

and the solution filtered and the residue washed with 50 per cent. alcohol. A measured excess of $N/10$ hydrochloric acid is then added to the filtrate and the solution boiled to expel the carbon dioxide, litmus being used as an indicator and more acid being added if necessary, to give a permanent acid reaction after boiling. The titration is then finished with $N/10$ sodium hydroxide. The solution is evaporated to dryness in platinum, dried at 110° and finally at very faint redness and the residue of potassium and sodium chlorides weighed. The amount of each metal can be calculated on the following principle:

Let a = No. of cc. of $N/10$ HCl used less the No. of cc. of $N/10$ NaOH.
 $b = a \times 0.00585$ = weight of NaCl equivalent to sum of NaCl + KCl.
 c = weight of NaCl + KCl formed less the weight of NaCl corresponding to the weight of NaOH used.

x = weight of Na.

y = weight of K.

$$\text{Then } b = \frac{58.5}{23.05} X + \frac{58.5}{39.15} y.$$

$$c = \frac{58.5}{23.05} X + \frac{74.6}{39.15} y.$$

$$y = 2.432 (c - b).$$

$$x = \frac{23.05}{58.5} \left(c - \frac{74.6}{39.15} y \right) = 0.3937 c - 0.75 y.$$

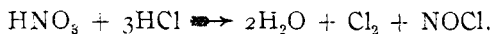
Three samples of clay gave by the above method:

	By Lawrence Smith's method.		By the above method.	
	K.	Na.	K.	Na.
A.....	0.76	0.14	0.77	0.14
B.....	0.33	0.53	0.33	0.45
C.....	0.18	1.39	0.14	1.42

J. E. THOMSEN.

LABORATORY OF JOSEPH DIXON CRUCIBLE CO.,
 JERSEY CITY, N. J.

The Determination of Total Nitrogen Including Nitrates in the Presence of Chlorides.—Asboth, Jodlbauer and Scovell have modified the Kjeldahl nitrogen method with the view of making possible the determination of nitric nitrogen simultaneously with organic nitrogen. In the presence of common salt, however, these modifications, and also the method of the Official Agricultural Chemists (which is essentially Scovell's) are inapplicable; for the sulphuric acid used in the method acts upon chlorides and nitrates producing hydrochloric and nitric acids and before the latter is reduced to ammonia by the reducing agents present, the following reaction occurs:



The pickling solutions used for curing meats contain usually salt, saltpeter and sugar; and after use they contain also the class of substances known as meat bases and various proteins. Cured meats themselves also contain all these compounds. The Kjeldahl method and its modifications are inapplicable, therefore, to the determination of total nitrogen in cured meats and pickling solutions. Various methods were tried in this laboratory to arrive at the amount of total nitrogen in these two products and the following was devised for the purpose: (1) determine nitric nitrogen by the Schloessing-Wagner method; (2) in another portion determine nitrogen excluding nitrates by adding to the substance in the Kjeldahl flask 10 cc. more or less of saturated ferrous chloride solution and boiling with dilute sulphuric acid until nitrates are destroyed. Then proceed with the determination of the remaining nitrogen by the Kjeldahl or Kjeldahl-Gunning method. The sum of (1) and (2) gives the total nitrogen. A test solution was made containing ten grams ammonium chloride, ten grams potassium nitrate and 200 grams sodium chloride in 1000 cc. By the Kjeldahl method modified to include nitrates the following quantities of total nitrogen were found in three determinations in aliquot parts of this solution: 0.0910 g., 0.0883 g. and 0.0834 g. calculated: 0.1000 g. By the method described above the following quantities were found: nitric nitrogen 0.0347 g. (calculated 0.0346 g.); other nitrogen by Kjeldahl method after removal of nitrates, 0.0653 g. (calculated 0.0654 g.); total nitrogen found 0.1000 g. (calculated 0.1000 g.). Mr. E. F. Scherubel assisted in this work.

W. D. RICHARDSON.

LABORATORY OF SWIFT & CO.,
CHICAGO.

REVIEWS.

REVIEW OF ANALYTICAL WORK DONE IN 1906.

BY BENTON DALES.

Received December 15, 1907.

In this review the only change from the plan of previous ones is that American work has been included. The writer's acknowledgment of his indebtedness to the *Chemisches Zentralblatt* for general grouping of subjects and for abstracts is due again and is here made. He has made use occasionally also of abstracts in the *Journals of the London Chemical Society* and *Society of Chemical Industry*.

General Analysis.

Apparatus.—A new Orsat apparatus was proposed by Bendemann (*J. Gasbel.*, 49, 583, from *Z. Ver. Ing.*) for analysis of the new power gases which contain something like 30% of carbon monoxide, 12% of hydrogen and only traces of methane. Two cuprous chloride pipettes are used, and where considerable amounts of oxygen are to be absorbed either