referring to the relative convenience of these methods for fertilizer chemists. Also points out again that the West Coast method is deceptive and recommends that it be eliminated from contracts governing transfers of commercial nitrate of soda. Also shows development of a modification of the Kjeldahl-Gunning (sulfuric-salicylic) method for the rapid and accurate determination of nitrate, as ammonia, also indicates errors in this method as sometimes used. Also shows correct application of the method to mixed fertilizer containing nitrate.

The caking of sulphate of ammonia: C. G. Atwater and Dr. J. F. W. Schultz. Sulphate of ammonia, even when dried and screened to fit it for fertilizer use by itself as a top dressing, has shown a tendency to cake in certain cases. Examination of the material that had given trouble finally indicated in this case that the trouble was due to the presence of salts of pyridine bases which are deposited with the salt in the saturator. These impurities give the salt a slightly sticky nature; cause absorption of water and caking. By passing dry ammonia gas through the sulphate to neutralization, the pyridine was set free and the objectionable characteristics removed.

The caking of sulfate of ammonia and acid phosphate mixtures: C. G. Atwater and J. F. W. Schnultz.

The American potash industry: R. O. E. Davis. Domestic production of potash grew from 1,000 tons in 1915 to 9,000 in 1916, 32,000 in 1917, and 55,000 in 1918. At the close of 1918 there was a potash-producing capacity in this country of approximately 100,000 tons per annum. The sources of potash are widespread, covering about sixteen states in various sections of the Union. The main production has come from Nebraska and California. Fourteen cement plants have installed methods of collecting potash from flue dust. Two blast furnaces have similar methods in operation. Five molasses distilleries are recovering potash from their wastes. A number of beet sugar refineries recovered small amounts of potash. The Green sands of New Jersey are a source of potash for two plants. One plant is utilizing Georgia shale as a source of potash. One plant at Marysvale, Utah, is utilizing alunite, and kelp formed the basis of operation for four large companies on the Pacific coast. Other minor sources exist, such as wood ashes, wool washings, and the brines of the great Salt Lake basin. The best prospects for the development of a permanent industry in competition with foreign potash appears to be from the gradual solving of technical details of processes where potash can be obtained in localities near consumption centers and in the development of by-products. Western producers must meet the handicap of high freight rates to eastern markets, although the development of by-products and improved methods may overcome this handicap.

The relative availability of nitrate nitrogen and commercial organic nitrogen—field and cylinder experiments: A. W. Blair. For more than 20 years, the New Jersey Experiment Station has been studying by means of field and cylinder experiments, the relative availability of nitrate nitrogen from organic sources. The work has been conducted on two types of loam soil and also on a loam with varying admixtures of coarse white sand to represent soils varying in texture. For all of these soils, except those containing 80 per cent. or more of sand, the nitrates have stood first in yield of dry matter and percentage of nitrogen recovered in the crop. Under the most favorable conditions, only a little over 60 per cent. of the applied nitrogen can be recovered in the crop. Under less favorable conditions, the percentage recovery is much lower, often amounting to only one third of the amount applied. The average recovery of nitrate nitrogen in the field experiments was 37 per cent. and of organic nitrogen 26½ per cent. It is suggested that the reason for the larger return from nitrate nitrogen than from organic nitrogen may be found in the immediate availability of the former. The plant is thus given a good start and on account of the rapid growth which it makes, it is able to utilize the nitrogen more fully than the plant which must wait for a supply of available nitrogen, until the organic matter has gone through the process of decomposition.

Charles L. Parsons,
Secretary

(*To be continued*)

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