

Mr. O. J. Sieplein, instructor, and Mr. A. H. Goldstein, student in this laboratory, have aided in the experimental work on this petroleum. Aid in carrying on this work was received from the C. M. Warren Fund for chemical research.

NOTES.

On Nitrometer Work.—The following work was done on the usual nitrometer, composed of a decomposing bulb and reservoir and the complement of a measuring tube, reduction tube and reservoir. The measuring tube had a capacity of 140 cc. The potassium nitrate used was Merck's, chemically pure, recrystallized. About 0.5 gram was used for each determination. The temperature of the laboratory, while the work was being done, was approximately 68° F. The dry potassium nitrate was weighed out into tared weighing bottles and about 15 cc. of sulphuric acid added. The bottles were then stoppered and set aside for about eighteen hours, or over night, by which time a clear solution was obtained, if the acid used was over 90 per cent. H_2SO_4 , but if of less strength a residue, presumably of potassium sulphate, was left. The contents of the weighing-bottles were transferred to the decomposing bulb with the aid of a wash-bottle containing acid of the same strength as that used in the weighing bottles. In each determination 32 cc. of acid were used. The strengths of sulphuric acid used and the volume in cubic centimeters of nitric oxide (NO) per gram of potassium nitrate for each acid are as follows :

Strength of sulphuric acid in per cent.	Cubic centimeters of nitric oxide per gram potassium nitrate.					
	I.	II.	III.	IV.	V.	Average.
98.03	222.0	221.8	222.0	222.3	222.3	222.08
96.92	223.2	223.0	223.3	223.3	...	223.2
96.92	224.0	224.3	224.4	224.4	224.4	224.3
95.14	225.1	224.8	225.0	225.2	225.0	225.0
94.07	225.0	225.0	224.9	225.2	225.0	225.02
93.05	225.1	225.0	224.8	224.9	225.0	224.96
90.90	225.0	224.9	224.9	225.0	225.0	224.96
85.04	225.3	225.1	225.3	225.0	225.3	225.2
80.14	226.2	226.0	226.2	226.2	226.0	226.1

A difference of 4.02 cc. of nitric oxide is thus obtained by the use of the strongest and weakest acids. It seems probable that this is due to the varying absorptive powers for nitric oxide, of the different strengths of sulphuric acid used.

Lunge¹ states that "1 cc. of concentrated vitriol dissolves 0.000593 gram = 0.035 cc. NO." If this 4.02 cc. of nitric oxide per gram, or 2.01 per half gram of potassium nitrate is due to the difference of solubility of nitric oxide in the first and last acids used, then 32 cc. of 98.03 per cent. sulphuric acid absorbs 2.01 cc. nitric oxide and 1 cc. absorbs 0.0628 cc. nitric oxide. For nitrometer work acid of about 95 per cent. H_2SO_4 appears to be the best. Weaker acid attacks the mercury more readily and decomposes nitric acid more slowly. There is no objection to stronger acid except the difficulty of obtaining it. The chemically pure acid made by a well-known company has been found to vary from 95.0 to 98.0 per cent. H_2SO_4 .

C. H. SHEPARD.

CHEMICAL LABORATORY, UNION IRON WORKS,
SAN FRANCISCO, CAL.

NEW BOOKS.

A TEXT-BOOK OF IMPORTANT MINERALS AND ROCKS WITH TABLES FOR THE DETERMINATION OF MINERALS. BY S. E. TILLMAN. New York: John Wiley & Sons. 1900. viii + 196 pp. Price, \$2.00.

The preface states that the author has designed this book especially for the course in mineralogy at the West Point Military Academy.

The subjects are presented in the order usual in most text-books. Crystallography is treated very briefly: The six systems are defined and illustrated by a few examples. Crystallographic symmetry is defined and contrasted with geometric symmetry. The chemical and physical properties of minerals are reviewed in a short chapter.

Chapter III devotes sixty-four pages to well written descriptions of about seventy-five species, including some well-known gems, ores of the metals, and the common rock-forming minerals.

With the descriptions brief but well selected notes are given as to the occurrence and economic value of many species.

The tables for the determination of minerals are based upon the more obvious physical characteristics and seem well adapted to aid a class in the study of a collection. The book closes with a classification of the common rocks.

The book would seem well adapted for a short practical course in mineralogy if in the hands of a good teacher, otherwise its

¹ *J. Soc. Chem. Ind.*, (1885), p. 447.