

CHEMISTRY

New Products Envisioned

Postwar automobiles may burn gasoline of 150 octane rating. Lighter building materials predicted. Recent advances reported to American Chemical Society.

➤ THE POSTWAR automobile will burn gasoline of 150 octane rating, and it will never be necessary for the filling station attendant to put more water in the radiator because the cooling system will be permanently sealed. When you get home from your ride, you'll put the car in a garage with plastic-and-plywood walls and a stainless steel roof.

Your house will be built of the same materials, strong yet so light that two men will be able to lift the whole wall of a room as they put it up.

These are items from a vision of the future presented before the meeting of the American Chemical Society at Buffalo, by Dr. Charles M. A. Stine, vice president of E. I. du Pont de Nemours and Company. They aren't just dreams, he explained; the things actually exist now, at least on an experimental basis, but are at present absorbed into the war effort.

Other new accomplishments in scientific technology were listed by Dr. Stine—glass that is unbreakable, glass that will float, wood that won't burn, shoes that contain no leather, window screens without wire, machinery bearings not made of metal.

Post-victory production of consumer's goods will reach heights undreamed of in prewar days, the speaker predicted. We have built an immense industry that turns out more light metal in a year than was formerly produced in a decade, with corresponding volumes in such things as special steels, plastics, synthetic fabrics, fuels.

Having seen how abundantly we can produce for war, the American people will insist on abundance in time of peace, Dr. Stine forecast. Slums must be cleared away, he declared; the space they leave should not be filled with other buildings, but put to use as close-in airfields. Better nutrition for everyone, based on recent researches in food chemistry, is imperative for the maintenance of a population of high industrial productivity.

"No doubt, some will become alarmed over the possible displacement of old materials and old industries," Dr. Stine

admitted. "Changes of a drastic nature are inevitable but they seldom result in the hardships that the timid predict . . . Let our swords be mighty, and mighty indeed will be our plowshares."

Science News Letter, September 12, 1942

Flours Help Replace Meat

➤ MEATLESS DAYS, even whole meatless months in an emergency, need have no nutritional terrors, if a supply of soybean, cottonseed or peanut flour is available, the American Chemical Society was told by Dr. Theodore F. Zucker and Dr. Lois Zucker of Columbia University. These flours, which are made from the seeds after the oil has been extracted, are very rich in protein and certain vitamins, so that they should prove

highly valuable as additions to ordinary wheat flour, making bread a more nearly balanced diet.

It is possible to make a meatless sandwich just by buttering two pieces of this mixed-flour bread and slapping them together. The "meat" is invisibly present, incorporated in the bread itself.

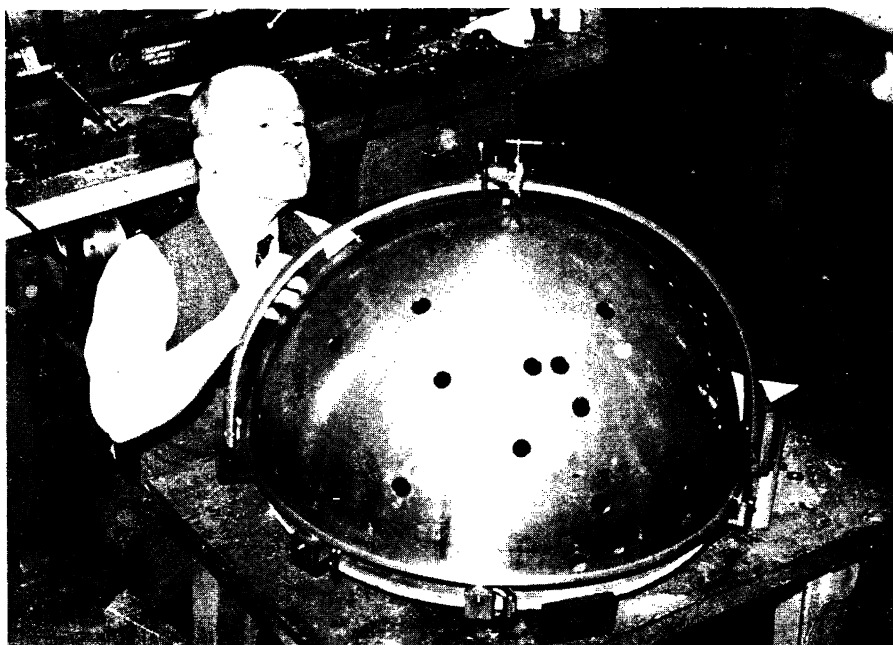
Both soybean and cottonseed flours have distinctive (*Turn to Page 170*)

MEDICINE

Symptoms May Be Wrongly Blamed on Blood Pressure

➤ A GOOD many people afflicted with headaches, nervousness, cold hands and feet, lack of energy and a tired feeling plus a low blood pressure are likely to blame their symptoms on the low blood pressure. In fact, says Dr. Thomas M. Durant of Philadelphia, they often may have been helped to that idea by their physician.

Generally, the patient does not know he has a low blood pressure until he goes to his doctor for relief of his headaches, fatigue and other symptoms.



STAR MAKER—Bausch and Lomb has built a new star projector for use by Navy aviators. Men are taught the position and degree of brightness of 145 navigational stars which are projected on the spherical dome. Stars appear realistically in the sky through a period corresponding to a 24-hour cycle, which speeds up instruction. The instrument can be used in the daytime when no stars are visible and can be operated at night when bad weather obscures the stars outside.

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tastes to which the person who eats them, needs to become accustomed, Dr. Zucker stated. Cottonseed flour makes a yellower loaf than most of us are used to. On the other hand, it is very cheap—five cents a pound on the current market. Peanut flour offers less difficulty so far as taste is concerned, but its price is considerably higher.

The Doctors Zucker made up test batches of bread out of various mixes of these seed flours with wheat flour and tried them out on rats, which thrive very well on them, needing no other source of proteins. They also got sufficient quantities of two necessary vitamins, thiamin and riboflavin, from the seed flours.

Science News Letter, September 12, 1942

New Sugarcane Byproducts

➤ ANOTHER BYPRODUCT of agricultural industry that may find profitable use through chemical handling is bagasse, the woody waste left after the sugary sap has been crushed out of sugarcane. Prof. Donald F. Othmer and George A. Fenstrom of the Polytechnic Institute of Brooklyn told the members of the American Chemical Society of their experiments with this material.

From a ton of dry bagasse, heated in a dry still, they obtain 35 pounds of acetic acid, one and one-third gallons of crude methanol (wood alcohol) and 750 pounds of charcoal. The acetic acid and methanol are in large demand as industrial solvents, and charcoal is a

familiar domestic fuel in the warm lands where sugarcane is grown. The experimenters pressed it into briquets for marketing.

Science News Letter, September 12, 1942

New Vanadium Process

➤ VANADIUM, strengthener of steel for war, is now being extracted by a new process from Idaho phosphate rock used in fertilizer manufacture. It is estimated that half a million tons of vanadium can be recovered from the 5,700,000,000 tons of phosphate rock in sight in this deposit.

The extraction process was described before the meeting of the American Chemical Society by Dr. J. Perry Morgan, chemical engineer of the Standard Oil Company of New Jersey, who developed it under the direction of Prof. Arthur W. Hixson of Columbia University.

The phosphate rock is first treated with sulfuric acid, the solution concentrated by evaporation, and then treated with nitric acid. The vanadium is precipitated as vanadyl phosphate, and the phosphoric acid is filtered off to be used in the making of fertilizer.

The vanadyl phosphate is subjected first to live steam, then treated with ammonia gas and ammonium nitrate, which converts it into ammonium vanadate. The ammonium is driven off as ammonia gas by heat, leaving a residue of vanadium pentoxide, which is the form in which vanadium is supplied to the steel industry.

Science News Letter, September 12, 1942

Methods of Dehydrating

➤ DEHYDRATING vegetables is not simply a matter of peeling and slicing them and tossing them into the drier. There are a lot of tricks to the trade, and ignorance or neglect of them will produce the inferior products that gave dehydration such a black eye during World War I and delayed its progress by a decade or more. At the meeting of the American Chemical Society in Buffalo, Dr. W. V. Cruess of the University of California told of some of the things that must be done if dehydrated vegetables are to be really good.

First of all, the vegetables must be garden-fresh. Keeping them for any length of time results in a loss of vitamin C, he said. Then they must be blanched, that is thoroughly scalded in

hot steam, to stop the action of their own enzymes which will spoil both quality and color if they are allowed to continue their activities within the cells. The practical dehydrator has to know certain necessary facts about plant physiology, and apply them.

Dehydration temperatures can be high at the beginning, while the vegetables still have full moisture content, because the water absorbs the heat. But near the end, the temperatures must be kept to a safe, low level.

Even after the job is finished, there are still troubles to contend with, Dr. Cruess told his listeners. Insects love dehydrated foods, and will chew through anything but metal or glass to get at them. They are highly absorbent toward atmospheric moisture, and likely to spoil in contact with oxygen, which again calls for special protective measures.

Science News Letter, September 12, 1942

Frozen Foods in Demand

➤ WHILE FOOD dehydration is attracting great attention because the products can be so compactly shipped for overseas use, quick-freezing of fish, meat, fruits and vegetables for home consumption is not being neglected. Frozen fish is in such great demand, Domenic DeFelice, of the New York State Agricultural Experiment Station, told the meeting, that hitherto unused species have had to be added to haddock, flounder and other first favorites for filleting. The frozen berry industry in the Pacific Northwest has about reached its limit, but is expanding elsewhere in the country. Boned and packaged meats are being frozen in large quantities for Army use.

Science News Letter, September 12, 1942

Approximately 50% of the annual poultry loss from disease is due to fowl paralysis.

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● RADIO

Saturday, September 19, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. O. E. May of the Bureau of Agricultural Chemistry, United States Department of Agriculture, will discuss "Use of Agricultural Products in Industry."

Tuesday, September 15, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.