

fuels. He was also able to up-grade some low-grade natural fuels, for example converting non-coking lignites and sandy bituminous coals into coking coals.

The process, which Prof. Berl calls "incoalification," involves the use of alkalis derived from limestone, dolomite or zeolites. He believes that crude petroleum was formed from carbohydrates in nature if "during the first steps of the carbohydrates conversion a larger amount of alkali produced by limestone, dolomite or zeolites, etc., was present. By a rather complicated conversion process, finally, asphalts were formed which upon cracking or hydrogenation at low temperatures were transformed into crude oil."

Production of motor fuel from starchy or fiber crops grown year by year would

not place an undue tax on American agricultural capacity, according to Dr. Berl's figures. In 1941, for example, America's 32,000,000 automobiles used 55,600,000 tons of liquid fuel. To make that same amount of fuel from sugar-cane, "4% of the cropland harvested in the United States (320,000,000 acres) and 2.1% of the land available for crops (570,000,000 acres) would be necessary."

If the world ever goes wholly on a fuel-from-plants economy, the nations with large cultivable areas in the tropics will enjoy a tremendous advantage. Starchy plants grow at terrific rates in the tropics, and it is there that sun-power could be converted into engine-power most abundantly.

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RESEARCH

Reckless Drafting

► LABORATORY heads and industrial executives attending the Cleveland meetings of the American Chemical Society have been going into anxious little huddles, between the scientific sessions, exchanging worries over what the speeded-

up under-26 draft is doing to their research staffs who have been working on war problems.

In many places, draft boards have been pulling men out of their research jobs in apparent reckless disregard of

consequences. They seem to have a fixed idea that the quota of prospective infantrymen must be met, even if it involves robbing the ground troops of overhead protection through slow-down of aviation fuel production, or leaving the wounded without adequate medical treatment through diminished penicillin production. They just don't think that far.

Official instructions have been to leave young men on the chemical job, if it can be conclusively demonstrated that that job is immediately and directly connected with war production. But these instructions seem to have been disregarded, or at any rate given an extreme interpretation, by some draft officials.

If a man is working on a less immediately war-connected problem, if he is doing fundamental research that will not bear industrial fruit until day after tomorrow, he is not given a chance to go on with his potential contribution to the greatness of post-war America; into the ranks he goes.

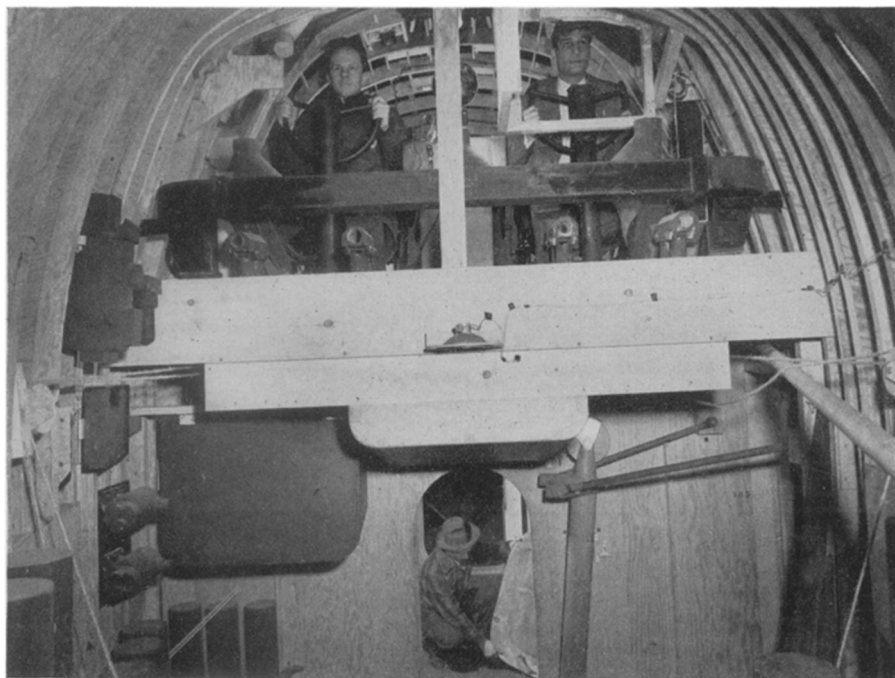
This can have very serious consequences, for other nations, notably Russia and Britain, are conserving their research scientists and seeing to it that they continue their training. They are our Allies today, but they will be our competitors in the business and industrial world of tomorrow, and they do not intend to throw away the best assets they have—the brains of tomorrow's scientists.

Dr. Charles L. Parsons, secretary of the American Chemical Society, put the situation into forceful words:

"Even victory will be fruitless if the scientist is sabotaged. I wish definitely to go on record that if some of the undisclosed discoveries and others that appear imminent do not come to fruition, the American people must hold those directing the combat army responsible, not the scientists of this country.

"England, Russia and Germany are protecting brains in order that brawn may function more efficiently. American brains are equal to any, and if permitted, stand ready to continue to function."

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MOCK-UP VERSION—The Martin JRM-1, production version of the 70-ton Mars, will be even larger and more efficient than the prototype now in service in the Pacific. As a cargo carrier the JRM-1 will have ample space for seven jeeps and even greater numbers of field guns or aircraft engines, for it has been designed to fly at weights up to 72½ tons. Twenty of these huge aerial freighters will be built for the Naval Air Transport Service by the Glenn L. Martin Co. of Baltimore. The two men "upstairs" in this picture are in the pilots' seats of the wooden model of the plane.

CHEMISTRY

Three Prizes of \$1,000 Given Outstanding Chemists

► THE AMERICAN Chemical Society's \$1,000 award in pure chemistry for 1944 has been voted to Dr. Arthur C. Cope, associate professor of chemistry at Columbia University, it was announced at the Cleveland meeting. Dr.