

# Newsletter

The Samuel Knight Chapter  
The Society for Industrial Archeology  
Issue Number 13  
December 1, 2002

## Contents:

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<b>CHAPTER NEWS .....</b>	<b>2</b>
ANNUAL CHAPTER MEETING .....	2
CHAPTER EVENT: SHELL REFINERY TOUR, JANUARY 2, 2003.....	3
CHAPTER EVENTS IN THE PLANNING STAGE.....	3
MAILING LIST CLEANUP .....	4
MEET A MEMBER .....	4
<b>OIL EXPLORATION AT SQUAW FLAT.....</b>	<b>5</b>
<b>FLOATING IA – THE S.S. JEREMIAH O’BRIEN.....</b>	<b>7</b>
<b>CONTACT AND MEMBERSHIP INFORMATION .....</b>	<b>10</b>

**This may be your last issue. Please see page 4 for details.**

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The Newsletter is published in December, April and August, with special issues when they are needed.

The Chapter web site has been moved to the SIA headquarters site:  
<http://www.sia-web.org/chapters/knight/knight.html>

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# Chapter News

## Annual Chapter Meeting

Special thanks to former Chapter President Andy Fahrenwald for hosting the annual Chapter meeting at Knight Foundry in Sutter Creek, CA on October 5, 2002. The turnout surpassed even our most optimistic projections, with a total of 17 members and friends.

In Chapter business, Treasurer McCauley reported that the Chapter bank balance was \$1540.56 as of October 1. The new Board will review the 2003 budget. The new Chapter Board consists of:

- President: Tony Meadow
- Secretary/Treasurer: Jay McCauley
- Board Member: Noel Kirshenbaum
- Board Member: David Lindquist
- Board Member: Scott See
- Board Member: R. Scott Baxter
- Board Member: John de Marchi

The Chapter thanks departing Board Member Nate Shugars for his hard work and contributions.



**The new Board: R. Scott Baxter, Scott See, David Lindquist, Noel Kirshenbaum, John de Marchi, Tony Meadow and Jay McCauley.**

The membership did some brainstorming on potential activities and events. Members agreed to follow up on the most interesting

ones. The members agreed informally not to seek IRS 501(c)(3) status due to the significant record keeping burden and the lack of a clear need to be recognized by the IRS as a charity. This decision can be re-examined if circumstances change. They also agreed that a Chapter web site was an important communications vehicle and it should be revived. The membership agreed that the mailing list should be trimmed and that email should be used to contact members who agree to use it. Due to the size of current newsletters, they will still be distributed in hard copy, but they will be put up on the Chapter web site shortly after distribution.

Andy gave the group a delightful tour of the machine shop and the pattern shop. One particularly interesting moment occurred as he started up what is believed to be the oldest operating machine tool in the US, a belt driven lathe. Andy discussed the dilemma of preservation versus use, a central issue for the Foundry and other organizations like it. The Foundry is vastly more interesting if it is a living organization, not merely a static snapshot preserved "under glass". However, how many more pieces can be turned on this historically significant artifact before it wears out or breaks? The Foundry has struck a balance that considers both sides of the issue. All the members were impressed at how much progress has been made at the Foundry, and the real IA that is taking place there.

Thanks to all the members who attended; it was an excellent meeting.

## Chapter Event: Shell Refinery Tour, January 2, 2003

**NOTE: Some of the renewal acknowledgement letters had an incorrect date. The correct date is Thursday, January 2, 2003.**

The Chapter will start 2003 with a tour of the Shell Refinery in Martinez, on Thursday, January 2, 2003. We will meet at 9:45 AM at the Shell Oil Alumni Museum, 1700 Pacheco Blvd., Martinez, CA. The tour will complete about 12:30. The tour will primarily be via Shell-supplied bus, and is suitable for interested children. This is a unique opportunity to see a major industrial complex with deep historical roots dating back to 1915. Please contact Tony Meadow for details if you will be able to attend.

As long as you're in the neighborhood, don't forget to check out the new Albert P. Zampa Bridge under construction between Vallejo and Crockett. Also of IA interest in the area are the Benicia Arsenal which was established before the Civil War, the Benicia State Capitol, the mothball fleet in Suisun Bay, and the Western Railway Museum in Rio Vista. Just up I-680, the Budweiser plant in Fairfield offers tours, as does the Jelly Belly factory, although combining them would seem to be a bad idea.

## Chapter Events in the Planning Stage

At the October 23, 2002 Board meeting, the list of possible Chapter events was winnowed to a more manageable set of high interest candidates. These include:

- SP's Sacramento Shops, now part of the California State Railroad Museum. The shops are one of the most important IA sites in the Western US and are the focal point for the new Museum of Railroad Technology, an ambitious

venture by CSRM. We are working with CSRM for a possible April/May visit.

- Mare Island Naval Shipyard. An important IA site with a rich history stretching back to 1854. If any of our readers has experience at Mare Island, it might help us put together a more interesting visit.
- Folsom Hydroelectric Plant. The first plant built by PG&E, operated from 1895 to 1952.
- Earthgrains Bakery in Oakland, CA. The yummy smell as you drive up I880 is now gone, the victim of tightened air pollution restrictions, but it's still there inside this large industrial bakery. This will be a weekday visit.

There are several other possible events being investigated. We are always looking for members' ideas on possible Chapter events.

## Mailing List Cleanup

The Chapter membership agreed that the current mailing list should be reviewed. If you renewed your Chapter membership in 2000 or later you will continue to receive the newsletter. If you have not yet renewed for 2003, now would be a good time to do so!

Even though reproduction and postage have gone up a great deal, the Chapter newsletter is still our most important vehicle for reaching our broader community of members and friends. So, we want to make sure that the recipients of the newsletter are still interested in the Chapter. If you are not a member or haven't renewed since 2000, please drop Jay McCauley an email or note if you wish to continue to receive the Chapter newsletter. If we don't hear from you, we may stop sending newsletters. They will be available on the new Chapter web site <http://www.sia-web.org/chapters/knight/knight.html/newsletters>. The web newsletters have the same basic content as the hardcopy, but include additional features such as color photos.

## Meet a Member

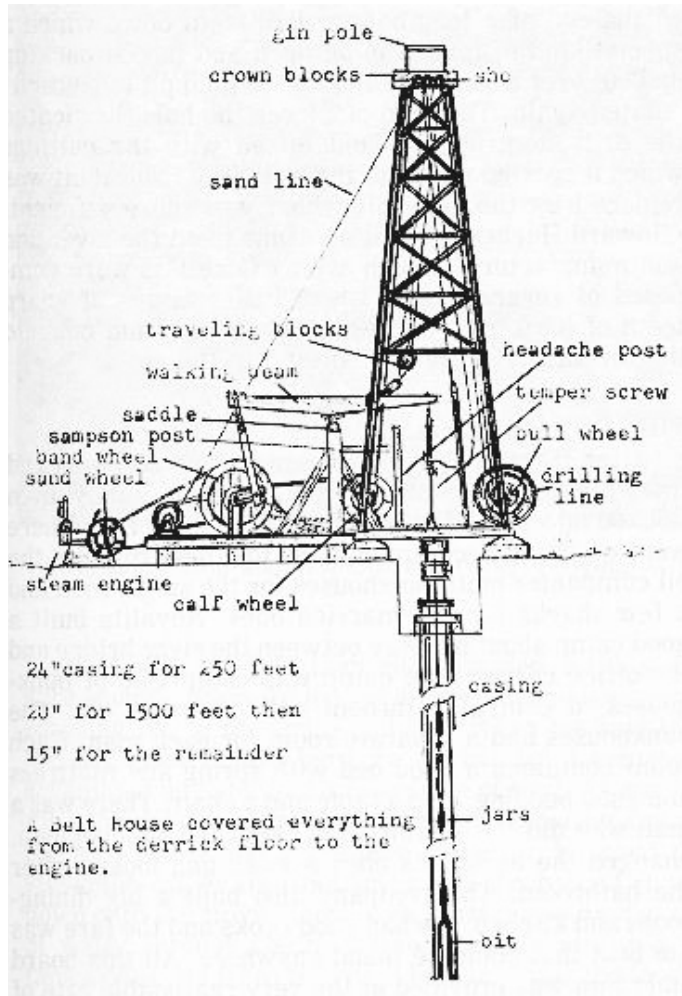
### **R. Scott Baxter**

(This is a new section that is intended to let the membership get to know each other a little better. If you'd like to participate, drop me a short biographical sketch. - Jay)

Scott Baxter is a practicing historical archaeologist with 12 years of experience in the field, and is a partner in the cultural resource firm Past Forward, Inc. He received a B.A. in anthropology from CSU, Bakersfield and a M.A. in anthropology from the University of Nevada, Reno. He has been a member of the SIA since 1995. Interests in industrial archaeology include mining, the petroleum industry, and the evolution of technology.

# OIL EXPLORATION AT SQUAW FLAT

R. Scott Baxter



**Cable Tool Drilling Rig (from <http://www.lloydminsterheavyoil.com/cable.htm>)**



**Boiler at Houston and Cohn**

Nestled high in the rugged Piru Mountains, 12 miles northeast of the town of Fillmore, is a small, grassy meadow known as Squaw Flat. The meadow is surrounded by dense chaparral, and is cut by a deep drainage that flows sulfurous water year round. Quail, deer, coyotes, and bobcats frequent the meadow, which seems a pristine picture of nature. But tucked away in surrounding drainages are remnants of an industrial past.

In the 1870s the Cohn family was drawn here, and reportedly constructed an adobe house and maintained a peach orchard here. Their interest in the land changed after the turn of the century, as the promise of mineral wealth loomed large. Oil had been discovered at the Sespe Oil Field to the south, and it appeared that chances were good the deposit extended north to their land. Around 1912 the first oil well was started at Squaw Flat. Known as Big Chief No. 1, it hit small quantities of oil, and proved so promising that the Cohn's filed a placer claim on the land to protect the new find. Soon others joined in. Squaw Flat Oil Company, New Moodey Gultch, Big Chief, Houston & Cohn, Beesum, Stansbury, Inc., and Border Oil Company all worked on or around Squaw Flat drilling exploratory wells. No less than seven wells were drilled here. Some on the flat, but others on ridge tops or hillsides, that were bladed flat for the drill rig and related equipment. Most of the wells were drilled with what are known as cable tool rigs, drills that hoist a heavy bit and smash it into the earth, breaking up the rock and soil. These drills were powered by portable steam engines, and locomotive type boilers.

Due to the long commute and rugged location workers stayed at the job site. A boarding house and two bunkhouses were erected on the flat to provide food, shelter, and even a hot bath.

By 1954 it was apparent that Squaw Flat would never yield the quantities of oil that the Cohn's had hoped for. Drilling stopped, and the buildings and equipment abandoned. In 1970 the Cohn's sold the

land to the U.S. Forest Service. Now scattered about the hills are remains of a once promising industry. Derricks still stand on hill tops, boilers are tucked away in small drainages, oil tanks sit half full, the collapsed bunk and boarding houses are slowly returning to the earth, and a slow trickle of water gurgles out of an abandoned well, feeding the drainage that flows through Squaw Flat. The Forest Service now manages the remnants of Squaw Flat's industrial past as a cultural resource.



**Band Wheel (possibly from Oil Well Supply Co., Pittsburgh, PA)**

For more detailed information see:

R. Scott Baxter 2002 Industrial and Domestic Landscapes of a California Oil Field. *Historical Archaeology* 36(3): 18-27.

### **Related Sites (physical and web)**

West Kern Oil Museum, 1168 Wood St, Taft, CA.  
<http://www.westkern-oilmuseum.org/index.html>

California Oil Museum, P.O. Box 48, 1001 E. Main St.  
Santa Paula, CA 93061 <http://www.oilmuseum.net/>

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# Floating IA – The S.S. Jeremiah O'Brien

Jay McCauley



**S.S. Jeremiah O' Brien in San Francisco**

The morning fog still shrouded parts of the Bay when we boarded the S.S. Jeremiah O'Brien, a living piece of IA, for a leisurely cruise to Sacramento in August 2002. The O'Brien is one of a handful of surviving Liberty Ships.

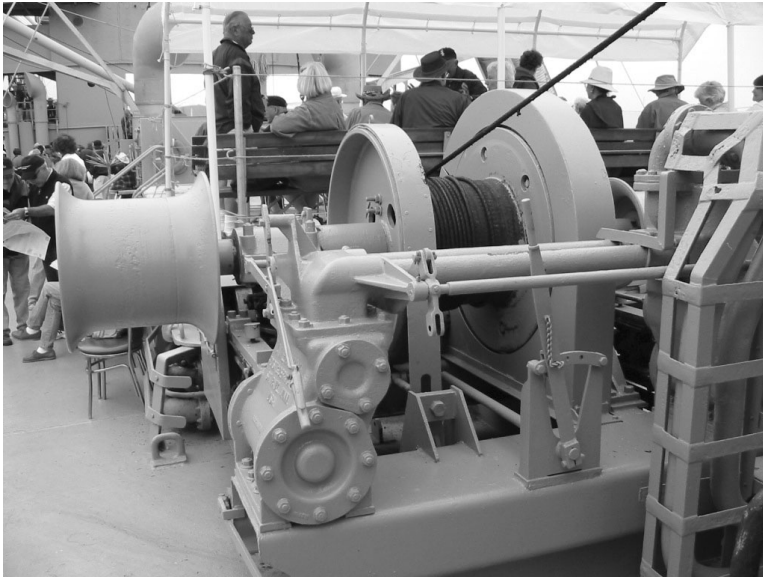
The Liberty Ship was conceived as a response to the enormous loss of shipping to German U-Boats during the early days of World War II. Losses of ship tonnage far exceeded the rate at which new ships could be built. As an island nation, the "tonnage war" threatened Great Britain's ability to continue the war.

A program launched at the end of World War I, the so-called Hog Island ships, demonstrated that ships could be built in a more standardized, modular fashion. Now the site of the Philadelphia International Airport, Hog Island was a huge (50 ways) shipyard was constructed from scratch, a preview of similar efforts around the country to build the 18

new shipyards dedicated to the construction of Liberty Ships. The Hog Island program was tinged by financial scandal, and never achieved the construction rates that the Liberty Ship program did, so had virtually no impact on the war effort. In fact, most of the Hog Island ships were launched after the war was over!

Except for Hog Island, prior to the Liberty Ship, shipbuilding in the US was a small industry, and nearly every vessel was unique. Construction of a ship would take several months or more and required many skilled craftsmen. The Liberty Ship changed all of that.

The ships' design was standardized and both simple to build and to operate. Every one of the 2,711 Liberty Ships built was nearly identical. Standardization benefited the effort in many ways. Each ship required very little new engineering. Workers required less training and became more and more proficient at the construction of the Liberty Ships; now we call this the learning curve effect. Simplicity was the rule. The central tenet of the Liberty Ship program was to produce as many ships as possible in the shortest possible time. These boxy "ugly ducklings" had most of their hull plates as simple, flat pieces of steel, requiring less of the complex shaping of the hull plans for more elegant designs. Standardization also allowed for economies of scale in producing component parts. Factories throughout the US were involved in the effort, not just the specialized firms near shipyards along the coasts. Standardization and simplicity also made it easier to man the ships. Crew training was simplified, and a crewman from one ship would be right at home on another Liberty Ship.



**Steam Driven Cargo Winch**

The design was modular, allowing large sections of the ships to be constructed independently, then moved into place and welded together to complete the vessel. This technique resulted in an unprecedented assembly line style of ship "manufacturing". Modular construction also allowed easy access to hard to reach areas in the finished vessel. Plumbing, electrical and other subsystems could be installed in the modules while areas were accessible, then connected together as the modules were assembled. Modular construction was so successful that the S.S. Robert E. Peary was built in just four days at the Kaiser shipyard in Oakland. The Peary made her maiden voyage just

seven days after her keel was laid! The O'Brien was constructed in 46 days in mid-1943 at the New England Shipbuilding Corporation shipyard in South Portland, Maine. In contrast, Hog Island ships, which were similar in concept and size, required on average over 200 days to complete, with some requiring as much as 400.

Another novel aspect of the Liberty Ship was its all welded construction. Welding is far more efficient than riveting, which had been the primary construction mode since the dawn of modern shipbuilding. The first welded ship in the US was produced in 1940, so the Liberty Ships were somewhat guinea pigs for the technique. There were some problems with welding, particularly embrittlement in very cold temperatures and stress cracking, but these were remedied very early in the program.

The Liberty Ship program, like other defense industries, also changed the face of the workforce by recruiting and training thousands of women and members of minorities. At least in the Liberty shipyards, Rosie wasn't a riveter, she was a welder.

Liberty Ships are powered by a triple expansion reciprocating steam engine. The choice of this type of engine over the more modern turbine engines was motivated, as were most design choices for the Liberty Ship program, by a desire to build the ships as quickly as possible. It is much easier to build a reciprocating steam engine than a turbine. The simplicity of the reciprocating engine's construction increased the number of manufacturers who could build them. The Chapter visited one of these manufacturers, the former Hendy Iron Works in Sunnyvale, in 1997. The O'Brien's engine has been seen in several movies, the most notable of which was *Titanic*.

The ship cruises at around eight to ten knots, so the trip from Pier 42 in San Francisco to the Port of Sacramento took almost ten hours.

The O'Brien is the last surviving ship to have participated in the D-Day landings in Normandy. In 1994, she sailed to Normandy to participate in the events commemorating the 50<sup>th</sup> anniversary of the landings, a journey that took five months.



On Friday, August 30, 2002 an ocean breeze chilled the over 500 passengers boarding the O'Brien. Almost exactly on time, the lines holding the O'Brien to Pier 42 were cast off, and tugboats eased her into the Bay.

At lunchtime as we passed under the new Carquinez Bridge, the passengers could see the spinning of the main suspension cables, literally a once in a lifetime sight. The new bridge will replace one of the oldest major bridges in the Bay Area, the 1927 Carquinez Bridge, which will be torn down. (*Look for an article on the Carquinez bridges in the next newsletter. – Jay*)

The Carquinez Straits are a heavily industrialized area, including the Shell Refinery at Martinez, the site of a forthcoming Chapter Event on January 2, 2003. The Straits connect to Suisun Bay, where the O'Brien had spent several years as part of the "Mothball Fleet". There are stories of the ship being moved around to avoid being cannibalized for parts or even scrapped. Fortunately, these efforts preserved the O'Brien. On the South shore of Suisun Bay, the passengers saw the changed face of ocean commerce, as a double stack container train carried containers eastward that had been off loaded at Oakland or Richmond. Break bulk cargo ships like the O'Brien and the masses of longshoremen needed to load and unload them were completely replaced by the containership revolution.

From an IA perspective, the O'Brien is a unique time capsule. She was never intended to last this long. The Government felt that these vessels were expendable, and would fulfill their mission if they completed only one voyage. The O'Brien has been lovingly preserved, and restored to operation by a dedicated corps of volunteers. She offers insight and hands on experience to an era in maritime commerce that has completely disappeared. Her machinery spaces are more from the 19<sup>th</sup> century than the 20<sup>th</sup>. She also shows the types of choices in design and implementation that the emergencies of war bring on. Finally, she is a living, breathing monument to the men and women who built the ships that helped win the war, and to the men who served aboard them.

## Resources

<http://www.ssjeremiahobrien.org> - Web site for the O'Brien, many useful links, references to books etc. The O'Brien is berthed at Pier 45 in San Francisco.

<http://www.wiitechpubs.com/dock/nv-usa/nv-usa-ss-liberty-ship/nv-usa-ss-liberty-ship-ftr.html> - Detailed technical article on the Liberty ships. One minor error in that the engine is described as a turbine.

[http://www.andrew.cmu.edu/~pt/liberty/hog\\_island.html](http://www.andrew.cmu.edu/~pt/liberty/hog_island.html) - overview of the Hog Island ships.

<http://www.blancmange.net/tmh/articles/hogisle.shtml> - long article about the scandal of the Hog Island shipyard. Very biased author.

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Samuel Knight Chapter  
Society for Industrial Archeology  
c/o Jay McCauley  
1350 Vance Drive  
San José, CA 95132-2455

**Address Correction Requested**

## Contact and Membership Information

### **President**

Tony Meadow  
30 Pine Hills Court, Oakland, CA 94611  
Home: 510 531 3416, Work: 510 834 5300 x108  
Email: tmeadow@sbcglobal.net

### **Secretary/Treasurer** – Memberships, Newsletter Editor, Webmaster

Jay McCauley  
1350 Vance Drive, San Jose, CA 95132  
Home: 408 926 2312  
Email: mccauley3@sbcglobal.net

Membership in the Samuel Knight Chapter is available in the following categories:

Individual	\$25	
Couple	\$30	One copy of newsletter
Student	\$10	Please send copy of current ID
Senior	\$10	Age 65 or older
Contributing	\$60	
Institutional	\$30	
Sustaining	\$125	
Corporate	\$100	Includes 4 memberships - please list names

To join the Chapter, please send a check or money order (made out to the Samuel Knight Chapter) to the Chapter Treasurer. We'd also love to know about your interests, skills, etc. that might be part of a future Chapter event. We encourage Chapter members to join the National SIA.