

dent, Governor J. K. Tener, of Pennsylvania, Secretary Walter L. Fisher, of the Department of the Interior, and others.

At 1.00 P.M. the President proceeds to the river front to review marine parade in honor of the Centenary of Opening Navigation on the Ohio River.

Parade of miners will proceed from Forbes Field down Fifth Avenue to a reserved reviewing stand on the river front, passing, en route, in review of President Taft and accompanying officials.

THE DETERMINATION OF NITROGEN IN COMMERCIAL AMMONIATES OF HIGH NITROGEN CONTENT.

Second Report of the Committee on Nitrogen, Division of Fertilizer Chemists, American Chemical Society.

The attention of this committee was recently called to the fact that the determination of nitrogen by the Official Kjeldahl or Gunning method modified for nitrates in commercial nitrate of soda, does not always give concordant results in the hands of different analysts even if the samples in question are presumably identical, as truly representative samples of the same lot of goods. It was thought advisable, therefore, to ask for co-operative work on the analysis of a carefully prepared sample. The

SUMMARY OF ANALYSES OF NITRATE OF SODA.

Averages only are given.

An- alyst.	Moisture. Per cent.	Nitrogen. Per cent.	
1	1.20	15.50	Official Gunning Method, approximately 3 hrs. digestion after adding potassium sulphate.
2	1.64	15.18	Moisture at 100°, 5 gm. 3 hrs., 2 gm. 12 hrs. Modified Kjeldahl Method.
3	1.55	15.30	Modified Gunning Method.
4	1.64	15.60	Official Gunning Method. Moisture at 98-99°C.
5	1.67	15.79	Moisture at 130°C. Used 0.25 gm. and let stand for 5-6 hrs. before heating.
6	0.69	15.33	Modified Kjeldahl Method.
		15.22	Modified Gunning Method.
		15.48	Official Kjeldahl Method. 2 gm. salicylic acid, 30 cc. H ₂ SO ₄ , 2 gm. Zn dust and Hg. Heated 3 hrs. 1/2 gm. material used. KMnO ₄ added at completion of digestion.
		15.55	Comb. Kjeldahl-Gunning Method 2 gm. salicylic acid 30 cc. H ₂ SO ₄ , 2 gm. Zn, Hg and K ₂ SO ₄ . Heated 2 hrs. 1/2 gm. material used. 2 gm. material used for moisture. Dried 7 hrs. 100-102°C. in air bath.
7	1.24	15.09	Official Gunning Method, modified to include nitrates.
8	1.67	15.25	Official Gunning Method. Moisture at 130°C.
9	2.46	15.48	Stood over night with salicylic acid mixture before digestion.
10	1.98	15.43	Official Gunning Method.
11	0.32 ¹	14.60 ¹	Official Kjeldahl Method.
12	1.63	15.41	
13	1.40	15.45	Modified Kjeldahl-Gunning Method, allowing to stand 1/2 hr. before reduction, and 6 hrs. longer before digestion.
14	..	15.45	Official Gunning Method, modified to include nitrates. Kept mixture very cold with constant shaking for 30 minutes.
	..	15.46	1/2 cc. of water added acid mixture and digested without shaking.
15	..	15.18	1/2 gm. material used and modified Kjeldahl Method, adding 30 cc. acid with 2 gm. salicylic acid dissolved in same.
	..	15.29	1/2 gm. material used, adding salicylic acid dry to nitrates.
	..	15.48	1/4 gm. adding wet mixture, salicylic acid and sulphuric acid.
	..	15.62	Dry salicylic acid and mixing with nitrates, using 1/4 gm.
Mean,	1.56	15.41	
Max.,	2.46	15.79	
Min.,	0.69	15.09	

¹ Omitted from average.

letter of instructions sent with the sample substantially requested that nitrogen be determined thereon by the Official Gunning or Kjeldahl methods modified for nitrates as given in *Bulletin* 107 of the Bureau of Chemistry and that moisture be determined on two gram portions of the sample. The reason for specifying two gram portions was that the samples sent out had to be small, as the time available before the summer meeting was limited.

For the same reason, the amount of work asked for was limited so that it represented but a small addition to the routine work of those laboratories to which samples and requests for work were sent. These included state fertilizer inspection laboratories, commercial laboratories and fertilizer manufacturers' laboratories.

Replies were received from 14 out of 22 analysts to whom requests and samples were sent.

The results of the work are briefly shown in the preceding table.

COMMENTS OF THE ANALYSTS.

1. There is a tendency to higher results in using 0.25 gram than when using larger quantities.

4. After quoting illustrations from his own practice in which differences between his laboratory and others range from 0.5 per cent. to 2.0 per cent. of nitrogen were developed, this analyst adds:

"We find that the more nitrogen the goods contain, the longer the digestion is required to stand before heating. We usually put it on in the afternoon and let it stand all night."

14. "We cannot seem to get as high results with 0.5 gram materials as with 0.25 gram, especially so when we add the mixture of salicylic acid dissolved in sulphuric acid."

There is a wide range in the results reported by the various analysts in the results on moisture as well as on nitrogen. This variation does not seem to depend on any one particular factor. The details as reported vary widely as shown in the table and no definite conclusions can be formed from this preliminary work. Local conditions of manipulation and reagents are probably responsible for as much variation as any other factor.

The committee recommends that the study of this subject be continued with a view towards the establishment of a standard sample in sufficient quantity to serve the needs of the members in this division or at least of those members who are particularly interested in this subject.

Respectfully submitted,

Committee on Nitrogen,

C. H. JONES,

F. C. ATKINSON,

F. L. PARKER, JR.,

PAUL RUDNICK, Chairman.

REPORT OF THE COMMITTEE ON PHOSPHATE ROCK.

JUNE MEETING, A. C. S., 1911.

The committee appointed as the Committee on Phosphate Rock, for the better handling of the prob-