

## NUTRITION

# Wheat Protein Saved

**A billion pounds of body-building protein can be recovered as a by-product from alcohol distillation. May be used as meat substitute or for chemical products.**

➤ "MEAT" SANDWICHES without visible meat but rich in body-building proteins may result from a new process developed by chemists of the U. S. Department of Agriculture. A billion pounds of protein could thus be recovered annually by alcohol distillation from wheat.

Equipment has already been designed for commercial production based on the process developed by Irwin W. Tucker, a young chemist working under Dr. A. K. Balls, chief of the Department's enzyme research laboratory.

Wheat is treated with sodium sulphite solution, a plentiful waste product of paper mills and other industries. The extracted protein clots and rises to the surface as a thick, yellow froth. When dried it looks very much like dried egg white.

The protein is suitable for human consumption, especially when granular flour is used in the process. Its cost would be only about five cents a pound. Some

look for the protein enrichment of bread, which would help make up for meat supplies that have been cut nearly in half. Cereal products could be similarly treated. Essential chemical products, such as casein, are also possibilities.

Meanwhile, distillers expect to use the solution that is left after the protein separation to replace barley malt, now the most expensive single ingredient of the alcohol distillation process. This, together with the protein by-product, will save the government \$50,000,000 on the 500,000,000 gallons of war alcohol being bought from distillers annually.

After the war we may look forward to large-scale production of grain alcohol for synthetic rubber and other industrial products. Fully developed, the new process will cut former prohibitive costs of peacetime grain alcohol production by at least half. Some say it will pay for the production of the alcohol and then debate as to whether the protein or the alcohol is the by-product.

Production problems will also be solved by the Balls-Tucker discovery. Sticky gluten, extracted by the new process, has been gumming up distillation equipment, thereby forcing frequent shutdowns.

In addition, the process reduces the distillation residue to a thin liquid which is much easier to dispose of than former wastes.

Protein has heretofore been recovered at the end rather than at the beginning of distillation, and the product was good for little but livestock feed. The new, simpler process gives higher yields and the product is pure enough to be used in human food.

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## ENGINEERING

## Noted Boatbuilder Patents Amphibian Pontoon Bridge

➤ WHEN OUR ARMIES roll across the North German plain toward Berlin, it will do the reeling Nazi forces little good to demolish bridges over the many rivers of that rainy country. The Corps of Engineers can throw pontoon bridges across streams almost as fast as the field-gray "Ingeneure" can blow up the old ones.

They won't even have to unload pontoons from trucks and lay floors on them, if an amphibian bridge just patented by Andrew Jackson Higgins, noted New Orleans boatbuilder, comes into use by then. The new bridge consists of wheeled barges, that can be hauled overland behind a tractor like a string of freight cars. Arrived at the edge of a stream, the lead barge is hitched to a cable reel carried by an amphibian tank. The tank swims to the opposite shore, paying out the cable as it goes. When it gets firm footing on the opposite bank, it reels in the cable, drawing the bridge across the river.

As soon as the bridge is in place, engineer troops swarm out on it. They swing over hinged sections that have been lying on top of the barges and slip into place steel pins that hold them firmly in position. The width of the bridge is thus doubled, giving an eight-foot driveway in the middle and a four-foot walkway for infantry on either side; also serving as stabilizing outrigger floats. Folding plates bridge the gaps between the ends of the barges, and short chains prevent too much yield under heavy loads or the thrust of swift currents.

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**AMPHIBIOUS**—Transport glider, America's newest invasion weapon, was made for the U. S. Navy of molded plywood and other non-strategic materials by Allied Aviation Corporation.