

Do You Know?

Most plant *seeds* germinate faster, and in some cases better, in soil that is not fertilized.

Boysenberry is one of California's principal bushberry crops; it is a variety of the blackberry.

Yellowstone had been a U. S. National Park 75 years on March 1, 1947; it is the grandfather of all national parks, the first to be established.

Mental disorders affect, in some degree, some 8,000,000 Americans, it is estimated; mental cases fill more than half the hospital beds in the nation.

Bark from mangrove trees is used for tannin, and the timber, hard, heavy, tough and durable, for tropical construction.

Oysters contain copper, iron and manganese, needed by the human body; also calcium and phosphorus that assist bone growth, and iodine that aids the thyroid gland.

CHEMISTRY

Mold Will Make Alcohol

Molds will take the place of malt, saving grain needed for food and other uses. The mold turns starches into sugars in this method.

► ALCOHOL for both beverage and industrial purposes will be produced in this country on a major scale without the ages-old malting process, thus saving the grain formerly used in making malt for food and other uses. This revolution in one of the world's oldest industries is being wrought by turning malt's traditional job over to one of the molds sometimes found on old bread.

At the meeting of the American Chemical Society at Atlantic City, N. J., S. L. Adams and associates, chemists for the distilling firm of Seagram and Company, told of improved methods they have worked out for the mass culturing of this valuable mold, and of their company's plans for its use in large-scale alcohol production.

At the Northern Regional Research Laboratory of the Department of Agriculture, in Peoria, Ill., government researchers have developed their own mold-production method. They feed it on a watery waste product of the liquor business known by the unappetizing name of "thin distillery slop," with a little ground corn and ground limestone added. After letting the mold grow on this for a couple of days at a temperature of about 140 degrees Fahrenheit, they pour a few gallons of it into 100 gallons of grain mash. The starch in the mash is soon converted into fermentable sugars, ready for the yeasts to work on.

During the war, another chemist, Leo M. Christensen, then at the University of Nebraska, took out a patent on still another method for producing this valuable mold, in which common bran is the principal nutrient used.

However produced, the mold is able to take over malt's old job because it uses the same chemical tool on starch, to turn it into fermentable sugars. This is a starch-digesting enzyme called amylase. When grain is sprouted, in the making of malt, quantities of amylase are produced to turn the reserve food-stock of starch into sugar, for the benefit of the young plant. Then the sprouting grain is heated just enough to kill it, then

dried and ground up. The amylase, still present, will work on any starch to which it is added, changing it into sugar.

It just happens that this mold produces amylase just as good as that in malt—maybe even a little bit better. The chemists in the Peoria laboratory got a slightly higher yield of alcohol, per bushel of grain, when they used mold than they did when they used malt.

Although mold conversion of starch into sugar for fermentation is the newest thing in modern industrial chemistry, it still has an ancient history. The same mold has been used in the Orient for centuries in making alcoholic beverages out of rice—for example, Japan's famous saké. But in those old lands it has always been employed on a handcraft basis; only now is the Occident giving it a big-time job.

Botanically the mold is known as *Aspergillus niger*. It is a first cousin of *Penicillium notatum*, the mold that produces penicillin, the drug that has revolutionized medicine.

Science News Letter, April 26, 1947

CHEMISTRY

Chemical Makes Safer Wave-Fixer for Hair

► AMMONIUM thioglycolate, a wave-fixer for hair, is a much safer compound to use than the ammonium hydrogen sulfide that was formerly the standard. Dr. Cornelia T. Snell of New York told the American Chemical Society meeting in Atlantic City, N. J. The older compound was irritating even on unbroken skin, and if it got into a scratch it raised blisters. Ammonium thioglycolate, tested on rabbits, produced relatively little irritation in scratches, and on a whole skin caused no more redness than a good shampoo liquid.

Science News Letter, April 26, 1947

War-famed *Stalingrad*, Russia, is found to be in a natural gas-bearing region; drilling during 1946 found the gas-bearing stratum about a half mile below the surface.



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