

$2\text{N}_2\text{H}_4 + 2\text{O} \rightarrow \text{HN}_3 + \text{NH}_3 + 2\text{H}_2\text{O}$, amounted to 13.55 per cent. of the theory. The highest yield of ammonia amounted to 21.3 per cent. on the basis of the same equation. The use of ammonium metavanadate in the determination of hydrazine, as recommended by Hofmann and Küspert, is theoretically subject to a percentage error numerically equivalent to the percentage yield of hydronitric acid when the nitrometric method is employed, and to a smaller error when the oxidimetric method is chosen. By the use of a Lunge nitrometer the error was found to be about 4.5 per cent. for the nitrometric method and about one per cent. for the oxidimetric method.

CORNELL UNIVERSITY,
June, 1907.

UNIFICATION OF TERMS USED IN REPORTING ANALYTICAL RESULTS.¹

BY CYRIL G. HOPKINS, Chairman of Committee from the Association of American Agricultural Colleges and Experiment Stations.

Received July 5, 1907.

In 1904 at the St. Louis meeting of the Association of Official Agricultural Chemists, a committee was appointed on unification of terms used in reporting analysis; and at the Des Moines meeting a similar committee was appointed by the Association of American Agricultural Colleges and Experiment Stations.

These two committees have cooperated in the work assigned and at the last annual meetings made substantially the same report to their respective associations.

Final action on the report was postponed for one year by the Association of Official Agricultural Chemists at Washington last November, in part, because at that time no action had been taken by the broader association of Agricultural Colleges and Experiment Stations, whose annual convention was held a week later at Baton Rouge, at which meeting, however, the report which follows was adopted with the conditions stated:

Report of Committee on Unification of Terms Used in Chemical Analysis.

"Your committee has been working in cooperation with a similar committee from the Association of Official Agricultural Chemists, and the following report is in harmony with a report already made to that association by its own committee, on which action was postponed for one year.

The subject-matter referred to your committee naturally divides itself into two classes, one of which includes soils, fertilizers, ash and other materials whose analysis may be expressed in terms of chemical elements or in simple compounds; while the other class includes foodstuffs, condiments, and other materials whose analysis may best be expressed in terms

¹ Read at the Toronto Meeting of the American Chemical Society, June 28th, 1907.

of more complex compounds, or groups of compounds, which actually compose or are contained in the material.

Soils, Fertilizers, Etc.

Special efforts have been made during the past two years to secure a full consideration, especially by directors of experiment stations, chemists, and agronomists, of the question whether it is better to continue to report analysis of soils and fertilizers on the basis of oxides (excepting nitrogen, which is already most commonly reported as the element), or to report such analysis on the uniform basis of the elements.

Several circular letters have been sent out, and in answer to this question 85 replies have been received. Of these there were 21 making comments, but expressing no definite or final opinion on the question; there were 16, including 12 chemists who favor retaining the present system; while there were 17 chemists, 16 agronomists, and 15 directors and other officers, or 48 in all, who expressed definite opinions in favor of adopting the uniform system of elements.

In view of these facts, and providing concurrent action is taken by the Association of Official Agricultural Chemists and the American Chemical Society, your committee favors the adoption of the element system for reporting analytical results in the analysis of soils, ashes, and fertilizers as rapidly as possible, and recommends that the association urge those responsible for fertilizer legislation to have the laws changed if necessary, and as soon as practicable to meet with these recommendations, if concurred in.

This would necessitate the adoption of the dual system of expressing results temporarily in some States, but it is hoped that when fertilizer laws are adopted to meet these requirements some definite time will be set, at the expiration of which only the element system will appear on the bags or tags. It is therefore suggested that no other terms than those of the element system be allowed after the year 1916.

Your committee also recommends, provided the foregoing is adopted, that this association adopt some definite form for stating the composition of fertilizers and fertilizer materials. The following form is suggested.

Elements Guaranteed.	Per Cent.
Available nitrogen.....
Inert nitrogen.....
Available phosphorus.....
Inert phosphorus.....
Available potassium.....
Inert potassium.....

We recommend that the terms "available" and "inert" shall be used in harmony with the construction placed upon them by the Association of Official Agricultural Chemists.

The committee also recommends that in case of the adoption of the

foregoing there be required to be printed on the bag or on the tag to be attached to the bag or to accompany fertilizers sold in bulk an explanatory statement naming the materials in which the plant food is carried, as, for example :

The plant food guaranteed in this fertilizer is carried in cotton-seed meal, potassium chloride, and acid phosphate.

Foodstuffs, Condiments, Etc.

In the case of foodstuffs, condiments, etc., your committee recommends in the statement of analytical results the use of names of compounds (or groups of compounds) actually present as such in the material, this being in accordance with the present practice.

Your committee asks for further time in which to consider the more complete unification of systems for reporting results of analysis of some miscellaneous materials, as insecticides, baking powders, etc.

It is further recommended that this association appoint a committee to aid (preferably in cooperation with a similar committee from the Association of Official Agricultural Chemists) in trying to bring about both national and international uniformity in the reporting of analytical results."

This report with the conditions stated as presented by the committee was adopted by the Association of American Agricultural Colleges and Experiment Stations, and on behalf of that association I now present this report to the American Chemical Society and ask for its endorsement.

UNIVERSITY OF ILLINOIS,
Urbana, Ill.

CONTRIBUTION TO THE DETERMINATION OF PHOSPHORIC ACID VOLUMETRICALLY.

BY, W. D. RICHARDSON.
Received July 11th, 1907.

It is a fact fairly well known among agricultural chemists that when phosphoric acid is determined in acid phosphate by the Pemberton volumetric method or its usual modifications results are obtained which do not agree with those obtained by the gravimetric method of the A. O. A. C. and the error frequently amounts to + 1 per cent. P_2O_5 . Inasmuch as the volumetric method in general agrees well with the gravimetric and as it is a desirable method to use, a search was made in this laboratory for the substance which caused the discrepancy.

A check sample of an ordinary run of acid phosphate was sent out to a number of chemists and the results were in accord with previous experience, that is differences amounting in the extreme case to 1.2 per cent- P_2O_5 were recorded. Following this, mixtures of microcosmic salt and the impurities usually present in acid phosphate, namely lead salts, fluorides, arsenic compounds and silicic acid were made and the P_2O_5 in them