

CHEMISTRY

Glycerine Made Synthetically Expected to Stabilize Price

Long Sought in Vain by Chemical Industry, It Is Now Available from Petroleum; Made from Cracked Gas

SYNTHETIC glycerine, a product long sought in vain by chemical industry, is now available from petroleum. Recent technical reports to the American Chemical Society by Dr. Evan C. Williams, Dr. H. P. A. Groll and G. Hearne, of the Shell Development Company, Emeryville, Calif., show how unlimited quantities of the compound can be made from cracked gasoline.

Glycerol, as the chemist prefers to call glycerine to show its family relation to alcohol, has ever been the victim of fickle market conditions, since it is a byproduct of rather fixed quantity from the soap industry. A change in demand, as occasioned by war conditions or peace treaty, does not affect supply and thus prices skyrocket and dive most inconveniently. Figures from 9 to 70 cents per pound have been quoted since the World War. During the one year 1938 the price dropped nearly 60%.

Although glycerol is a simple organic compound, its molecular structure, with one atom of oxygen attached to each carbon atom, has baffled the synthetic manufacturer who must use processes of low cost. By allowing chlorine to react upon propylene, a gaseous component of cracked petroleum, the California technologists have succeeded in producing at low cost the substance allyl chloride. From allyl chloride the compound trichloropropane is then readily prepared. The molecule of trichloropropane is similar in structural design to that of glycerol, and the product is readily convertible into glycerol with the aid of cheap alkali.

Less Unpleasant

The new synthetic glycerol has been tested in gross quantities in the stomach, with effects even less unpleasant than those from the pharmaceutical grade of natural glycerol. Being identical in composition, the preparation needs attention only to purity standards, and this question is easily solved.

It is suspected that much more of interest is in view than a mere stabiliza-

tion of price and strategic war supply for use in a possible time of siege.

By combination of glycerol with acids, a remarkable array of valuable oils is possible. These compounds are analogous chemically to olive, cotton and linseed oils, but without the narrow restrictions in quality and quantity imposed by nature in plant growth.

Superior Lubricants

From petroleum it is likely that entirely new acids, perhaps those with molecules in bunch-like form instead of the chain form normally followed by plants and animals, may be available for this field of research. From such syntheses it is possible that lubricants superior to castor oil, and paint vehicles ahead of linseed oil, might be discovered. The castor and linseed products are

glycerol-acid compounds of the type in question. Furthermore, the resin industry is interested in the prospect of cheap glycerol, which with complex acids forms very complex derivatives suitable for use as plastic resins.

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ENGINEERING

New Dams Bring Northwest America's Cheapest Power

THE GRAND Coulee and Bonneville dams will bring to the Pacific Northwest region of the U.S.A. America's cheapest commercial electric power, costing from 1½ to 2 mills per kilowatt hour (a mill being a tenth of a cent.) Here is energy for a new industrial development utilizing the large deposits of raw material and cheap tidewater transportation in connection with the inexpensive electricity.

Research workers in mining, metallurgy and geology, both State and Federal, centered at Washington's State College at Pullman are exploring vigorously new manufacturing industries capable of using the new electrical power.

Most promising are developments that make production of manganese metal and magnesium metal of high purity, practical at low cost. Most exciting is a new and simple direct method of



YARDSTICK FOR ATOMIC ENERGY

Dr. William H. Wells, in charge of the giant electrostatic atom smasher at Westinghouse, measures the energy of the atomic bullets with the aid of this little electroscope.