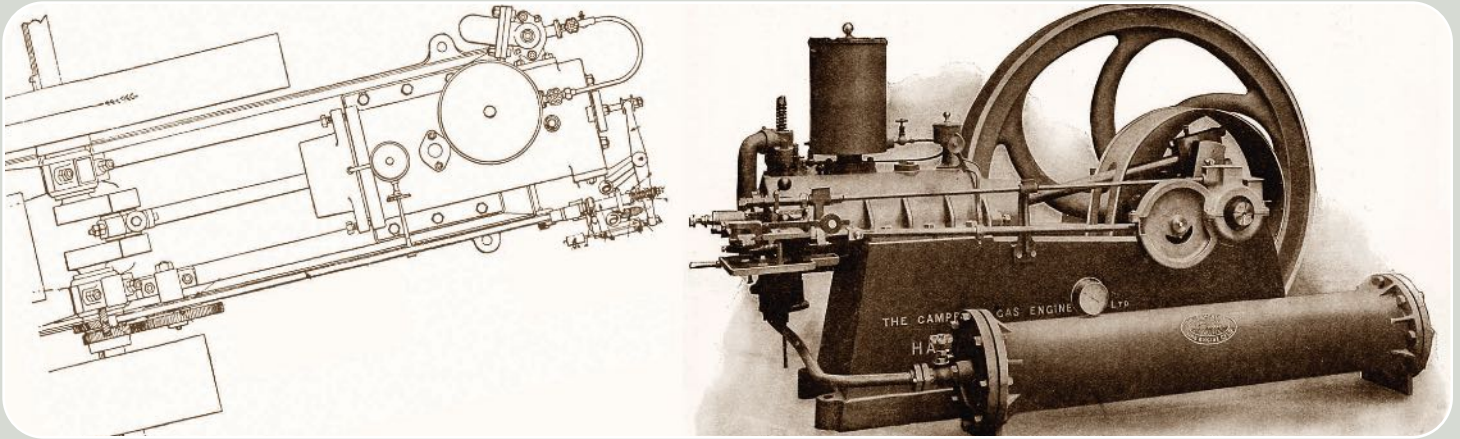


October 2008

HIT & MISS

Journal of the Western Antique Power Associates



ALTERNATIVE FUEL FOR THE 1800'S

By Rob Skinner

Throughout history, the specific materials and products used by humans were dictated by availability, cost and political pressure.

The internal combustion engines that we collect, and their builders, were not immune to these influences.

M. Durand, a French engine builder, stated a common belief of the period: "It is a mistake to attempt to distill the oil in the engine itself, when a mineral essence [gasoline], already distilled, can be obtained." Many manufacturers built gasoline-fueled engines just for that reason: gasoline was inexpensive and readily available. Further, existing designs just worked well.

The use of gasoline was not without drawbacks. British legislators decreed in the Petroleum Act of 1879 that all oil for burning in lamps would have a flash point above seventy-three

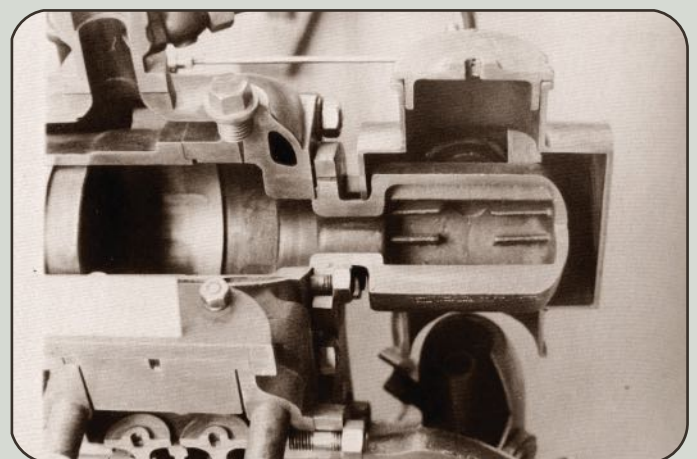
degrees Fahrenheit. Other laws stated how lighter fractions (including gasoline) were to be transported and stored. Other European countries and some states in the United States also enacted laws that greatly increased the cost of gasoline to the consumer.

As a result of these restrictions, there was pressure on engine builders to develop an engine that ran on fuels heavier than gasoline with a higher flash point, such as kerosene.

Early experimenters in this arena were Priestman, Akroyd-Stuart, and Capitaine.

This article will focus on the Akroyd-Stuart design, as it was clearly the most successful.

Akroyd-Stuart's early experiments followed traditional philosophy of the time, but in 1890 he filed two patents that described a vaporizing chamber



Above: Cutaway showing the inside of a Hornsby cylinder and vaporizer.

Top of page: Campbell Oil Engine with air-start reservoir.

connected to a working cylinder via a narrow throat. From then on, all Akroyd-Stuart engines exhibited this characteristic.

All of these engines feature a small chamber (vaporizer) on the end of the cylinder, which is preheated with a lamp.

In the earlier Akroyd-Stuart design, air is inducted into the cylinder via a poppet valve on the end of the vaporizer. Near the completion of the compression stroke, oil is squirted into the superheated vaporizer, where it ignites and the expanding gasses force the piston downward.

This operation is distinctly different than the patent of late 1890. In that design, fresh air is inducted directly into the cylinder and oil is squirted into the vaporizer on the intake stroke. Combustion is initiated when the clean air from the cylinder is compressed into the superheated fuel-air mixture contained in the vaporizer.

After the potential of the Akroyd-Stuart became obvious to the engineering world, he entered into an licensing agreement with R. Hornsby and Sons, Ltd., a large manufacturer of agricultural equipment and steam engines. Hornsby made several changes to the design to aid in reliability and ease of use. The new engine was introduced in 1892 and it became an instant success.

The Hornsby-Akroyd engine was economical to run, immune to the idiosyncrasies of contemporary electrical ignition

variations, and simple to maintain and operate.

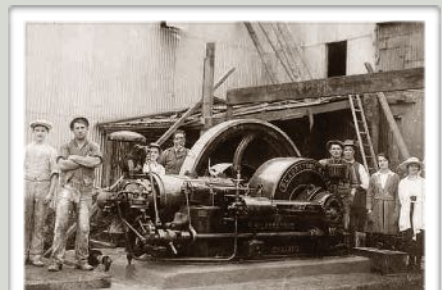
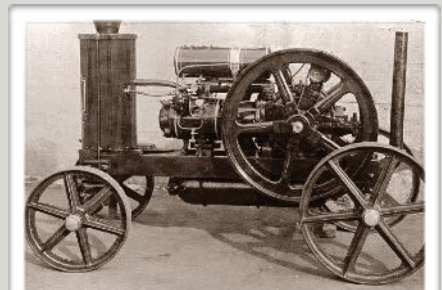
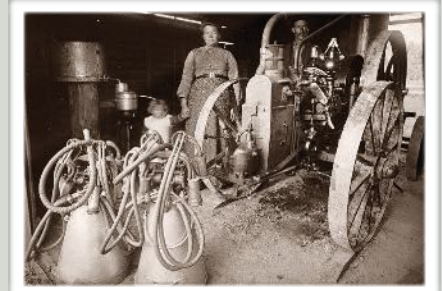
In 1883, Hornsby licensed the right to build the engine in the United states to De La Vergne Machine Co., in New York.

Hornsby oil engines became ubiquitous, and soon could be found in all corners of the globe. A Hornsby oil engine was the first to provide power to the Statue of Liberty. Hornsby also supplied power to Marconi's early radio experiments, the tunnels in the Rock of Gibraltar, and the Taj Mahal.

After the expiration of the Akroyd-Stuart patents, a myriad of other companies began manufacturing engines of similar design.

Other manufacturers that built upon the foundation laid by Akroyd-Stuart were Blackstone, National, and Crossley. All incorporated subtle differences to the Akroyd-Stuart design, which were intended to improve power delivery, economy, and ease of use.

Pictures from top: Hornsby engine in a milking barn; bullock wagon hauling oats and a portable Hornsby engine; Jelbart portable oil engine; portable Hornsby-Akroyd engine powering a saw bench; Blackstone oil engine; Hornsby-Akroyd engine powering an irrigation pump.



FUEL	BTU/LB	BTU/FT ³	FLASH POINT
Gasoline	18000		10°F
Kerosene	22000		150°F
Methyl Alcohol	20000		55°F
Natural gas		975	
Producer gas		150	
Gasoline Vapor		692	

systems, tolerant of fuel

MINUTES OF THE ANNUAL MEETING OF THE BOARD OF DIRECTORS HELD SEPTEMBER 12, 2008

Board members

present: Wayne Mabb, Kelley Garcia, Bob Swan, Jack Johnson, Leroy Overstreet, Bob Smith, Craig Maxwell, Joe Siddons.

Board Members Excused: Tom Millett

WAPA members present: Jim Davis, Rob Skinner, Slats Seeley, John Hampton, Gus Lukrofka, Dan Kato.

The meeting was called to order at 7:03 p.m. by President Wayne Mabb.

Flag salute was led by John Hampton.

President: Wayne Mabb announced that he would be out of town for the October board of directors meeting. He asked Bob Swan to officiate the meeting. Bob delightedly accepted.

Vice President: Bob Swan had nothing new to report.

The secretary was absent so **acting secretary** Bob Smith made a motion to accept the July board of directors meeting minutes. Jack Johnson seconded. All were in favor. Bob Smith made a motion to accept the August board of directors meeting minutes. Leroy seconded. All were in favor with no corrections.

Treasurer: Kelley Garcia presented the Category summary report. She pointed out that as of 9/12/08 we are in a deficit of \$1,368.25 but keep in mind that \$1,304 of that was income transferred to the Museum fund leaving only a \$64.25 deficit. The question was raised from the membership as to how the Morgan Stanley and

Smith Barney investment accounts were doing in this down economy. Kelley stated that they were a wash with profit and loss for the year.

Membership: Jack Johnson announced that former member Bruce Marian paid dues for the next three years, 2008, 2009, and 2010. Jack made a motion to reinstate Bruce as a member. Kelley seconded. All were in favor. Rob announced and made a motion to accept as a new member Hidenobu Wakahara from Japan. Kelley seconded the motion. All were in favor.

Purchasing: Leroy Overstreet announced he bought more boats for Joe Siddons to sell. He also mentioned we have plenty of corn for grinding at Neff Park.

Library: Craig Maxwell announced that it was too hot lately to do the inventory so now that it is cooling down, he will get to cataloging the books onto a computer. Bob Smith donated an old steam tractor book to the museum. Dottie Blackburn donated old Gas Engine magazines to the museum.

Shows: Bob Smith made a motion to sanction to Wilson Elementary School show on October 3. Seconded by Bob Swan. All were in favor. Bob went on to make a motion to sanction the Glendora Pumpkin Festival on October 18. Seconded by Leroy Overstreet. All were in favor. Bob lastly made a motion to sanction the Los

Alamitos Airfield show on October 26. Seconded by Leroy Overstreet. All were in favor.

Break: 7:40 p.m.
Reconvene: 8:00 p.m.

Safety: Joe Siddons reported that the Chino Valley Fire Inspector pointed out at the Chino Corn Feed Run show that our fire extinguishers were in need of current inspection tags. Tom Millett took them for the required inspection after the show.

Old Business: Craig Maxwell announced that a meeting was arranged with Phil Krause of the County of San Bernardino regarding the museum land. Mr Krause was unable to attend but set a new meeting for Tuesday, September 16, at 10:00 a.m.

New Business: President Wayne Mabb made a motion to continue until the October meeting the appointment of a nominating committee for officers for the 2009 board of directors. Craig Maxwell seconded. All were in favor.

Adjourn: 8:15 p.m.

Bob Smith, Acting Secretary



The board has sanctioned the Neff Park Show, scheduled for October 4.

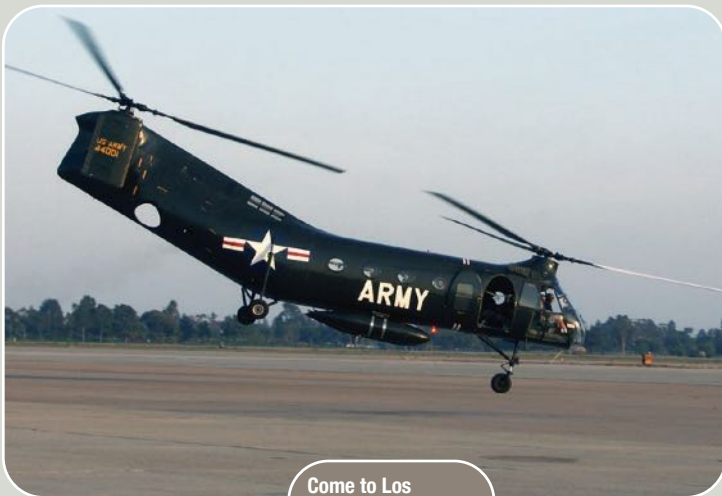
UPCOMING EVENTS

September 26, Friday
Lutheran School Show
by Wayne Mabb, Chairman
626-286-6452

Bring hands on equipment or an engine to become a teacher for the morning. Lunch will be provided. Be there to set up between 8:00 and 8:30. The show runs until lunch.

September 27, Saturday
Aliso Viejo Founders Day Fair
Rob Skinner, Chairman
562-694-2301

For full details, see last month's issue of the Hit & Miss. Show is 12-6, setup at 10:30. Location: 100 Park Ave., Aliso Viejo.



Come to Los Alamitos on the 26th to see this Shawnee and other rare birds

October 3, Friday
Wilson School VIP Day
by Tom Millett, Chairman
626-335-6271

This is a hands on exhibit during lunch. Students range from Kindergarten through fifth grade. Parents and grandparents are invited to have lunch with the students. The kids love to look, touch, crank, pump, and whatever else we have to offer them. Try to bring something kids that age would enjoy and possibly operate under the supervision of WAPA. Leave the big engines at home. However, they would love to sit on the seat of a tractor while Grandpa takes a picture. We should get there by 10:30 a.m. to be ready for them at 11:30 a.m.

The address is 8317 Sheffield Rd., in San Gabriel, just east of San Gabriel Blvd. A school employee will direct you in. Call Tom if you have questions.

October 4, Saturday
Neff Park
by Bob Smith, Chairman
909-435-9978

Neff Park is located at 14300 San Cristobal Drive in La Mirada. There will be Victorian Arts and Crafts, tours of the Jeff house, an antique car show, a children's area and other entertainment. From the 5, go north on Valley View, cross the railroad tracks and proceed to

Al Cala Dr. across from Mc Donalds. Turn right and go back south on frontage road to San Cristobal and turn left. Go to San Esteban and turn right into the park. Hours are 10:30 a.m. to 4:00 p.m. Setup by 9:30 a.m.

October 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 ideas on how WAPA can become a better club, or if you just want to come and join in the festivities, please join us.

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

October 18, Saturday
Glendora Pumpkin Festival
Setup 7:30 a.m. To 8:00 a.m.
by Tom Millett, Chairman
626-335-6271

We need to be in and well setup before they start the public shuttle service. Water and electrical are available. Bring shade. This is the major annual fundraising event for the Glendora Preservation Foundation. Lots of youngsters and adults alike attend. Food is available for purchase. We will grind and sell corn meal. We can sell boats, whistles, shirts, etc. President and First Lady of the Glendora Preservation Foundation are WAPA members, John and Valerie DeLazzaro. Let's show them our support.

Directions: From the 210 freeway, exit at Grand Ave. Go North to the first traffic light, which is Moana Loa and turn right (East). Go until you can't go any further. You are there.

October 26, Sunday
Wings, Wheels and Rotors Expo
by Bob Smith, Chairman
909-435-9978

This will be the seventh annual event at the the Joint Forces Training Base in Los Alamitos. The event is free to the public. Over 20,000 are expected to attend. From 605 or 5 take Katella Ave. to Lexington. Go three blocks South to the base entrance. You must show a photo ID to enter the base. Setup is 6 to 8.

The Hit & Miss is the monthly publication of the Western Antique Power Associates. If you would like to join, visit us at www.wapa.us or come see us at one of our shows.

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