoration. The survey of almost 70 horologists worldwide also indicated that maintaining a clock in working condition for its expected duration is amongst the most important goals for a clock restoration. The survey established that the replacement of mainsprings in clock repair is common practice and that there are no established criteria for their replacement; indeed, one of the most widely accepted criteria—the degree of "coiledness" in the relaxed state—was found to be of questionable value as

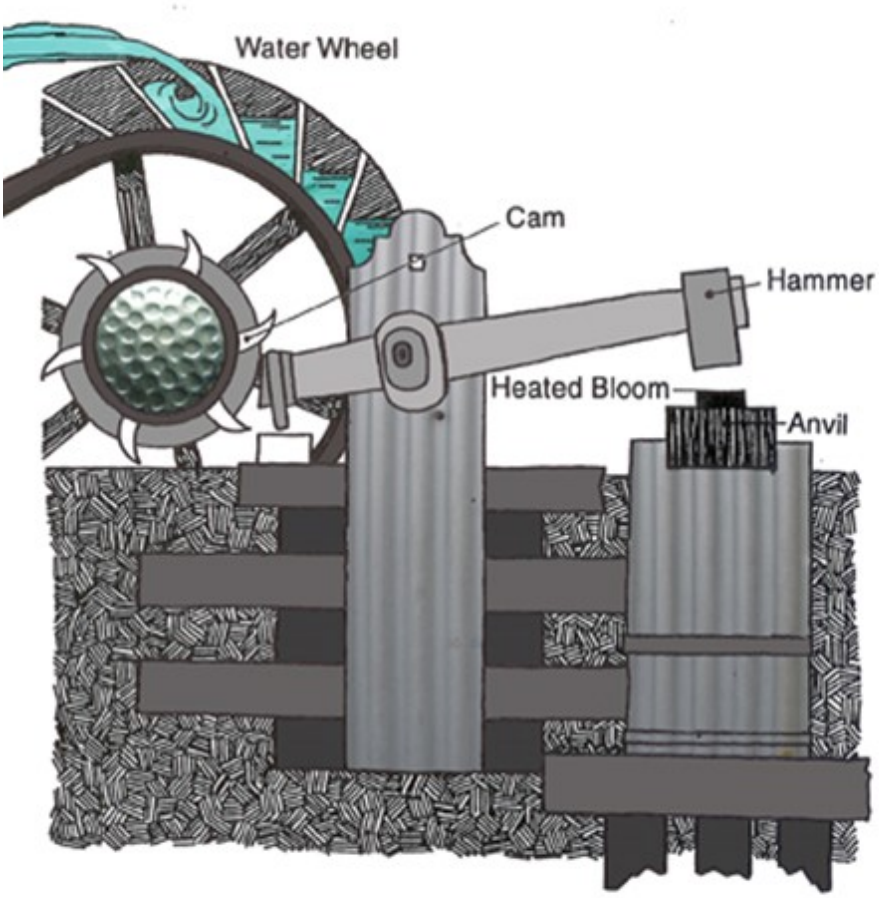

Fig. 4 Diagram of a forge trip hammer.

Figure 1

A water-powered bloomery. The waterwheel turns the cam wheel which lifts the hammer and then drops it onto the heated bloom. (Credit: WITF, Inc., Courtney Howell)

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applied to mainsprings of 19th century or earlier.

A thorough literature review was also conducted looking for a stated standard practice for conservation of mainsprings—very little was found. The survey and literature review demonstrated a fundamental conflict between the goals of maintaining a clock in a functioning state versus preserving the integral historic object for future generations and revealed the current preference for maintenance of functioning clocks above preservation—without a change in the priorities of practicing horologists the loss of historical information is certain to continue.

Figure 2
Forging the mainspring (Fig 1, Plate 2, Blakey)

HISTORICAL RESEARCH

I researched the historical development of steel and mainspring manufacture—three markers were identified, relating to metallic composition, which led to four defined historical eras of iron and steel manufacturing development. Recognizing that dates are, of course, approximate and not to be taken as absolute, the historical markers are:

Prior to1742 – Steel was manufactured using a bloomery process (Figure 1) resulting in a significant number of inclusions (impurities) remaining in the steel. Significant variations in size and

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DETERMINING THE AGE OF MAINSPRINGS
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distribution of inclusions throughout the steel was the result of this process.

1742 to 1839 – In 1742 a clockmaker from Sheffield, named Benjamin Huntsman, developed the crucible steel process. This resulted in far fewer inclusions that were generally smaller and more uniformly distributed throughout the steel than in the bloomery process.

1839 to 1950 – In 1839, Josiah Heath discovered that the addition of manganese to crucible steel reduced the adverse effects of high sulphur content introduced by the use of coke as a fuel for blast furnaces. The presence of manganese in amounts greater than about 0.1% provides an earliest possible date for the steel of 1839.

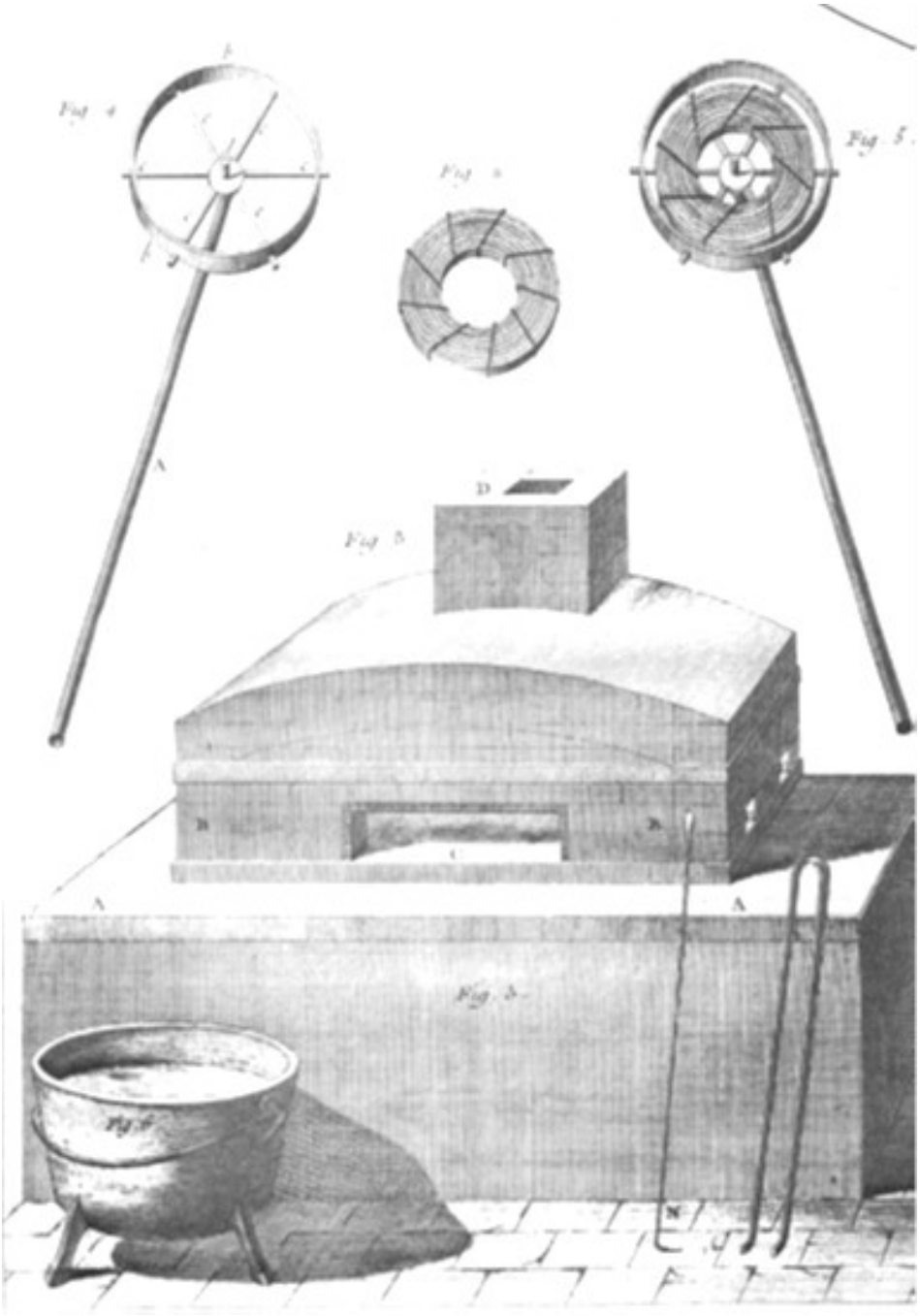

Figure 3
18th and early 19th century mainsprings were hardened in the coiled state (Plate 4, Blakey).

1950 onwards – In 1882, Sir Robert Hadfield discovered that the addition of manganese to steel, in much larger quantities than Heath introduced—on the order of 10 to 15%—significantly altered the

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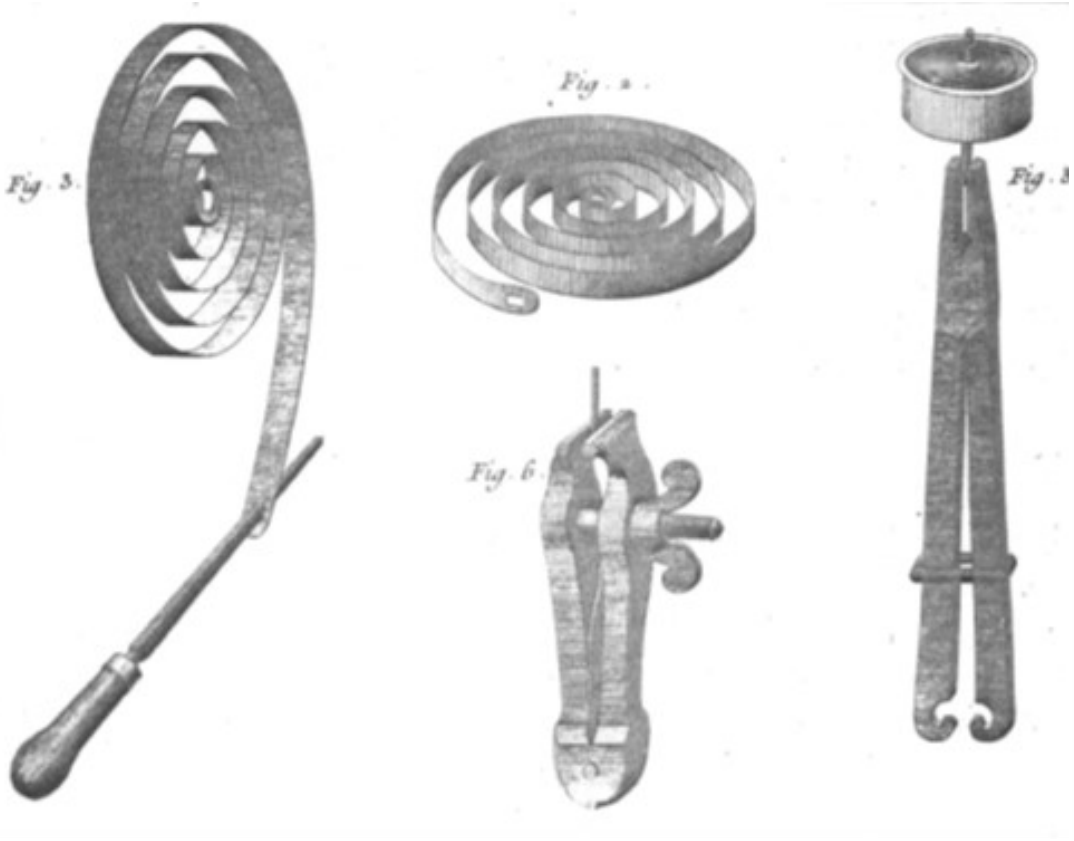

Figure 4
The coiled mainspring is tightly wound and inserted into a barrel (Plate 10, Blakey).

characteristics of steel. Hadfield's discovery, coupled with a quickly improving scientific basis for understanding steel, opened up a world of experimentation with different elements being added to steel to discover different beneficial properties. Modern steel alloys often contain nickel, chromium, molybdenum, vanadium, silicon, and/or boron, all of which improve toughness, hardenability, and corrosion resistance to differing degrees. Stainless steel mainsprings were pioneered by the Elgin Watch Company in the 1950s. The presence of elements in a mainspring other than carbon or manganese is then, a good indicator of a manufacturing date later than 1950.

Prior to 1861 – A fourth historical marker was identified relating to mainspring manufacturing methods. *L'Art de Faire les Ressorts de Montres* (The Art of Making Watch Springs), written by William Blakey in 1780, describes the process for mainspring making beginning with drawn wire which is then hammered, forged, filed, coiled, and tempered (Figures 2-4). Since this process as described was utilized throughout the 18th century and into the 19th century, it is reasonable to expect that mainsprings of this era could be detected by the filing/finishing marks left on their surfaces. Additionally, imperfections, such as varying width, thickness, and planarity, were reported

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by Saunier as late as 1861. These visual surface features then, are indicators that a mainspring was manufactured prior to at least 1861.

TEST METHODS AND RESULTS

I tested twenty sample mainsprings using a portable x-ray fluorescence (p-XRF) analyzer to determine their metallic composition. The resulting data (Figure 5) revealed that the compositional differences in mainspring steel did correlate with the expected differences as determined by the historical research. Some mainsprings were composed only of iron and carbon. About 50% of the mainsprings contained traces of manganese on the order of 1%; this is one of the historical markers, dating to 1839 or later. Finally, relative to p-XRF measurements, the results were inconclusive with regard to the addition of elements other than manganese after 1950, another of the historical markers. This was perhaps due to the fact that the concentrations of alloy elements are typically very small (< 0.5%) and near the limit of reliable detectability using this method.

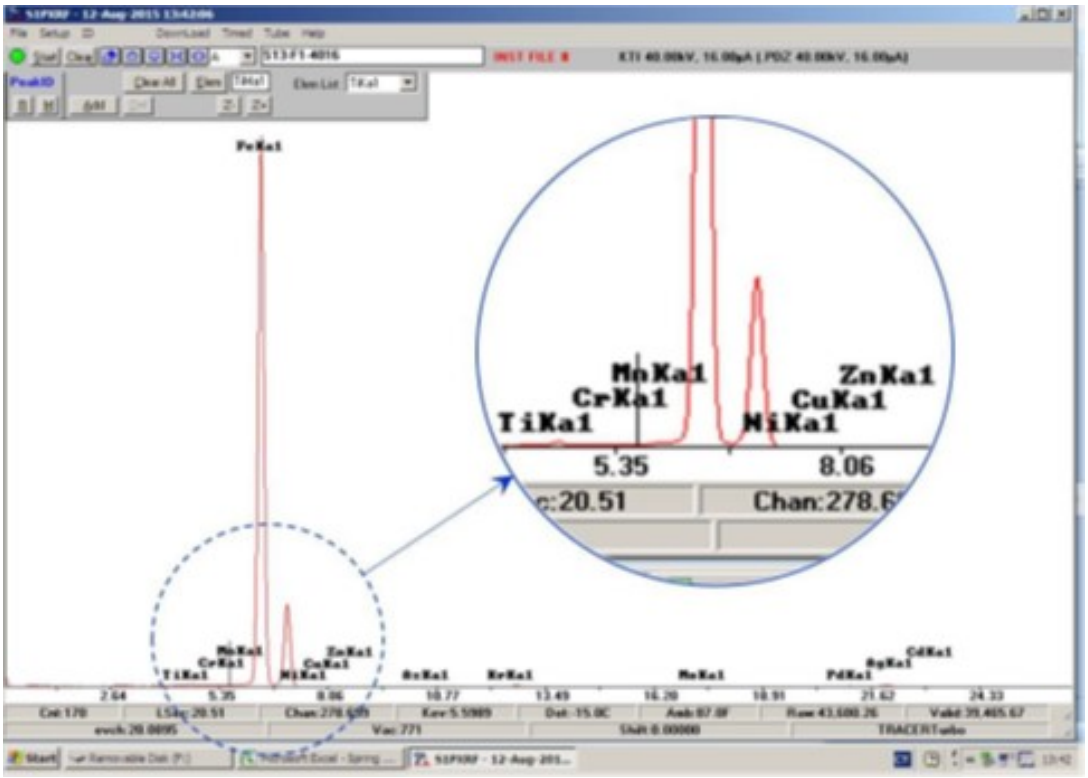

Figure 5
Typical x-ray fluorescence results – this one indicating only the presence of iron.

I also examined the mainsprings under a 400X power microscope (Figure 6) to identify inclusions in the steel and determine their character relative to the dating criteria established by the historical markers; namely the development of crucible steel by Huntsman in 1742. Inclusions were very apparent (Figure 7) and differences in their abundance and size was easily discernible. In general, older mainsprings manifested the expected larger inclusions and a greater abundance of inclu-

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sions as well as less uniform distributions. Unfortunately, since I had no verifiable manufacturing dates for most of the mainsprings I tested, a strong correlation could not be made between manufacturing date and the intrinsic steel characteristics.

Figure 6
Mainsprings were viewed under 400x power microscope to identify the presence of inclusions

The most simple examination method was a visual examination. I divided the visual surface characteristics into three categories: Color, Roughness, and Pattern. Roughness (Figure 8) was divided qualitatively into: Fine, Medium, and Coarse. Pattern (Figure 9) was divided into: Longitudinal Scratches, Angled Scratches, Pitted (small, irregular hollows), and Blotched (a large irregular patch). Colour was divided into three groups: Blue, Bronze, and Silver. As with the microscopic evaluation, without specific information about the actual manufacturing dates of the mainsprings I had for testing, it was difficult to make strong correlations between manufacturing date and specific surface features. However, based on the information given in Blakey, close inspection led to the conclusion that these features, are not the result of corrosive processes, as some have suspected, but are the artefacts of the manufacturing process.

Perhaps the clearest conclusion that can be drawn from this study based on the visual characteristics, is that *mainsprings with these types of features are from the 19th century or earlier.* Future studies of this type should include a greater number of mainsprings and of verifiable age. In a much larger study it may be possible to identify mainsprings with very nearly identical characteristics. This then might lead to further ability to differentiate where and possibly when they were made. Additionally, the manufacturing development of mainsprings should be further studied relative to surface features.

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CASE STUDY

A case study mainspring from a Vulliamy clock circa 1845 (Figures 10 - 12) was one of the twenty examined. The date of the clock is fairly well established from Vulliamy records as close to 1845. This date is post 1839 when manganese is expected to have been added to the steel, however, this mainspring did not show manganese. One possible reason for this may be that migration of the technology was slow. A second possible reason is that the manufacturing date of a mainspring would have to be prior to the date of a clock into which it was installed. Whatever the reason, since there is no manganese present in this mainspring, it can be confidently stated that this was most likely a mainspring original to this clock. This is a good example demonstrating that *the manufacturing age of a mainspring CAN be determined.*

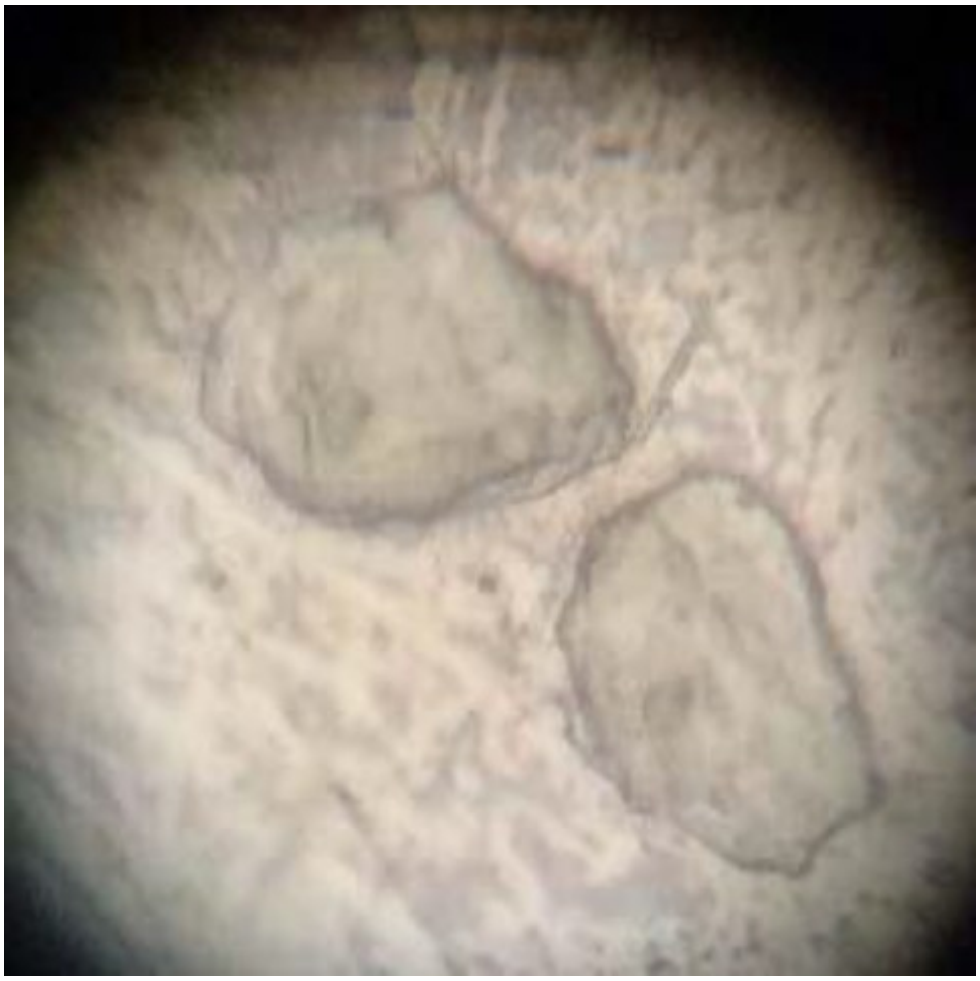

Figure 7
Typical inclusions as viewed through the microscope.

The issue of mainspring replacement in clock repair is multi-faceted and there is no generally definitive answer to the question of whether to replace a mainspring or not. This research decisively concludes that, at least in some circumstances, *determining the age of a mainspring IS possible,* and can provide a significant addition to the understanding of the history of horology.

Beyond the primary purpose of the research, several other points of interest were discovered:

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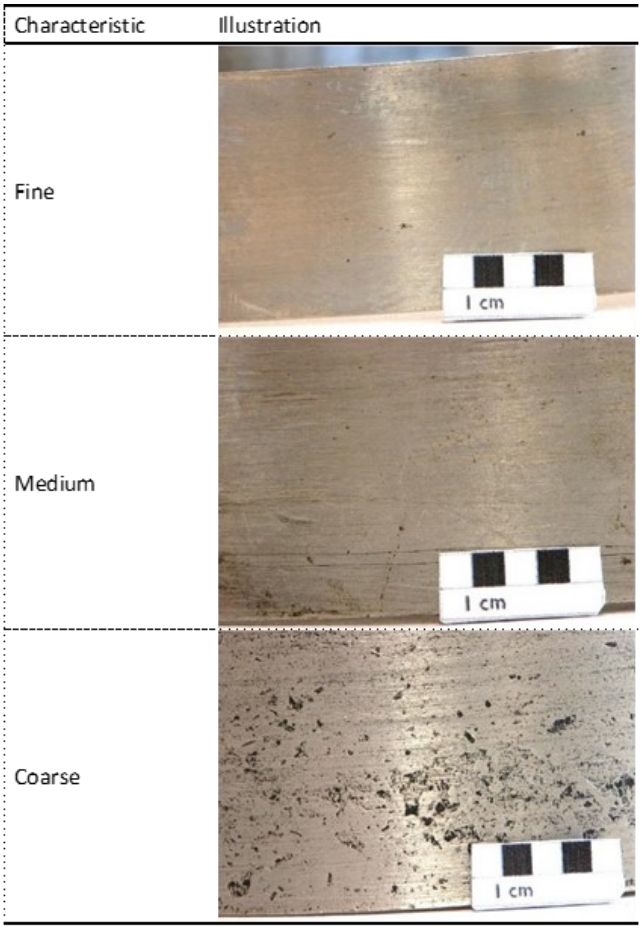

Figure 8
Surface Roughness characteristics were judged to be Fine, Medium, or Coarse.

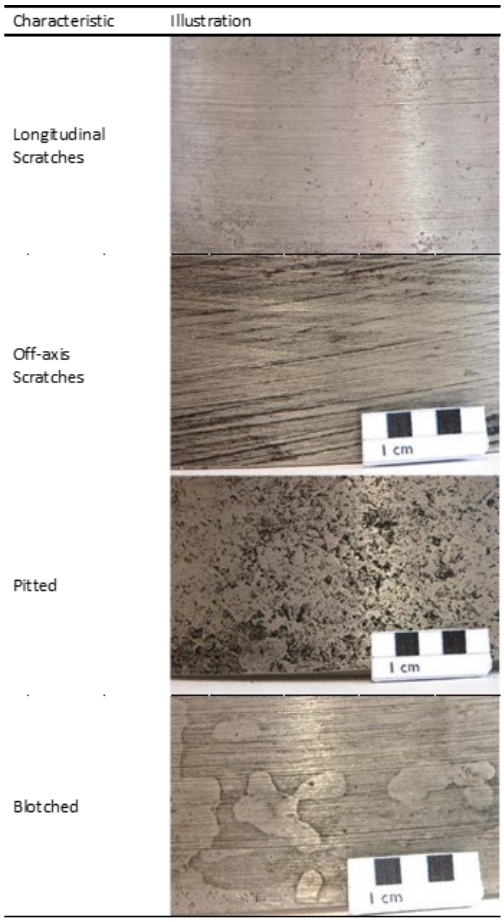

Figure 9
Surface pattern characteristics were described in four ways.

1. Eighteenth century mainsprings would have been significantly coiled even when new—the degree of a mainspring's "coiledness" is not a good determiner of age or ability to sufficiently power a clock.
2. For some periods, visual surface characteristics are equally as good an indicator of age in a broad sense as a microscopic analysis. This puts in the hands of every horologist the understanding and ability to evaluate, to first order, the age of a mainspring. With this visual information alone, a careful decision regarding the disposition of a broken mainspring can be made.
3. An XRF analyzer is useful for determining the presence of manganese in a mainspring which, in turn provides a useful historical marker dating to 1839.
4. Inclusions are relatively easy to see and can provide a useful indication of age.

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Figure 10
The case study Vulliamy clock, known to be made in 1845.

Figure 11
The mainspring from the Vulliamy case study clock

Figure 12
The mainspring from this clock was cracked in two places. A hole had been drilled at the end of the crack in an attempt to prevent further cracking.

Happy Birthday

July

BARB BARNES
ED MALDONADO
RON PALLADINO
CAMILLE SCHAETZEL
MICHAEL SCHMIDT
KATHI SHEFFREY
KIM ST. DENNIS

August

JOHN BERNEY
ALAN BLOORE
PHIL CAULFIELD
JIM CHAMBERLAIN
PAT FITZGERALD
WILLIAM FRANK
ROYCE HULSEY
KEN McWILLIAMS
MERL MEACH
RALPH NAPOLITANO

CHAPTER 190 MEETINGS ARE HELD THE THIRD SUNDAY OF THE MONTH (EXCEPT JUNE AND DEC.) AT VENTURA COLLEGE IN THE CAMPUS STUDENT CENTER

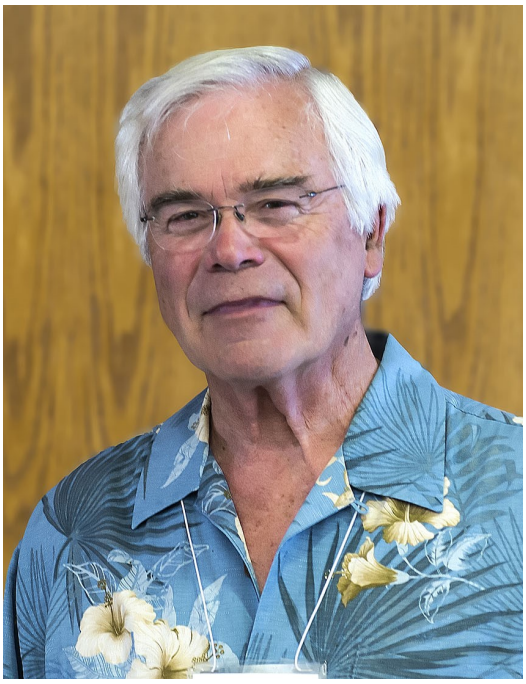
SELLERS MAY START SETTING UP AT 11:30

THE MART IS OPEN FROM 12:00 TO 1:15

THE MEETING STARTS AT 1:15

BIOGRAPHY: MEL JENSEN

BY WALTER PICKETT



Here is Mel's story in his own words

I was born in Raymond, Washington and raised in Willapa, Washington. I grew up a mischievous and curious young boy always into everything and trying to figure out how things worked.

My father was away in the Navy a good deal of the time and back in those days we didn't have a lot of toys - so, I made do with the things I found and re-invented for uses of my own making.

My mother was an excellent seamstress and would sew costumes, without a pattern, for school plays. I think more than anyone else at the time, she was instrumental in showing me how things could fit together and work.

I joined the Navy in 1959 shortly after the Viet Nam war began. After boot camp I went to Interior Communications Electrician school for all on-board communications and metering including the gyro compass. After that I went to 35mm and 16mm Projectionist School and was subsequently transferred to Treasure Island near San Francisco for a year where I ran the base theater and showed movies. The longest movie at that point was also called *The Longest Day* and as I remember, the film broke at the take-up reel so I had to run it out on the floor

Photo courtesy of www.classic-british-motorcycles.com

A Norton International similar to the one Mel restored

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BIOGRAPHY: MEL JENSEN (CONTINUED FROM PAGE 13)

since the film goes through at the rate of 90 feet per minute, so I had quite a pile of film on the floor that I had to repair after the movie was over.

From there I was transferred to the USS Cogswell to patrol off the coast of Viet Nam doing interdiction which was a task of stopping the North Viet Nam fishing boats traveling south for weapons and supplies.

I was discharged from the Navy in 1963 after the Cuban Crisis and returned home to Washington. Shortly thereafter I found myself working at a lumber mill in Yreka, California which was very familiar to me having grown up in logging towns.

In 1964, I reconnected with an old Navy buddy, living in Los Angeles, California, who invited me down to find a better job. As it turned out, this was a good move for me as I landed a job with Xerox as a Technical Representative and continued with the company for 38 years working on high speed laser printers and most everything else Xerox produced.

Photo courtesy of www.classic-british-motorcycles.com

A Velocette Thruxton similar to the one Mel restored

I met my wife of 41 years in 1972 and we were married in 1974. We have two wonderful children; a son who is an ex-Marine and now has a Masters Degree in fine arts and business management and a daughter who has a Masters Degree in Special Education. We also have 4 very busy grandchildren all of which we are very proud.

I retired from Xerox at 62 and became involved with my many hobbies including collecting and repairing vintage British motorcycles and cars, antique radios and of course clocks and watches.

I became involved with the NAWCC in 1970, because I wanted to have a better working knowledge and understanding of watches, clocks, their histories and how to repair them. So I took several field-suitcase classes which has been instrumental in helping me attain some of those goals.

Photos from the May Meeting

EDUCATIONAL WORKSHOPS

Chapter 190 continues to offer our popular ***Introduction to Antique Clock Collecting, Repair & Maintenance*** workshop. Open to members, friends and the public. The only prerequisite for this workshop is "**Interest & Curiosity**" in mechanical clocks. All tools, movements, and knowledge will be supplied. **For further information contact Mike Schmidt (805) 988-1764 or email EagleCreekClocks@msn.com**

Other workshops will be scheduled as interest develops: These may include: ***FSW 302 Wristwatch***, ***FSW 200, 201 and 202 Lathe Workshops***, ***FSW104 Fusee & Vienna Regulators***, ***FSW101 Introduction to American Clocks*** and others.

Chapter 190 Educational committee will soon be offering some new workshops and some new reformatted Field Suitcase Workshops. In addition to new Field Suitcase Workshops we have strong interest in a ***Platform Escapement Workshop*** and a ***400 day/Anniversary Clock Workshop***.

"Repairing Platform Escapements" **- September 24, and 25th, at the Dudley House Museum, 197 N Ashwood Ave. Ventura, CA.**

NAWCC *"Luxury or Lie"* How To Identify Genuine Watches- Nov. 12-14 in Santa Paula

Please let us know what workshops or repair instructions you desire.

For further information on any of the above workshops, contact Mike Schmidt (805) 988-1764 or e-mail eaglecreekclocks@msn.com

"Action is the Foundational Key to All Success"

NAWCC CHAPTER 190

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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

Chapter 190 of the NAWCC
Presents it's latest workshop

PLATFORM ESCAPEMENT REPAIR

Ferdinand Geitner will instruct this important workshop

it will be held at

The Dudley House Museum

197 N. Ashwood, Ventura, CA

September 24th & 25th

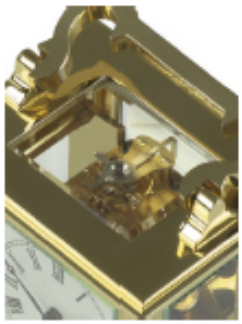
(Saturday and Sunday 9:00 AM to 4:00 PM)

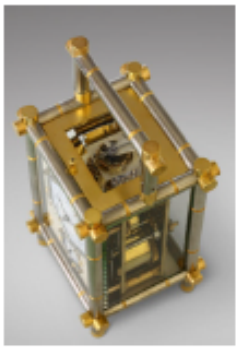
Cost: $200.00, all inclusive

($300.00 FOR NON-NAWCC MEMBERS)

Platform escapements are used in ships clocks, carriage clocks, and other clocks where pendulum regulation would not be practical due to motion or portability. Students should have some experience in clock or watch repair.

Requirements: Students should bring a clock with a removable platform escapement. (No floating balance or other Hermle type clocks. These will be covered in another workshop.) Students should also bring, magnification in the form of: eye loops, clip on loops, or head visors. Magnification should be 5X and 15X. A good set of small screwdrivers will also be required.





Space is limited, and this workshop is expected to fill quickly, so register early. This is a new registration and if you signed up last year, you will have to do so again.

Contact Mike Schmidt to register
Phone: 805 988-1764
e-mail: EagleCreekClocks@msn.com

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