

# The Guildman

VOL. 2 NO. 2

10c. the Copy MARCH-APRIL 1935



OFFICIAL MAGAZINE OF THE FISHER BODY CRAFTSMAN'S GUILD

*An educational foundation sponsored by General Motors Corporation through its Fisher Body Division*



"The Ghost Pilot", an exciting aviation story & Sport Story  
Guild Hall of Fame & "Ocean Water", Amazing facts about gasoline

# OCEAN WATERS

General Motors research engineers recite some amazing facts about gasoline

*General Motors Research Corporation*

**EDITORS' NOTE:** The facts in this story are taken from a booklet, "Chemistry and Metals", which is an unusually interesting account of how researches in metallurgy and chemistry have led to the General Motors Research Laboratory. It is a astonishing to read into what fast figures their problem leads. If we were to collect all the carbon dioxide used to automobile engines of the United States in one year, we would have a stock of two trillion cubic feet—seven hundred billion cubic feet of gas—a giant cube measuring two and five eighths miles in every dimension. It all the water in every river, it would fill a canal six feet deep, ear, it would fill a canal six feet deep, went-five feet wide, and extending across the country to the Pacific. Carbon dioxide and water, when mixed together, make soda water. As you know, a spectrum consists of bands of color, spreading from violet at one end to red at the other. But not all spectra are alike. In fact, the light reflected them to analysis.

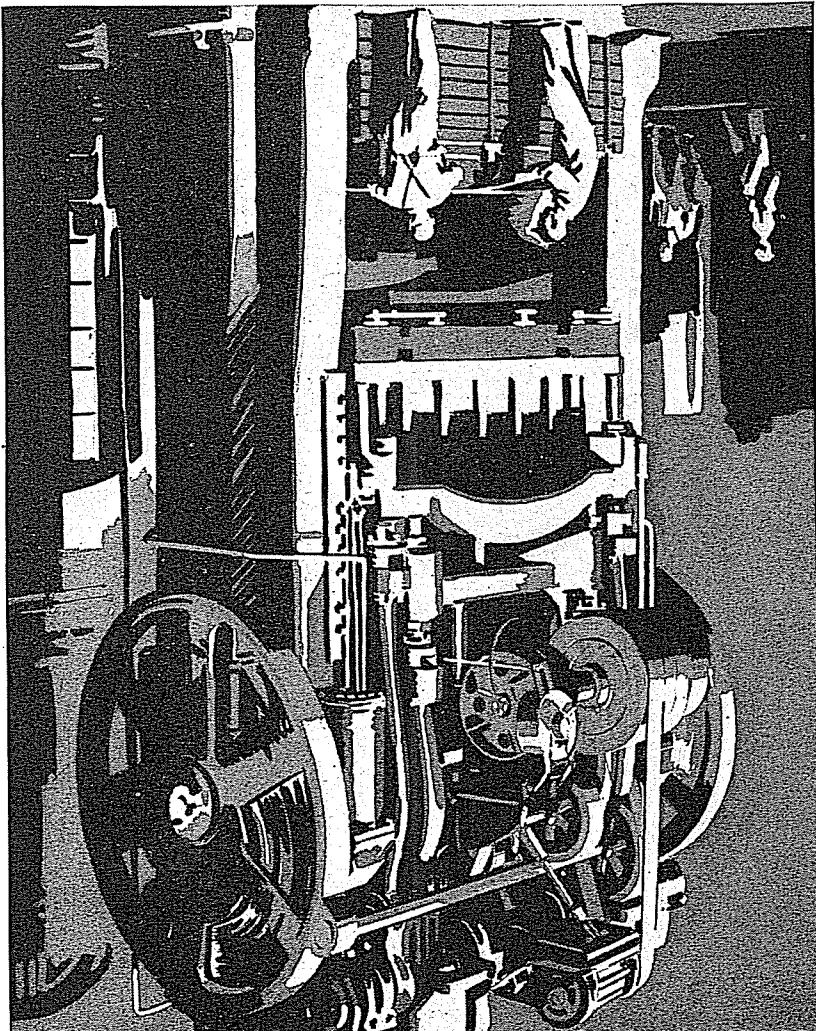
From that mighty hood of ocean water, this new industry extracts a quantity of bromine, which, in turn, goes to the manufacturer of antiknock gasoline. Craftsmanship, in its guise of modern scientific research, has levied toll upon the seas to make our motors run more satisfactorily.

For more than fifteen years, research engineers of the General Motors Engineering Corporation have been studying motor car fuels in a search for better engine performance. They developed a compound, which, when added to ordinary gasoline, slopped fuel knock in the engine. But this compound contained bromine as one of its essential ingredients, and the total world production of bromine as see gasoline and air go into the engine. They find water vapor and carbon dioxide coming from the exhaust. And they have devoted years of scientific study to every step of the process by which what goes in at the carburetor is transformed into what comes out through the muffler.

To THESE men in the research laboratories, motor car perform-  
ance is a problem in chemistry. They see gasoline and air go into the engine, and water vapor and carbon dioxide come out through the muffler.

**T**HERE is a new industry in the United States. Every month, it pumps five million tons of water out of the sea and back again to give motorists faster acceleration and smoother per-

LHIS HUGE PRESS IS A STOBIES  
STAMPS OUT NEW SOLID STEEL "THREE-TOPS"\*  
FOR FISHER BODIES



# Living the Story of the Race

**THE BOSTONIAN** is published weekly by THE BOSTONIAN COMPANY, 100 Washington Street, Boston, Mass.

Cornell University  
Engineering, College of Engineering,

Dexter S. Aimbridge

Hildegard's Note

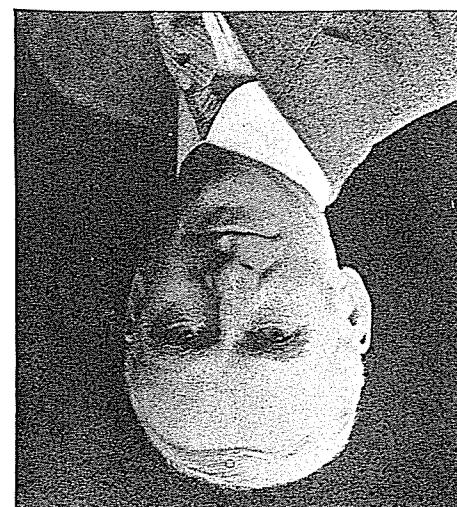
thing himself. I'd build a boat, to try  
t and then start out on a voyage of  
discovery on the lake or millpond is to  
live in miniature the story of the race.  
And only through such work can the  
creative spirit of our people be re-  
newed and sustained. It is for these  
reasons I am a hearty supporter of the  
basic philosophy,  
I believe in its basic philosophy,  
and I prophesy a glorious future for it.

Cornell University is situated at Ithaca, New York, on a high plateau overlooking Cayuga Lake. It was organized in 1865 and opened October 7, 1868. Congress at that time had authorized a grant of public lands to any state that would establish an educational institution for higher learning, and it was under this act that Cornell was founded. The funds thus available were, however, supplemented by contributions from a number of benefactors, the leader of whom was Ezra Cornell.

The university where any person can find instruction in any subject, and has long enjoyed high rank among American colleges and universities.

As presently organized, Cornell consists of eight schools and colleges. The College of Engineering, mechanical engineering, civil engineering, electrical engineering, and also a college of architecture.

In 1933, the enrollment was 6,167, of whom 937 were in the College of



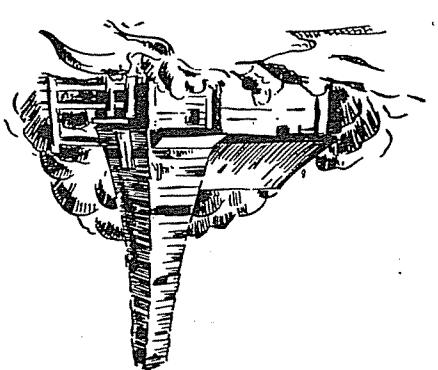
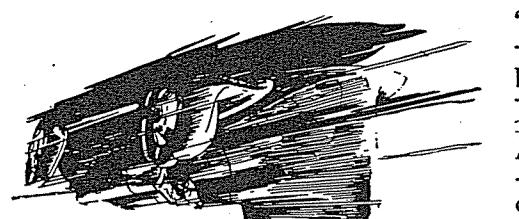
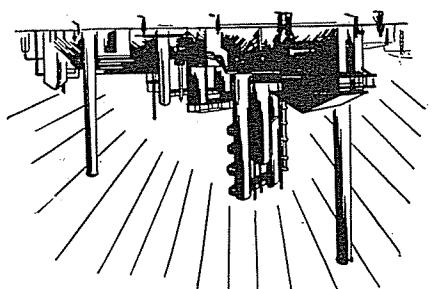
**R**OM the inception of the C have been deeply impressed with abilities that it offers to active boys and the influence that members can exert on our industrial activities. It cannot be doubted that the Guild can do much to encourage hobbies and the interests that it offers to active boys and the influence that members can exert on our industrial activities. It cannot be doubted that the Guild can do much to encourage hobbies and the interests that it offers to active boys and the influence that members can exert on our industrial activities. It cannot be doubted that the Guild can do much to encourage hobbies and the interests that it offers to active boys and the influence that members can exert on our industrial activities. It cannot be doubted that the Guild can do much to encourage hobbies and the interests that it offers to active boys and the influence that members can exert on our industrial activities.

The enormous power output of gaso-  
line per gallon comes from the fact that  
gasoline takes the oxygen for combus-  
tion out from itself but from the air.  
Meeting in the carburetor of the auto-  
mobile engine, the gasoline and air  
combine into a well-mixed perfect fuel  
for the motor car. The amount of air  
consumed in the processes is enormous.  
In fact, when a car is traveling 70  
miles an hour, air is pulled through  
the carburetor at the enormous speed  
of 250 miles an hour.

The Guidedman miles in diameter, which encircle them. Both of these elements have high heating value. The burning of one pound of hydrogen releases enough heat to raise 62,100 pounds of water one degree Fahrenheit; one pound of carbon can raise 14,600 pounds of water.

of gasoline line out for that 200 miles, find that it makes a threefold less tension on the line than does a one-half inch diameter, which is about the thickness of five one-thousandths of an inch.

If we could build an engine 100 per cent efficient, one gallon of gasoline would propel a 3,000 pound car travel- ing 30 miles an hour for a distance of 200 miles. It is now we stretch our gall- on to about three miles. The impara- tion can scarcely conceive what a gal- lion of this fuel is capable of doing. Thus, the General Motors Building, in Detroit, which is one of the world's largest office buildings and covers an entire block, weighs 460,000,000 pounds. Yet if all the energy contained in one gallon of gasoline could be con- ducted into work it would be enough to lift this entire building  $2\frac{1}{2}$  inches off the ground. The total amount of gasoline used in the United States in one year is capable of developing more horsepower than all the Falls in size of Niagara Falls.



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