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AMERICAN WATCHMAKERS-CLOCKMAKERS INSTITUTE
SEPTEMBER 2010

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Official Publication of the American Watchmakers-Clockmakers Institute

EDITORIAL & EXECUTIVE OFFICES
American Watchmakers-Clockmakers Institute (AWCI)
701 Enterprise Drive
Harrison, OH 45030
866-FOR-AWCI (367-2924)
or 513-367-9800
Fax 513-367-1414
awci@awci.com
www.awci.com

Donna K. Baas
Managing Editor & Advertising Manager

Katherine J. Ortt
Associate Editor & Design Associate

James E. Lubic, CMW21
Executive Director/
Education & Technical Director

Thomas J. Pack, CPA
Operations Director

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Watchmaking Instructor/
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Horological Times (ISSN0 145-9546) is published monthly and copyrighted by the American Watchmakers-Clockmakers Institute, 701 Enterprise Drive, Harrison, OH 45030-1696. Subscription price for the public is $137.00 per year ($8.50 per copy). Members subscription is $70.00 which is included with annual dues of $137.00. Periodicals postage paid at Harrison, OH 45030 and additional entries. POSTMASTER: Send address changes to Horological Times, 701 Enterprise Drive, Harrison, OH 45030

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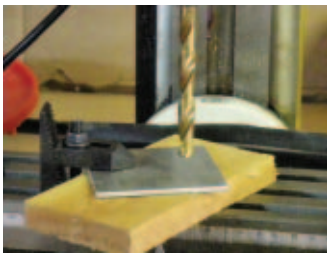

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COVER
This month's cover features the Seiko electronic ink watch

a message from the president

by **Mark Butterworth**

Our 50th anniversary annual meeting was really a special occasion. First I want to thank the Board and the membership for the confidence given to me to serve you as president for a second year. I will do my utmost to not let you down. As promised the meeting was an opportunity to meet with industry representatives and vendors. We had a record number of vendors at this meeting and the showcase was outstanding. I want to thank them for the time and effort they put into this. Cas-Ker opened its doors to us for a night of some great Cincinnati brats, burgers, and beverages. For those of us in this line of work to see how a place can organize and locate a half-million different SKU's of parts is pretty impressive. Just being able to visit with fellow craftspeople I think is worthwhile. The staff at AWCI worked hard this year and we really appreciate that. Thanks to everyone who made this extraordinary event possible.

You are seeing now one of the new projects of the year—a totally revamped *Horological Times* in color. I love it! I think our readers and advertisers will also and I think it will help pull in more advertisers and articles of popular interest. Already in the works for this coming year are new membership cards and posters, material to help our members advertise their association with the AWCI, through decals, etc. We are also working on a new strategic plan to identify our members' wants and needs and stay focused on what we can do to satisfy them. Let us know if you would like to be a part of that committee. Speaking of committees, this is the time of year to sign up. There are sign up sheets in the *HT* or you can contact the office. Updated computer software and possibly hardware are part of the plan this year to help get reports out on time and generally keep track of everything. Of course there will be classes in both watch and clock work. There will also be expanded Face book options you will hear more about later. I do want to mention that it is important that you sign up in our referral database. I get calls regularly asking where someone can find a repairperson in a particular city or even region. The referral directory is free to our members and a terrific opportunity. You do not need to have computer capabilities to be a part of this registry. Just contact the office and they will help you get on the list.

a message from the executive director

by **James E. Lubic, CMW21**

Congratulations to all the newly elected AWCI Directors and Officers: Mark Butterworth will be our President for a second year, Manuel Yazijian is our Vice President for a second year, Henry Kessler will be our IAB Director for a second year, and this will be his first year as Treasurer. Doug Thompson will continue as our Secretary, Glenn Gardner is the Affiliate Chapter Chairman, and Jason Ziegenbein is REC Chairman. I look forward to working with all of you as well as the rest of the Board during the upcoming year.

The October issue of the *Horological Times* is traditionally the issue that we report to our members on the activities of the Annual Convention and Educational Symposium. However I would like to take this opportunity to thank those who participated in the 50th Anniversary Convention and Symposium.

The Rolex ELM Charitable Trust Dinner and Awards Program is the one time every year that we say thank you to all who have been instrumental in donating their time and expertise on behalf of the Institute, thank you to Rolex USA for sponsoring this event and supporting AWCI. Congratulations and thank you to the award recipients.

The ELM Charitable Trust Annual Fundraising Dinner sponsored by Richemont/Baume & Mercier was also a hit. The dinner took place on a Riverboat Cruise along the Ohio River. The weather was perfect for the 115 individuals who gathered for a fun-filled evening of sight-seeing and gaming. Thank you Baume & Mercier for supporting AWCI.

The Educational Symposium was sponsored by Swatch Group USA. Thank you to the Symposium presenters: Dale Coats of Johnson Investments, Tom Schomaker, CMW21; Greg McCreight; Jerry Faier, CMC21; Wes Grau, CMW21, Henry Kessler, Sy Kessler Sales/Renata; Robert Arn and Urs Hani, Witschi SA; Hanspeter Herzog, Ronda AG; and Mark Butterworth, Butterworth Clocks. Thank you Swatch Group USA for supporting AWCI.

Thank you to the following vendors for their participation: Jules Borel & Company, Cas-Ker Company, Eckcells, International Dial, Butterworth Clocks, Horometer USA, Grobet USA, C.R. Time, American Income Life, and Hong Kong Trade Development Council. You made this year's vendor fair the largest and most attended ever for AWCI.

Thank you to Bergeon, Griener/Vibrograf, and Witschi for your support and participation in the overall convention including the trade fair.

Thank you to the other convention sponsors such as Hong Kong Trade Development Council, Bergeon, Eckcells, and Ball Watch Company.

If you didn't attend this year or if you have never attended in the past please mark your calendar for August 3rd through the 7th, 2011. We are already working to make next year a memorable convention for watchmakers, clockmakers and their families.

Finally, thank you to all the AWCI members who attended this year's convention and to all the spouses who put up with the time and effort that these individuals put forth on behalf of AWCI.

I apologize if I forgot anyone. I can assure you that everyone's efforts are appreciated.

questions & answers

by **David A. Christianson, CMW21, FAWI**

Question

Could you please provide any background information on this watch? A customer brought it in without the crystal and hands. She states that it has been in her family for years and thinks the hands were plain and utilitarian in style. We want to restore it to as close to original looking as possible and any history would be appreciated

Bob Crossley
Kansas City, MO

Send your Questions to *Horological Times*
701 Enterprise Drive
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magazine@awci.com

Answer

Your watch movement is a Swiss bar-style movement known as a Lepine caliber. The Lepine caliber has each train wheel supported by its own bridge or cock as opposed to those bar movements that have more than one wheel supported by a single bridge. The Lepine caliber led to a thinner watch that would more easily slip into and out of the tighter clothing styles coming into fashion in the mid-18th century. This style of movement was named after its inventor, Jean Antoine Lepine (1720-1814), a prominent French watchmaker.

Adolph Chapiro of Gif-sur-Yvette, France, classified the various Lepine style movements into six calibers, starting with the original caliber used by Lepine himself between 1765 and 1795 and by other makers until 1815. Your movement would be classified as an earlier version of the Lepine Caliber IV, a movement used from about 1835 to 1850.

The ebauches, or rough movements, from which yours was made, were supplied to various watch finishers or watchmakers by specialized ebauche factories in France and in Switzerland, the largest of which was the Japy factory near Besancon, France. Japy (1800) adopted the Lepine caliber for his and the world's first machine production of watches. The

Continued on page 15.

quartz watches

what does the future hold?

by **Christian Piguet, CSEM, Neuchâtel, Switzerland**

The very first quartz watches were presented at the Neuchâtel Observatory competition in 1967, and took the first ten places in the competition. These watches had been developed by the Centre Electronique Horloger in Neuchâtel. Four chronometers, also quartz-based, occupied the next positions; they were manufactured by Japan and markedly less accurate. The Swiss and the Japanese had arrived at the same time, but the Swiss timepieces had the upper hand.

Working to promote the introduction of new technologies in watchmaking and more specifically the quartz watch in Switzerland, the President of the Fédération Horlogère (FH) Gérard Bauer contributed to the creation of the Centre Electronique Horloger SA (CEH) in Neuchâtel in 1962. The Center had the objective of developing a watch that housed a more accurate resonator than the mechanical hairspring, and powered by an electrical energy source. Astutely, Gerard Bauer focused CEH recruitment on the repatriation of Swiss researchers established in the USA, to develop a totally innovative timepiece: the quartz watch [1]. Later, the CEH became one of the laboratories behind the creation of CSEM in 1984.

The development of the first electronic watch began at the CEH in 1963. Under the leadership of Roger Wellinger, the laboratory had two departments: the circuit department led by Max Forrer, and the semiconductor department directed by Kurt Hübner. The latter had the task of perfecting the manufacturing technology of the watch's silicon integrated circuit, an unknown technology in Switzerland at the time. This activity in fact represented the beginning of the semiconductor industry in Switzerland—a direct result of research into watchmaking [2]. The circuit department had to closely study the watch itself, with the target of manufacturing a resonator and its corresponding drive circuit.

Several competing projects, researching low-frequency metallic resonators and tuning-forks similar to Max Hetzel's Accutron were carried out, but they were not all successful. In spring 1965, Armin Frei and Rolf Lochinger developed a quartz resonator with a markedly higher frequency, around 10 kHz. Then it was necessary to develop an integrated circuit with a quartz oscillator and frequency divider circuits, as well as a motor to drive the hands. The major difficulty was of course achieving the level of miniaturization necessary for a wristwatch,

autonomy of more than one year, while guaranteeing high reliability.

The quartz and its oscillator effectively replace the hairspring of a mechanical watch that oscillates, with a to-and-fro motion, several times per second. Because quartz frequency is higher, it offers certain technical advantages: the damping factor is greatly reduced, and the element as a whole is less sensitive to perturbations. As a result, the quartz watch attained the unprecedented accuracy of a few minutes per year.

The first motor studied was a "stepping motor" that made a step each second. To achieve this, the selected frequency of 8,192 Hertz had to be divided using 13 frequency dividers. To obtain an accurate one-Hertz signal (or one to-and-fro motion per second) so that the watch motor can advance the hands, an electronic circuit is necessary; that is, frequency dividers by 2. Such a divider simply divides its input frequency by 2. This is why current quartz watches have a frequency of 32,768 Hertz (or 2 to the power of 15), and in the case of the first quartz watch, a frequency of 8,192 Hertz (or 2 to the power of 13). The BETA 1 system with 13 frequency dividers using bipolar technology was the first to be deployed in July 1967. However, the high energy consumption of the BETA 1 system was a drawback, and it was therefore abandoned in favor of another motor type, so-called "vibrating", requiring 256 Hz. As a result, the BETA 2 system needed only 5 frequency dividers and featured a consumption rate allowing a 17-month watch autonomy. The 5 frequency dividers were in fact 5 different integrated circuits. Total watch consumption was 15 to 30 times that of electronic timepieces today. At the end of 1967, and well ahead of schedule, the watch prototypes were ready.

The BETA 2 prototypes were submitted to the Neuchâtel Observatory trials, and their certificates were dated 6 December 1967. During a memorable seminar on 19th December of the same year, the prototypes were presented to CEH shareholders. The Japanese quartz watches that had been ranked just behind the BETA 2 models were presented by Seiko. Of complex construction, the Japanese prototypes did not feature any integrated circuits but rather a large number of isolated transistors.

A commercial version of the BETA 2, renamed BETA 21 (Figure 1) was rapidly begun, by grouping together the 110 transistors on the same integrated circuit of 3 mm sides (Figure 2). The first 1000 timepieces were commercialized in spring 1970, and the price of the movement was 700 francs (today it is less than 1 franc.) However, Japan was the first to mass-produce a quartz watch with hands, the Seiko 35SQ, in 1969. The United States launched a quartz digital display prototype in 1969, comprising 44 integrated circuits, but commercialization was only begun in 1972. This

Figure 1. BETA 21

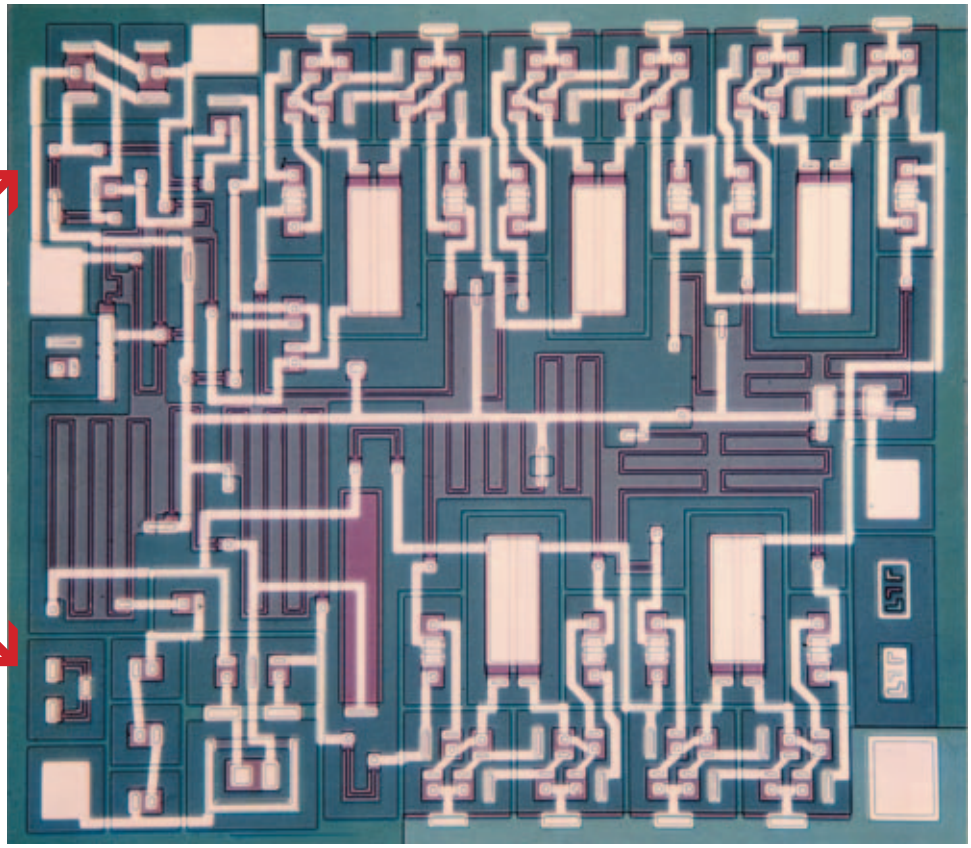

Figure 2. BETA 21 integrated circuit

Pulsar watch by Hamilton consisted of red electroluminescent diodes and a CMOS (and non bipolar) integrated circuit. Nevertheless, in these early years, the impact of electronics remained relatively weak, as by 1974, 96% of manufactured watches worldwide were still mechanical.

Another CEH invention was necessary to attain the perfect quartz watch; this was digital adjustment, invented by Walter Hammer. As a quartz, after manufacture, never oscillates precisely at the correct frequency of 32,768 Hz, a small regulating capacitor called a trimmer was added. To eliminate this supplementary component, the new invention consisted of making the quartz oscillate at a slightly higher frequency and to suppress some pulses from time to time (using an "inhibition" electronic circuit) to obtain precisely the frequency of 32,768 Hz. Comprising a few transistors, this circuit is of course much less costly than the trimmer. Refer to publications [3] and [4] for relevant publications.

The economic crisis of 1973 struck just as electronic watches arrived, and the number of Swiss watchmaking employees dropped from 90,000 in 1970 to 32,000 in 1997. All the bottom-of-the-range mechanical watches disappeared, and it was open to discussion whether Switzerland would be forced to take refuge in niche-market, top-of-the-range mechanical watches. The response came in 1982 with the Swatch, developed by Nicolas Hayek, and electronic watch sales soared to tens of millions per year. The Swiss had virtually decided to produce only electronic watches with hands; that is, analog display. It proved a judicious decision for the image of high-quality Swiss watches. Finally, in recent times we have witnessed the spectacular comeback of luxury Swiss mechanical watches, manufactured in smaller

quantities than electronic timepieces, but clearly surpassing the latter in terms of value.

One may well now ask: what does the future hold for electronic watches in Switzerland? Ideas are plentiful—calculator watches, diary watches, dictionaries, entry tickets, credit cards, passports, cameras, MP3 players, car or house keys, compasses, personal beacon locators, watch pagers, USB sticks, communication with cellular phones, radio time-setting, GPS watches, and wireless PC links. Some of these ideas have been described in publications [5]. Most of these concepts have already been developed in diverse, so-called multifunctional watches, with more or less success, though technical feasibility has clearly been established. It is possible to cite the voice-recognition system (Asulab), the pager watch (ETA), the battery-less watch (ETA Autoquartz, Asulab SALTO), the telephone watch (Swatch and NTT), PC connection (Lund University, Sweden), radio-synchronization (Junghans), GPS (Casio, Asulab), the MP3 watch, the watch connected to a cellular phone (Seiko) and the Emergency Watch (Breitling), with aircraft emergency frequency 121.5 MHz, 48 hours autonomy and 160 km transmitter signal length. But all this does not necessarily rhyme with commercial success, which to some extent remains limited faced with cellular phone competitors as well as electronic devices such as the PDA, Blackberry or iPhone.

Indeed, the cellular phone has become the second device, after the watch, that we nearly all use. It is after all more user-friendly, with larger keys and displays. Consequently, there seems little hope to look forward to any massive Swiss electronic watch production in that segment. Worse still, the cellular phone is becoming a "watch" for many people, in particular the younger generation. Not possessing a watch is currently socially acceptable, but not owning a cellular phone is an embarrassment. 76% of the French population consult a mobile phone for the time, while 56% use its alarm-clock function.

But a mobile phone is functional and "disposable". Unlike the watch, which is a cult object with sentimental value! For these reasons, it's possible to

imagine several new avenues that would, on the one hand, result in very handsome mechanical watches by playing on the beauty and dream aspects, even for electronic timepieces, and on the other hand, would feature useful functions only available using electronics.

In the first category, there are a number of very attractive digital timepieces featuring displays using new breakthrough technologies (flexible displays, electronic ink, polymers, holograms, OLED) to cite just a few. There are, for example, the magnificent digital watches that everyone dreams of owning, like Ventura (Figure 3), Philippe Starck (Fossil) (Figure 4) or the Seiko (Figure 5) with a flexible electronic ink display. The latter is composed of pure white and black particles. It offers the same contrast as a printed page, and is in fact twice as fine as LCD contrast. Furthermore, the display can be read in full daylight. With no backlighting requirements and natural stability, consumption rate remains low. In this first category, it is also possible to include ecological watches created with natural and fine materials, or watches without batteries using truly innovative energy sources.

As for the second category of more technical watches, two important groups to mention include personal medical surveillance watches and communicating timepieces. Medical watches enable the monitoring of certain physiological parameters of the wearer, whether he is ill or undertaking specific sporting activities: consequently, sensors are of primary importance. Such an example is the heart-beat rate, which requires further sophisticated treatment of the signal coming from the sensor to extract the sound signal induced by the movement of the person.

Suunto offers heart-rate and blood pressure monitoring watches, and Phonak has a remote-control watch that wearers can use to regulate personal hearing aids in real time. These examples would seem to indicate that medical companies are more likely to develop such timepieces than their watchmaking counterparts.

Figure 3. Ventura

Figure 4. Philippe Starck

And finally, in the technical watch category are those timepieces able to communicate between themselves. Derived from sensor networks with wireless communication, this is currently a subject of strong interest for the monitoring of buildings and the environment, and in particular for security and surveillance purposes. Concerning watches, it is now important to determine specifically what information they could communicate to each other. They could,

Figure 5. Seiko, the electronic ink watch

for example, adjust themselves to the same time settings. On a university campus, they could be used as locating devices to find students or professors and to supply all the necessary information on others and the campus. This could also be pertinent in businesses, museums or at conferences to locate fellow colleagues. Another application would consist of finding, via wireless communication, mislaid objects such as glasses, keys and cell phones that would also be equipped with a radio. Clearly, diverse applications are possible and of potential interest.

There is no doubt that electronic watches have a future; but today, and in view of the immense success of luxury mechanical timepieces, it is easy to understand why Swiss watchmakers favor the second option.

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Société Suisse de Chronométrie
Journée d'Etude SSC
La Chaux-de-Fonds
May 2009, #60

making a watch part 2

the conception and creation of the escapement

by **Paul Loatman**

I wanted a tourbillon wristwatch with a free sprung balance wheel. My watch would be made using the borrowed gear train from the ETA 6498/97 movements, and so if I wanted this type of balance wheel it meant having to make my own from raw materials. This was a task that at first I thought would be fairly straightforward, but quickly I realized how complex it actually is.

In my pursuit of a balance wheel that could at least compete against those made using modern manufacturing methods, I wound up making four different balance wheels before I was satisfied with both the design and my own manufacturing methods.

The balance wheels in Figure 1 are older designs and each one was flawed in some way. They all had issues that were caused by my manufacturing methods, which over time improved greatly. The first wheel was too thick and didn't even work in the test watch, the adjustable masses were riveted directly into the balance wheel instead of going onto a post, and this caused it to become very distorted from the riveting. The second wheel had a thicker rim because I wanted the hairspring to be shorter, the adjustable masses were held onto posts that were riveted separately, but still this wheel had some distortion from the riveting process. It worked in the watch, but was very far out of round and didn't have a very good amplitude because of the extra material around the rim. The third balance wheel had a thinner rim; the posts were riveted in a way that left it distortion free. However, it was still out of round slightly.

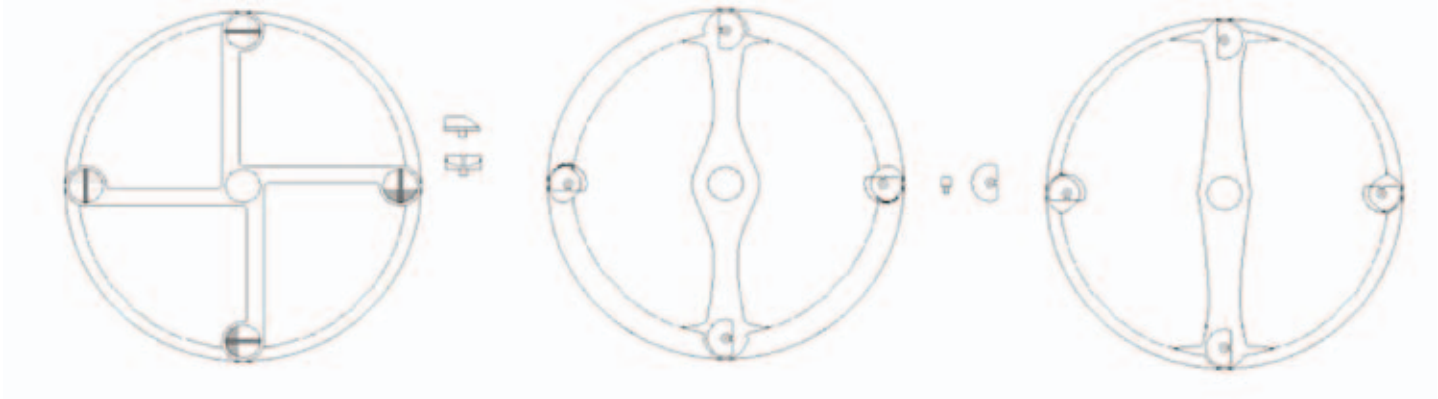


Figure 1. Prototype balance wheels.

The balance wheel in Figure 2 was the final mark of my balance wheel both in design and manufacturing methods. The rim is thinner than any of the previous models, the arm is wider, and the center hole for the staff was bored perfectly concentric with the rim. This wheel worked without issue in the test watch. This final balance wheel was made with 715 nickel copper alloy, the wheel is 14 mm in diameter, the total thickness is 0.7 mm thick, and the arm is 0.25 mm thick.

I start by turning the outside diameter first, then I use a milling attachment to mill out four recesses of approximately 0.5 mm deep and 2 mm wide. They must all be the same depth; these recesses will be almost unnoticeable but will be there in the final product. Four holes of 0.3 mm diameter are drilled in the centers of each recess. Next the inside recess is turned; this is when the rim of the balance wheel is formed. A small hole is drilled in the center and then the piece is cut off at approximately the correct thickness. With my equipment it was nearly impossible to cut it off at the exact thickness, so the unfinished wheel is then turned in a step/wheel chuck to the proper thickness. If you consider the thickness of the arms first and then the total thickness, the rest will follow suit. The arms are crossed out, cut and filed out by hand. The filing must be done very carefully near the rim because a mistake will require starting over completely. The inside part of the rim and the arms are given a frosted finish using a 4-inch diameter steel wire wheel. The top of the rim is polished smooth as well as the outside. This should be done now to insure you don't damage the posts after riveting them. Now the posts for the weights must be made; these are made of brass. The lower part is 0.3 mm in diameter in order to fit the four holes drilled in the balance earlier. The upper part is 0.52 mm, which are cut at roughly the correct length. The lower part is kept longer and is held in a small very precise lathe; I use a 6 mm Lorch. The upper part is turned to the exact length and this allows you to finish the top of the post with a very nice polish. The piece is turned around, the lower portion is turned to about 0.28 mm long, and the end is given a chamfer for riveting. Now the adjustable masses must be made; these are also made of brass. A brass rod is turned down to 1.95 mm in diameter, and a hole of 0.5 mm diameter is drilled into the center. A drill bit of about 0.48 mm must be used to insure the hole is actually 0.5 mm. I use very small cut off wheels to cut approximately 1/3 of the diameter of the rod off its entire length, then with the same wheels I slit the rod to the center hole from the thinnest side. Now all that's needed is to cut pieces of about 0.3 mm off of the length of the rod until you have four weights. These can double as balance weights and timing weights, by removing slight amounts of material from the bottom of each weight until the balance is poised. Of course you should try to make the original balance wheel as poised as possible without the weights. These weights work as timing weights by rotating them inward or outward, you can adjust the timing of the watch by changing the position of mass on the wheel this way.

To insure that the riveting doesn't damage the balance wheel, I made a special stump for my staking

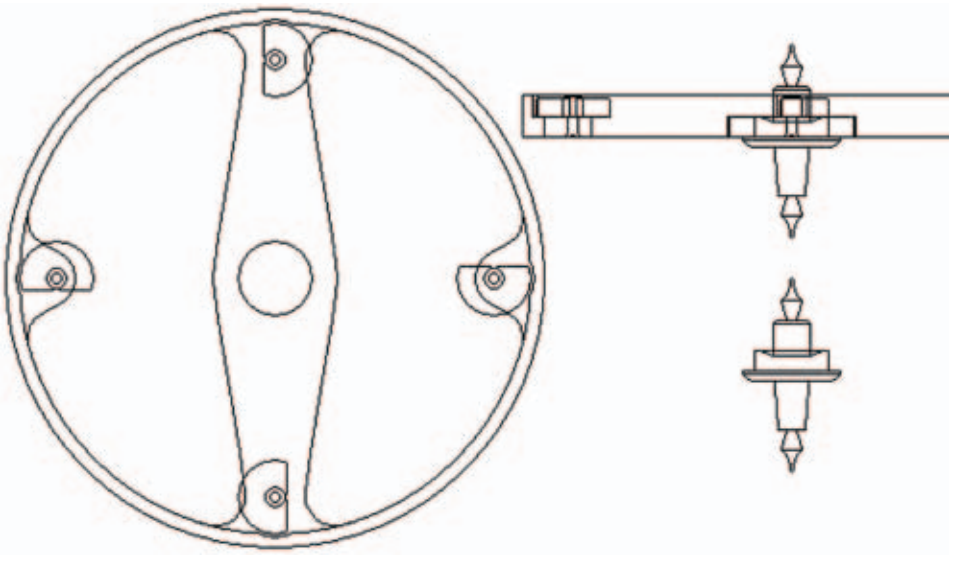


Figure 2. The final balance wheel.

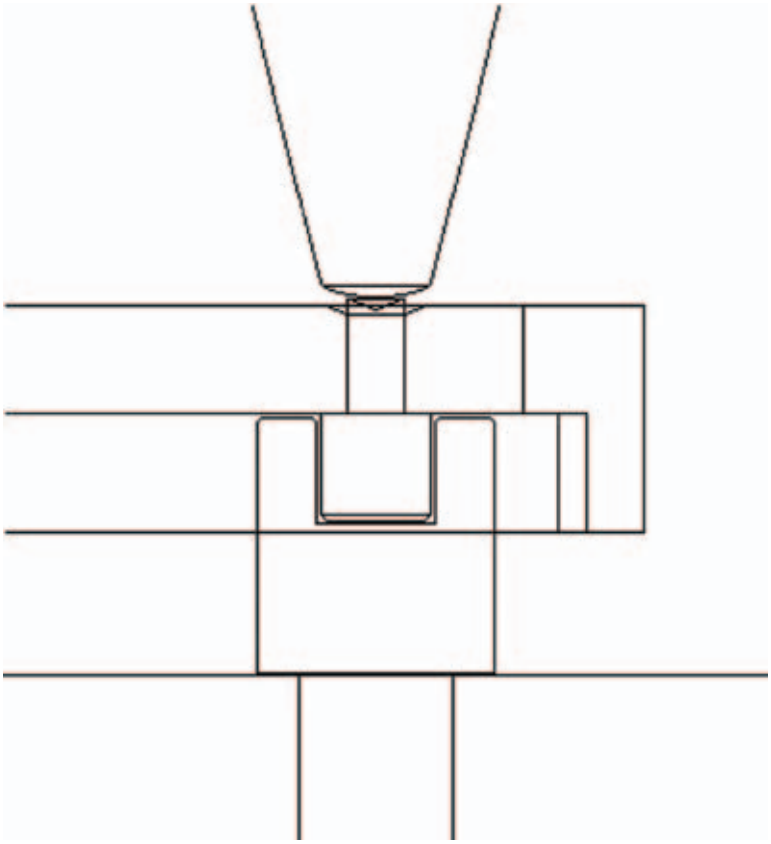


Figure 3. Riveting the post without distorting the wheel.

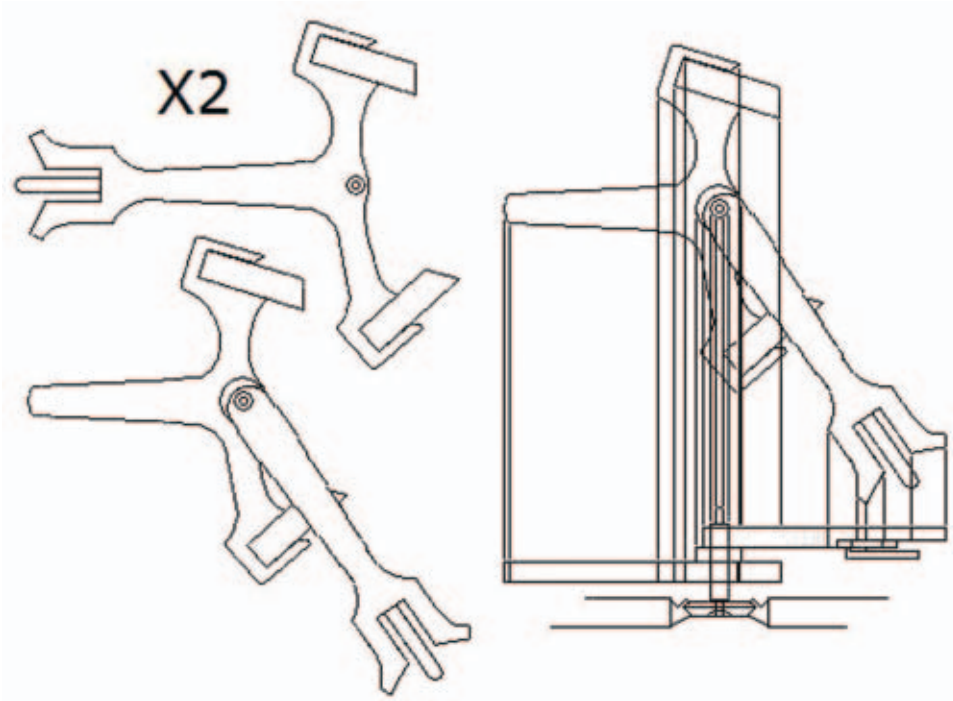


Figure 4. Two pallets made into one.

set. It's made of brass to insure it doesn't distort the post. It has a recess milled into the top of it that fits the head of the posts perfectly, and allows you to rivet the posts without creating any distortion in the wheel by displacing the force from the hammer and stake in through the post and onto the stump, rather than onto the rim of the balance wheel. (See Figure 3.) The bottom side of the four small holes in the balance wheel should be given a small chamfer to keep the bottom of the wheel free of protrusions after riveting.

The original design for my watch would have the escapement parts pivoted in a straight line, also known as a "line of centers". This would have made the space required for the tourbillon very large. However, while I was looking at a pair of pallet forks an idea came to my mind, an idea that would allow me to compact the escapement parts underneath the balance wheel and would allow me to design the tourbillon in a more traditional fashion.

By taking two pallets from the same watch, I was able to use one for the jewels against the escape wheel and the other for the shank and slot for the roller under the balance wheel. It's a very simple method for prototyping a tourbillon if you're using an already existing movement as a canvas. In Figure 4 you'll see the original pallet and the newly made pallet. When adding the new shank onto the pallet, I needed to add a spacer in order to allow the guard finger to

by **David A. Christianson, CMW21, FAWI**

Continued from page 5.

inside dust cover (or cuvette) of your watch tells us that the seller of your watch was T. F. Cooper. Thomas Frederick Cooper (1819-1875) was a well-known manufacturer of watches in London, chiefly for the American market. In the case of your watch he may have finished the watch from a blank Swiss movement himself or, more likely, imported it as a finished watch from Switzerland to sell as a lower priced alternative to the more expensive English watches that he would have made.

The crystal (lens) in your watch would probably have had a flat spot ground into its center to, in theory, help concentrate light during periods of low light levels so that the viewer might be able to more easily see the position of the watch's hand. This crystal is commonly known as a "bull's-eye" crystal.

clear the escape wheel. There was room for everything to fit on the original pivot so it was reused. If one were to make the pallet from scratch, all you would need is a small stone cutoff wheel held in a lathe and a small saw table held in the tool post, mark out a piece of steel with the outline of the pallet you want to replicate, shape the cutoff wheel to conform to the shapes of the jewel slots and the fork slot, and then the rest is quite easy. Even new raw synthetic ruby or sapphire can be acquired if you wish to make your own pallet jewels.

The last thing I needed in order to complete the escapement was the escape wheel. Since I was using the train from an already existing movement, I was able to reuse the escape wheel. However, the pinion was flipped over so that it was underneath the pinion instead of above as normal. The lower pivot on the pinion was also shortened down as far as possible. This is an easy modification.

Now that I had all the escapement parts, I could continue onto the framework that would hold this, the tourbillon carriage. My next article will explain how I make my tourbillon carriage.

clockmaking elements

part 8

deadbeat escapement

by Laurie Penman

Last month I showed the method of developing the impulse faces for any deadbeat escapement. It can be applied to the anchor form, pinwheel, or coup perdu (lost beat). As a result I have the diameter for the circle (Figure 1) that will enable me to make the pallets in metal, as opposed to drawing them on paper or the computer screen. These faces are really quite small and it really is not at all satisfactory to make a drawing on card and use that as a guide, even using very thin brass (shim) and drawing on it will produce inferior results. A simple jig should be made, which will make use of the 47 mm circle in Figure 1, for filing or grinding the surfaces, and the escape should be set up so that the pallets can be checked against it as the filing or grinding proceeds. I prefer to grind the pallets because they can be hardened and tempered (light amber) first, and no further heat treatment is needed after the impulse faces have been ground and polished. Filing, on the other hand, has to be carried out with the metal in the soft condition and heat treated afterwards, which inevitably damages the crisp edges of the impulse faces slightly. Polishing them has to be a hand operation too, and without a jig will introduce errors of angle or "rounding".

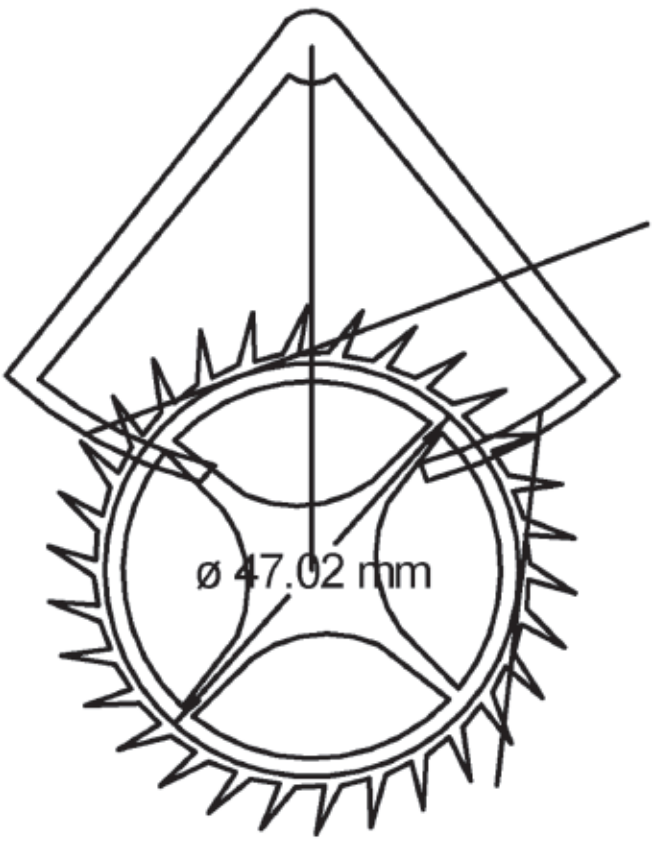


Figure 1

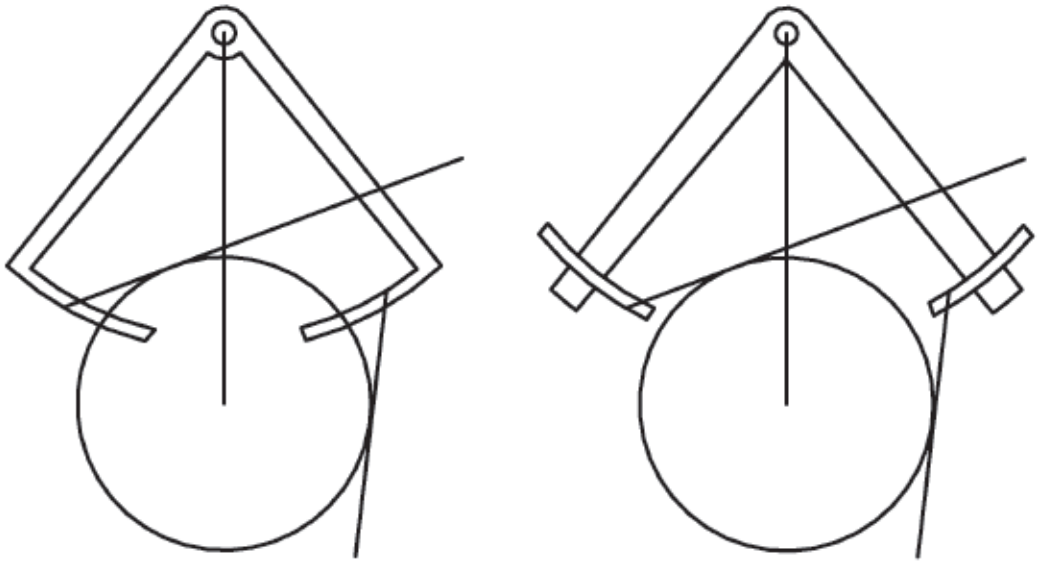


Figure 2

There are two popular forms of the normal deadbeat pallets, the solid and the Vulliamy (Figure 2). The former has to have the lock set during the final grinding and polishing of the impulse faces, but the Vulliamy is adjustable and it is only necessary to finish the faces and then adjust the lock when being set up in the clock movement.

The jig is a simple affair consisting of a plate that can be fastened to the top slide or the cross slide of a lathe and which carries an upright post that the pallets and the 47 mm disk can be slipped onto, giving the arrangement seen in Figure 3. It was made from the contents of my scrap box, a piece of aluminum plate 75 mm square and 2 mm thick, a brass disk about 18 mm diameter with a 3 mm hole in it, and bar brass of 15 mm diameter.

The aluminum plate will form the base for the jig and is drilled to fit on my top slide with the tool post removed (Figure 4). A "stand off" to allow the plate

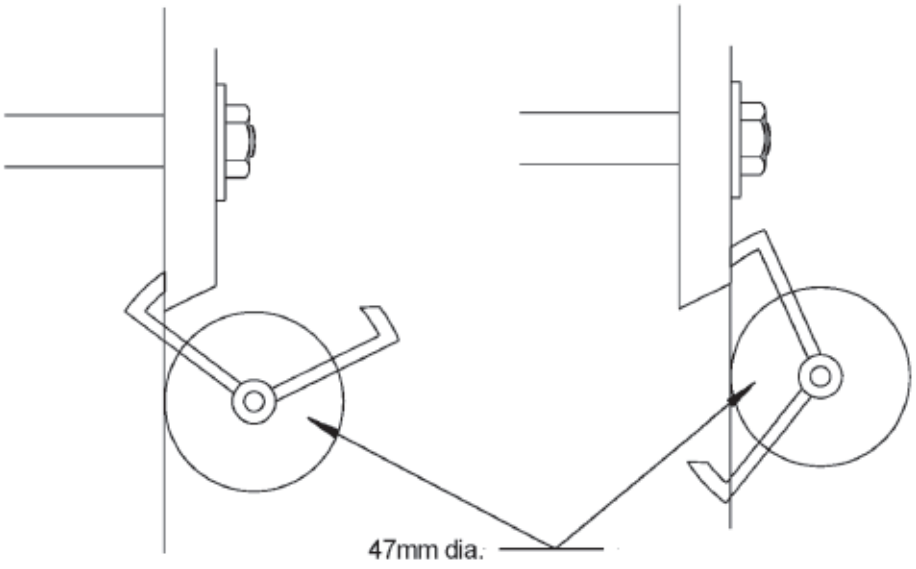


Figure 3

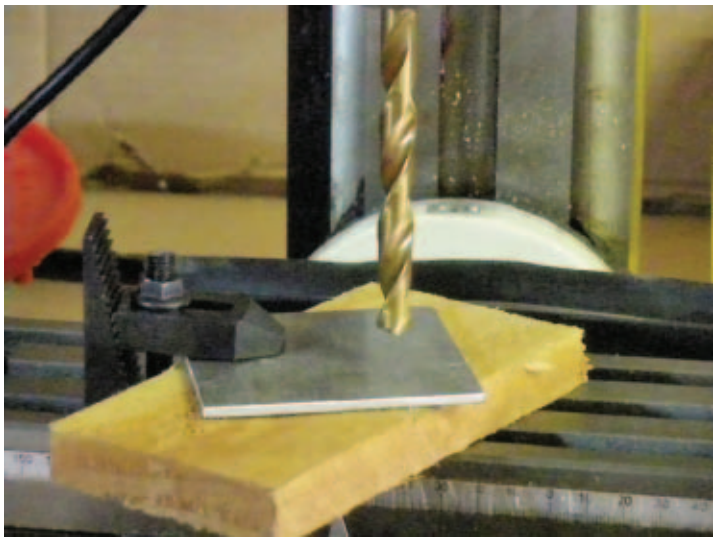


Figure 4

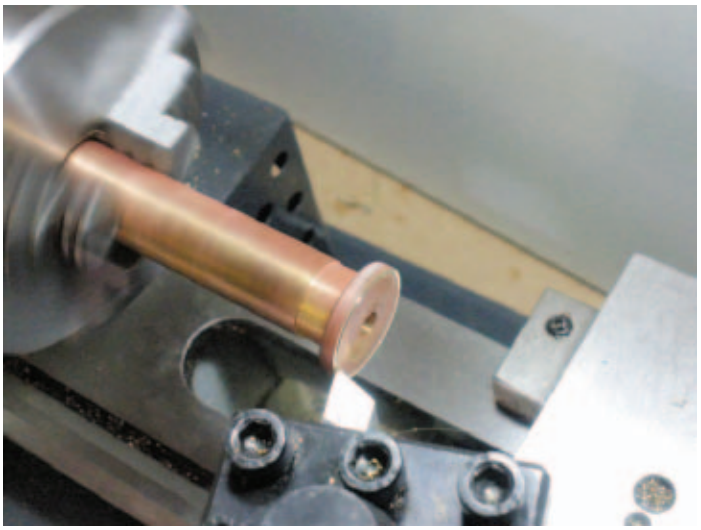


Figure 6

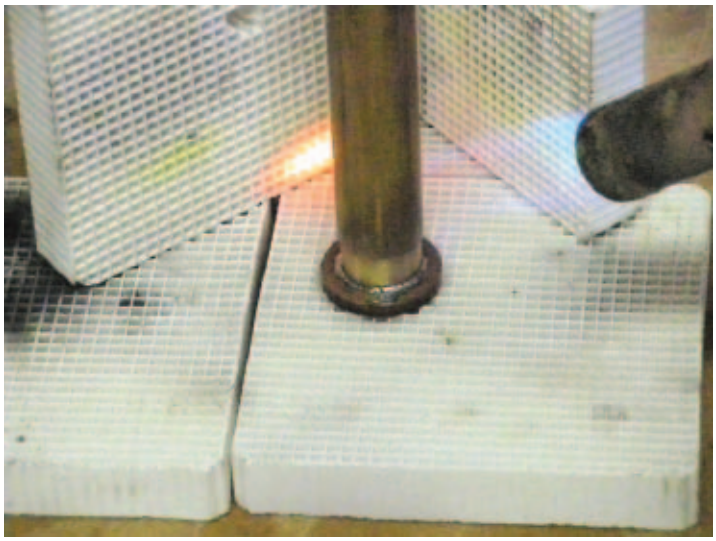


Figure 5

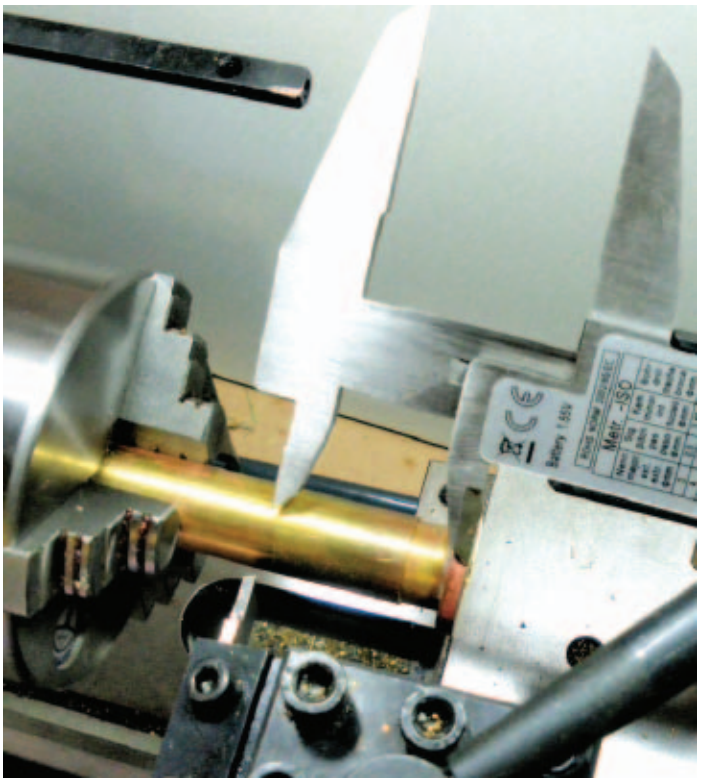


Figure 7

to be clamped down by the tool post handle is made by soldering the disk from the scrap box to a piece of the brass rod, after facing off the end so that it stands upright (Figure 5).

The rod has not been cut to length and is held in the chuck (Figure 6) for facing the disk ready for drilling. Figure 7 shows the overall length required being marked off with a vernier caliper at 35 mm and then

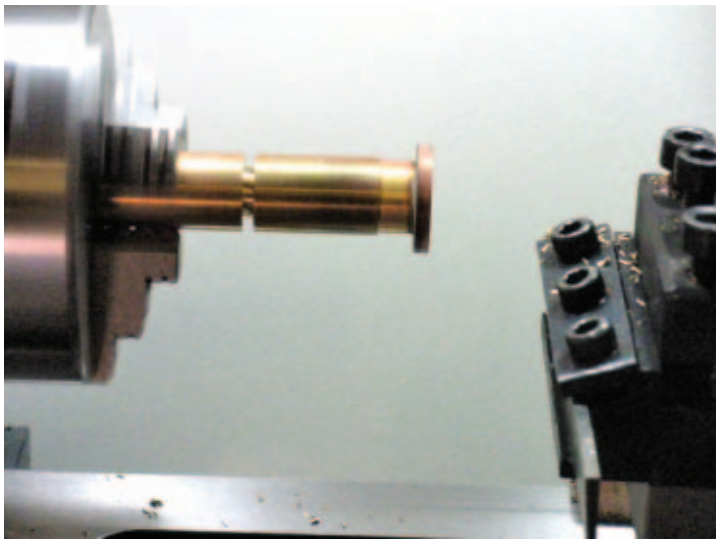


Figure 8

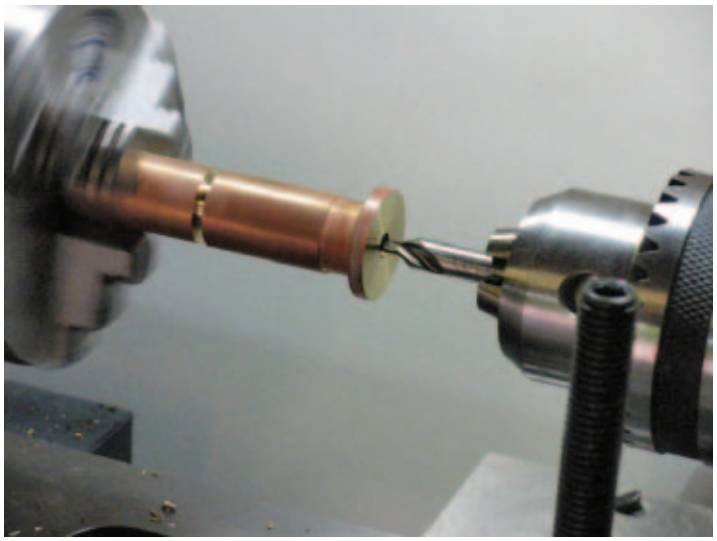


Figure 9

(Figure 8) a parting tool is used to place a groove to mark the length and reach down to the diameter that the drill bit will leave in the next operation. The disk already had a hole in it, which is not running true because no attempt was made to solder the disk concentric with the bar. In order to make the 10 mm drill to bore a concentric hole I have used a center drill to reform the original hole (Figure 9). It is the stiffness

of this type of drill bit that allows it to virtually bore out a small hole that is running off center. The drill chuck needs to be firmly settled in the tailstock and the clamp handle should be tightened until the quill of the tailstock can still be advanced, but does not wobble when gripped and pulled from side to side.

When the 10 mm drill (Figure 10) has traveled 35 mm along the rod, it meets the groove and the "stand off" parts from the rest of the bar (Figure 11). Just to make sure that the hole is complete, the bar is released from the chuck, the "stand off" is gripped in the jaws and rotated by hand as the drill is advanced another few millimeters or so.

The "stand off" is finished. Now the post that the impulse disk and the pallets will rest on has to be made. It will be riveted into the aluminum plate (Figure 13) because the plate is not really thick enough to accept a secure screw thread.

Because there is no great need for concentricity, just "squareness" of the rivet and shoulder, the length of the rivet is judged by holding the plate against it (Figure 14). Its diameter is judged by trying the hole in the plate against the turned part of the rod (Figure 15) until the plate sticks on the rivet without slipping over it. The parting tool is used again to mark the length of the diameter (12 mm), which will support the disk and

Figure 10

Figure 12

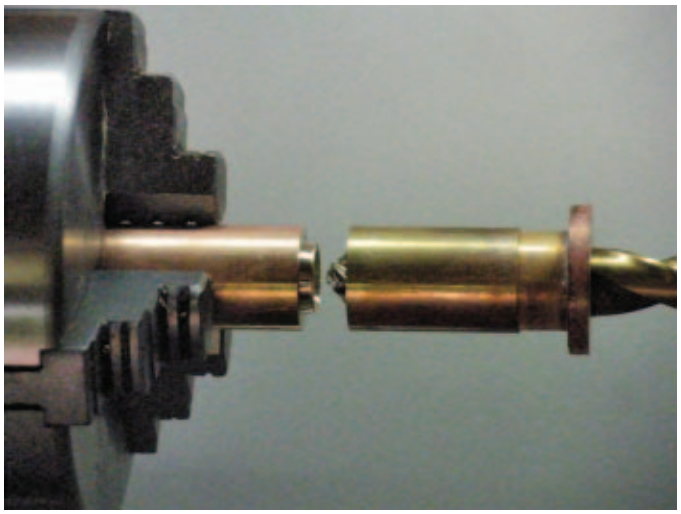


Figure 11

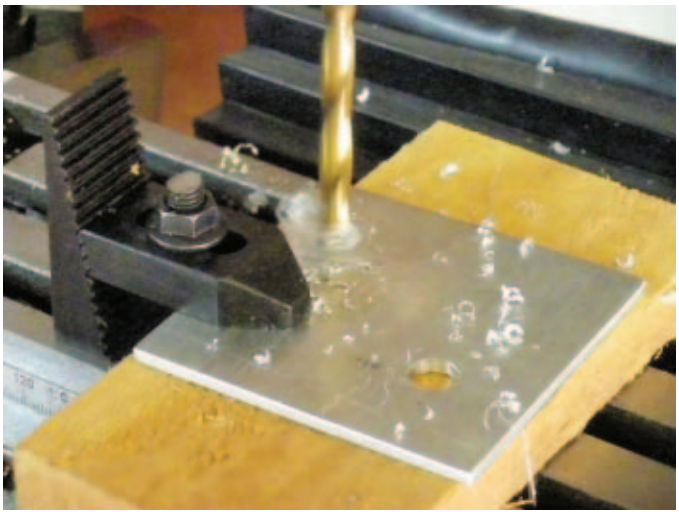


Figure 13

pallets, so that the faces to be ground will be offered on the center line to an abrasive wheel held in the chuck (Figure 16).

Riveting is carried out in, or rather on, the vise. Two of my gear blanks were used to first, tap the plate down against the aluminum plate and second, to support the plate while the rivet is "made" with a ball peen hammer in Figure 17. The finished jig is shown in Figure 18.

Next month I will make the pallets and produce the impulse faces on the jig.

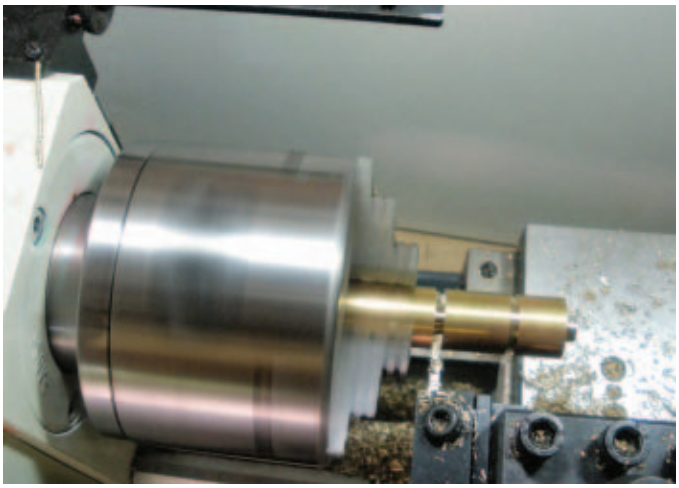


Figure 16

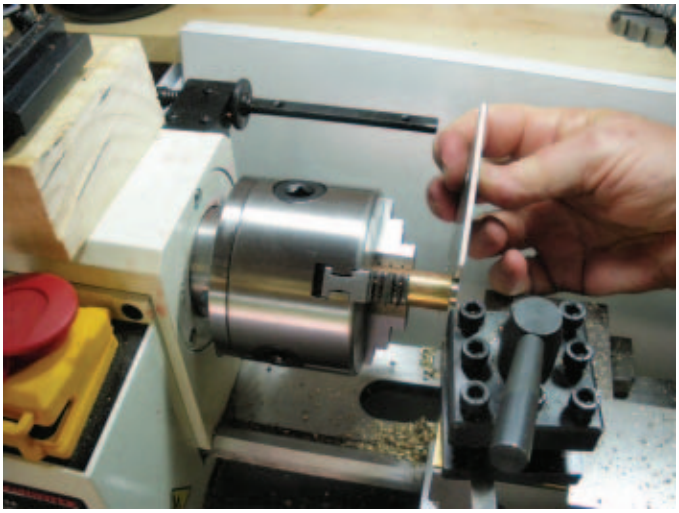


Figure 14

Figure 17

Figure 15

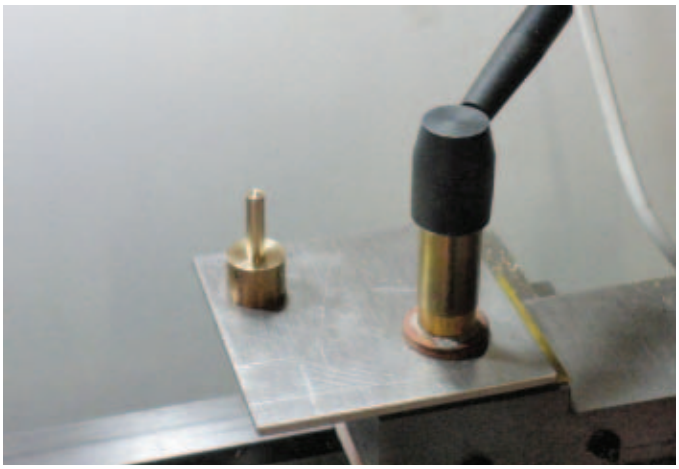


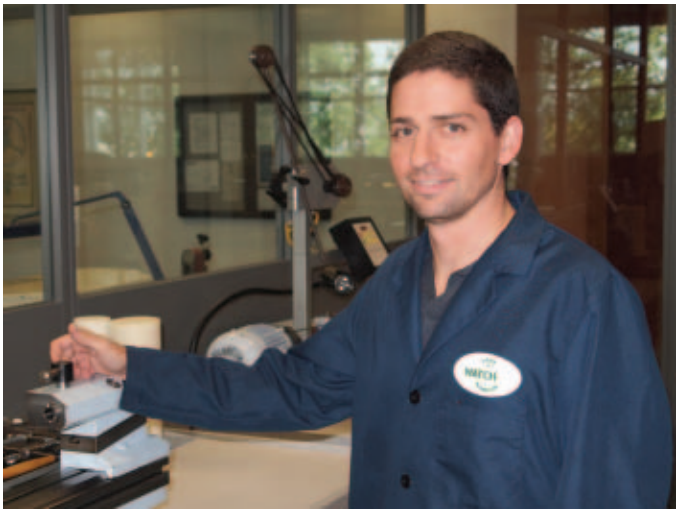
Figure 18

2010 recipients

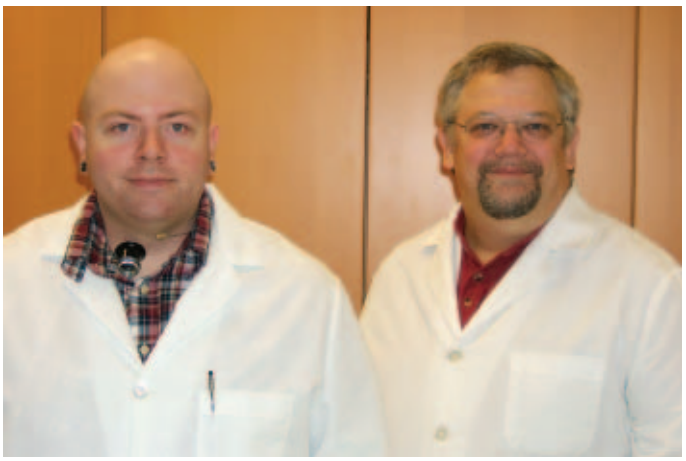
of the Harold and Marie Borneman Greenwood Memorial Fund

The AWCI ELM Charitable Trust is happy to announce the 2010 recipients of The Harold J. and Marie Borneman Greenwood Memorial Fund. The recipients are: Bill Balistreri, Lititz Watch Technicum, Lititz, PA; Ted Bettein, Saint Paul College, Saint Paul, MN; Ryan H. Fox, North Seattle Community College, Seattle, WA; Paul Kamay Oklahoma State University Institute of Technology, Okmulgee, OK; Robert (Rob) Lindsay, North American Institute of Swiss Watchmaking, Fort Worth, TX; Fredrick Neidhardt, Bishop State Community College, Mobile, AL; and Wesley Simmons, Gem City College, Quincy, IL.

The Harold J. and Marie Borneman Greenwood Memorial Fund of the New Hampshire Charitable Foundation was set up to assist watchmaking students. The Fund is maintained by the New Hampshire Foundation. The Foundation distributes the interest earned by the fund annually to the AWCI ELM Charitable Trust. The ELM Trust distributes the fund equally to the schools/students that meet the directives given in Article IV, Section 4 of the ELM Trust Bylaws. The recommendation, made by the REC instructor, may be based on financial need or exemplary student achievement as determined by the instructor.

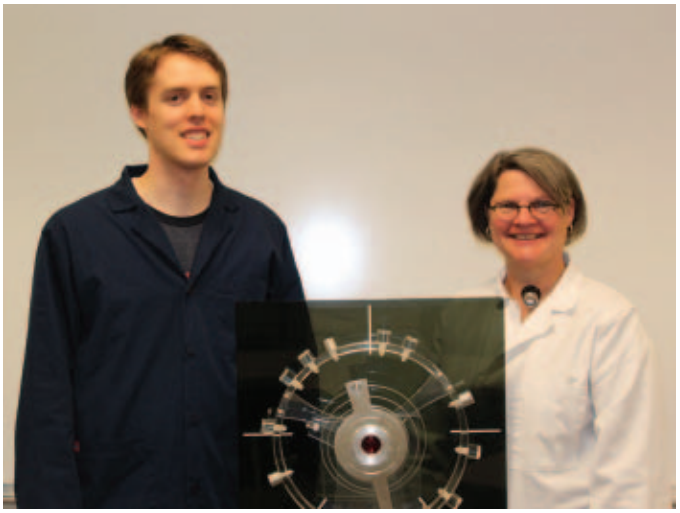


Bill Balistreri, Lititz Watch Technicum, Lititz, PA



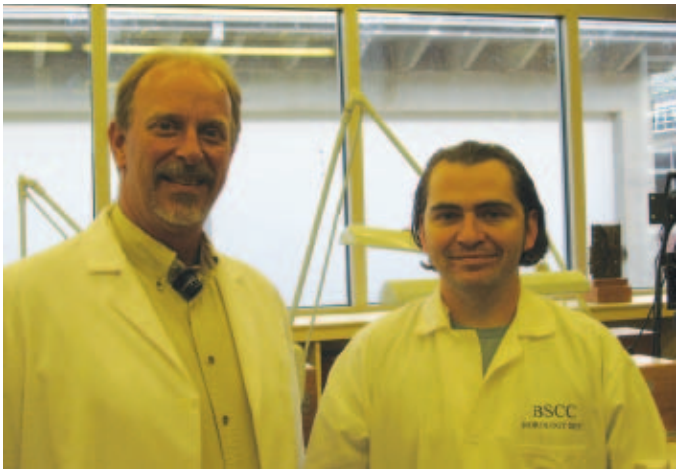
Ted Bettein and Doug Thompson, instructor, Saint Paul College, Saint Paul, MN

2010 recipients



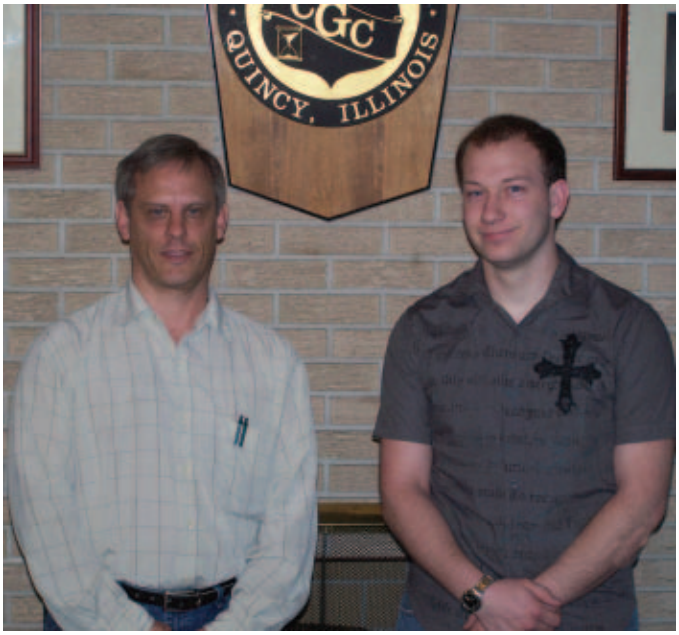
Ryan Fox and Elaine Rolf, instructor, North Seattle Community College, Seattle, WA

Jason Champion, instructor, Paul Kamay, and Jason Ziegenbein, instructor, Oklahoma State University Institute of Technology, Okmulgee, OK



Stephen Lange, instructor, and Fredrick Neidhardt, Bishop State Community College, Mobile, AL

Robert (Rob) Lindsay and Stanley McMahan, instructor, North American Institute of Swiss Watchmaking, Fort Worth, TX



Jim Hush, instructor, and Wesley Simmons, Gem City College, Quincy, IL

to your health

the watchmaker's breakfast

by **John Safranek, MS**

I am sure everyone has heard the expression, "Breakfast is the most important meal of the day." However, it is oftentimes the most "abused" meal of the day, in that working professionals are tempted to skip or skimp on breakfast, or to consume too much caffeine and simple sugars with which to "fuel" the start of their day.

For much of my young life I was extremely physically active. Physical fitness and daily exercise were inherent in the requirements of my outdoor guiding, and so I never thought to skip breakfast. We had a saying; "Lunch starts right after breakfast and ends right before dinner." So you had to have eaten breakfast before you could begin snacking or "grazing" as we called it. This reminded our clients of how important it was to constantly fuel their bodies with healthy complex carbs (such as granola, peanuts and raisins), which were always plentiful in our snack foods on the trail or in a canoe/kayak/raft. We never really ate a BIG, sit-down-type lunch. We had several 'light meals' throughout the day. A BIG lunch puts a BIG strain on your body to digest. Your blood supply is diverted to your stomach for digestion, resulting in a drop in ones creative problem solving and decision making/judgment abilities.

We had another saying; "The best canteen is your stomach," and "Drink before you are thirsty." These expressions reminded our clients of the importance of drinking lots of water, all the time. In guide training it was often impressed upon me that one's thirst mechanism kicks in at around 5% reduction of the body's "generic fluid pool." At 10% dehydration, you run the very real risk of a deadly heat stroke. But something else was equally concerning for me, as a watchmaker.

At 5% dehydration and higher, one's judgment and fine motor coordination begin to decrease significantly. For a rock climber, the results of this can easily spell disaster. But for a watchmaker there are equally grave concerns, as judgment and fine motor skills are extremely critical at the bench—all day long.

Becoming a watchmaker and starting a business from scratch, coupled with an intense focus on many hours of work at the bench each day, led to a few health problems in my middle-aged body. Last year I was diagnosed with pre-hypertension and IBS (irritable bowel syndrome). People who knew me could not believe it. The doctors chalked this up to "normal" aging and a sedentary occupation. The solution to these maladies, according to my physicians, was prescription medications. And these worked great, except for the side effects and cost. Plus, they didn't really "cure" the problems.

So I began looking for a more holistic approach to treating these conditions. Revisiting some of my earlier philosophies regarding nutrition, hydration and exercise, and working with my physicians, I was able to mediate these health problems and more importantly,

get off the medications. How did I do it?

The solutions to my health problems were actually very simple. Here's how I lowered my blood pressure and virtually eliminated IBS. Breakfast and a walk around the block immediately following! That's right. I altered my diet, in the morning.

So what is in "The Watchmaker's Breakfast"?

OATMEAL – Let's start with oatmeal. Yikes! Few people seem to like this stuff. But there are some things you can do to spruce it up, and make it more palatable. I start with very good quality oatmeal. But first, let's review some of the benefits of eating oatmeal.

If you have a cup or more of this stuff, 3-5 days a week, you will just about meet or exceed your requirement for the good type of fiber (soluble) necessary for a healthy diet. Some studies have shown that increasing your intake of soluble fiber lowers cholesterol, normalizes blood sugar/glucose levels (helpful for diabetics and obese individuals), reduces the risk of heart disease and high blood pressure, and also helps reduce the risk of certain types of cancer.

My personal preference is to have rolled oats because they usually cook faster. However, you can get them milled or also "steel cut." Just be prepared to make a big pot once a week and save it, as

cooking steel cut oats can take 30 minutes!

I start with 2/3 cup of rolled or milled oats. Set them aside in a bowl. Next, I add 2/3 cup filtered water to a pot and 2/3 cup of skim milk. The milk can be substituted with more water; however, try it with the milk as the results are much tastier. Next I add Celtic Sea Salt. Just a pinch. Contrary to popular belief, the right kind of salt is good for you, in moderation. In fact, your body is mostly water. Actually, it is mostly salt water. Also your body does not make salt. You have to eat it. The problem is you just eat too much of the wrong kind of salt. So cut it out of your diet, but not out of your breakfast.

Not all sources of sodium and salt are the same. Regular table salt is highly refined, chemically cleansed, and unfriendly to the human body. Unrefined, organic sea salt, on the other hand, is a naturally occurring complex of sodium chloride, which includes major minerals such as calcium and magnesium, and a complete complement of essential trace minerals. This is the form of salt the body is designed to utilize. Use a pinch of it in your milky water. Bring this to a boil, but watch the pot, as the milk in the water will make it boil over.

As soon as the milk water begins to bubble, add the oats and reduce the heat. Cook for the amount of time on the oats box, but do not overcook and do not let it dry out. You want moist and semi-wet oatmeal. This is the easiest to digest and the most palatable.

Serve with a touch of cinnamon spice. I use 1/8 to Ð teaspoon of this. Why? Cinnamon is healthy. Some studies show that it may help to regulate blood sugar, and is an aid in digestion. It has an anti-clotting effect on the blood, helps in certain yeast infections, boosts cognitive function and memory, reduces the proliferation of leukemia and lymphoma cells in the body, provides relief from arthritis pain, and is a great source of manganese, fiber, iron, and calcium. Plus, it can't hurt you, and has no known side effects if taken in small amounts, such as the small amount you are putting on your oatmeal.

What about a sweetener for your oats? You have two choices. Actually, you have three choices. You can forgo any sweetener. However, if you plan to stick to your oatmeal breakfast for long, I suggest you try these sweeteners. First up is volcanic black sugar. Black sugar contains molasses, plus potassium, iron, calcium and other minerals. This is the good stuff, and is used in Asia for all sorts of medical as well as food preparations. You will like it! Alternatively, you can try organic Blue Agave nectar or syrup. Agave has a low glycemic index (GI) so it is much more slowly absorbed by the body than regular, white or even brown sugars. It is 25% sweeter than traditional sugar, so you don't need much to do the trick, which is make the oatmeal taste good enough to keep eating for weeks and months and years.

Under no circumstances are you allowed to use any butter or margarine. Verboten! Don't do it. If the oatmeal is too dry, then consider using whole milk rather than 2% milk. That should do the trick.

While your oats are cooking it is time for the next item on our breakfast menu, and that is freshly squeezed grapefruit (see cautionary statement below). Yes, your grandma ate them almost every morning, for a reason. I use an Omega® "juice machine" (ha ha – not a Swatch product), but any juicer should do the trick. You want to peel the fruit so that you leave as much of the white part of the grapefruit intact as possible, because this area of the grapefruit has very beneficial compounds in it. I use a special tool for peeling the grapefruit, which has a special hook on one end. This makes cutting the rind to peel a snap.

A word of CAUTION is in order. Many prescription and non-prescription DRUGS are affected by CYP3A4 inhibition with grapefruit compounds. Too many interactions to list here; therefore, if you are on ANY prescription medications, talk to your doctor BEFORE you start juicing and/or consuming grapefruits.

Drinking the grapefruit juice when eating the oatmeal was necessary in order to take advantage of a little-known synergistic effect of ingesting these two foods at the same time. I like to juice it fresh every morning to take advantage of the therapeutic effect that grapefruit juice has on the digestive organs. Grapefruit has a host of therapeutic benefits that are well researched, including acting as a protective agent for some forms of stomach and pancreatic cancers. Combined with oatmeal, the grapefruit juice does a double whammy on stabilizing blood sugar almost all day. You may not even notice you are hungry until the mid afternoon! But don't wait until then to have healthy snacks. Mid morning is best for those, when you take your sun break outside. Did you miss your morning walk? Take it during your break or at lunch!

Next up in our Watchmaker's Breakfast is the inclusion of plain yogurt and fresh blueberries. Besides being a great source of calcium and protein, yogurt has many benefits in the colon and in digestion. It also can boost immunity, lower cholesterol and can increase the bioavailability of other nutrients, such as from the blueberries, grapefruit and the oatmeal you eating. Avoid yogurt that reads, "heat treated after culturing," and by all means stick with plain. If you have to spruce it up, add a small amount of vanilla bean extract. However, the blueberries should do the trick here. Let's talk about them for a bit. These little guys have the highest

antioxidant capacity of any fresh fruit. They neutralize free radicals in the body (cancer fighting). They are an aid in reducing belly fat, dissolve "bad cholesterol," are high in fiber, guard against constipation and aid in digestion. The biggest benefit is to your vision. Blueberries have a compound called anthocyanosides, which have been found in clinical studies to delay and/or prevent certain age-related ocular problems such as macular degeneration, cataracts, myopia (near sightedness) and hypermetropia (far sightedness). They also help prevent dryness and retinal infections.

With all this good food, why would you even think about supplementing your meal with vitamins? Well, you don't need to. Most of the vitamins and minerals you need are already packed into this super breakfast. However, in my case, I decided to add several supplements. Specifically I add Omega 3 (EPA and DHA in a 4:1 ratio) to aid in cardiovascular health and immune support, and its reputation of lowering blood pressure. If you use this supplement, be sure to purchase only Omega 3 that is pharmaceutical grade and is molecularly distilled. This will provide insurance that you are not ingesting mercury or other toxins! Next, I add Vitamin D3 supplement, in a 5000 IU dosage, which also is reported to lower blood pressure, as well as potentially provide for calcium balance, boost the immune system, help with insulin secretion, and aids in cell differentiation (cancer protection). Finally, and due to the thoughtful advice from another watchmaker who suffers from Crohn's Disease, I added a pro-biotic supplement. However, after eating this breakfast for several months now, I am finding that I no longer need a daily pro-biotic supplement, as the ingredients in this breakfast are having a profound effect on eliminating my IBS symptoms.

So here is to "Your Watchmaker's Breakfast." May your own special breakfast diet help to keep you healthy and wealthy at the bench!

The Food and Drug Administration have not evaluated this column and its statements, and these foods and products are not intended to diagnose, treat, cure or prevent any diseases. Consult your physician before beginning any dietary or supplement regimen.

"The best six doctors anywhere
And no one can deny it
Are sunshine, water, rest, and air
Exercise and diet.
These six will gladly you attend
If only you are willing
Your mind they'll ease
Your will they'll mend
And charge you not a shilling."
—Nursery rhyme quoted by
Wayne Fields,
What the River Knows, 1990

by **Thomas Pack, CPA**

Let us know your email address, and AWCI will make it worth your time!!

We would like to be able to send updates on classes, events and other important news to all AWCI members, and using email is a very efficient way to accomplish that task. It is very inexpensive for AWCI to do this (that's good for you!!) and it is a reliable and quick method of communicating information (also good for you!!). If you have not received any messages from AWCI, it is almost certain that we either do not have an email address for you, or the one that we do have is either incorrect, outdated or is unable to accept email from AWCI.

We would like to invite and encourage all AWCI members to give us a reliable email address to where we can send these updates. It is important that this email address be one that is frequently checked and does not routinely end up as "full", meaning that it is unable to accept messages. This address must also not be associated with an authentication or challenge process. Our experience has shown that these processes, although well-intentioned, don't work as one would expect.

As an incentive for you to provide us with the address to your valid and regularly checked email account, AWCI is going to give away an "AWCI Gear-Up" merchandise package to five members who have provided us with a valid email address. The "Gear-Up" package consists of the new AWCI bag, an AWCI membership pin, an AWCI polishing cloth, an AWCI pen/pencil holder with built-in clock, and an AWCI window decal. If you have already given us your email address, and are receiving occasional email messages from AWCI, then you need not do anything. If you have not been receiving email from AWCI, then please send in your address. The drawing will take place on October 15, 2010. The only entry requirement is that you supply us with your valid email address. We will match the winning email addresses to the records that we have on file to determine the winning members. Notification of winners will take place via email, so be sure your address is correct and that you get in the habit of checking it!

Once you have provided us with your email address, please take a few moments to make sure that you will be able to receive all emails from AWCI. There are literally thousands of variables that can affect your ability to receive email from AWCI, so we won't describe specifically how to do this in this article. Please make sure that all email from email addresses that end in awci.com is added to your trusted address list. You also need to make sure that all addresses that end with awci.com are not on a spam list, blocked address list, black list, etc.

Please get in the habit of checking your email at least once every few days. You may have inquiries from paying customers who have found you on the AWCI Referral Directory, but can't give you their money because they can't contact you due to a filled-up mailbox!!

We promise not to send you numerous email messages every week, and your address will not be sold to or shared with by any outside party. More information about providing your email address to us can be found by visiting the "Staff" page at www.awci.com.

Seeking Candidates for the AWCI Board of Directors

The committee involved with securing candidates to run for the AWCI Board of Directors is seeking recommendations from the membership. If you plan to suggest a possible candidate, please send that individual's name and background to: Nominations for Board of Directors Committee, AWCI, 701 Enterprise Drive, Harrison, Ohio 45030-1696 or e-mail to: nominatingcomm@awci.com

Each recommendation will be carefully considered by the committee. Candidates will be selected on the basis of their local association or AWCI experience, geographic location, present job status, horological experience, and willingness to serve. The nominating committee will notify each candidate whether they have or have not been selected by the committee by December 30, 2010.

The deadline for membership to nominate a candidate for the AWCI Board of Directors is December 1, 2010 to be considered for the 2011 election.

by **Jack Kurdzionak, CW21**

The Schmooze Factor

AWCI's 50th anniversary convention is now history. Several attendance records were set during this convention. The overall attendance rivaled any convention in recent memory. Our vendor fair had more vendors, more visitors, and lasted longer than any previous vendor fair. The Friday evening riverboat cruise and the Saturday evening awards dinner also set attendance records. Saturday was education day, with numerous seminars presented all day long, only pausing a short time for lunch. One of our affiliate chapters, The Chronometer Club, presented an all day, case and bracelet-refinishing seminar. AWCI staff and volunteers who made all this possible were more than pleased with the success of this convention. However, there is far more to a successful convention than attendance statistics. Successful conventions also need to be judged by the schmooze factor.

But, just what is schmooze? One could ask that legitimate question. The etymology (origin) of schmooze comes to our language from the Yiddish shmuesn, literally meaning talk. Webster's dictionary defines schmooze as: to converse informally: chat; also: to chat in a friendly and persuasive manner especially so as to gain favor, business, or connections.

Conventions present a unique opportunity to informally meet with and talk with colleagues from many diverse segments of our profession. Bench watchmakers and clockmakers, and teachers attended our recent convention from several schools of watchmaking, service center managers, and spare parts distributors. Many prominent Swiss firms that distribute tools, testing equipment, and watch movements considered our convention important enough that they sent representatives from Switzerland to this convention. Numerous watch manufacturers and distributors were also well represented. Two representatives from the Hong Kong Watch and Jewelry Fair were on hand to invite all of us to visit their exposition in Hong Kong.

In addition to the educational offerings, the attendees had a unique opportunity to informally meet, discuss, and share information about our profession. In other words, they did a lot of schmoozing. It took place over dinner, in between educational offerings, and especially in the hospitality room often continuing well after midnight. Each evening, our hospitality room volunteers, Ron Price, Brad Wellmann, and Chris Carey politely asked the schmoozers to leave the room so that it could be properly closed and cleaned.

It is impossible for any accountant to sort out the value of attendance at a professional convention; most of them would agree that the benefits, both tangible and intangible, of attendance far outweigh the costs associated with attendance. How can one place a dollar value on the knowledge acquired by attending the various educational programs? Who can say how much time will be saved by the people who viewed, handled, and purchased new tools and test equipment at the vendor fair? Finally, no dollar value can ever be placed upon the opportunity to schmooze with scores of people who all earn a living in some facet of the watchmaking and clockmaking profession.

Most important, far above any monetary consideration, is the opportunity to meet old friends and meet new ones who all share a common interest. Why not plan to attend the next convention so that you too can continue your education and schmooze with other professionals at the same time.

Jack Kurdzionak

Movements and the Price of Gold

The price of gold has trended steadily upward for many months, prompting many people to sell their unused or worn out karat gold watches to buyers of scrap gold. These buyers seldom have any interest in a gold watch other than the profit obtained by reselling the scrap gold to a gold refining company. After

buying a gold watch, these buyers strip the watch-case of any non-gold component. Very often, the movements go into the same trash can as the strap, spring bars, crystals, and crowns. Many dedicated watchmakers are distressed to learn the fate of these fine old timepieces. While very little can be done to prevent the scrapping of the cases, something can be done to salvage the movements, many of which can be used as a source of spare parts. This is especially valuable in the case of movements for which spare parts are scarce or almost non-existent. Take advantage of this unique opportunity by contacting some scrap gold buyers and ask them to save the movements from scrapped watches for you. Make it more interesting for the gold buyer by offering to dismantle the gold watchcases and protect the integrity of the movements at the same time. Offer a few dollars for these movements to make the transaction more lucrative for the gold buyer than it would be if the movements were simply tossed out in the trash. Protect our future repair business by preventing the loss of some irreplaceable movements.

Jack Kurdzionak

Expensive Crystals Vs. Quality Tools

Long ago, when a watchmaker broke a crystal while it was being installed, he would say "Oh $&#@" or more politely "Aw shucks", before proceeding to replace it at a cost of $1 or so. You do not need

to be told that crystals now cost more than a dollar or two. It is not unusual to pay $150 or more for a domed, genuine factory brand, sapphire crystal. When a watchmaker or technician breaks one of those expensive crystals far stronger language than "Aw shucks" will be heard reverberating throughout the shop. Any crystal can be broken while servicing a watch. This may be due to: 1. carelessness, 2. improper fitting techniques, or 3. utilizing unsuitable or poor quality tools to fit the crystal. The first two causes can be eliminated by exercising caution and utilizing proper watchmaking skills. The third cause, poor quality or unsuitable tools, can easily be remedied by obtaining quality tools to properly service crystals.

Watchmakers, who provide service to retail jewelers, are often called upon by their retail clients to replace crystals which they, the retail jewelers, have broken during the course of battery replacements. The jewelers manage to open the watchcase, fit a new battery, and then proceed to damage the case or crystal while trying to close the case. Many of these retailers are still trying to close cases with cheap case closing pliers or very inexpensive case presses costing $20 or $30. These tools will close some cases, but in many instances they will cause hundreds of dollars worth of damage to a watchcase, crystal, or both. Even worse than paying for a broken crystal is when one needs to buy a replacement case, costing upwards of $1000 or more, because the original case was damaged by poor quality tools.

It does not take a CPA to calculate that a few broken crystals at $150 each or a $1000 watchcase will cost far more than a quality case and crystal press sold by our tool suppliers.

Quality case closing tools are an investment that will pay dividends during their entire useful life. Cases will be closed without incidental damage. Crystals will be fit without unnecessary breakage. Time will be saved by completing these tasks in less time than it would take using low quality or improper tools for the job.

If you are still using an inadequate case and crystal press and are reluctant to buy a new one, consider the cost of a few crystals, or worse, a watchcase or two. Then check with your tool supplier and see what Horotec and Bergeon have to offer to make your life easier and your work better.

Jack Kurdzionak

You Are Invited

Do you have a solution to a watch or clock repair problem that you want to share with our membership? Do you have a question about a repair problem you would like to ask? I invite you to participate in this column with your suggestions, questions, and comments. It is easy. Just email me at AWCI <magazine@awci.com> or write using the old standby known as the postal service. You can even fax me at 513-367-1414.

I will do my best to help you help the membership. By sharing your questions and suggestions, all of our members can benefit from our combined knowledge and experience. The ideas, tools, techniques and products presented in this column are suggested by the author and contributing members and are not endorsed by any manufacturer, supplier, advertiser or AWCI itself.

new members

Florida
Gazzia, Antonio—Ocala, FL*

Illinois
Alvarez, German—Northbrook, IL*

Michigan
Murphy, Pat—Muskegon, MI*

Ohio
Snelly, William A.—Hinkley, OH*

Pennsylvania
Shiha, John—Lititz, PA*

Texas
Camacho-Hodges, Elvira, CW21—El Paso, TX*

Virginia
Alave, Guido C.—Vienna, VA*

*AWCI welcomes back these individuals who have chosen to re-instate their membership.

AWCI Academy of Watchmaking Class Schedule

AWCI is offering a series of 5-day watchmaking classes. Each 5-day block will cost $725; 3-day block is $435.00 All classes are held in Harrison, OH. For additional information call toll free 1-866-FOR-AWCI (367-2924), ext. 303 or e-mail education@awci.com. Class information is also available online www.awci.com.

September 13-17, 2010	Balance Staffing & Timing
September 20-24, 2010	Modern Automatic Watches
October 11-15, 2010	Basic Quartz Watch & Quartz Chronograph Repair
October 18-22, 2010	Modern Mechanical Chronographs, Servicing & Adjusting
January 3-7, 2011	Modern Mechanical Chronographs, Servicing & Adjusting
January 31-February 4, 2011	Modern Automatic Watches
February 14-18, 2011	Basic Quartz Watch & Quartz Chronograph Repair
February 28-March 4, 2011	Servicing & Adjusting the Swiss Lever Escapement
March 7-11, 2011	Balance Staffing & Timing
April 11-15, 2011	Modern Watch Lubrication

AWCI Watch Repair Course schedule is subject to change.
Seats may become available for the classes; please contact AWCI to be added to the waiting list

AWCI 21st Century Certification Exam Schedule

Visit AWCI's website for complete information on the 21st Century Certified Watchmakers Exam. To register for an exam or for more information call toll free 1-866-FOR-AWCI (367-2924), ext. 303 or e-mail education@awci.com.

October 4-7, 2010	AWCI Training Facility	Harrison, OH
November 1-4, 2010	AWCI Training Facility	Harrison, OH
December 6-9, 2010	OSU Institute of Technology	Okmulgee, OK
December 13-16, 2010	Saint Paul College	Saint Paul, MN
January 10-13, 2011	AWCI Training Facility	Harrison, OH
February 7-10, 2011	AWCI Training Facility	Harrison, OH
March 14-17, 2011	AWCI Training Facility	Harrison, OH
May 23-26, 2011	AWCI Training Facility	Harrison, OH
June 13-16, 2011	AWCI Training Facility	Harrison, OH
July 11-14, 2011	AWCI Training Facility	Harrison, OH
September 19-22, 2011	AWCI Training Facility	Harrison, OH
October 3-6, 2011	AWCI Training Facility	Harrison, OH
November 7-10, 2011	AWCI Training Facility	Harrison, OH

AWCI Watch Certification schedule is subject to change.
Seats may become available for the exams; please contact AWCI to be added to the waiting list

AWCI 21st Century Certified Watchmakers & Clockmakers

AWCI congratulates these members who have successfully completed the AWCI 21st Century Certified Watchmakers exam and the AWCI 21st Century Certified Clockmakers exam.

Certified Watchmaker 21

Adams, Wilfred J., Jr.—Butler, PA*
Blaszczyk, Michal—Gainesville, FL
Borton, James—Lititz, PA
Brunski, Joe—Phoenix, AZ**
Chinoski, Scott—Manheim, PA
Cox, Brittany—Seattle, WA
Creel, Jonathan—Round Rock, TX
Donia, Emily—Leola, PA
Gichi, Mohammad—Boca Raton, FL
Hanke, Dan W.—San Antonio, TX
Kelly, Christopher—Fremont, CA
Kohn, Edward—Milwaukee, WI
Little, Jonathan—Wilmington, NC
Martin, Jeremy—Lancaster, PA
McConnon, David—Seattle, WA
Meester, Travis—Lititz, PA
Nguyen, Anthony—Lancaster, PA
Ridley, Bob—Arlington, TX
Rysko, Jorge—Sarasota, FL
Smith, Adam—Lititz, PA
Stock, Richard—Seattle, WA
Vara, James—Apple Valley, MN
Zimmerman, Drew—Lititz, PA

*Passed exam in 2008 (name was not submitted for publication)
**Passed exam in 2009 (name was not submitted for publication)

Certified Clockmaker 21

Ebenstreit, Karel—Port Elgin, Ontario, Canada

New Requests

Seiko Lassale Movement
Richard Mazza, Van Nuys, CA, is looking for a good Sekio Lassale movement with all parts, movement #5A54.

Rolex 180 Setting Bridge
Mike Soni, Mount Prospect, IL, is looking for a source for a Rolex 180 setting bridge, size F.

Items Still Needed

Universal Geneve Center Wheel Marty Kale, Brookline, NH, is looking for a source for a Universal Geneve center wheel.

Patek Philippe 8180 Detent Lever
Donald Yax, Howell, MI, is looking for a source for a detent lever for a Patek Philippe 8180.

Responses

Telechron B13 Rotor
Many AWCI members have responded to the request from Richard Adams, Nashua, NH, for a Telechron B13, 1 RPM rotor (M3609). Henry Livesay, Sr., Livesay's, Tampa, FL, called to say he had one left in stock! We also received information from Brien Dews, Rockford, MI; George Jones, Troy, NY; and Aubrey Ward, Indianapolis, IN.

Seiko Cannon Pinion
Mike Soni, Mount Prospect, IL, was able to supply a Seiko 7123A cannon pinion for Marty Kale, Brookline, NH.

Do you have information regarding this month's requests? Do you need information about one of this month's responses? If so, send your information or requests to: ***Horological Times*** Bulletin Board; 701 Enterprise Drive; Harrison, OH 45030-1696; Toll-Free: 1-866-367-2924, ext. 307; Phone: (513) 367-9800; Fax: (513) 367-1414; E-mail: dbaas@awci.com

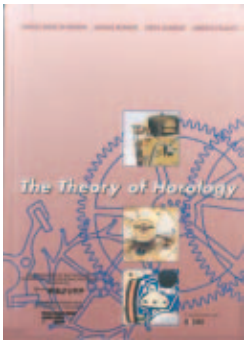
Technical Discussion & Parts Forum

The American Watchmakers-Clockmakers Institute Technical Discussion & Parts Forum is available online at www.awci.com Click on Technical Discussion & Parts Forum in the blue box. Guests are free to browse our topics and posts but only validated AWCI members will be able to actively post messages and communicate with one another via private messaging.

The purpose of this board is to aid our members in finding watch parts, clock parts, tools and discusss technical aspects of watch and clock repair. This board is not open to generic advertising posts; therefore, web addresses and email addresses should not be included in public messages.

Recommended Literature for AWCI's CW21 Examination

The Theory of Horology
The Theory of Horology is a hardcover book with 360 large semi-glossy pages of 8" x 11Ð" and printed in full color. This book is a theory on horology pertaining to watches and clocks. This book is not a detailed guide of how to repair a watch or clock, but from the descriptions given and from the detailed line drawings of all types of timepieces, one can easily deduce methods of repair and re-assembly. The Theory of Horology is currently the "bible" of every novice and even the well seasoned watchmaker, clockmaker, and student. It ends with an eight (8) page section on exercises (with answers given of course) which is quite interesting.
RETAIL: $194.95 AWCI MEMBERS: $175.46



The Modern Watchmakers Lathe and How To Use It
By Archie B. Perkins, CMW, FAWI, FNAWCC, FBHI
A course in watchmaking, clockmaking, and repairing would not be complete without adequate instruction and practice in using the watchmakers lathe as well as instruction and practice in using saws and files. When restoring antique watches and clocks, the restorer must be skilled in the use of the lathe, saws and files to make and alter parts to fit the mechanisms. Parts are not always available, or available to fit, and must be altered or made from raw materials. This book is intended to teach these skills and to serve as a textbook for schools as well as for students of on-the-job training programs and hobbyists. This book has more than 400 pages with 548 illustrations. These illustrations include 267 photographs and 281 hand made line drawings. All of these illustrations were made by the author. The book also has eleven tables. There are 25 chapters in the book. Each chapter has a summary, questions about material in the chapter, and a reference guide for further reading.
RETAIL: $79.95 AWCI MEMBERS: $71.96

The Watch Repairer's Manual
By Henry B. Fried, CMW, CMC, FAWI
This book is frequently used as the textbook for courses in watch and clock repair. It is ideal for individual study as well. Published in 1986, the 4th edition includes the six chapters on case setting and winding systems, motor barrels and jeweled main wheels, the verge fusee watch, repairing fusee chains, how to make a verge (staff), and the duplex escapement. A total of 26 chapters comprise this 456-page book, along with a glossary, appendices, many illustrations.
RETAIL: $43.99 AWCI MEMBERS: $39.59

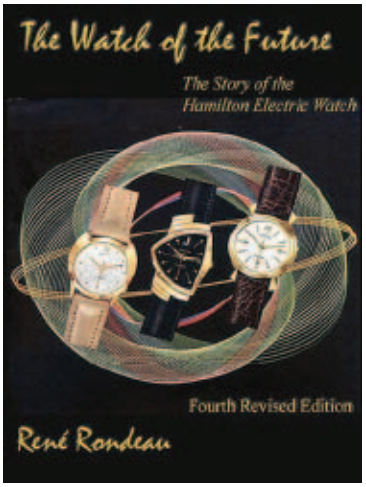
The Joseph Bulova School of Watchmaking Training Manual
The Joseph Bulova School of Watchmaking Training Manual units include: Staking Balance Staff, Truing Balance Wheels, Basic Turning, Turning Balance Staffs, Stem Making, Burnishing Balance Pivots, Poising Balance Wheels, Hairspring Truing, Hairspring Vibration, Overcoiling, Watch Assembly, Mainspring Barrel Assembly, Friction Jeweling, Wheel Train Assembly, Escapements, Terminology, Finishing, and General Repair Information. The Joseph Bulova School of Watchmaking was the principal author and developer of The Joseph Bulova School of Watchmaking Training Manual. Size: 8Ð x 11, 352 pages, hard cover.
RETAIL: $54.95 AWCI MEMBERS: $49.46

PLACE YOUR ORDER TODAY!
Call AWCI 1-866-367-2924 ext. 301 or visit the AWCI website www.awci.com

by **Jordan Ficklin, CW21**

The Watch of the Future: The Story of the Hamilton Electric Watch

by René Rondeau, Fourth Revised Edition, 256 pages with full color photographs.



The Watch of the Future is a comprehensive history of the conception, development, marketing, and production of the Hamilton electric wristwatch. In addition the book contains a complete full cover listing of all the Hamilton electric models and mechanical models from the same period that were housed in futuristic cases, which even today are progressive. As if that was not enough, the appendix includes a copy of technical documents on the servicing of the Hamilton electric watch calibers. The Fourth Edition has been completely revised and expanded with full color photographs throughout the entire book.

The Watch of the Future is the best source of information for collectors of electric watches but it also benefits the watchmaker on many different levels. For the collector, it has a listing of every Hamilton electric produced with full color photographs, introduction date, original pricing, and estimated production numbers. René Rondeau also includes information about advertisements, boxes, displays, and presentation pieces. For watch enthusiasts who may not specialize in electric watches, the book is an entertaining read and may inspire them to add at least one Hamilton electric to their collection. (It has certainly inspired me.)

For the watchmaker, *The Watch of the Future* provides the necessary tools to intelligently converse with your customers about electric watches, whether or not you repair them. For the young watchmaker (There are some others of you out there, I assume?) this book provides a look inside of the watchmaking industry, as it existed during the transitional phase from the mechanical watch to the electric watch and eventually to the quartz watch. During this same time period, watch production left the United States for Europe and independent companies were consolidated into large conglomerates.

While reading *The Watch of the Future* I couldn't help but compare the hastened development of the electric watch to the lightning-fast way in which new watch calibers and brands are brought to market today. Since I knew virtually nothing about the Hamilton electric watch prior to reading Mr. Rondeau's book I was unaware of the problems that faced Hamilton as they brought the new product to market without having thoroughly tested the product and without having established a consumer friendly (or watchmaker friendly) service system in place. Without giving too much away: this system resulted in watchmakers damaging watches, for lack of understanding how the product functioned. For many consumers, their perception of the Hamilton watch company and the quality of service they delivered was forever changed. This book should be required reading for executives in all aspects of the watchmaking industry.

Over the last six months I have read and reviewed several watchmaking related books, but this is the first book I would consider a "must read." *The Watch of the Future* is both entertaining and educational and will benefit anyone even remotely involved in the field of watchmaking. Hamilton's release of the electric watch helped shape the world of watchmaking today and an understanding of the product, as well as the industry of the time, is important to professionals in the field today, lest history repeat itself.

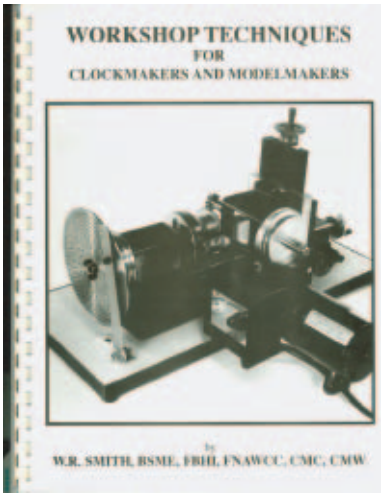
To purchase the book please visit:
www.hamiltonwristwatches.com

by **David Fahrenholz**

Workshop Techniques for Clockmakers and Modelmakers by W.R. Smith

This spiral bound publication is a collection of articles and excerpts authored by W.R. Smith who covers many of the expected tasks that a clockmaker or watchmaker might encounter when using a lathe and more specifically a Sherline model.

Taking consideration of the fact that these are not linear chapters but unique solutions to creating rests, tables, wheel cutting attachments and milling attachments helps the reader move through it as needed by skipping to the specific chapter which gives the author's advice. I found that overall these were very creative and simple ideas with great depth in the area of materials, the manufacturing of, and the expected results. I took away many ideas that would be helpful to the daily use of my lathes.



As I mentioned previously, there is a lot of information to go through and trying to cover it here would do it a disservice. The photos are black and white but are clear enough to discern what the author is trying to convey. My advice is to read the article, dissect the schematics and engineering examples, and then use the photos for a guide.

I highly recommend this book for any clockmaker or watchmaker, regardless of your skill level, as a valuable reference.

To purchase the book please visit:
www.wrsmithclocks.com

Mrs. Nayla Hayek Appointed as Chairwoman of The Swatch Group Board of Directors

At its June 30th meeting, The Board of Directors of The Swatch Group Ltd. appointed Mrs. Nayla Hayek as Chairwoman of the Board of Directors.

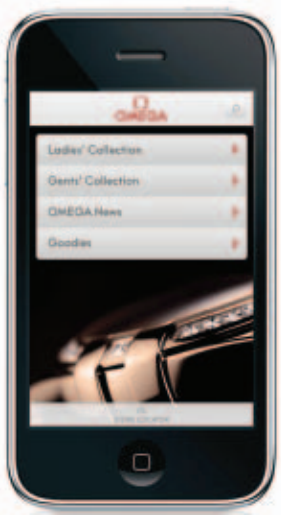
Mrs. Nayla Hayek has been prepared for this function during the past years and has a long-time experience within the Board of Directors. In addition, she was sucessfully active in various operational functions during the last years.

The Board of Directors has honored the immeasurable merits of Nicolas G. Hayek and will keep a grateful memory of him as founder of The Swatch Group Ltd. and visionary pioneer. Nicolas G. Hayek passed away on June 28, 2010.

OMEGA iPhone Application

In a world defined by the rapid evolution of communications media, OMEGA's new feature-packed iPhone App vividly presents the brand's products, stories and retail locations.

The world of OMEGA is at your fingertips. You have the opportunity to browse the entire OMEGA collection—you can carry images and technical data about every OMEGA wristwatch in your pocket. With the Watchfinder function, you can also select the timepieces which have exactly the specifications that you are looking for. You can save your choices as Favorites.



The time and date are displayed on an OMEGA DeVille Hour Vision watch.

When you tap on the dial, the back of the watch will appear on your iPhone. Its sapphire case back allows you to watch the automated operation of OMEGA's Co-Axial caliber 8611.

When you are ready to visit an OMEGA Boutique, the App will help you find the one nearest you or any of our other locations around the world.

Regular news updates also keep you in touch with the latest stories from OMEGA.

There is also a selection of wallpapers, including some of OMEGA'S most popular brand ambassadors and-most popular timepieces.

Please visit www.omega-watches.com/ for more information.

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dthompson@awci.com

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hkessler@awci.com

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jjuaire@awci.com

Directors

Gene Bertram, CC
gbertram@awci.com

David Douglas, CW21
ddouglas@awci.com

Roland (Ron) Iverson, CMC
riverson@awci.com

Joseph Juaire, CW21
jjuaire@awci.com

Ron Landberg, CW21
rlandberg@awci.com

Joseph Schrader, CMW21
jschrader@awci.com

Glenn Gardner, CMW: Affiliate Chapter Director
ggardner@awci.com

Jason Ziegenbein, CW21: REC Director
jziegenbein@awci.com

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hkessler@awci.com

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American Watchmakers-Clockmakers Institute

*Robert F. Bishop
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awci staff directory

James E. Lubic, CMW21
Executive Director
Education & Technical Director
1-866-367-2924 ext. 310
jlubic@awci.com

Thomas J. Pack, CPA
Operations Director
1-866-367-2924 ext. 311
tpack@awci.com

Thomas D. Schomaker, CMW21
Watchmaking Instructor/Certification Coordinator
1-866-367-2924 ext. 309
tschomaker@awci.com

Donna K. Baas
Managing Editor/Advertising Manager
1-866-367-2924 ext. 307
dbaas@awci.com

Daniela Ott
Education Coordinator
1-866-367-2924 ext. 303
dott@awci.com

Sally Landis
Receptionist/Technical Support
1-866-367-2924 ext. 301
slandis@awci.com

Jim Meyer
IT Director
1-866-367-2924 ext. 323
jmeyer@awci.com

American Watchmakers-Clockmakers Institute
701 Enterprise Drive
Harrison, OH 45030
Phone: Toll Free 866-FOR-AWCI (367-2924)
(513) 367-9800
Fax: (513) 367-1414
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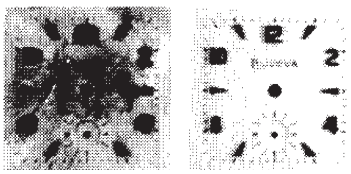

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