CHEMISTRY

War Requires Alcohol

New methods for producing and also for using alcohol in the war industries are described before the Farm Chemurgic Conference.

➤ ALCOHOL in enormous quantities is used in the American war industries; directly for war in the production of smokeless powder, mustard gas and Buna S synthetic rubber, indirectly as a solvent in hundreds of industrial processes. Alcohol's war importance was sketched before the Ninth Annual Chemurgic Conference in Chicago, by Dr. Donald K. Keyes of the War Production Board.

Before the war, Dr. Keyes stated, industrial alcohol was produced in the United States almost exclusively from blackstrap molasses, brought in tankers from Cuba and other islands in the Caribbean area. Shortage of tankers has necessitated the use of other materials, notably corn. Distilleries have stopped making whisky to devote their capacity 100% to war-necessary alcohol, and many new plants have been erected. It has been found desirable to substitute wheat for corn to some extent, because of shifts in the relative available amounts of the two grains.

Some promising possibilities, like production of alcohol from wood, and from waste ethylene gas in the petroleum industry, must be postponed, partly because they require quantities of critical materials that cannot be spared from other uses at present, partly because a good deal of research and development work remains to be done. Because of the same lack of critical materials it was found less economical to convert breweries and sugar refineries for alcohol production than to put up entirely new plants with more compact, modern equipment.

Science News Letter, April 10, 1943

Granular Flour Used

➤ ALCOHOL PLANTS that converted from blackstrap molasses to grain have found it advantageous to use what is known as granular flour rather than whole wheat, Philip A. Singleton of the New England Alcohol Company told the Conference. This is wheat stripped of its bran coat and milled into a product resembling a widely known breakfast cereal. This is much more tractable stuff to handle in the fermentation vats. Moreover, the bran can be bagged and sent directly into the stock-feed market, instead of needing to be salvaged and dried as part of the distillery slop.

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Speeding Up Production

➤ NEW, VASTLY more efficient methods in producing alcohol from grain were described in some detail by Earl D. Unger of Joseph E. Seagram and Sons, Inc., one of the larger whisky distilling companies, that is now producing headache-juice for the Axis instead of more agreeable fluids for American palates.

The first step in converting crushed grain into alcohol, that of cooking the mash, is now carried out by a flash-conversion process that requires only four or five minutes in relatively compact vessels, instead of the slow hours of simmering in enormous kettles formerly the practice. This saves not only time, but considerable quantities of strategic metals.

The next step, the changing of starch into fermentable sugar by the action of malt enzymes, has also been shortened to a mere 40 seconds, by dint of raising temperatures and pressures. The new, quicker process not only gains hours of time, but increases the yield of alcohol by about a tenth of a gallon per bushel of grain. The amounts of metal needed for apparatus is reduced to a fifth or less of that used in the bulky, old-fashioned distillery vessels. In one part of the distilling equipment it has been found possible to substitute wood for copper.

The most difficult part of the process to speed up is the fermentation itself. Even this, however, shows promise of yielding to the pressure of research now in progress.

Science News Letter, April 10, 1943

June-harvested *hay* in the northeastern states often has twice as much protein content as hay cut a month later.

Shoe-soles moulded of plasticized polyvinyl chloride are reported to be in general use in Germany as a substitute for scarce leather; they are called "P-soles."