

Doble steam car of 1930 was the last of the steam automobiles built in the U.S. and has latest innovations of that period.

THE LOST RACE

BY THOMAS E. KILEY

*Somewhere along the way steam lost the battle—
and it won't be back until the atomic auto appears.
Meanwhile, here's how things stand*

HOW WOULD you like to have an automobile that could run as smoothly at one mph as at 80 or 90 mph, that had unlimited hauling power, silence of operation, no transmission, only about forty moving parts in the entire car, ran many thousand miles more on the same set of tires, no clutch, carburetor, ignition system to get out of order or adjustment? One whose acceleration was as fast and as smooth as a racing car and that would cost about one half of today's automobile to manufacture?

No, this is not a car of the future, but of the past. One of the mysteries of this century is why you do not have such an automobile today, a steam car. There have been many reasons advanced for the failure of the steam car to capture the public market, but no one has been able to answer this question absolutely.

It is admitted that as an efficient power plant the steam engine is superior to the internal combustion engine. What is needed for best and most efficient operation of an auto is variable power and variable speed. The steam engine is this type. The internal combustion engine is a constant power and constant speed power plant, and must depend on clutches, transmissions, differentials, carburetors, ignition

system and many other complex auxiliary parts to convert this constant speed and power to the variable speed and power needed to move and control an automobile.

We are inclined to think of the horseless carriage as an invention of the latter part of the last century or the early part of this century, while in fact, the first steam propelled land vehicle was made 300 years ago this year. In 1655, a Jesuit missionary, Father Verbiest, while located in China, designed and built a small car powered by steam. He used the principle of a jet of steam blowing on four vanes, called an Aeolipile. This vehicle was mainly used indoors.

In 1680 Sir Isaac Newton designed a steam carriage with an escape pipe from the boiler pointing backward, propelling the vehicle on the same principle as is used in our modern jet airplanes.

During the reign of Louis XV of France in 1763, three steam carriages or tractors were built by Captain Nicholas Cugnot for the purpose of towing artillery guns into the field of battle. One of these steam tractors is still in the Paris Museum.

One of the better known steamers was the Stanley Steamer, that saw its birth in September, 1897 in the town of New-

ton, Mass. The famous Stanley twin brothers, F. E. and F. O. Stanley were the designers and builders of this marvel of that time. In the first "Open Air Meet of Horseless Carriages" in 1898, the Stanley Steamer ran at the exciting speed of 27 mph. Three years after their first car, the Stanley brothers sold their business and patents to John Brisbane Walker of the *Cosmopolitan Magazine* and a financier named Amzi L. Barber. Messrs. Barber and Walker had a disagreement and separated the Stanley Company into two steam car manufacturing firms in 1899. The two new companies were the Locomobile Company and the Mobile Company. The Locomobile Company later switched to the making of gasoline cars when they saw the trend.

Another famous car manufacturer, Ransom E. Olds built an experimental steam car in 1886 but never put it on the market.

In 1901 the White Sewing Machine Company of Cleveland, Ohio began the manufacture of steam cars. They made two models in 1907, one selling for \$4,000 and a smaller car for \$2,000. That is quite a bit of money even now and more so at that time for a vehicle that was far from being as reliable as today's automobile. They discontinued the making of steam

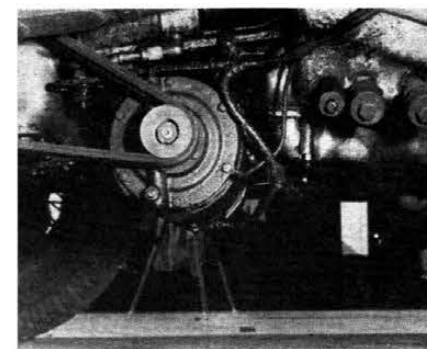
cars in 1910 and today are one of the leading manufacturers of trucks.

But 1918 was the start of the Doble steam car manufacturing in the United States and 1930 saw the end of the Doble. The car shown in the accompanying photographs is the last complete car that came out of the Doble factory. This was the last steamer made in the United States, but Doble cars, busses and trucks were made and used in Germany as late as World War II. Hermann Goering, Nazi Number Two, was often seen in parades riding in a Doble steam car. Doble powered trucks and busses served the German Nation during the war.

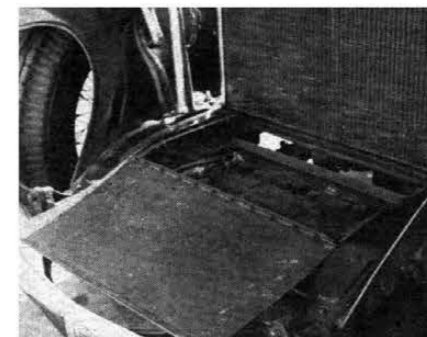
Steam powered motorcycles were built and some are still in operation in England. A steam powered light plane was flown successfully in 1933. The engine was removed from the plane and installed in a locomotive used to pull three Pullman cars, showing the power of steam as this was only a two-cylinder engine.

A steam car with its variable power and variable speed is the most efficient and economical automobile possible. The present auto industry spent millions of dollars and years of time to match the steam car's smoothness, rapid acceleration, control and ease of handling. A steamer needs no complex transmission, starter, clutch, gear shift, carburetor, ignition system or drive shaft. The later steam cars had only 15 moving parts in the engine and only 37 moving parts in the entire car. It could run 200 or more miles between stops for fuel and water and could burn gasoline or kerosene as fuel for the boiler.

Steam, the source of power, is made in the boiler, admitted to the engine, and power is applied direct from the engine to the wheels without the need of a clutch, transmission, drive shaft or flywheel. The engine is located on the rear axle or just in front of it. Some older steamers had the engine located under the hood and a



Doble steam engine is partially seen in upper right corner. In center is the electric generator with belt to rear wheels.



Battery of the Doble steam car is located in front of the condenser (radiator) and between the wheels. It has six cells.

short drive shaft was used, but usually the engine was located just in front of the rear axle. To reverse the car you simply reverse the engine.

An internal combustion engine, with its constant power, constant speed, that needs transmissions, gears, clutches, drive shafts and differentials to deliver the power from the engine to the wheels, cannot have the strong pulling power at low speeds, nor the capacity for big overloads that is inherent in the steam engine.

To operate a steam car, it is necessary

only to steer and operate the throttle or the brakes when needed. A steam engine can be used as a brake by reversing the engine. With smooth acceleration and deceleration the tires on a steam car last much longer. With only about 40 moving parts in the car, there is much less to go wrong than in a gasoline car with its thousands of moving parts.

The steam engines are of two or four cylinder types. One cylinder is a high compression cylinder and one a low compression. A four cylinder engine has two of each type, mounted in banks. The steam goes into the high compression cylinder first and, after delivering its power, is then sent into the low compression cylinder where more power is extracted from the steam. Then it is returned to the condenser to be made into water and then back to steam again.

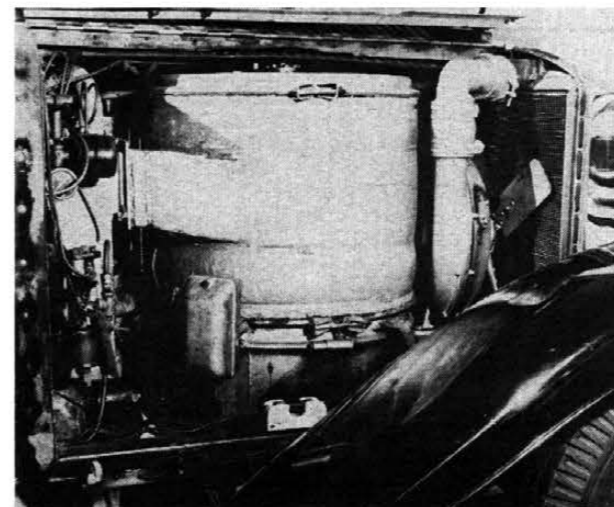
The pilot light fires the main burner, the main burner heats the water in the boiler into steam and then the car is ready for operation. There are three types of boilers: water tube, fire tube and flash boilers. Water tube has the water in the tubes and the fire below or around; fire tube has alternating water and fire tubes, giving a greater surface for the making of steam. The flash type has no stored reserve of steam, as have the water or fire tube, but can produce superheated steam in the required amounts instantaneously. There was no danger of boiler explosion with the flash type but steam had to be kept in balance with requirements at all times, a tricky operation.

There are water pumps, fuel pumps, and check valves also required as on a gas car. The radiator on the steam car is actually a condenser used to convert steam returning from the engine into water to be used again.

By operating the throttle, speed of the car is controlled, the same as the gas pedal on the conventional car, but there

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Right side of the Doble steam car, with hood raised, shows main boiler and the turbine used to drive the front fan.



Dash panel of the Doble was a maze of instruments. Steam pressure gages are the white dials below the main dash.



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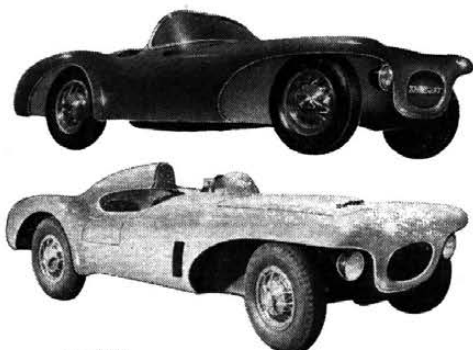
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THE LOST RACE

(Continued from page 51)

are no gears to be shifted, either manual or automatically, in order to get the power to start the car from a standstill and later when car is moving to shift into high gear. A gasoline engine is efficient only at high speeds, a steamer at all speeds. The steam car can be placed with the front bumper against a building and when started up the wheels will spin. If you did the same with an internal combustion car, you would stall the motor.

The pilot light used to start the main burner on the Doble is electrically operated. On early models of the steam cars, this was done by lighting a small pool of gasoline, and 10 to 25 minutes was required to get up enough steam for power, but with the improvements made since then, and the electrically operated pilot lights, steam pressure is available in about two minutes. This is about the same time a gasoline motor should be warmed to operate efficiently.

The Doble F-30, pages 50-51, was the last complete car to be made in the Doble factory located in Emeryville, California, and the last in the United States. This was to be their latest model with a new type four cylinder engine, but the engine never got beyond the drawing board. The engine of another Doble, one owned by Joseph Schenk, husband of Mabel Normand, the movie star of silent pictures, was bought, overhauled and rebuilt to equip this Doble F-30 with a power plant.

The car originally sold for \$10,500, which is more than the highest priced car sells for today. However, with advanced manufacturing techniques, newer metals and advanced designs, it is believed a steam car could be made for less than today's autos if done on a mass production scale.

Note that the boiler of this Doble is under the hood, the usual place of the motor on modern cars. The steam engine of the Doble is shown in front of the rear wheels, in the upper corner of the pictures. The electric generator is in the center of the picture, operated by a belt from the rear wheels. The differential is shown to the rear of the generator. It contains two main gears, one connected to the engine and one to the wheels. A friction device takes care of the difference in speed of the wheels when making a turn.

Note that the battery of this car is carried in front of the condenser (radiator) between the front wheels. There is a turbine in front of the boiler that drives the fan used to cool the steam in the condenser back into water. The instrument panel of the Doble has the appearance of an airplane panel board. However, the usual oil pressure, fuel indicator, water indicator and speedometer of the gasoline car are included, in addition to those showing the steam pressure.

However simple and efficient the steam car could be, because of the lack of im-

improvements during the last 25 years, it is quite a chore to operate one such as this Doble. The actual driving is simple and easy, but getting the car ready and "blowing it down" after takes more time and trouble than the ordinary person cares to give, especially when compared to the improved cars we have today. After a run in the Doble shown it took three hours to blow down the boiler to prevent scale and rust and to take proper care of it as required. It must be remembered that this car is more or less a museum piece so in everyday use this care would not always be necessary. A steam car can be run for some time even after the boiler is shut off, on the steam reserve left in the boiler.

If steamers had had the improvements since their beginning that were made on gasoline cars, no doubt this care would have been eliminated and they might have been as easy to care for, or easier, as today's modern cars. A ride in this steam car showed its rapid and smooth acceleration and its quiet engine. While the water pump was a little noisy, what car 25 years old doesn't have a few rattles and knocks.

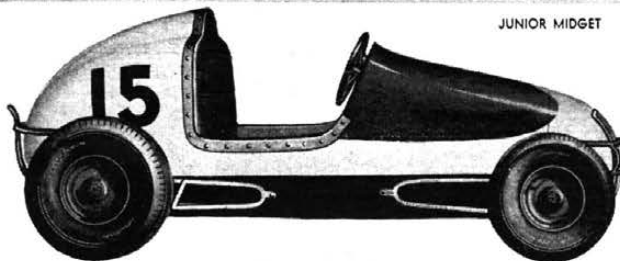
While this was the last steam car commercially manufactured in the United States, there have been many cars converted into steam by individuals since 1930. Some steam advocates have even built steamers, but none have been put in production. There have been attempts from time to time to revive the steam powered automobile, mainly along the lines of commercial vehicles, but they have all come to naught.

There seems to be no record of the number of steam cars in actual operation today, nor is there any association of steam car owners. Any steamers in operating condition at this time, like the Doble F-30 shown here, are probably collectors' items or individually converted or built steam cars.

At one time there were from 100 to 125 makes of steam cars in the United States. Some of these were duplications of the same manufacturer, using a different name for the same car. Some of the better known steamers are the Stanley, White, Locomobile, Federal, Peerless and Steamobile. There was also a Hudson steam car.

With the tremendous investment in gasoline car manufacturing, its auxiliary parts manufacturing, the petroleum industry and its by-products, the millions of cars owned by us today plus the excessive cost of building steam cars on a volume scale, there is very little likelihood that you will ever have the efficient and economical auto that the steam car can be. Atomic power might some day be used to manufacture steam in a small compact power plant and again we may see the steam car on the highways, but for the immediate future, powerful interests cannot permit the reappearance of the steam car on any great scale. We will have to wait and see what passing years bring. •

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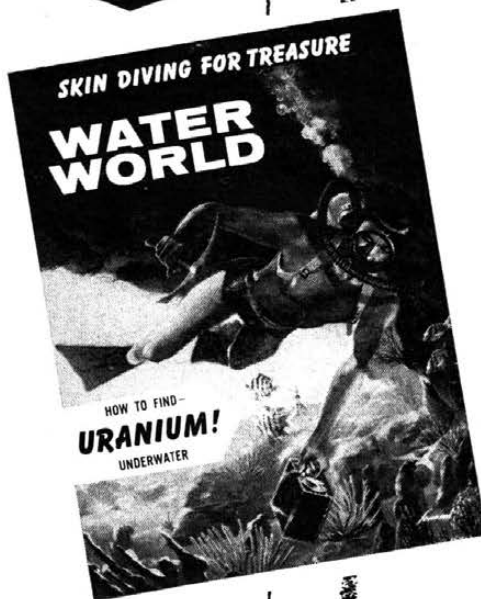
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