CALCULATION OF RESULTS

The corrected titer to be used in calculating the quantity of mineral acid in the sample is computed by means of the following expression:

$$T = Ts - Tk(N - 1)$$

where N = total number of extractions
Ts = sum of titers of all extracts
Tk = average of the small, essentially constant titers obtained after the first two or three extractions
T = corrected titer

Tk is an average of titers of extracts in which traces of sulfonic acid are present. It is assumed that this trace of organic acid is present in all extracts except the first, where tests have shown the mineral acid content is strong enough to "salt out" the organic acid. Therefore Tk is multiplied by $(N - 1)$ rather than by N to correct for the organic acid extracted.

LITERATURE CITED

(1) Burton and Robertshaw, "Sulfated Oils and Allied Products," pp. 116, 148, New York, Chemical Publishing Co., 1940.
(2) Marron and Schifferli, IND. ENG. CHEM., ANAL. ED., 18, 49 (1946).

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BOOK REVIEWS

Organic Analytical Reagents. *Frank J. Welcher.* Vol. III. xi + 593 pp. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y., 1947. Price, $8 single volume; $7 series.

The third volume of this valuable series covers material representing more important procedures of analytical chemistry than the previous two volumes [reviewed in ANAL. CHEM., 20, 88 (1948)]. The volume is divided into three parts: Heterocyclic Nitrogen Compounds, 153 pages; The Oximes, 258 pages; Acidic Imino Compounds, 164 pages, with name and synonym index as well as an index to reagent uses.

The binding is substantial and attractive, the paper stock sturdy of dull finish, and the format attractive with legible type. All that has been said in the review of the first two volumes may be said of the third volume. In Volume III there seem to be included more extensive and complete directions for the preparation of the materials and much more complete directions for their use, probably because much of the material included in this volume is the product of domestic and English origin.

In, Part I, 48 pages are devoted to pyridine. The analytical applications of pyridine have been, with 2 exceptions out of 170, references of foreign origin. Sixteen pages are devoted to quinoline and to derivatives, 40 pages to bipyridine and related compounds, and 98 pages to pyrazolone and miscellaneous heterocyclic ring nitrogen compounds.

Part II on the oximes gives 330 literature references to dimethyl glyoxime in 67 pages and 30 pages to other oximes, and 48 pages are devoted to cupferron and neo-cupferron with 161 literature citations. This section is completed with references to the use of nitroso amines.

Part III is of principal interest because of the procedures outlined in the use of dithizone; 212 literature references are included on this subject alone.

Volume III of this series represents the most valuable individual volume for those who wish to select one of the first three volumes. To have this work as a part of the library of every research and routine laboratory is a wise investment.

There are a few unfortunate errors. The functional group to which the bipyridines, phenanthrolines, and terpyridines owe their remarkable properties is the (=N—C—C—N=) group and not as given (page 101) as (—N=C—C=N—).

G. FREDERICK SMITH

The Analysis of Fermentation Acids. *James B. McNair.* xi + 290 pages. Westernlone Press, Los Angeles, Calif., 1947. Price, $7.50.

Hitherto information concerning the qualitative and quantitative determinations of the fatty acids commonly produced by fermentation, such as formic, acetic, propionic, butyric, and lactic, has been found widely scattered through the literature and in books on physiological or medical chemistry. This includes such biological material as foods, vegetable products, silage, honey, wine, alcohols, vinegar, esters, sour milk, cheese, blood, urine, and feces. In this book the author has collected analytical information from many sources and has codified, edited, and condensed it in the light of his long analytical experience. The general plan followed is the description of an analytical method for an acid selected from the literature for its apparent utility. Criticisms and modifications as suggested by various workers are reviewed and the accuracy of the method is discussed, usually from the author's own findings.

The literature of the field has been so thoroughly searched that it seems doubtful to the reviewer whether any worth-while analytical method concerning fermentation acids has escaped notice. Both chemical and physical methods are given. Analyses of single acids and mixtures of two or more are discussed. In the analyses of complex mixtures the algebraic method of Gillespie and Walters for the calculation of results is emphasized. In the preliminary separation of acids from media the author considers that ether is superior to steam distillation. That the treatment of a topic is adequate is shown by the requirement of 40 pages to explain the Duclaux method, apparatus, and technique; lactic acid occupies 102 pages. The book should be in every laboratory where analyses of fermentation acids are required

L. E. WARREN

Metodi di Analisi Chimica Siderurgica. *Gaetano Gavioli.* xix + 379 pages. Ulrico Hoepli, Corso Matteotti 12, Milano, Italy, 1947. Price, 1200 lire.

This is a clear and well organized account of modern analytical procedures for iron, steel, and related materials. It deals essentially with classical chemical methods, but brought up to date. Spectrographic methods, for example, are only briefly mentioned in the introductory chapter on elementary techniques, qualitative analysis, spot tests, and various empirical methods.

Each procedure carries a brief explanation of the chemistry, followed by adequate details, discussion of interferences, and estimates of accuracy and of time required. In the chapter (132 pp.) on cast iron and steels, quantitative determinations are described for 28 elements, with some comparison in most cases of the relative merits of different methods. Another principal chapter (57 pp.) covers ferrous alloys and pure metals, followed by seven special chapters (111 pp.) on materials used for electrical resistance, hardness alloys, ores, slags, refractory materials, fluxes, and solid fuels. Some of the details (standard specifications, sampling conventions, etc.) represent official methods of Italian national industrial organizations, but most of the material comes from American and German official publications and from the general literature, which seems to be covered up to 1945, about 60 of the 175 references being dated 1935–45.

The methods are well organized, critically considered, and clearly described. The printing is good, the diagrams are clear, errors negligible. The binding, however, especially for what is essentially a manual, is extremely poor. It could otherwise prove a useful book despite the foreign language, particularly because of its coverage of recent literature.

JOHN E. RICCI

Proceedings for the Society for Experimental Stress Analysis. *C. Lipson* and *W. M. Murray,* editors. xix + 136 pages. Vol. V., No. 1. Addison-Wesley Press, Inc., Kendall Square Building, Cambridge 42, Mass., 1947. Price, $6.