



TOOLS & TECHNOLOGY

AMERICAN PRECISION MUSEUM • SUMMER 2014

Vol. 31, No. 1

The American Precision Museum is open daily 10 am - 5 pm, Memorial Day weekend through October.

American Precision Museum... Ingenuity in manufacturing technology: Past, Present, Future

Young Engineers at the Museum

By Sarah Rooker, Director of New initiatives

"I can't do this."
"Can you help me?"
"What do I do?"

These were some of the first questions as we challenged our young participants in the first "Tinkering with Electricity" workshops at the museum. The task was to take apart a string of Christmas lights and get them to light up by creating a circuit with a battery. We gently pushed the questioners to figure it out and eventually everybody had a working circuit, complete with a paper clip switch that they proudly brought home to their parents. In the second session they were challenged to turn an electric toothbrush into a moving bot figure. We still had a few questioners, but we also had some creative young girls who actually turned their bots into cat-like creatures, complete with whiskers and tails. By our final session, everyone was naturally going through



Kip is designing a new circuit.

the engineering process to tackle a problem — the case of the burglar-ing dog. They sketched designs for door alarms and set to work to create prototypes. Soon there were buzzing alarms duct taped on every door in the lobby. There was testing, troubleshooting, and shouts of joy as switches were successfully triggered.

It was wonderful to see our museum full of young engineers growing in their confidence and problem-solving skills and to know that they are just the first of many students who will be participating in programs in the coming year. In fact, these kids

declared that they didn't want to stop coming and we've formed a young engineer's club that will share projects and activities at the museum's fall Model Engineering Show.

And that's not all. Soon word spread and schools and libraries have been in touch to see if we would offer workshops around the region. Word also spread among the teens in town. Through a partnership with the local shop teacher we connected with a student who joined us to mentor our young tinkerers. We have responded to requests for more advanced workshops by collaborating with the local computer recycling group to offer a teen 3-D print lab and computer build session this summer. Other teens will be here this summer in our Working Machine Shop through a cooperative program with River Valley Technical Center that provides students with a



Ben is re-engineering a race car with John Alexander's help.

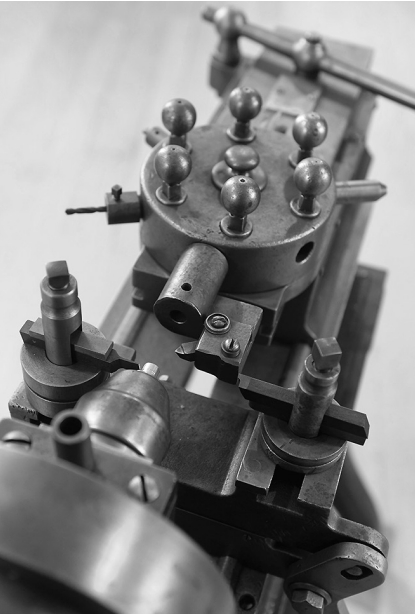
Tinkering continued on page 8



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Calendar of Events 2014



Detail, Lamson Goodnow & Yale turret lathe

EXHIBIT

Arming the Union: Gunmakers in Windsor, Vermont

uncovers the surprising influence of the machine tool firm Lamson, Goodnow & Yale operating out of the Robbins & Lawrence Armory, and the critical role they played in outfitting the Union Army. Altogether the North produced more than 1.5 million rifles in the span of about three years, along with tens of thousands of pistols and carbines. The majority of those weapons were made using machinery designed and produced in Windsor.

photo by First Light Studios

EXHIBIT

Full Duty: The Civil War Collection of Howard Coffin

presents the first-ever exhibition from the private collection of Vermont's foremost Civil War historian. The exhibition explores the day-to-day life of Vermont soldiers in camp and on the battlefield.

Friday June 6

5:30 – 7:30pm

Opening Reception with Howard Coffin

Join Howard as he introduces new artifacts into the exhibit for its third and final season.

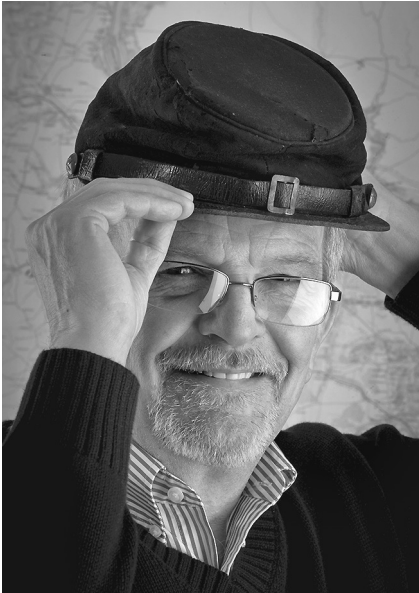


photo by First Light Studios

Howard Coffin tries on the forage cap of James Batten, Walden VT, who survived the Battle of the Wilderness.

Sunday July 13

1 – 5pm

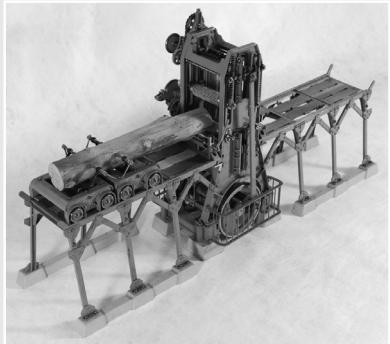
Family Maker Day: Make a Telegraph

Drop in to see the telegraph in the museum's collection and explore how information was shared during the Civil War. Learn about Mr. Lincoln's "T-Mails," and learn some Morse code. You can even make your own telegraph! Free.

Behind the Scenes Tours

Sundays: July 13, August 10 and September 27
2pm and 3pm

Tour the second floor storage area to learn about our building and the collections stored there. Limited to 12 per tour, \$10 each.



Model of a gang saw made by John Aschauer, gift of his daughter Hilda Kelsay

Sunday July 13

11am

Highlights Tour with Howard Coffin

Explore the exhibit with Howard Coffin as he shares how he found objects in his collection and the stories behind them. Pre-registration is required, limited to 20, \$10 each.



photo by First Light Studios

Bead detail, hat of Col. William Munson, worn at Gettysburg

Museum Admission

Members Free

Adults: \$8

Students: \$5

Family: \$20 (2 adults and children under 18)

Special Group Rates:
Call for details

FREE
ADMISSION
Every Sunday

Sunday July 20

3pm

The Battle of Cedar Creek

Howard Coffin will talk about the Battle of Cedar Creek, the site of one of Vermont's greatest sacrifices in the Civil War.

Sunday August 10

11am

Highlights Tour with Howard Coffin

Explore the exhibit with Howard Coffin as he shares how he found objects in his collection and the stories behind them. Pre-registration is required, limited to 20, \$10 each.

Sunday August 10

1 – 5pm

Family Maker Day: Make a Cryptograph

Espionage was a vital tool during the Civil War. One of the most large-scale espionage activities of the Confederates was the St. Albans Raid. Drop in to make a cryptograph and see if you can decipher the secret messages and clues at the museum. Free.

Sunday August 17

3pm

St. Alban's Raid

Howard Coffin will talk about the northern-most land operation of the Civil War when a raid of Confederates from Canada robbed a Vermont bank.



photo by Las Blackmore

Robotics Meetup at the 2013 Model Engineering Show

September 27

10am – 5pm

Smithsonian Magazine Museum Day

Free admission at participating museums across the country with the Smithsonian Day pass, obtainable online or in Smithsonian magazine.



Saturday October 25

9am – 4pm

15th Annual Model Engineering Show

Windsor Recreation Center and the museum. Admission to both: Adults \$10, students \$5

Visit with New England's finest model engineers, attend workshops and watch live demonstrations.



photo by First Light Studios

Spurs of Ora Paul, Woodstock VT.

On Dec. 28, 1862 he commanded two companies of the 12th Vermont. Volleys they fired caused the Confederate cavalry to retreat.

★ Blue Star Museums

Blue Star Museums is a partnership among the National Endowment for the Arts, Blue Star Families, Joining Forces, MetLife Foundation and museums across the country. From Memorial Day – Labor Day we offer free admission to all active duty, National Guard and Reserve military personnel and up to five family members.

Chairman’s Message

The past year has been a time of change and success, and I’d like to share the highlights with you. First, my thanks are due to all our friends who support our work through their memberships and contributions. The enclosed **2013 Report on Giving** reflects your generosity and support.

In 2013, our Board of Trustees adopted a **new mission statement**, and it is not sitting on the shelf! Immediately on adoption in October 2013, it became an actionable document. You will see progress bringing it to life in the article by Sarah Rooker, our Director of New Initiatives, who joined our team last fall.

American Precision Museum has for too long been a well-kept secret. We appreciate our industry friends who are helping raise the museum’s visibility in the manufacturing world.

We invite you to read this report carefully, and consider our accomplishments and plans for the future. And please be in touch to let us know your thoughts.

D. Sean Kersey
Chairman, Board of Trustees

Our Mission

To capture the imaginations of young and old with the spirit of innovation, problem solving and design as demonstrated through the dynamic story of the machines and people which form the foundation and future of the manufacturing industry in America.

We Aspire To

1. Offer programs that inspire young people to design, innovate, and problem-solve.
2. Build communities that foster a strong manufacturing future.
3. Care for and use our collections and historic property to inspire new generations of innovators.

We Believe

Our museum is a tool to educate and inspire new generations to design, innovate, and problem-solve in the machine tool and manufacturing industries. We do this by creating engaging exhibits and electronic media that excite individuals to:

- experience the history of machine tools at work,
- grasp the impacts of machine tools on society and individuals in America,
- understand the connection between machine tools and the products we rely on,
- witness the continuing evolution and exciting future of precision manufacturing, and
- become part of the continuing story of the precision manufacturing industry.

Financials

Condensed Balance Sheets*

for the years ended April 30, 2013 and April 30, 2012

	2013	2012
ASSETS		
Cash and equivalents	\$ 16,838	\$ 35,757
Grants receivable	30,001	48,348
Other current assets	12,585	11,328
Property and equipment, net of depreciation	732,487	750,686
Investments	1,293,140	1,370,546
TOTAL ASSETS	\$2,085,051	\$2,216,665
LIABILITIES AND NET ASSETS		
Current Liabilities	18,716	40,105
Unrestricted net assets	1,069,848	1,002,488
Temporarily restricted net assets	264,300	441,885
Permanently restricted net assets	732,187	732,187
Total Net Assets	\$2,066,335	\$2,176,560
TOTAL LIABILITIES AND NET ASSETS	\$2,085,051	\$2,216,665

Condensed Statement of Activities and Change in Net Assets*

for the years ended April 30, 2013 and April 30, 2012

	2013	2012
Donations, bequests, grants	\$ 229,125	\$ 363,162
Admissions	27,284	17,279
Memberships	52,775	29,420
Investment Income	45,887	56,499
Unrealized gain (loss) on investments	64,623	(70,624)
Other income, net	10,193	9,358
TOTAL REVENUE	\$ 429,887	\$ 405,094
EXPENSES		
Salaries and benefits	252,321	282,471
Depreciation	85,416	51,655
Occupancy, insurance & maintenance	40,571	38,848
Office and publication costs**	12,246	21,278
Professional services	40,724	22,204
Contracted services	12,358	14,534
Other expenses	96,476	160,781
TOTAL EXPENSES	\$ 540,112	\$ 591,771
REVENUE LESS EXPENSES EQUALS CHANGE IN NET ASSETS	\$ (110,225)	\$ (186,677)

* Complete reviewed 2013 and 2012 financial statements with accompanying notes and opinions are available at the museum office.

** In Fiscal year 2013, APM changed the grouping of the expenses in office and publication costs.

2013 Report on Giving

Each year we are pleased to recognize with grateful appreciation all those who have contributed so generously to the museum in 2013. Every gift we receive is important and helps us preserve and maintain the 1846 Robbins & Lawrence Armory containing an unparalleled historically significant collection. Even more important is your support that is helping us accomplish our new mission “to capture the imaginations of young and old with the spirit of innovation, problem solving and design demonstrated through the dynamic story of the machines and people which form the foundation and future of the manufacturing industry in America.” Support comes to the museum in many ways — membership, annual and special purpose gifts, gifts in kind, and those made in honor or in memory of a loved one. No matter how you support the museum, your contributions make a difference.

Carl Johnson
Chair, Development Committee

ANNUAL AND SPECIAL PURPOSE GIFTS

January 1 - December 31, 2013

Robbins & Lawrence Society

(\$2,500 and up)

Mimi Baird
Anonymous
Farley Family Charitable Foundation
Douglas M. Loudon
Morris Group
Lee B. and Diane Morris
Old Stones Foundation
Rick Roesch
Rothchild Charitable Fund,
Margaret and Eric Rothchild

Mill Brook Society

(\$1,000 - \$2,499)

John Bainbridge Jr.
Russell Barnes
Steven C. Carter
Stephen F. Christy
Cone Automatic Machine Co. Charitable Foundation
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Jane Osgood and Ted Hilles
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Michael Newbold
Thomas P. Putnam
Peter D. Rebar
Dr. M. Roe Smith
Vermont Antique Automobile Society

Precision Valley Society

(\$500 - \$999)

Mark and Michele Aldrich
Bryant Chucking Grinder Charitable Foundation
Couch Family Foundation
Robert Dufresne

Newell Flather
Carl H. Johnson
Charles Leni
Bill Lynn
William C. Martin
Mascoma Savings Bank
Bernard Rosselli
Jane E. Sherman
E. Hubbard Yonkers

Edwin Battison Society

(\$250 - \$499)

Liora Alschuler
Daniel and Florence Belleville
Joseph Bozik
John D. Brown
Eric Gilbertson
Shirley J. Grainger
Karl Gurcke
Dr. Fukuo Hashimoto
Daniel L. Hertz Jr.
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Richard A. Johnston
D. Sean Kersey
Seymour Lehrer
Frederick G. Novy III
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Timken Fund Matching Gift Program
Larry L. Vanice
Dr. Richard White

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(\$100 - \$249)

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Dr. Howard Andrews
Terry McDonnell
Edward and Judith Becker
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Earle C. Stubbs
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David Hamilton
Toland

In Honor Of:

Eric Gilbertson and
Susan J. Polk
Bill and Nancy Polk

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Cota & Cota, Inc.
Gardner Business
Media
Shirley S. Grainger
Christopher Gray
Heidenhain
INDEX Corporation
Sarwar Kashmeri
Steve Lubar
Moore Tool Company
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Rick Roesch
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Contributing (\$1,000)

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Make a Lasting Impact Join the Museum's Legacy Society

Is the museum already in your estate plans? Please let us know so that we can thank you!

A **charitable bequest**, with the museum as a beneficiary, is easy to put in place and can be made with cash, securities, or real estate.

"I give to the American Precision Museum, Inc., Windsor, Vermont, _____ dollars (\$_____), or _____ percent (____%) of my residuary estate, to be used for the benefit of the American Precision Museum, Inc. as the Trustees thereof may direct."

William Rewinski
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Life

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Daniels
Douglas Graham
Clark Griffiths
James Heald II

*We encourage you to bring any
mistakes or omissions to our
attention so that we may correct
our records accordingly.
Thank you.*

Charles Hutchins
Richard Kuba
Doug Loudon
Wayne Moore
Michael Newbold
Alfred Purcell Jr.
Rick Roesch
Margaret Rothchild
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Jeoffrey Thorrez
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Tinkering *continued from page 1*

summer job that is a stepping stone to a career in manufacturing.

All of this is to engage youth in science, technology, engineering, and mathematics. It is to provide them with the basic applied mathematical and physics concepts as well as the problem-solving and communication skills they will need in the future. This is just one step in our approach to encouraging youth to take a look at manufacturing and engineering as careers.



Kip, Asa, and Maurice “break” appliances in the first of two “break and make” workshops

We’re also building relationships with universities. Our machine tool collection is unparalleled and provides opportunities for reverse engineering challenges and deep study. The history of iterative design and rapid prototyping that occurred here in Windsor holds lessons for university students as they embark on their own design and building process.

So watch for us on National Manufacturing Day as we bring students to local firms to introduce them to the possibilities of manufacturing careers. Join us as we help kids explore the mechanical world. Support us as we challenge older students to be inspired by the past and build toward the future. It is an exciting time for the museum!

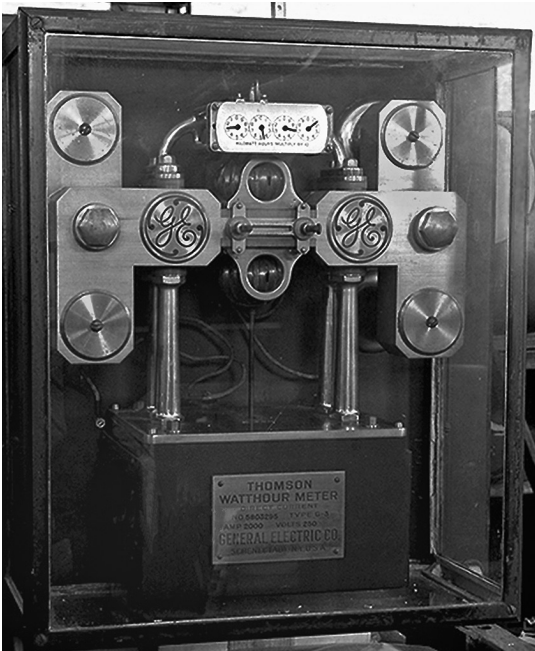


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Thomas Edison’s Watt Hour Meter

This watt hour meter, made around 1900, was used in Thomas Edison’s lab. While not every motor, generator, and meter in the museum’s extensive collections have such famous origins, together they tell the story of electrical innovation. This story reaches back as far as the 1870s with a ballistic chronograph that measured the speed of bullets. Our collections provide the foundation for the concepts we teach students in our workshops and working machine shop.



See this watt hour meter, gift of Thomas Edison Laboratory, on a Behind the Scenes tour.