The Keen

Steam Car

This magnificent sports roadster achieves outstanding performance in almost complete silence.

THE KEEN STEAM CAR

NO SMOKE — NO DIRT — NO FUMES

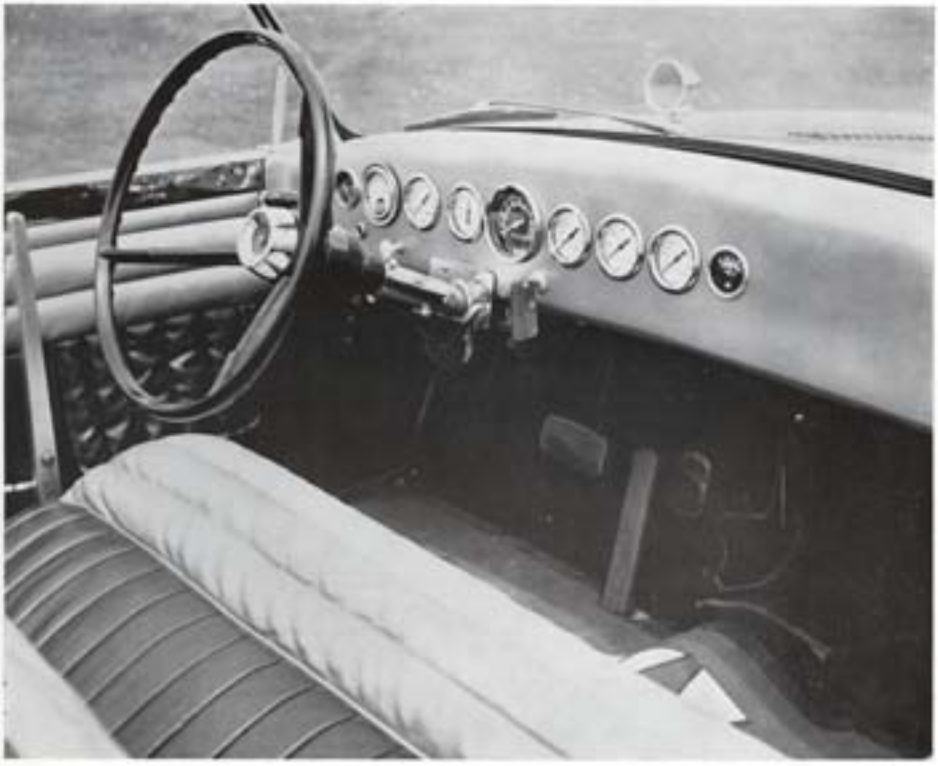
Starts at the turn of a switch — No gears — Silent travel.

Here is a magnificent bright red, very sleek sports car of rakish design, losing nothing by comparison with the most expensive and illustrious of that ilk. The exterior has twelve coats of rubbed down lacquer, and has beautiful magnesium wheels. Interior décor is in black and gold, the commodious cockpit having plenty of leg room and clean swept space. The impressive dashboard has a long array of gauges to inform the driver of what is going on, with the reversing lever at the left. If desired a foot pedal could be substituted for this lever.

Careful streamlining and beautiful finish combine to create distinction.

Performance.

A turn of the switch and the burner ignites with a slight puff. No smell and no smoke from oil fuel—lovely combustion. By my watch timing, steam pressure was raised and we moved away in just over one minute with full power available. When the power unit is warm, steam raising is practically instantaneous. We threaded our way through heavy city traffice and then out on



In charge of exciting power, the driver sits amid opulence.

With interior decor in contrasting black and gold surmounted by dove-grey panel which frames the instruments in neat array, the Keen displays excellent craftsmanship. Most of the intruments are of engineering interest only, being merely visual reminders of efficient automatic control.

From left to right are spotlight for instruments, water and fuel gauge, steam temperature gauge, fuel oil pressure, steam pressure, speedometer, steam pressure at engine, engine oil pressure, exhaust steam pressure, ammeter. Below from left to right are signal light for feed water pumps, headlight switch, and windscreen wiper control beside steering column bracket.

Two pedal control is provided by the brake and throttle accelerator pedals.

to the open road. Owner-driver, designer Charles F. Keen let her out and we rolled at sixty and then at seventy, which was all traffic conditions would allow. No fuss and no trouble. The monotube steam generator and automatic controls provide the steam when the engine requires it, all the driver has to do in normal running is use the accelerator pedal and footbrake. To reverse, the engine rotation is reversed. There is no clutch or gearbox. Acceleration is brilliant, being best described by the remark: " . . . . **at the average stop lights I am across the intersection before most cars get started."**

On a spurt, pressure once dropped to 800, but promptly came back, and the rest of the time remained quite steady at 1,000 to 1,200. This type of steam generator, being inherently safe from all fear of explosion is **not** subject to insurance cover or inspection. At 45-50 m.p.h., the burner was frequently auto-

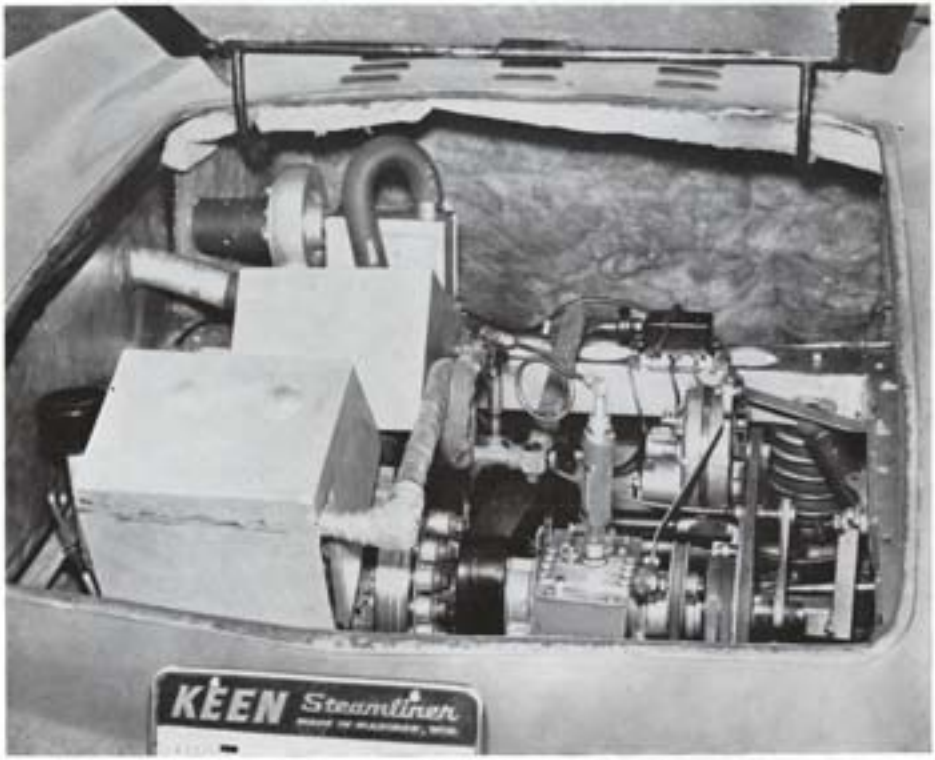
matically switched off due to excess steam pressure, very rarely due to excess steam temperature, which proves the worth of the automatic control system. There are two power settings—a low fire position, which gives about 85 m.p.h. top speed and the high fire with about 100 m.p.h. available.

Economy.

Cheap paraffin (kerosene) or furnace oil gives an economical 12—18 m.p.g. (10-15 m.p.g. American), depending on driving conditions, with improved economy envisaged for the future. Ordinary tap water is used and, with the steam condensed for re-use, the water tank need be only rarely filled.

Silence.

The engine and pumps are extremely quiet, comparing favourably with a perfectly tuned i.c. engine. On a sudden hard pull one is aware of a slight pulsation, but it is not very noticeable unless one is told to watch for it. There are several positions for variation of cut-off (which is the fraction of the piston's stroke during which steam is admitted to the cylinder). Engine drive coupling



The engine compartment under the rear deck.

The 4 cylinder uniflow expansion, single-acting engine is shown at left. Cylinders in this 90 deg. V. design are arranged in two banks of two each. There is direct drive to the rear axle, no clutch or gearbox being required. Freedom from vibration is ensured by a coupling incorporating twenty-four drive pins each surrounded by a rubber bush. With the engine installed transversely aft of the rear axle, the torque in forward direction tends to throw more weight on the rear wheels, thus counteracting wheel spin.

contains 24 drive pins each surrounded by rubber bushes to give smooth, silent transmission. When riding along at 25-30 m.p.h., it is impossible to know whether the burner is on or off.

Engine.

With four cylinders—the equivalent in power impulses of an eight cylinder i.c. engine, and 100 cub. in. (1,639 cc.) capacity, the compact V4 design gives 130 h.p., which can be increased if needed.

Steam distribution in the cylinders is on the uniflow principle, in which steam enters through a valve and exhausts through ports cut in the cylinder walls near the end of the stroke. Very high torque is available at very low r.p.m.,

The steam generator.

Nestling neatly under the bonnet (hood) is the highly efficient, oil-fired, automatically controlled steam producer, quite different from the cumbersome boilers of yesteryear.

so high that there was a danger of excessive wheel slip during acceleration. For this reason the engine is placed transversely **behind** the rear axle so that when power is applied going forward it throws more weight on the rear wheels, thus avoiding wheel spin. Also when the throttle (accelerator) is tromped on, the car hugs the road rather than creating a tendency for the front wheels to lift. That this arrangement is of great practical use is made evident by the ease with which the rear wheels can be made to spin when reversing.

Steam Generator.

Gone are the days of the bucket of coal, belching smoke, and greasy rag. Steam is generated automatically, without noise, smoke or troublesome fumes. Combustion is so good that there is none of the noxious odour associated with the diesel and, to a lesser extent, with the petrol (gas) engine.

Air and oil spray are blown into a totally enclosed combustion chamber at the top of the steam generator, and the hot gases give their heat to closely wound coils of immensely strong tube before being allowed to escape from an exhaust duct beneath the body of the car. Water is pumped into the coils of

The graceful lines give no indication of the smooth, silent steam power, with brilliant acceleration.

tube, turning to steam therein, which is admitted to the engine via a throttle valve operated by the accelerator pedal. Steam pressure is automatically controlled at a maximum of 1,200 lbs. per sq. in. by the action of a pressurestat, which switches the fire on and off to suit the engine's demand for steam, as controlled by the throttle. The normaliser allows a small spray of water to be admitted into the hot or superheater section of the coiled tube, cooling the steam before its exit to the engine and enabling the thermostat to maintain a steady

steam temperature. The whole nestles unobtrusively under the bonnet (hood). This is a very light-weight, compact steam producer, not be be confused with a heavy, cumbersome boiler.

Starting is more simple and reliable than an i.c. car. You just turn a switch. There is no need to wait for the engine to fire. Within the minute stored power is available to make the car accelerate right up to maximum speed as fast as the tyres will allow, without a pause for gear changing.

A familiar car in Madison, U.S.A., is the Keen Steamliner, but nevertheless one which rarely fails to merit excited comment. Preliminary arrangements for eventual manufacture on a commercial scale are being made.

Enquiries should be directed to :—

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