

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.

Science News Letter, April 15, 1944

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.

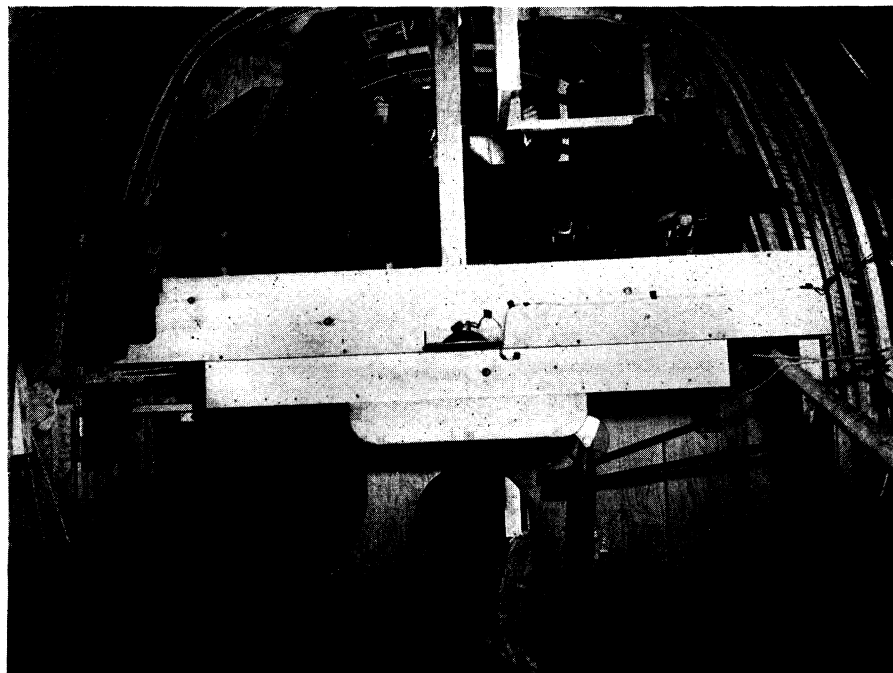
"England, Russia and Germany are protecting brains in order that brawn may function more efficiently. American brains are equal to any, and if permitted, stand ready to continue to function."

Science News Letter, April 15, 1944

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.



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.

Cope, who is only 35, has already published more than 30 papers announcing results of his researches in organic chemistry, which will have ultimate application in the fields of plastics and drugs. This prize was founded particularly to encourage research in pure chemistry by the younger generation of chemists.

Two other \$1,000 prizes were awarded to chemists attending the meeting. The Eli Lilly and Company prize in biological chemistry was presented to Dr. Joseph

S. Fruton of the Rockefeller Institute for Medical Research, for studies in the difficult field of the proteins and their structural units, the amino acids.

The Borden Company prize for research in the chemistry of milk was handed to Dr. William Mansfield Clark of the Johns Hopkins University, who has done special work on the precise determination of the acid or alkaline state of milk.

Science News Letter, April 15, 1944

CHEMISTRY-MEDICINE

Weapon Against Cancer

Radioactive zirconium is seen as new chemical for use in combatting disease. Since it is a solid it can be applied directly to tissues under treatment.

► **CANCER** can now be exposed to the fire of a new and powerful chemical battery, as potent as radium emanation but much more maneuverable. It is radioactive zirconium in completely pure form, preparation of which was announced before the Cleveland meeting of the American Chemical Society by a wife-and-husband research team, Dr. Margaret H. Kurbatov and Prof. J. D. Kurbatov, both of Ohio State University.

Radioactive zirconium is a solid, coming in extremely finely divided form—colloidal particles, in the chemists' term. Being a solid, it can be applied directly to the tissues under treatment. This gives it considerable advantage over radium emanation, which is a gas and has to be applied enclosed in small tubes or hollow needles.

Radioactive zirconium has the same half-life as radium emanation, three and one-half days. This should make easier the development of a clinical technique for its use, since the potency and rate of disintegration of radium emanation figure importantly in the determination of treatments. Thus far, however, the new substance has not been given medical application.

Zirconium has been prepared in radioactive form before now, but hitherto all preparations have been mixtures of the radioactive with the ordinary element.

In preparing it in pure form, the Doctors Kurbatov made use of an entirely new technique, an ultra-micro-chemistry which they themselves evolved. It involves the bombardment of rare elements with the powerful cyclotron at Ohio State University, and examining the results with two instruments, the Geiger

counter and the electrometer, which register number and kind of radioactive rays or particles given off. These data can be interpreted in terms of new substances brought into being by the bombardment. Quantities smaller than a billionth of a gram can be thus detected and studied.

In the case of the radioactive zirconium, they subjected the scarce element yttrium to the cyclotron's action for several hours. The quantity of radioactive zirconium thus formed was so small that it could never be seen, even with a microscope, yet its activity, particularly its emission of gamma rays, left no doubt of its presence and its identity.

There is another radioactive zirconium, which has the much longer half-life of 63 days. Thus far, however, it has been produced only in mixture with common zirconium. It can be used when absolute purity is not required. A number of other radioactive substances have been isolated in pure form at the Kurbatovs' laboratory.

Science News Letter, April 15, 1944

PSYCHOLOGY

War Disabled Should Be Treated as Though Normal

► **WHEN**, at work or in a social group, you meet a man disabled by a war injury, keep an attitude of normality and treat him as though there were nothing intrinsically different about him as a result of his handicap. So advises Maj. Walter E. Barton in a report to *Public Health Nursing*, a professional journal for nurses.

Major Barton lists nine other points to remember in helping deformed or crippled war veterans regain their emotional stability and "focus attention on what is left instead of on what is lost." Although written for nurses, these pointers may be a useful guide for relatives, friends and fellow workers of the veterans. They are:

1. Be natural. A natural manner that one would bring to a normal person is all that is necessary.

2. Face the reality of the disability. Create within the patient a willingness to face the fact of his limitation.

3. Ignore the deformity. Let no horror or sorrow appear in the face or manner of the person in contact with the deformity.

4. Reassure the handicapped. Help the soldier concentrate on the determination to get well and on the determination to overcome the loss.

5. Restore his faith in his ability. The martyr's attitude may be noble but it doesn't bring much happiness to the individual.

6. Continue social living. Encourage the patient to resume social contacts after he returns to his own home.

7. Give the patient a job to do. Work is associated in our minds with health.

8. Keep a balance in life. In order to maintain mental health, some work, some play, some rest should be a part of every day.

9. Stress the importance of beauty of spirit. The handicapped person who has overcome his disability carries a great message to those who feel overburdened by life's many tribulations.

Science News Letter, April 15, 1944

PUBLIC HEALTH

Falls Lead As Cause Of Accidental Death

► **THE WAR** and its restriction on automobile driving have pushed falls into first place as cause of accidental deaths in the United States, the Metropolitan Life Insurance Company reports.

Nosing out motor vehicles, falls in 1943 killed more than 25,000, which was about 2,000 in excess of the number killed by motor vehicles.

Chief victims of fatal falls are old people. Whether because they fall more often, or because when they do fall the results are more serious, is not known, but more than two-thirds of the deaths from falls happen among persons aged 65 and older.

Science News Letter, April 15, 1944