

SAMPLE C.

	Opium taken in grams.	Iodine consumed by one-half.	Percentage morphine found.
1.....	0.9969	0.096319	14.48
2.....	1.0016	0.097219	14.55
3.....	0.9988	0.094552	14.19

AS A VALUATION OF THE MORPHINE OF ANY PHARMACOPOEIAL
ASSAY.

If it should be desired to estimate the alkaloid in the crystals obtained in assay by the pharmacopoeia of this or any other country, the periodide volumetric analysis could be well applied as follows :

Let the crude morphine obtained by the pharmacopoeial method be taken up with lime-water, the latter made up to a given volume, and a measured portion of the filtered solution, placed in a graduated vessel and acidulated with hydrochloric acid; let a definite excess of the decinormal iodine be added, in small portions at a time, and shaken after each addition, till the periodide separates out, and the clear liquid retains a dark red color, making up the mixture to a given volume, filtering off half and then titrating the excess of iodine in this half by standard sodium thiosulphate, the amount of iodine consumed can be easily found. Working on ten grams opium, a tenth portion of the lime-water solution would represent one gram of opium, and the percentage of morphine would be equal to the weight of iodine consumed, multiplied by 74.918, or to the number of cubic centimeters of the tenth-normal iodine consumed, multiplied by 0.94793. Several analyses could be made with the remaining part of the lime-water solution.

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NEW BOOKS.

A LABORATORY GUIDE IN QUALITATIVE CHEMICAL ANALYSIS. BY H. L. WELLS, YALE UNIVERSITY. New York: John Wiley and Sons. pp. 189. Price \$1.50.

In the first nine chapters the author endeavors to get the student to learn, by direct experiment and by numerous questions, how to distinguish and divide what are usually termed bases

into the five or six generally accepted analytical groups. The purpose appears to be to make the student think, and there is little doubt but that if he conscientiously pursues the course outlined he will not fail to gain a very fair knowledge of the general principles of analysis.

Sixteen pages are devoted to the study of the acid radicals, the student being as before urged to test and note his discoveries. Numerous excellent practical hints appear here and there, helpful even to the more advanced student.

Two chapters are given to the analysis of solids and the preparation of reagents.

Part II considers theory. It discusses, among others, the radicals and formulas, ionizations and ions, etc. In the latter connection the author remarks, "the circumstance that ionization takes place greatly simplifies inorganic chemical analysis."

About a dozen pages are devoted to sensible and helpful suggestions on equation writing.

Part III considers the descriptive portion, which in most texts dealing with analysis, receives first attention.

The author has aimed to lead the student into analysis without resorting to the mechanical habit, and in this book contributes much to obviate and keep out this evil. He accordingly deserves great credit for his effort. Earnest teachers, who believe in laying a good foundation in analysis, will appreciate it and give the little volume a hearty welcome.

EDGAR F. SMITH.

ERRATA.

In the August issue, page 557, line 9, for "ammonium bromoselenide" read "ammonium bromoselenate."

Page 567, line 10 from bottom, for "ammonium selenium bromoselenate" read "ammonium bromoselenate."

Page 578, line 8, for "forty" read "four."