THE WILLIAMS STEAM CAR OF TO-DAY

Some preliminary details of the car, which gave the fastest acceleration I have ever witnessed.

By ROBERT E. OSTWALD.

On the Sunday morning of the recent steam car meet at Kent, Ohio—unfortunately when many of those attending had left—a 1950 Ford Sedan drew up. However, there seemed to be something wrong, for it was boiling over slightly.

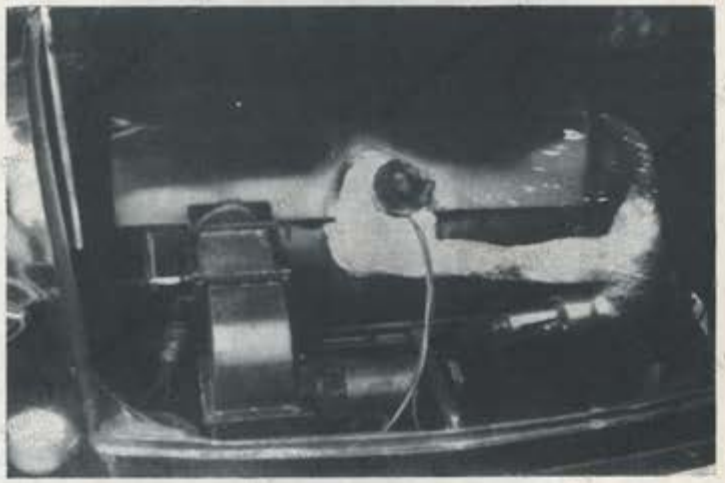
This was Mr. Calvin Williams steam car—all steam power unit components were fitted so that the exterior, interior and underside of the car remained unaltered. It had the excellence of a professionally built job—all hoses and tubes were run the shortest possible way, fastened at intervals with clamps. The only reason for the escaping steam was that the new condenser had not yet been installed, the original Ford radiator being in use.

I gave Mr. Williams one of my business cards, and was able to get the first ride after we got everyone's head out from under. Nothing at the meet attracted so much attention as this ordinary looking Ford. The ride was something to behold, with the turn of the ignition key the burner began. Some soot was experienced at the start, but I am collaborating with him to use my burner, and this should be no problem, in any case, no soot was seen after the initial start. The voltmeter marked in percentage of charge had been resting at 100, but dived to 75 as the burner fan and fuel pump motor started up. A Leese-Neville Alternator and rectifier capable of delivering 100 amps at 12 volts D.C. is installed. Steam rose on the pressure gauge almost at once, and in just about a minute the burner cut out at 1,000 lbs. per sq. in. We were then ready to start.

The car had been idle for about an hour, during which time the steam generator had cooled down. We had to manoeuvre to turn around, and the car started going backwards just as soon as the shift lever (steam cut-off control) in the floor was moved to reverse and the foot throttle depressed slightly. With a few soft jerks, we were back, and now shifted to forward (60 per cent. cut-off). The throttle was opened about half, and my neck snapped back as we were off. To be sure, we did not condense all the steam in this amazing take-off,

what with cold steam line and cold engine, but we did move along at a fast pace. The acceleration was the fastest I have ever witnessed.

We went a short distance down the highway at about 40 miles an hour. Checking my watch, I found that the burner came on for 15 seconds per minute, over about four miles of rolling country. Theoretically, at least, this speedy little car—by American standards—had a potential of over 100 m.p.h. Now with the car in " hi " (35 per cent. cut-off) hills seemed to flatten before us, and acceleration for passing was always at hand, due to the lack of fluctuation of the pressure gauge from the 1,000 lbs. mark. Power was smooth at all times, except at very slow speeds on light loads, when it was a bit rough.

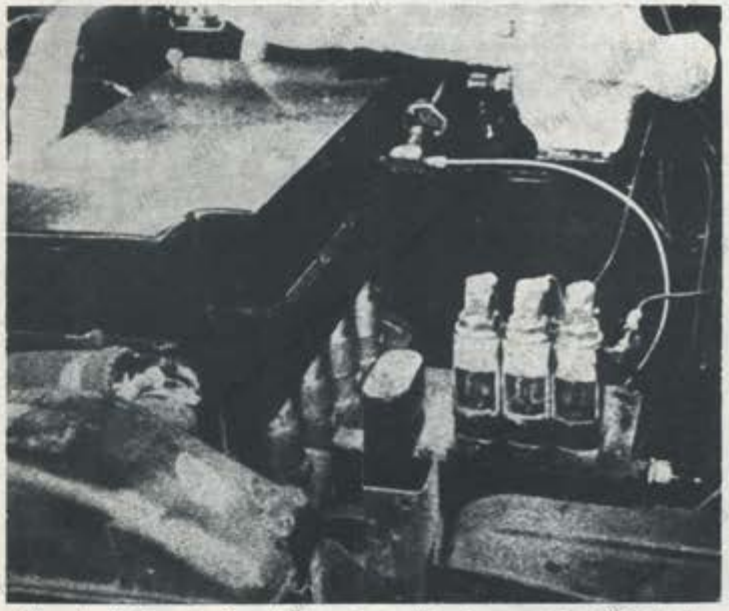


The Doble type monotube steam generator installed horizontally in the trunk (boot).

Here are a few details of the power unit. The steam generator is Doble type, tangentially fired with a pressure atomising burner using a maximum of 8 gallons (U.S.A.) per hour, installed in the trunk (boot) lying on its side. Under the hood (bonnet) is the 4-cylinder single-acting Uniflow expansion engine, which drives the Ford propeller shaft and thus the rear wheels through a 3.72 : 1 differential crown wheel to pinion gear ratio. The electric generator, a small gear-type water pump to pump condensate from bottom of radiator to water tank, a fine quiet three cylinder water feed-pump and cylinder

lubricating pump are engine driven. Delivery of water from the feed pump to steam generator is via solenoid valve on the high pressure side.

The engine is of " in-line " construction, that is to say, the four cylinders are arranged in line with 3ins. bore and 2ins. stroke, that is, " oversquare " to use I.C. car jargon.



The 4-cylinder, single-acting engine. This is a vertical " in-line " design, with poppet admission valves and Uniflow expansion. Bore, 3in. ; stroke, 2in.

Steam admission is controlled by poppet valves, exhaust being entirely through ports in the cylinder walls uncovered by the piston at the bottom of the stroke. This accounts for the slight roughness at low speeds, since the exhaust steam is highly compressed on the piston's up stroke, resulting in large variation of torque, which is felt at low speed. Auxiliary mechanically operated exhaust valves would cure this. To deter the entry of condensed steam into the crankcase and to retain the oil, crossheads of cylindrical type run in guides in the crankcase, the piston being connected thereto by rod.

To say the least, the car took our breath away, and I am

pleased to say I have not seen it for the last time. This modern car proves that you can fit a modern steam unit in place of an internal combustion engine. I feel sure that this same type of engine, if laid on its side with suitable oil sump modification, could be combined with the steam generator, also on its side, as now installed and both fitted as one compact unit in the present engine compartment. Also that the amazing response of steam is well ahead of the modern gas (petrol) engine, and that the monotube steam generator with good automatic controls can handle all road conditions provided it delivers steam to a suitable engine. (Stop press! Elimination of engine "roughness" is now claimed.)

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This article appeared in the

November - December 1957 issue of

LIGHT STEAM POWER

Reprinted by

Additional copies available from:

STEAM DEVELOPMENTS

Box 335 Staten Island 8, N. Y.

Price 10 Cents

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