In conclusion, I may say that science has failed, so far, to provide a substitute for the natural nitrate, and it is more economical to avail ourselves of the reserve supplies, representing the accumulated work of bacterial ferments during protracted geological periods of the past, in the now desert regions of Chili, than it is to rely upon their inadequate and uncertain work in our soils under the unfavorable natural conditions prevailing in our climate. JOHN A. MYERS.

NOTES.

On a Possible Error in the Determination of Nitrogen in Nitrates Due to Impurities in Reduced Iron.—Reduced iron is employed in two of the methods for the determination of nitrogen in nitrates, which are in use by the Association of Official Agricultural Chemists. Recently, in making blank determinations with a new lot of so-called chemically pure reduced iron it was found that, by the modified Ulsch method, much less ammonia was required for neutralizing the acid than in the case of blank tests formerly made. The error from this cause in determinations involving half a gram of commercial sodium nitrate, would amount to from 0.30 to 0.35 of a per cent. By direct distillation, without first allowing the iron to dissolve in the acid, no difficulty was experienced. The reduced iron bore the label of one of the leading manufacturers of chemicals in Germany and was ordered through a prominent and reliable firm in this country.

Since these tests were made, an account of a similar observation by L. Brandt[1] has been noticed. Brandt found in a similar manner an error equal to eight-tenths of a per cent., assuming half a gram of nitrate to be employed in a single test. As in our own case, he assured himself that the error was not due to any of the other reagents, nor to the apparatus employed, and also found that the error did not appear unless the iron was dissolved in the acid before the distillation. From various tests made by Brandt, he concluded that the impurity in the iron was in the form of some organic nitrogen compound, which probably gained access to it, subsequent to its reduction by hydrogen. Further experiments showed that the impurity could be removed by heating the iron in a current of hydrogen, though the accom-

[1] *Chem. Ztg.*, 23, 22 (1899).

plishment of the object was impossible by extraction with water, alcohol, or ether. Brandt very properly closes the account of his observations by stating that the experience further indicates the propriety of never placing implicit confidence in chemicals claimed to be chemically pure, but to test everything before using it.

In view of the recent extension of the use of the modified Ulsch method in the laboratories of this country, it seemed important that our own analysts should be put on their guard as to the possible character of the reduced iron sold as chemically pure. B. L. HARTWELL AND H. J. WHEELER.

On the Determination of Sulphur in Sulphites.—This method is founded on the following well-known reaction: Sulphur dioxide, when brought into contact with nascent oxygen and water, is transformed into sulphuric acid. The operation is conducted as follows: The weighed sulphite dissolved in water is placed in a beaker, and a mixture of water, hydrochloric acid, hydrogen peroxide, and barium chloride is added in sufficient quantity. The beaker is covered with a watch-glass, gently heated, and the operation conducted as in the case of a determination of sulphuric acid.

$$\text{Weight of } BaSO_4 \times 0.1371 = S.$$
$$\text{Weight of } BaSO_4 \times 0.2742 = SO_2.$$

The reaction comprises three phases:

(1) The sulphite is decomposed by hydrochloric acid, which liberates sulphurous acid.

(2) Sulphurous acid decomposes hydrogen peroxide and unites with the nascent oxygen forming sulphuric acid.

(3) Sulphuric acid with barium chloride gives barium sulphate.

Potassium metasulphite, $K_2S_2O_5$, analyzed by this method has given:

	Calculated. Per cent.	Found. Per cent.
Sulphur	28.8	28.8560
Potassium	35.1	34.9755
Oxygen	36.1	.....

In using the bromine method the result for sulphur was 29.0202 per cent.