METALLURGY

Scientists Pool Knowledge, Report Data to WPB

Over a Hundred Reports Already Submitted on Metals And Minerals; Indicate Direction for New Research

SCIENTISTS of the United States are making their knowledge and experience available for the war effort through committees of the National Research Council of the National Academy of Sciences. A great stock of information already in existence has been thus pooled, and has been placed on record in well over a hundred reports furnished to the War Production Board and its predecessor organizations. Directions which new research should take have also been indicated.

Especially important has been the work of the Metals and Minerals Advisory Committee, of which Clyde Williams, director of Battelle Memorial Institute, Columbus, Ohio, is chairman. This committee has already turned in well over a hundred reports. About half of them are on metals substitution and conservation, a little less than half on ferrous minerals and ferro-alloys, with several additional reports on tin smelting and reclamation and on nonmetallic minerals.

A very considerable proportion of the reports are concerned with three "bottleneck" metals, aluminum, magnesium and manganese. The first two are basic materials for aircraft, the third is a key material in modern steel-making. With all three, our present difficulties arise largely from the fact that before the war the respective industries naturally utilized only the highest-grade sources, which were most easily worked. Now, however, these "cream" sources are not sufficient to meet the enormously expanded demand, and scientists are called upon to tell what may be done about realizing values from some of the "skim-milk" ores.

Other investigations of the committee range through the whole alphabet of the minerals, from antimony and asbestos to zinc and zircon. In some cases, rarer and more costly metals may become replacements for those that are more abundant and cheaper in normal times; as in the substitution of lead-silver solder for the old familiar lead-tin solder, thus releasing tin for use where it is more urgently needed.

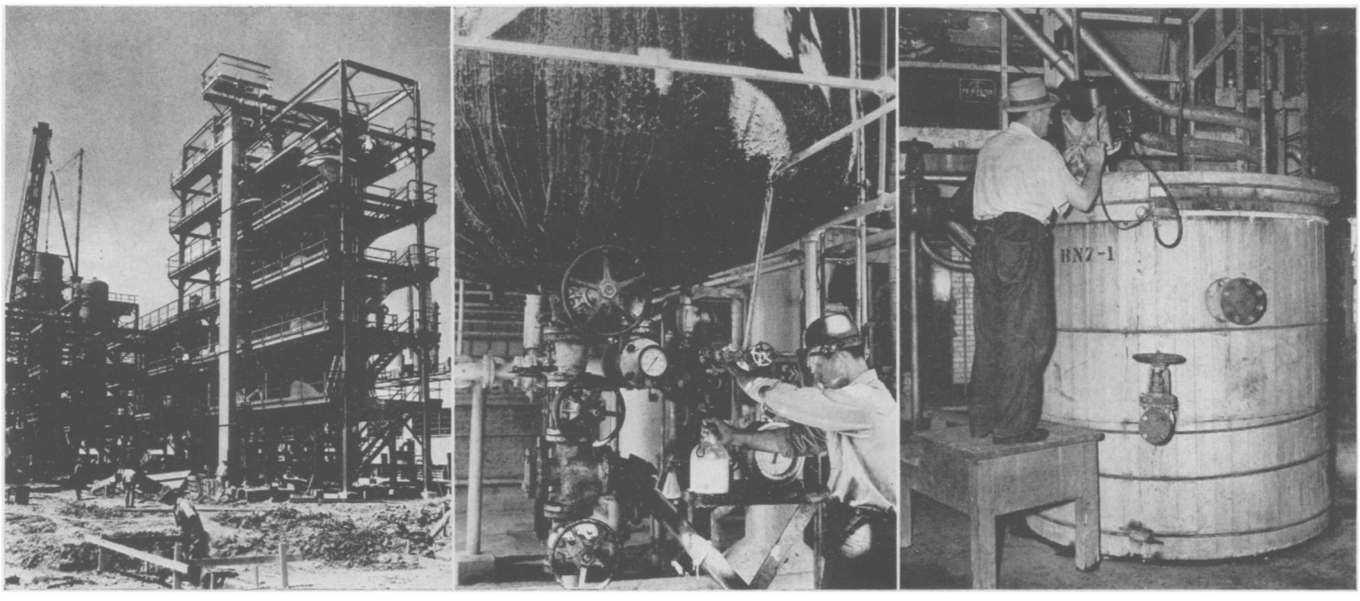
This set-up of a national clearing-house for scientific ideas and information in a nation at war continues a tradition that goes back to the administration of President Lincoln. In 1863 he chartered the National Academy of Sciences as a means of making the then existing scientific resources of the country available for the use of the federal government.

During the first World War the National Research Council was organized as a committee of the Academy, to carry on the same kind of work in the vastly more highly developed fields of science that had come into being since Reconstruction days. The Council continued in existence during the interim between the first and second World Wars, and now again attacks the task, with greatly expanded personnel and facilities.

Science News Letter, August 8, 1942

SYNTHETIC

These photographs and those on the facing page show steps in the process of making artificial rubber from petroleum. At left is part of a new butadiene plant now under construction. Next is the huge reactor in which butadiene is polymerized to form a latex-like fluid—the white stuff being drawn off in the bottle. At right, the "latex" is being coagulated by agitation with acids.



Wild mules found wandering in the jungles of New Guinea are being broken in, by Australian horsemen, in their native python-infested valleys.

Statisticians have calculated that nearly 5% of the American population, or 6,000,000 people, will at some time during life be legally committed as *insane*.

GENERAL SCIENCE

New Body For Promotion of Research Taking Shape in WPB

Development Committee Studies Industrial Problems Under Direction of Maury Maverick; Ask $100,000,000

THE COMMITTEE on Technical Development, a new body for the promotion and correlation of research in general industrial production, is now taking shape within the War Production Board under the guidance of Maury Maverick, chief of the Bureau of Government Requirements. It is intended to operate along lines parallel to the work of the Office of Scientific Research and Development and the National Inventors Council, supplementing, though not duplicating, their efforts. An appropriation of $100,000,000 is being asked for, to finance the work of the Committee.

Associated with Mr. Maverick in the new project are a number of research men and administrators, including Dr. Charles I. Gragg and Dr. C. C. Hill, Jr., both of Donald Nelson's organization.

As the research men picture their task, it involves several separate steps for each of the industrial problems with which the country is faced today.

First is a survey of the problem itself, a determination of its magnitude and of all the factors involved that can be discovered. This is done largely by calling in groups of representative industrialists, engineers, and government and university researchers who know about various phases of the problem.

Having thus outlined a particular job, the next thing is to lay it out as a research project and final places where existing laboratory facilities will permit rapid work. This is very likely to involve a breaking down of the project into sections, and "farming out" the sections to universities and technical schools which have the necessary apparatus and personnel not yet employed on war research jobs. In this part of its work, the Committee on Technical Development would be functioning along lines analogous to those of the Smaller War Plants Corporation of WPB, in procuring the completion of jobs by subcontract.

After the laboratory research stage comes the pilot plant, where processes until then done only by spoonfuls in test-tubes are expanded to middle-sized batches—say a couple of hundred pounds—in relatively small kettles or retorts, similar to those of factories, only not so big. Here is where the jobs graduate from "pure" chemistry into engineering chemistry, where "bugs" are discovered and eliminated.

Finally, after the pilot plant has carried the task as far as it can, it goes to the full-scale industrial plant for regular commercial development. The interval between pilot plant and factory is the "slip twixt cup and lip" where many a hopeful research project has died a-borning, and been embalmed in neatly bound research reports that only gather dust on library shelves, instead of rolling dollars into bank accounts and payrolls. One of the big jobs of the Committee on Technical Development will be to help practicable research results to become practical and real in the marketplace.

Even before formal organization and financing, the Committee has made a number of beginnings. One hitherto neglected possibility of natural rubber has been turned up in the strangling-fig vines that grow wild in southern Florida and the West Indies. Little is known about it as yet; it is one of the research tasks that will have to be done from the ground up.

Agar, a vegetable jelly made from seaweed and indispensable in bacteriological and medical research, has always been imported from Japan. Small American manufactures of this substance have been of good quality but insignificant in quantity. New seaweed sources that may help ease us out of this bottleneck have been turned up on the Florida coast.

FROM SLURRY TO SHEETS

The workman (left) at one of the synthetic rubber plants of the Standard Oil Company (New Jersey) is inspecting "slurry," the "curd" produced by coagulation after it has been washed and the liquid has been squeezed out. (See photos on facing page.) The stuff is then dried. The center picture shows it as it emerges from the dryer ready to be carried on a belt to a milling machine. At right is the finished rubber sheet being slit into ribbons, later to be cut into short pieces for convenience in shipping.