

explosions in its six or eight cylinders. The heat caused by these cylinder explosions is removed by circulating water.

Parts of the gas turbine engine, get red hot, but water cooling is not necessary. The hot parts will be designed to withstand the heat with ordinary air cooling. An aluminum shield over the hottest parts of the engine is enough to prevent the heat from damaging the car body.

Auto manufacturers, after tests of the gas turbine on vehicles, say that it is not necessarily the engine of the future despite its performance record. There are still bugs that have to be ironed out. General Motors is running two vehicles, a bus and a race car with experimental engines. Chrysler Corporation has a conventional-looking experimental gas turbine model on the road, the "Turbine Special." Ford Motor Company is testing and improving the new motor part by part.

One disadvantage of the gas turbine is that there is no braking force from the engine when the driver takes his foot off the accelerator.

At high speeds, especially, the motor's role in breaking is important, even more important than the brakes themselves. Brakes alone could not stop the car in time in many cases.

Engineers believe the braking problem will be solved. It may, however, entail a large bill for maintaining a more powerful

and complicated braking system than we find in today's cars. The GM Firebird gains extra braking force with adjustable fins on the body, and exterior wheel brakes. The GM Bus, the Turbocruiser, gets extra retarding force on steep downgrades by reversing its engine.

Another difficulty with the engines is that the auto industry is not tooled to produce them. The initial expense, some say, would be prohibitive. New materials, such as the high temperature steels for the combustion chambers and the turbine blades would have to be stockpiled at great expense.

There may also be objections from the oil industry, which has huge investments in production of high octane gasoline, too rich a diet for the new engines.

Cars Still in Future

These factors indicate that although successful experimental engines are now available, it may be five or ten years before gas turbine cars will be coming off the production line.

General Motors insists its Firebird is only experimental and that there are no plans to put it into production.

The Navy, on the other hand, is quite optimistic about gas turbines for certain applications.

A. C. Skortz, head of the gas turbine branch of the U. S. Naval Engineering Experiment Station, Annapolis, Md., who has been testing the Navy's small gas turbines, pointed out that these small turbines are vibration free.

The noise generated by the gas turbine is a high pitched whine, but it is a high-frequency noise and is fairly easy to muffle.

Gas turbines have come a long way in the Navy in the past 11 years, back to the time when about the only operating one was the Experimental Allis-Chalmers engine that filled a huge warehouse-type building at the experiment station.

Tiny Gas Turbines

That engine is now being taken apart and scrapped and, in a corner of the same building, the new tiny gas turbines are being tested and improved. These latter were designed and built by Boeing Aircraft Company for the Navy.

Gas turbine engines at their present stage of development drink fuel faster than piston engines, but it is cheap diesel fuel. Potentially, the gas turbine could use even cheaper fuel and the efficiency per mile per gallon could be stepped up.

Mr. Skortz said he is now trying to run the motors on a very cheap, low grade, black, sticky oil called "Bunker C." The motors have run on it, but there are big problems involved in long term operation with such crude fuel. The experiment shows how variable the gas turbine's diet can be. Diesel oil seems to be the standard fuel.

Gas turbines are used by the Navy for auxiliary power aboard large ships.

Science News Letter, September 17, 1955

PSYCHOLOGY

Women Can Equal Men in Learning Gun Assembly

► WOMEN may not know as much about mechanics as men but, in the Navy, female recruits could learn as well as men how to assemble the breech block of a 40mm anti-aircraft gun.

Tests showing this were reported by Roger B. Allison Jr. of the Educational Testing Service, Princeton, N. J., at the American Psychological Association meeting in San Francisco. The tests were made under the sponsorship of the Office of Naval Research.

Four groups of naval recruits, men and women, were shown a motion picture on assembling a 40mm anti-aircraft gun breech block. The recruits were then tested on what they knew about it and on putting one together.

In the knowledge test, females did as well as males, and they were only slightly behind males in the actual assembly test.

The conclusion was that "under controlled learning conditions female recruits were able to learn a mechanical-motor skill despite obvious background differences."

Science News Letter, September 17, 1955

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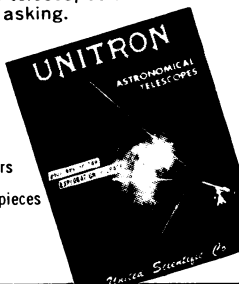
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