

great confidence that some of the many unsolved problems in medicine that still confront us may be attacked with the same vigor and concentration of talent

as were applied to wartime matter and that answers to some of those problems, at least, may be found.

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## ENGINEERING

## Uses Either Gas or Oil

Conversion from one fuel to another is made almost instantly in the new diesel engine which needs no electric sparking device.

► A NEW development in the diesel engine field permits the use of either gas or oil as fuel without any electric sparking device, saves from 20% to 25% in fuel consumption, and enables the change from one fuel to another without the necessity of a shut-down. It is a development of the Cooper-Bessemer Corporation.

Any engine built as a diesel can be fitted to operate on gas, but engines built purely as spark-ignited gas engines cannot be converted to work on the principle of the diesel. Conversion of diesels from one type of fuel to another has been possible in the past, but it has always been necessary to shut down and exchange major or minor parts. With the new development conversion is as simple as closing one valve and opening another, and it can be arranged so that the engine automatically goes from one to the other as the gas availability changes.

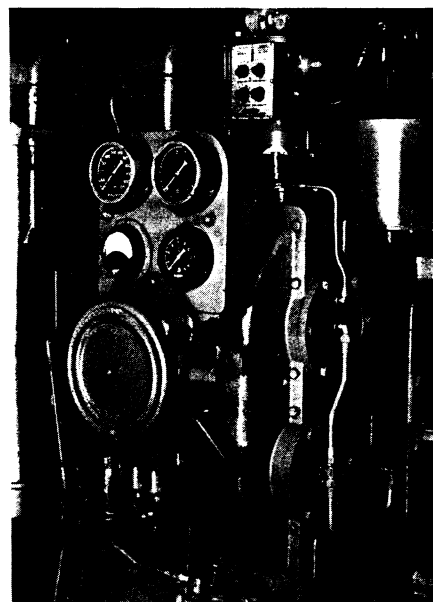
Seventeen years ago the company built a single-cylinder test engine on the diesel cycle to operate on gas. It used compressed air with the gas injected on top dead center under very high pressure.

It was found that while it was possible to run such an engine without other ignition means, the engine performed very much better if pilot oil injection was also used. This engine was not marketed.

No thought was given at that time to the possibility of allowing the gas to go in with the intake air, because of the assumption that it would pre-ignite. It is now found possible to admit the gas with the engine air intake and be free of any evidence of premature ignition. In fact, an engineer of the company states, on very heavy overloads with natural gas, the mixture will not fire without the pilot oil.

"Assuming a diesel oil engine in operation and on load," Ralph L. Boyer, Cooper-Bessemer Corp. engineer, says, "if gas is admitted in the intake air the governor obviously will immediately reduce the amount of oil to compensate for the percentage being carried in the gas. It then merely becomes necessary to reduce the fuel oil injection to the desired minimum and then govern the percentage of gas according to load."

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**CONTROL END**—This is the Cooper-Bessemer Type JS-8 Diesel engine, showing the gas-oil operating mechanism. This engine is rated 675 horsepower at 400 revolutions per minute.

broadcast of "Adventures in Science."

Plant scientists can offer you specific varieties of vegetables that have been created by plant breeders for better quality, higher yields, resistance to disease, and for other virtues of good garden crops, he stated.

Thanks to fertilizer technologists, Victory gardeners will have all the fertilizer they need, Dr. Cardon announced. Last year a new form of fertilizer nitrogen, granular ammonium nitrate, made up about a fifth of the nation's total nitrogen supply. We had ammonium nitrate before, but it attracted moisture so readily that it caked, sometimes even turned to liquid. Fertilizer scientists studied this problem and found a way to produce ammonium nitrate in very small pellets with a coating to protect them from moisture.

"Plan your garden for a long season," Dr. Cardon urged, "so that something fresh will be available from early in the spring until late in the fall. Home canning and storing plans should be included in garden plans. Vegetables you grow and can or store yourself don't cost you ration points. If you have any gardening problems, get in touch with your local Victory garden chairman or county agent. Planning your garden ahead will give you the most returns for your effort."

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## HORTICULTURE

## Home Grown Food

► HELPING to win the war isn't the only reason for having a Victory garden this year. You can save yourself money, too. By supplying your family with fresh vegetables for a whole season at little cost from even a small garden, you can grow the same vegetables that you would have to pay up to \$50 or more for on the market. Home grown food is tastier, too. Vegetables and fruits do have a better flavor when they are garden fresh, as they are when they come out of your own Victory garden.

Science will be the Victory gardener's unseen helper this year, more than ever before, to help produce more and better vegetables. Science can be brought into

your Victory garden from the moment you begin to plant your crops, reports Dr. P. V. Cardon, in charge of the Agricultural Research Administration of the U. S. Department of Agriculture.

"When you select the vegetables to plant in your garden you are applying at least two lines of scientific research. Scientists who breed better varieties of plants, and investigators who study nutritional needs may not seem to have much in common at first glance. Yet you are relying on recommendations made by both these groups when you choose your garden crops," Dr. Cardon pointed out, speaking as the guest of Watson Davis, director of Science Service, on the CBS