



## Henry Warren

### *~Father of electric time*

Last month, I profiled well known early NAWCC leader Charles Terwilliger, "father" of the 400 day clock (or 400 day clock repair, at least). This month, I'll profile an equally important leader in the development of household timekeeping: Henry Warren, father of electric time and at the same time, the inventor of the first electric generating cycle regulating tool.

Henry was born in 1872, and showed an early interest and expertise in making work-saving devices-especially electrical contraptions. As a boy, he devised a way to feed chickens without leaving the house in the morning: He pressed a button by the bed, and his device dumped out a bucket of feed for the chickens in the coop. He also retrofitted his mother's sewing machine to run by electricity.

After earning his BS in electrical engineering at MIT in 1894, he immediately started earning patents for new devices, the first of which was the thermophone, an electrical thermometer that was installed at the US Capital and at Derwentwater Reservoir, England. In 1902, in a hint of things to come, he invented an electrical waterwheel governor. A friend and employer built a new business around this new governor and the device was sold worldwide in more than 3000 large scale water mills. One of the problems encountered in the building of these devices was that commercially available gears were not satisfactory, so he invented a new way of making gears.

One of Warren's inventions was a battery powered clock, and he formed the Warren Clock Company in 1912 to make and sell his clocks. Unfortunately, the battery technology of his day did not make this invention very practical, but he

refined his invention by integrating other experiments of his, and powering it with electricity. By 1916, he had invented the synchronous motor, and in 1917, General Electric was allowed to buy half interest in his company. But there was a problem with his early electric clocks: They were off by 10-15 minutes per day, even though nothing was wrong with the clocks. At the time, electrical generation was less precise than today. Henry discovered that instead of 60 cycles per second, the electricity was actually being delivered at varying rates between 59.5 and 60.5 cycles per second. While that doesn't sound like much, a ½ cycle per second error results in a 12 minute per day error on a clock!

Time for another invention? Absolutely! Enter the Warren Master Clock. Instead of using electricity to regulate the time on the clock, a very accurate heavy pendulum clock compared the known rate of the pendulum-powered clock to the electrical frequency to regulate the electrical power supply!

The local power supply company was immediately interested in testing the new invention and quickly put it to work in October, 1916. Word spread to other power companies and within a very short time, more than a million homes were powered by electricity regulated by Warren Master Clocks. As the reliability of electrical power supply went up, the accuracy of electric clocks did also, and by the 1920s, more than 20 million people were using electric clocks powered by Warren's Telechron motor. The rest, as they say, is history.

For more information, take a look at the Telechron website (<http://www.telechron.com/>). I happen to own a Telechron Master Clock Type B that I am restoring, and the Southwest Museum of Clocks and Watches has a Telechron Master Clock Type A on display. Some of you may have

seen one of these and never realized what they were or their role in the development of modern timekeeping.

The only other Telechron master clock I've ever seen in person was at the Lone Star Regional (co-sponsored by Chapter 15) a couple of years ago. I plan to look for one at the Lone Star Regional this weekend. I hope to see many of you there!

Mike Williams,  
President

Treasurer's Report	
<b>Chapter Account</b>	<b>\$8,347.03</b>
Beginning balance	\$8,220.07
Expenses – annual insurance premium	\$500.00
Income – Dues and dial painting class	\$626.96
<b>Regional Account</b>	<b>\$4,463.60</b>

### Board members and Contact Information

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### Member news

We were saddened to hear that Dr. Leonard C. Brenner of Longview, passed away on December 29<sup>th</sup>. Many of you will remember seeing Leonard and his wife Alice at Regionals and meetings through the years, as well as the wonderful exhibit of Tiffany Never-Wind clocks that Leonard shared at the 2007 Regional in Kerrville. Our thoughts and prayers are with the family.

### Chapter membership

In case you haven't renewed, or if you know of someone who might like to join Chapter 15, it's easier than ever with the addition of the Chapter 15 website PayPal option. Thank you for your continued support of our Chapter!

Chapter 15 Membership Application  
New Application / Renewal (circle one)  
Membership Dues are \$10

*You must be a current and paid NAWCC member to join a Chapter.  
You may be a member of more than one Chapter.*

**Please Print or Type**

NAME: \_\_\_\_\_

SPOUSE'S NAME: \_\_\_\_\_

STREET: \_\_\_\_\_

CITY: \_\_\_\_\_

STATE/COUNTRY: \_\_\_\_\_ ZIP: \_\_\_\_\_

EMAIL: \_\_\_\_\_

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NAWCC Member # \_\_\_\_\_

HOROLOGICAL INTERESTS: \_\_\_\_\_

\_\_\_\_\_ Please send my Chapter 15 newsletter by email.

Make Check Payable To: Chapter 15, NAWCC  
Enclose this application and check and send to:  
Pat Holloway  
1105 Lafayette Lane  
Pflugerville, TX 78660

## 1955 Chapter 15 happenings

To help us prepare for the '55 plus 55 Chapter 15 anniversary celebration, following are a few of the Chapter related items included in 1955 issues of the Bulletin.

### February

Letter to Amos G. Avery, President NAWCC

Dear Sir:

Replying to your letter of December 6, regarding the response to our efforts to form a Chapter of the NAWCC in Texas; I am happy to report as follows:

Of 25 replies received 22 are interested. This included 3 from Louisiana, 3 from Oklahoma, and 16 from Texas. Inasmuch as the Louisiana and Oklahoma addresses are as close to us as some points in Texas are, we thought it wise to include the nearer Oklahoma and Louisiana members in our invitation. From the communications received I believe we have a hard core of 20 who are enthusiastic and ready to go.

Favorite dates for a month to organize ranged all the way January to April, but we will probably settle upon February for the initial organizational meeting.

Dr. H. R. Coats  
615 S. Broadway  
Tyler, Texas

### April

The President's Message to the members included the following paragraph:

I am particularly pleased and happy at this time to welcome two more Chapters into our family. The organization of the St. Louis and Texas groups as the 14<sup>th</sup> and 15<sup>th</sup> Chapters of NAWCC strongly emphasizes the increasingly wide interest that the study of Clocks and Watches is receiving. The formation of these new Chapters in less than a year is a wonderful step forward for NAWCC. It will soon be so that few, if any, of our members in this country will be beyond reach of an active Chapter.

WELCOME ST. LOUIS AND TEXAS

## IMPORTANT NOTE

Please note that due to scheduling conflicts, our '55 plus 55 celebration will be held on Saturday, May 1<sup>st</sup> rather than April 24<sup>th</sup> as previously announced.

## Dial Painting Class

February 20 – 21, 2010

The pictures tell the story.



Getting started with a little drawing



and a little more



+ some elbow grease



and some hard work



= happy class members

Mike and Carrie Williams, Bob Rasmussen, Pat Holloway, Tony Janak, Karen Rasmussen and Instructor - Phil Gregory

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### **Save The Date**

- Lone Star Regional  
March 5<sup>th</sup> – 6<sup>th</sup>, 2010  
Mesquite
  
- May 1<sup>st</sup>  
Chapter 15's **'55 plus 55** Anniversary  
Celebration and Annual Meeting
  
- NAWCC National Convention  
June 16<sup>th</sup> – 20<sup>th</sup>  
York, PA
  
- June 26<sup>th</sup>  
Chapter 15 program

### **'55 plus 55**

As noted on page 3, due to scheduling conflicts, our anniversary celebration will be held on Saturday, May 1<sup>st</sup>, at Coker United Methodist Church in San Antonio.

Plan now to join us for this fun-filled one-day event featuring a mart, educational, lunch and annual meeting. Mark your calendar now and watch for additional details!

**Did you know...**many of the programs available on DVD and VHS have been converted to videos that can be viewed online? To check out the offerings, go to <http://www.nawcc.org/> >Member LogIn>Member Central>Member Resources. If you haven't yet logged on, take a few minutes to give it a try.