

French Vinters Use Ion Exchangers For Product Improvement

LONDON.—Provisional authorization has been secured for ion exchange treatment of wines in France. Plans have been made for a long trial on an industrial scale under official control. Ion exchange treatment offers definite advantages but long-term testing will determine whether or not wines treated in this way differ in final composition from ordinary wines, when both are ripened normally. G. V. Austerweil, Paris wine consultant, outlined process details and demonstrated techniques here before the recent Symposium on Ion Exchange, sponsored by the Society of Chemical Industry.

After fermentation and yeast settling, wines are first treated by a cation H-exchanger. Potassium ions are replaced by hydrogen ions, and the excess hydrogen ions are then removed by passing the wine through an anion exchanger.

Austerweil claimed these results from ion exchange treatment: reduction or complete abolition of changes in wines through crystallization of potassium bitartrate; removal of iron and copper turbidity; sterilization without use of SO₂; and increase of bouquet in medium grade wines.

In conventional wine processing, explained Austerweil, the product is unsalable until five or six months after its complete fermentation, because potassium bitartrate present becomes slowly insoluble in the alcoholic solution and crystallizes as argol. There is a simultaneous slow precipitation of some colloids and coloring matter, due to variation in pH and buffer salt concentration in the wines.

The elimination of the potassium ion must be carried out quantitatively so as not to remove more than the amount that would have left the wine through bitartrate crystallization. This is a legal point, since food laws of most wine-growing countries do not permit either addition or removal of components in the wine. In like manner, the acidity produced by the potassium-hydrogen ion exchange must be restored to that which would have been reached after potassium bitartrate crystallization.

After some practice, said Austerweil, plant operators are able to determine the end points of the cation exchange by tasting the wine, but he also outlined a more scientific method based on a nomogram interrelating solubility of the bitartrate in solutions of variable acidity and variable alcohol content.

The heavy metals, copper and iron, are also eliminated with the potassium. The

cation exchange bed also partially or totally removes the calcium and magnesium ions, as well as some ions containing basic nitrogen. This removal of mineral food, continued Austerweil, almost completely eliminates the possibility of microbiological metabolism. The sterilizing effect is increased by the subsequent passage of the wine through an anion exchanger bed which would normally contain polymers with quaternary amino groups, themselves powerful antiseptics.

Conventional processing of wine usually includes addition of SO₂ in amounts up to 100 milligrams per liter for the preservation of wines with a high sugar content. The ion exchange treatment, said the Paris consultant, obviates completely, or at least reduces any SO₂ addition.

Wines treated with ion exchangers have better organoleptic qualities than untreated wines and generally command a better price, said Austerweil. His explanation was that highly basic anion exchangers cause catalytically some aldolization of aldehydes in contact with them. Aldehydes are frequently cause of disagreeable odors in wines. In addition to this aldolization, it is probable that part of the reaction between the surface of highly basic anion exchangers and aldehydes gives the first stage of the Cannizzaro reaction—unsaponified esters of an agreeable odor are formed.

Industry

Chemical Enterprises Acquires Nine Fertilizer Units

Chemical Enterprises, Inc., of New York City, has exercised an option to purchase all of the outstanding stock of nine fertilizer and equipment distributing companies located in Louisiana, Texas, and Washington. These units which will continue to operate independently are engaged in the distribution of liquid fertilizer, particularly anhydrous ammonia, and auxiliary application equipment.

The purchase price was reported to be over \$1 million. Additional capital will be supplied by Chemical Enterprises, thus permitting further expansion. J. C. Berry, President of Louisiana Liquid Fertilizer Co., will be general manager of these affiliated companies. The nine companies are: Dixie Liquid Fertilizer Company, Inc., Monroe, La., Louisiana Liquid Fertilizer Company, Inc., Shreveport, La., Texammonia Gas, Inc., Mc-

Allen, Texas, Texammonia, Inc., Elsa, Texas, Palouse Ammonia, Inc., Endicott, Wash., Whiteman Ammonia Company, Inc., Oakesdale, Wash., Columbia Ammonia Company, Inc., Huntsville, Wash., Agricultural Equipment Company, Inc., Endicott, Wash., and Agricultural Wholesale Equipment Company, Inc., Shreveport, La.

In the past Chemical Enterprises' interests were principally in Southeastern Liquid Fertilizer Company, Inc., of Albany, Ga., with stations in Georgia, Alabama, and Florida. The new additions both extend the territory served and add to the diversity of crops on which the companies' materials are used.

Hercules Takes Option On Missouri Ordinance Works

Hercules has taken a lease on the Missouri Ordinance Works with an option to buy the ammonia plant for \$3,625,000.

The Ordinance Works was built by Hercules in 1941-42 for the Army Ordinance Department, and operated continuously until late 1945, when it was shut down and placed in a stand-by condition.

The installation consists of three high pressure lines for the conversion of natural gas to anhydrous ammonia at the rate of about 42,000 tons per year.

Hercules expects to begin production within three months, with capacity operation starting in five months. Earlier this month Hercules announced plans for a joint undertaking with Alabama By-Products Corp. for the production of 45,000 tons of anhydrous ammonia per year at Birmingham (AG AND FOOD Newsletter, April 14, page 390).

IM&C Forms Feed Ingredient Sales Department

International Minerals and Chemicals Corp. has announced the formation of a feed ingredients sales department within the phosphate chemicals division of the corporation. The feed ingredients department will incorporate the former feed phosphates group with an increase in activities to handle IMC products for the food industry.

Oldbury to Make TCA At New Mississippi Plant

Oldbury Electro-Chemical has announced that it will build a \$3.5 million plant at Columbus, Miss., for sodium chlorate and eventually a number of other products, including the weed-killer sodium trichloroacetate.

Earl L. Whitford, president of the company, said that the decision to build at the Mississippi site was prompted by the developing market for its products in the