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Disposal of Wastes from the Beet Sugar Industry

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A CONVENIENT METHOD FOR THE LABORATORY
PREPARATION OF ABSOLUTE ETHYL ALCOHOL

THOMAS H. LIGGETT AND KENNETH DYKSTRA

The rates of dehydration of ethyl alcohol of 95 per cent strength by calcium oxide were determined at 15°, 45°, and 78°. By two successive treatments for two months each with lime at room temperature, the alcohol was found to be dehydrated in a satisfactory manner. The same result was found to be accomplished at 45° by two treatments of one week each. In neither case is refluxing necessary.

The clear alcohol and the thin alcohol-lime mixture from the second treatment with lime were treated with a suitable amount of diatomaceous filter-aid (Hy-flo Supercel), filtered rapidly through a large Buechner funnel, and the clear yellowish filtrate distilled from a large Pyrex flask. In cases where the lime did not settle well the mixture of lime and alcohol was distilled without filtering. In this case the distilling flask was provided with a special still-head—a modified "plate column." The "plates" were copper spirals on which were laid discs of copper gauze, or layers of glass beads, in order to retain a layer of wash liquid. This allowed a rate of distillation of 2 liters to 5 liters per hour still prevented lime from being carried over.

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DISPOSAL OF WASTES FROM THE BEET SUGAR
INDUSTRY

EDWARD BARTOW

The wastes from beet sugar manufacture include (1) beet washing water, (2) diffusion water, (3) lime sludge, (4) Steffens waste. The extracted beet pulp which might be considered a waste is dried and fed to cattle. The beet wash water can be recirculated and the sand, mud, etc., removed. The diffusion water may be treated with lime and disposed of on sand filters. The lime sludge may be settled and the precipitate used as anti acid on land. The Steffens waste which amounts to approximately 210,000 gallons for 1,000 tons of beets is the most concentrated and most difficult to handle. It has been concentrated and ignited and potassium carbonate obtained but it seems better to concentrate and make glutamic acid, and use the **residue** as fertilizer; or as has been shown by experiments in the laboratory of the state University of Iowa, to concentrate, extract with alcohol, and obtain potassium chloride, betaine hydrochloride and glutamic acid. The latter is the most valuable product, and is used under the name of "ajinomoto" and other names as a condiment in Japan, China, and tropical countries of the Orient.

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