the latter is sulfapyridine, one of the most important of the sulfa group of medicines.

Science News Letter, April 15, 1944

More Rubber From Grain

➤ MORE synthetic rubber from a given quantity of grain, and quicker, was the promise held forth before the American Chemical Society by Dr. Donald F. Othmer of the Polytechnic Institute of Brooklyn.

The conventional method, now in use, involves fermenting the grain into ethyl alcohol, and then converting this into butadiene, one of the two basic materials for the kind of synthetic rubber now being mass-produced for war purposes.

By a different kind of fermentation, recently developed but quite well known, grain can be turned into a compound somewhat more complex in its structure than ordinary alcohol; this liquid is known as butylene glycol. It resembles glycerin in some of its properties. Butylene glycol can be converted into glycol diacetate by treatment with acetic acid—the stuff that makes vinegar sour. Glycol diacetate can then be changed into butadiene.

The contribution of Dr. Othmer and his associates has been the development of a series of new solvents that wash the glycol out of the fermentation liquors, and a simple new technique of distillation. The process has been tried out on a pilot-plant scale at Lawrenceburg, Ind.

Science News Letter, April 15, 1944

"Six Impossible Things"

➤ CHEMISTS attending the meeting of the American Chemical Society were invited to "believe six impossible things before breakfast," like *Alice Through the Looking Glass,* by Dr. Gordon M. Kline of the National Bureau of Standards, speaking on recent and prospective developments in the field of plastics.

"We should expect to see transparent glass-like plastics that are as crystal clear as glass but that possess an unexpected toughness and resistance to hot water," Dr. Kline stated. "This plastic will meet the requirements of curved windows for streamlined homes and transportation, of light and easily sterilized instruments and furniture for hospital use, and of tough transparent containers for foods and drugs, containers reusable in the home for canning purposes, tumblers, and other general utility applications."

Among other plastic products foreseen by the speaker are flameproof, waterproof, non-spotting, featherweight fabrics; draperies that let sunshine stream into the house by day but insure privacy at night; wear-resistant, non-absorbent, smooth (but not slippery) upholstery materials. He foretold also the coming of lightweight plastics for bonding lightweight plywood—stuff like "frozen whipped cream," many times lighter than wood and resistant to water, fire and fungus. In the enormously expanded field of electric power and electronic controls, plastic insulators, framework, casings, panelings, will entirely replace rubber, mica, amber and all the old natural products.

In all this prophesying, declared Dr. Kline, he was being quite conservative: "No use trying to go the White Queen one better! . . . We have equalled her record of conjuring up six impossible things—or are they?"

Science News Letter, April 15, 1944

Needs For Chemists

➤ A VERY SERIOUS situation arising in the present lack of chemists and engineers needed to replace those being drawn out of industry into the armed forces, H. T. Briscoe of the War Manpower Commission soberly told the meeting. Figures of the U. S. Employment Service, analyzed and reported by the National Roster of Scientific and Specialized Personnel, indicate that for a recent six-month period, some 15,000 typical firms engaged in direct war work employed 115,000 engineers and 20,000 chemists, and that they were in need of substantial increases in the numbers of both. Urgently needed additions to the ranks of these indispensable workers, Mr. Briscoe stated, would be in the neighborhood of 12,000 engineers and from 2,500 to 3,000 chemists in the first six months of 1944. But there is no warrant for expecting that these needs will be met.

Post-war chemical industry faces serious problems connected with these shortages in trained personnel, the speaker continued. If the war should end in 1944 or 1945, the situation might not be too serious; but if it goes on for several years longer, our failure to keep a steady stream of young people passing through our colleges and technical schools is bound to place American industry under a heavy handicap.

Science News Letter, April 15, 1944

NUTRITION

Food For China Seen As Partly a Chemical Problem

➤ FOOD for the millions of China was posed as a problem in chemistry before the American Chemical Society meeting in Cleveland by a former American professor in a Chinese University, Dr. William H. Adolph, now of Ithaca, N. Y., at one time head of the department of biochemistry at Yenching University, Peking.

Proteins, the foods that form muscle, blood and nerves, are chronically de-

SCIENCE NEWS LETTER

Vol. 45 **APRIL 15, 1944** *No. 16*

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

Entered as second class matter at the postoffice at Washington, D. C, under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Henry B. Ward, University of Illinois; Edwin G. Conklin, American Philosophical Society. *Nominated by the National Academy of Sciences:* R. A. Millikan, California Institute of Technology; Harlow Shapley, Harvard College Observatory; W. H. Lewis, Wistar Institute. *Nominated by the National Research Council:* Ross G. Harrison, Yale University; C. G. Abbot, Secretary, Smithsonian Institution; Hugh S. Taylor, Princeton University. *Nominated by the Journalistic Profession:* O. W. Riegel, Washington and Lee School of Journalism; A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers. *Nominated by the E. W. Scripps Estate:* Frank R. Ford, Evansville Press; Warren S. Thompson, Miami University, Oxford, Ohio; Harry L. Smithton, Cincinnati, Ohio.

Officers—President: Edwin G. Conklin. *Vice President and Chairman of Executive Committee:* Harlow Shapley. *Treasurer:* O. W. Riegel. *Secretary:* Watson Davis.

Staff—Director: Watson Davis. *Writers:* Frank Thone, Jane Stafford, Marjorie Van de Water, Morton Mott-Smith, A. C. Monahan, Martha G. Morrow. *Science Clubs of America:* Joseph H. Kraus, Margaret E. Patterson. *Photography:* Fremont Davis. *Sales and Advertising:* Hallie Jenkins. *Business Manager:* Columbus S. Barber.

ficient in the diets of a large part of the Chinese population, Dr. Adolph indicated. Unable because of the crowded condition of the populated areas in China to obtain animal proteins such as meat, cheese and eggs, the Chinese rely heavily on a cereal diet, which is overbalanced in the direction of carbohydrates. Chinese nutritionists realize this, and are striving to overcome the difficulty, though as a practical matter they stay within the framework of a vegetarian diet. They are also trying to get their countrymen to use more fresh vegetables, placing special emphasis on Chinese celery cabbage.

In some districts in North China, it has been discovered, a rather well-balanced ration, practically altogether vegetable, was worked out by the peasants ages ago, and they stick to it today because, as they say, it "stays with you." The cereal mixtures used in this diet differ from locality to locality, but the net results are good for any given blend of foods.

Millions of people in North China never taste rice; they use wheat and millet as their mainstays. For these people a great benefit seems to be in sight, in a recently bred variety of millet that contains 14% or 15% of protein instead of the usual 9%.

Science News Letter, April 15, 1944

***UNDER THE SUN**—As a preliminary operation in steel plate production, this workman is turning a slab broadside preparatory to further rolling on a sheared plate mill of the U. S. Steel Corp.*

CHEMISTRY-MEDICINE

Penicillin for Public

Enough to treat all urgent civilian cases should be available in the near future, Agriculture expert predicts at chemistry meeting.

➤ ENOUGH penicillin to treat all urgent civilian cases is expected to be available in the near future, Robert D. Coghill, chief of the fermentation division of the U. S. Department of Agriculture's northern regional research laboratory, told the American Chemical Society meeting in Cleveland.

The discovery by Dr. A. J. Moyer in this laboratory of the action of corn steeping liquor on the growth of the mold, penicillium, was "possibly the greatest single factor in making the commercial production of penicillin feasible," Mr. Coghill declared.

That production reached an estimated 40,000 million units of penicillin in March of this year, contrasted with a total of 400 million units for the period of January to May, inclusive, last year.

The cost of the penicillin for treating a severe case of blood poisoning would be $35, Mr. Coghill estimated, on the basis of using about 1,000,000 units at the present cost of $3.25 per 100,000 units. A case of sulfa-drug-resistant gonorrhea could be treated for less than $5, Mr. Coghill said. The first price quoted for penicillin, and acknowledged to be less than cost, was $20 per 100,000 units. The present price will undoubtedly go much lower and penicillin, in Mr. Coghill's opinion, will be within the reach of everybody.

The chemistry of penicillin, he stated, is considered of enough importance to be a military secret. He gave the following answer, however, to the question of whether chemists have succeeded in synthesizing penicillin, that is, in creating the mold chemical without benefit of the mold:

"We are not thinking of scrapping our fermentation plants yet."

There are now 21 of these penicillin-producing fermentation plants being erected in this country and Canada at a total cost of $20,000,000.

In contrast to the size and cost of the plants and their equipment, when they reach a 200,000,000,000 unit per month production, their output by weight will be only about nine pounds of pure penicillin per day.

Fantastic as this seems, Mr. Coghill pointed out that this amount will treat approximately 250,000 serious cases per month and for our fighting men will mean the saving of thousands of lives, to say nothing of arms and legs.

Science News Letter, April 15, 1944

CHEMISTRY

Fuel From Plants

Gasoline, lubricating oil and coal can be made faster by man than by nature from many common plants, including even wayside weeds.

➤ GASOLINE to run the world's automobiles, coal to fuel its industries, oil to keep them all moving smoothly, can be made from potatoes, sugar-cane, sawdust, even wayside weeds, after the present reserves in the ground have been used up, Prof. E. Berl of the Carnegie Institute of Technology announced at the Cleveland meeting of the American Chemical Society.

Man can now duplicate in hours the products which slow nature took millions of years to form, through processes which he has developed, involving the use of pressure and temperature, Prof. Berl declared. There is no need to anticipate a fuel famine so long as the sun shines and makes plants grow, he added.

The Pittsburgh researcher was interested at first only in the "pure science" aspects of the fuel problem. He wanted to find out whether oil and coal were formed in nature from the cellulosic part of plant materials or from the lignin. His investigations satisfied him that cellulose was the original material. In the meantime, however, the laboratory techniques he used were beginning to turn out substances that were pretty good synthetic reproductions of the natural