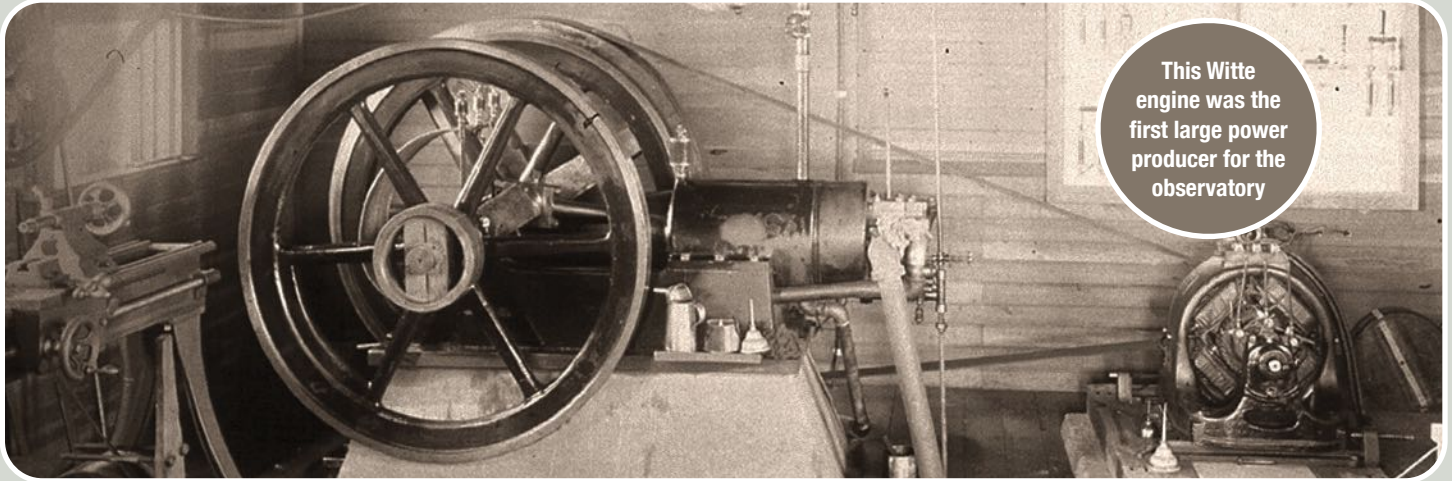


August 2007

# HIT & MISS

Journal of the Western Antique Power Associates

**This Month:**  
Dick Bouma's Rare  
Halfbreed Engine  
Page 3



This Witte engine was the first large power producer for the observatory

## MOUNT WILSON OBSERVATORY TOUR

**Don't Miss This Rare Opportunity**

About eight years ago, Larry and Ken Evans became involved with a group of volunteers at the Mount Wilson Observatory. The group was comprised primarily of engineers from the Jet Propulsion Laboratory in Pasadena. Their purpose was to advise and assist in the maintenance of the historical astronomical telescopes located at the observatory. The observatory is in the San Gabriel Mountains overlooking Pasadena.

The observatory is home to the 60 inch Hale telescope and the 100 inch Hooker telescope. When these reflector telescopes became operational in 1908 and 1917, each was the largest in the world at the time.

The Evans' first major project on the mountain was the refurbishment of

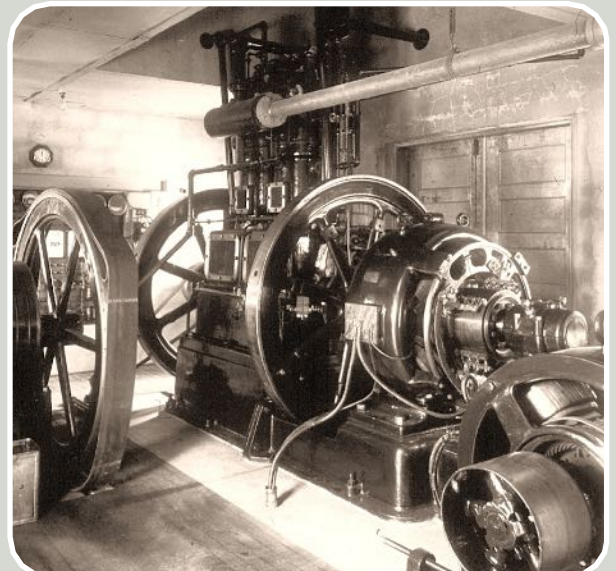
the dome rotation system protecting the 60 inch telescope. It was a project that lasted nearly a year and a half.

During their work at the observatory, the Evans' were able to view the facility's old power generation plant.

The engine is a 50 horsepower Fairbanks Morse Type RE, which is connected to a 125 VDC, 40 KW generator. The generator charged a bank of batteries. The power plant was just as it was

**This vintage photograph is of the Fairbanks Morse Type RE engine that will be run for those attending the Evans' tour of the Mount Wilson Observatory.**

back in 1912 when the engine was installed. It was very fortunate that the powerhouse had been protected for so long from vandals and treasure hunters. **continued on page six**



## President's Message

Tom Millett

When I composed my message last month and commented that a new format of this newsletter was being designed, I may have left the impression that I had been given a special viewing of publisher Rob Skinner's first publication. I had not, and was as surprised as all members when I received it in the mail. One of our founding members, Palmer Bochow, called me from his home in Carlsbad to tell me how delighted he was with the new design. It will take awhile to make it meet Rob's high expectations and I'm sure he appreciates your critique comments. Rob even tells me that it may fall within acceptable financial parameters.

At the last Board of Directors meeting, it suddenly came to mind that our annual nominating process was upon us and a nominations chairperson needed to be appointed by the board. After a bit of reluctance on the part of everyone in attendance, Leroy Overstreet stepped up to the plate and volunteered to chair the

committee. Now folks, let's help Leroy put together some nominees for board positions. I announced there, and I'm announcing to you all that the presidency position needs new blood. I have enjoyed the time I have served, but all organizations need change to foster new exciting ideas. Let's come up with some new talent.

I haven't spoken about our land issue in a few months. While attending a retirement event for my wife's fifty years of service on the job, our Prescott, AZ member, Mike Jones, asked me how the museum land issues were going. Quite frankly there hadn't been anything to report. As many of you are aware, Craig Maxwell offered to take over communicating with the county officials and keep the fire burning. Craig has established a dialog with the Regional Parks Planning Director, so all is not totally forgotten at the county level. Craig prefers to keep it low key for now, but with his professional background I'm sure he's the right one to deal with it.

That's it for this time. Watch the shows calendar and attend a few. Play safe.

## From the Editor's Desk

Rob Skinner

We're fortunate this month to be able to feature a very special engine owned by Dick Bouma. Dick is a long time member of WAPA. I'm sure those who know him will not be surprised by his generosity shown by taking time out of his Sunday afternoon to help with the preparation of this article.

At last month's board meeting, Leroy Overstreet was appointed to chair the nominating committee for this year's election. I'm sure you all know, but I'll say it anyway, you can't sail a ship with no one at the helm. Perhaps this will be your year to donate your time and expertise by helping your club and serving on the board.

Talking about sailing and ships, take a look at Joan Westgate's pictures from the Classic Yacht Show. More of her work will appear in next month's issue.

As always, if you have ideas for any feature articles or other content for the Hit & Miss, email me at [rskinner@rustyiron.com](mailto:rskinner@rustyiron.com). See you at the next show.



WAPA was in attendance at the Classic Yacht Show in Marina Del Rey. Look for Ken Evans' full report next month. Pictures by Joan Westgate.

# DICK BOUMA'S ONE-OF-A-KIND OILFIELD ENGINE

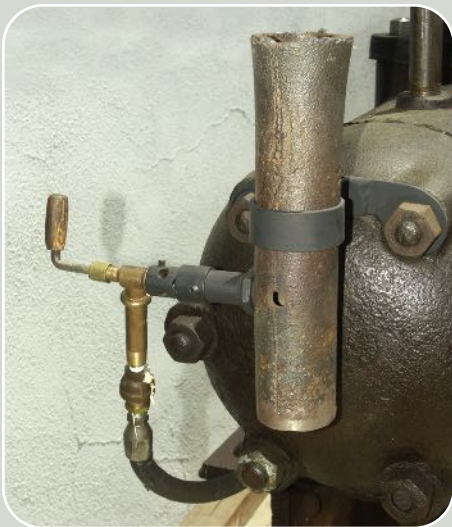
## Acquisition

Dick Bouma acquired this rare engine back in 2001. Since then, it resided at the Coolspring Power Museum in Western Pennsylvania. Last year he brought it to its new home in Ontario, California.

## Innovative Style

The engine is a halfbreed, an M. Lytle & Son cylinder on a Gibbs, Russell & Company bed. The halfbreed style engines are a special style that occupy a unique place in history.

Early industry utilized steam for power. Steam engines were made in sizes from fractional horsepower to thousands of horsepower. As much as the steam engine advanced industrialism and production, it was not without drawbacks. Steam boilers required an experienced engineer, engines were maintenance intensive, and start-up could take



The burner heats the hot tube to red hot, then the flywheel is rocked back against compression to start the engine.



Dick Bouma with his rare halfbreed engine from the oilfields of Pennsylvania

hours. Despite these drawbacks, steam power was used extensively, especially in oil production.

## Technology Marches On

The latter half of the 19th century saw great strides in the improvement of the internal combustion engine. Problems in production, fuels and ignition were being resolved so that internal combustion was quickly becoming a viable alternative to steam.

Just as is the case today, it is economics that drives business. As good as internal combustion engines were, it was not always economically feasible to replace a good or repairable steam engine with a brand new internal combustion engine.

The market's answer to this economic constraint was the "halfbreed" engine.

An owner of an engine could buy a kit that would convert his engine from steam to internal combustion.

Included in the kit would be a new cylinder, piston and flywheel (or flywheel weights). Generally, the halfbreed retrofits were of two-cycle design, which did not require the elaborate mechanisms of a four-cycle engine.

The old steam cylinder would be removed and the new cylinder installed. The steam bed would be reused, as would the crankshaft and a single flywheel. In the case of Dicks' engine, rather than adding another flywheel, a "ring" was bolted onto the original flywheel to add mass and momentum.

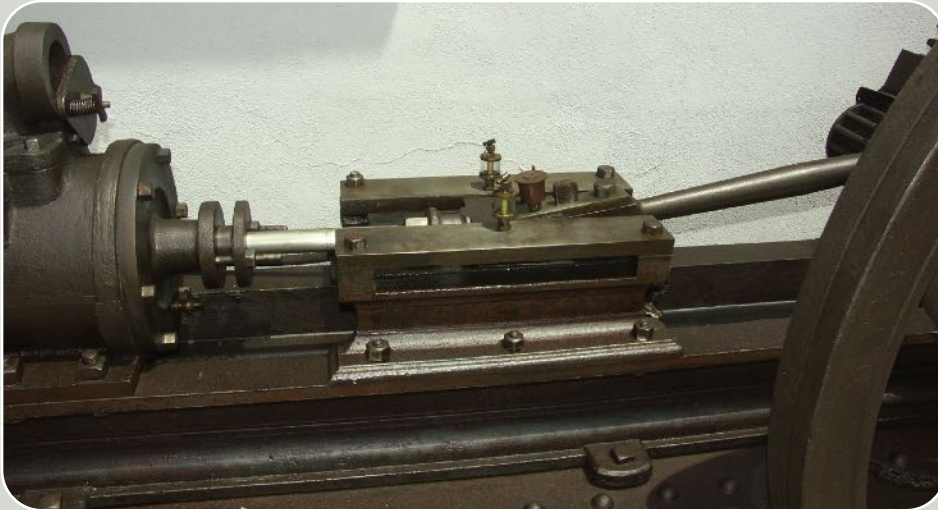
The halfbreed style engine was especially well suited for oilfield use, as it could run off of the well-head gas that was a byproduct of oil production.

## Engine Details

Dick's engine uses the bed from a Gibbs, Russell & Company steam engine. Gibbs and Russell were only in business from 1865 until 1869, at which time the company evolved into Gibbs & Sterrett. Although there are several surviving Gibbs & Sterrett engines left in existence, Dick's is the only known engine made by Gibbs and Russell.

Gibbs and Russell were located in Titusville, Pennsylvania. Titusville was the location where Edwin Drake first drilled for oil, and was the birthplace of modern oil production.

The cylinder on this engine was manufactured by M. Lytle & Son, in



The rod connecting the piston to the crosshead moves in a straight line, preventing angular thrust on the piston skirt. It also allows sealing of the bottom half of the cylinder, where the fuel/air is pressurized and transferred to the top side of the piston. Note the exquisite styling of the bed and crosshead.

Bradford, about 1900. Bradford was another oil boomtown and center of industry in Northern Pennsylvania.

The bull gear arrangement on this engine is somewhat of a mystery. Casting numbers indicated that it was manufactured neither by Gibbs, Russell & Company, nor M. Lytle & Son. The exact manufacturer remains unknown. The integrated bull gear, however, is uncommon on an engine of this type.

This engine, like many other oilfield engines, uses hot tube ignition. A hot tube is a short piece of pipe attached to the combustion chamber. It is heated to red-hot by an external lamp. As the piston compresses the fuel-air charge in the cylinder, some of the mixture is forced into the hot tube, where it ignites. The lamp is fueled by the well-head gas, just like the engine. Hot tube ignition is simple, reliable and well suited to oilfield use.

The bottom side of the cylinder is closed off, just as is the case with a double acting steam cylinder. In this application, however, the bottom half of the cylinder is used to induct fuel and air into the engine. First the fuel/air goes into the bottom half of the cylinder, then it is transferred to the top, just like a modern motorcycle or a Maytag engine.

A characteristic of engines of this type is the crosshead. A rod

connects the piston to the crosshead, which moves back-and-forth on a babbitt bearing surface. Another rod connects the crosshead to the crankshaft. This not only allows proper sealing of the bottom half of the cylinder, but it eliminates angular thrust on the piston skirt, greatly reducing stress and wear.

#### Origin

This engine originally powered a single oil well near Rock Run, Pennsylvania. The gear reduction, another rare feature of this engine, was attached to a rod line and then to the pumping unit.

The engine was one of five that were purchased and removed from this site in the early 1990's by Stiles Bradley and Craig Prucha.

#### Restoration

Although the engine looks pristine today, there were a few repairs that needed to be completed to get it in top-notch shape.

Dick needed to fabricate a new intake valve. He also replaced a broken hot tube and chimney.

Stiles poured new babbitt for the crosshead and for one of the main bearings. The cylinder was also bored out, the piston metal sprayed, and new rings made.

Another noteworthy feature is the base upon which the engine is



#### Attention to Detail

High quality castings and machine work are seen throughout the engine.

mounted. The decorative hand-riveted beams are from an 1888 Murphy stiff-leg steam crane.

#### What's Next

The engine has been run recently at the Coolspring Power Museum and Dick is currently weighing the options for transporting the engine. Hopefully we'll all get to see this special engine very soon at a WAPA event.

# MINUTES OF THE BOARD OF DIRECTORS

## MEETING OF JULY 13, 2007

Members present: Tom Millett, Bob Swan, Wayne Mabb, Kelley Garcia, Jim Davis, Robert Smith, Joe Siddons, Leroy Overstreet, Jack Johnson, Slats Seeley, Rex McCleary, Marissa Smith, Rob Skinner, John Hampton, George Noble and Craig Maxwell.

Called to Order at 7:02 by President Tom Millett.

Flag Salute led by Jack Johnson.

President's report: Tom had nothing new to report.

Vice-President's report: Bob Swan had nothing to report.

Secretary's report: Wayne Mabb moved to approve the minutes of the June meeting Bob Swan seconded the motion. Passed.

Treasurer's report: Kelley reported income of \$4,147.63, expenditures of \$5,228.27 for a loss of \$1,080.64. Assets of: cash \$38,285.61 investments of \$132,746.92 for a total of \$172,032.53 and no outstanding liabilities.

Membership: Jack reported that he required new badges and ordered on the badge account and found that it was still active. He also complimented the new editor of the Hit & Miss for a great first issue.

Purchasing: Leroy reported that balloon boats are not available at this time and he called the Washington based company for Putt-Putt boats.

Library: Jim Davis reported that Dick Bouma donated to the library and should be recognized for the donation.

Shows: Bob reported the following shows: Classic yacht show, sanctioned, and information and directions will appear in H&M; San Dimas car show July 29<sup>th</sup>, we will grind corn.

August shows: Joe Siddons yard sale August 4<sup>th</sup>. Ken and Larry Evans trip to Mt. Wilson August 12<sup>th</sup> and 18<sup>th</sup>, with a write up in the Hit & Miss. Chino Chamber of Commerce August 25<sup>th</sup>, Larry Madole to Chair. Bob moved to sanction Joe seconded the motion. Passed. South Pasadena car show Sept 16<sup>th</sup>, more information later.

Safety: Joe had nothing to report, we have been safe so far this year.

Tom reported on Jack's show at the Christian school in Costa Mesa, lots of hands on equipment for the kids. Jack's daughter brought a check to Tom for \$350 and he has sent a reply to the schools director.

Prado Dam: Craig reported that he had contacted the Army Corps of Engineers, no movement by ACE, we will need to

find a new contact person with ACE. He also talked about the antique Caterpillar show next June 20<sup>th</sup> in Woodland, Ca, to see if we might participate.

Rubel Castle: no report.

Editor of Hit & Miss: Rob thanked Jack for his help in getting out his first edition. Deadline for articles and picture will be the 20<sup>th</sup> of each month.

General information: John Konwiser from Arizona has many old cars and some members know him.

Old business: Jim to purchase the CD for the GEM.

New business: Tom to form a nominating committee, Leroy to head.

Rex spoke on the idea of having a show log with detailed information such as names, dates results and general information for show chairs and the shows director.

George Noble stated that it was time for a fun day. Tom stated that John DeLazzaro can make the Glendora Preservation Society available for a fun day. West Covina ranch also can be procured for a private gathering. Bob Smith to make contact for Sept 8<sup>th</sup>.

Adjourned at 8:45  
Wayne Mabb, Secretary

## Western Antique Power Associates

Like engines? Need tips? Have expertise to share? Join WAPA and meet other enthusiasts. Call Membership Director, Jack Johnson, at (714) 630-2912 or visit our web page at [www.wapa.us](http://www.wapa.us).



# UPCOMING EVENTS

**August 10, Friday**  
**7:00 p.m.**

## **Board of Directors Meeting**

The WAPA Board of Directors meeting is held at Heritage Park in Santa Fe Springs. All members are welcome and encouraged to attend. If you have an idea on how WAPA could become a better club or want to express your opinion, please attend.

Heritage Park is located just south of Telegraph Road and west of Norwalk Boulevard. The meeting is held in the train depot next to the steam locomotive.

**August 25, Saturday**

**7:00 a.m.**

## **Corn Feed Run, Car Show**

**Chairman: Larry Madole**

This is the Fourth Annual Corn Feed Run Car Show and Cruise in Chino. It's a fund raiser for charity, hosted by the Kiwanis.

In addition to the cars and engines, there will be music, drawings and food. In the afternoon will be a "green house raffle" and an "open header contest."

Larry will be providing several canopies for shade, cooling water, drinking water, coffee and donuts.

From the 60 freeway, exit on Central and go south. From the 71, exit on Soquel Canyon and go north. Soquel Canyon becomes Central. At D St., go west for less than a block, then turn left into the City Hall parking lot.

Setup is at 7:00 a.m. The show runs from 8:00 a.m. until 3:00 p.m.

## **September 16, Sunday** **South Pasadena Car Show**

Mark your calendars for this well attended event. Details will be in next month's Hit & Miss.

## **September 15, Saturday** **Bouris Ranch**

**Chairman: Larry Madole**

The Bouris family will be opening their doors for a rare opportunity to see their collection. They are requesting that all attendees bring an engine, so start getting your favorite ready for this event. Details will be in the September Hit & Miss.

# MOUNT WILSON

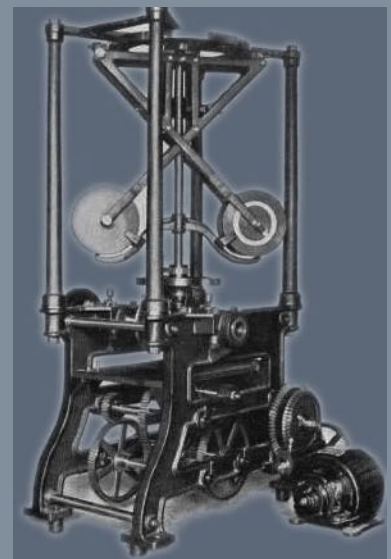
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The Evans' obtained permission to refurbish the engine and bring it back to running condition. With the help of Mike Jones, the trio spent many months bringing the facility back to operating condition. The engine now starts and runs flawlessly.

Larry and Ken have now arranged to obtain clearance for a limited number of visitors to tour the observatory. The tour will be limited to thirty people, and will include both the powerhouse and the telescopes.

The dates of the tours are Sunday, August 12 and Saturday, August 18. The meeting times on both dates will be 10:30 a.m. The tours will last until about 1:00 p.m. If you would like to attend, call Larry at (626) 574-8904 or Ken at (626) 683-8372.

-Larry Evans



# CLASSIFIED ADS

## **EDGE&TA Branch 134 Show.**

Mike Jones forwarded this info. The Branch 134 folks are putting on a show in Page, AZ, on Sept. 21-23. Contact Judy Kitson at judykitson@hughes.net or 928-645-2325.

## **Bench Mill.**

Go-Well, made in Taiwan. Excellent condition, minimal wear. 2 h.p., 115/230 VAC, single phase. Includes R-8 collets, some tooling, table vise. \$550. Contact Dick Bouma at corvette59@verizon.net or 909-988-7744.