

Do You Know?

The only living wild mammal with four *horns* is the four-horned antelope, one of the smaller hoofed animals of India and Burma.

The *gaur*, or Indian buffalo, found in hilly parts of Burma, furnishes good meat but is a very dangerous animal if wounded and cornered.

Nicotine is distributed better in greenhouses for insecticidal purposes when mixed with Freon and released with it from a compression chamber.

Bird lovers, unable to get customary *winter foods* for neighborhood wild birds, may substitute oatmeal, hominy, grits, peanut butter, nuts, fruits, and dry breadcrumbs.

Some 3,000,000 gallons of *alcohol* will be produced each year in a new plant just opened in Australia; the product will be used mostly to blend with imported gasoline.

Alaska has but one person for every 10 square miles of territory, in contrast to 413 to every 10 square miles in the United States proper, 6,850 in Great Britain, and 3,750 in Japan.

Gasoline, lubricating oil, plastics and other products will be produced experimentally from Kentucky *coal* at a pilot plant under construction at the University of Kentucky; smokeless fuel will also be produced.

Under supplementary government orders just issued, electric and *gas utilities* may now be extended by short lines to serve a substantial number of users; until now they could be extended only to meet urgent war needs.

A new *glass cleaner*, recently patented, consists of a water solution of from 20% to 50% of methyl, ethyl or propyl alcohol with a small amount of tetra sodium or potassium pyrophosphate to prevent haze formation.

In Australia, government *medical men* supervise 48 casualty centers maintained at munition establishments; more than 500,000 examinations for industrial diseases were made during the past year, and 10,000 X-rays were taken.

PHYSICS

Physicists in Industry

Because this war is a "physicist's war," prediction is made that physics will have post-war popularity like that of chemistry after first World War.

➤ POST-WAR employment of physicists in industries will far exceed pre-war figures, Dr. Albert W. Hull of the General Electric Co. believes.

"Physics occupies a place in this war similar to that of chemists in the first world war," he stated in his presidential address to the American Physical Society in New York, "and hence may expect a post-war popularity comparable to that which chemistry enjoyed in the twenties." The part played by mechanization in this war is the cause of its being called "a physicist's war."

"Research is coming to be looked upon as an industrial vitamin, without which an industry becomes decadent and its products obsolescent," Dr. Hull stated.

Production-improvement and the development of new products are the principal jobs of physicists in industries. Pure research, aiming "to obtain knowledge rather than to make something," is primarily the work of endowed and state-supported institutions; but, Dr. Hull feels, industry can afford to en-

gage in pure research in its own laboratories because "new discoveries lead to new and unexpected applications, which may be epoch-making."

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Microscopists Meet

➤ THE FIRST official meeting of the new Electron Microscope Society of America was held jointly with the meeting of the American Physical Society. This technical organization was established in Chicago a year ago by some 75 scientists who are actually doing work in the field of electron microscopy.

The electron microscope, an epochal development in scientific instruments, uses electrons instead of rays of light, and magnetic or electrostatic fields instead of glass lenses. It is from 50 to 100 times more powerful than the strongest optical microscopes. With its use magnifications up to 100,000 diameters are obtainable.

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CHEMISTRY

Chemicals From Coal

➤ ORGANIC chemicals, now extracted principally from petroleum, will probably be derived more largely from coal in post-war days as the oil reserves become more and more exhausted. The extraction of simple individual chemicals from coal is a difficult process at present because of its highly complex composition. Intensive studies at the Coal Research Laboratory of the Carnegie Institute of Technology may result in methods to make the process more simple and economical.

Chemicals are obtained from petroleum by relatively simple processes because the crude oil secured from the earth consists of many individual compounds easily separated and processed. They are now obtained from coal principally as a coke by-product. This by-product is a mixture of aromatic compounds called coal-tar. Coke and gas are

the objects of the coking process; the coal-tar is incidental, and normally only about one-half of it is used to obtain chemicals.

As a wartime measure all the coal-tar products are now used, mostly to obtain the essential toluene for TNT, benzene for aviation fuel, and styrene for synthetic rubber. The plastics industry also is a consumer of coal-tar compounds.

Production of coal-tar is now dependent on the amount of coke needed in the trade. The steel industry is the principal user of coke. To increase the output of coke and coal-tar, additional uses of coke must be found either as a fuel, or to furnish pure carbon for many commercial purposes. Coke is principally carbon. Present studies are concerned with how coal-chemicals production can be economically separated from coke production.

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