

Johnson, and Adelaide Johnson of the University of Chicago, which were completed during the past year. These studies proved glycerine acceptable as food in the animal organism and without adverse subjective effects or physiological reactions in humans even upon the addition of as much as 110 grams glycerine per day to the diet. These careful studies seem to refute completely previously reported results of an adverse nature and a firm foundation seems to have been established on which to proceed with the application of glycerine to food uses.

Glycerine has been used in the past as a moistening, sweetening, and blending agent in food preparations and beverages. An increasing application of glycerine to bakery products is found at present, and it seems destined to find extended application in liquors and cordials, should the people of the United States abandon prohibition.

And now in closing just a word concerning a newer field, which, from a technical point of view is extremely interesting; and, one suspects, full of potentialities. That field broadly speaking is the field of glycerine derivatives. The literature evidences widespread investigation of a surprisingly large number of these derivatives. The esters of glycerine have, of course, received most attention and have found greater practical application at present. Other derivatives appear to be of even greater interest, both from a technical and practical viewpoint, and hold the promise of profitable return to those who investigate their development and commercial applications.

Important among these derivatives are the ethers, the amino derivatives, and the oxidation products of glycerine. Ethers of glycerine can be prepared having almost any desired boiling point ranging from 148° C. and up. Generally speaking they are colorless, stable compounds of mild odor and vary from mobile liquids to crystalline solids. They are characterized by excellent solvent powers which suggests their application to a wide range of uses. They have already been demonstrated as valuable raw materials for the manufacture of synthetic

resins of the "Glyptal" type. The more recent patent literature suggests their use in conjunction with soap as wetting agents, and some of the ethers are further proposed as starting points in the preparation of new detergents as substitutes for soap. Urethane and nitrated derivatives of certain of the aryl ethers of glycerine have been investigated for medicinal purposes and as explosives. The latter are stated to be more stable than picric acid.

From a technical point of view at least the amines derived from glycerine are just as interesting as the ethers. Generally speaking they are very hygroscopic, viscous liquids or solids. They are strong bases with an ammoniacal odor. They combine readily with fatty acids to produce soaps which are soluble in organic liquids, and are excellent emulsifying agents. They have been used both to esterify natural resins and to produce nitrogenous "Glyptals" by reaction with polybasic acids. Some phenylurethane derivatives are stated to have anaesthetic properties.

Of the numerous possible oxidation products of glycerine, only a few have been studied to any great extent. Glycric acid, tartronic acid, mesoxalic acid, and dihydroxyacetone are perhaps the better known. Chemical, electro-chemical, and biochemical oxidations of glycerine have been reported, but it is not believed that any of the work has had as its object the development and practical application of these derivatives. There is some evidence to indicate that these oxidations might be effected in a practical manner by air in the presence of catalysts. If the reaction could be controlled or limited to the desired products, interesting applications are potential rewards.

Biochemical syntheses have produced numerous products from glycerine which includes such compounds as ethyl alcohol, acrolein, hydroacrylic aldehyde, n-propyl alcohol, n-butyl alcohol, butyric acid, lactic acid, phorone, citric acid, and trimethylene glycol. None of these reactions, however, has appeared to have practical interest, principally because of more economic methods of production, of these compounds generally, by other means.

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The Society feels very fortunate in having such an outstanding committee and it is certain that all visiting ladies will find their visit exceptionally enjoyable.

Mr. E. G. Williams, who heads our local arrangement committee this year, as for the past several years, has devoted a great deal of his time and energy toward the benefit of the Society. Send your reservations to Mr. Williams.