

the species is a "practical device," a necessary conception for reducing the endless variety of forms to some system; for the student of evolution it is merely a "passing stage in the stream of evolution." He wishes to know how it came into being and whither it leads.

But for both a definition is desired, but it can only be approximate and must be regarded as a convenience of varying value. As yet it is quite impossible to define "species," for the definition depends upon the degree of our knowledge of the group, but he endeavors to reach it by framing definitions of the "practical species concept," the "morphological concept," the "genetic species concept," the "concept based on sterility" and the "biolo-species definition." From all these we emerge with the definition: "Species are groups of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups." Accordingly the test is purely physiological, despite the author's choice of a morphological one. As to the method of origin of a new species it is stated as follows: "A new species develops if a population which has become geographically isolated from its parental species acquires during the period of isolation characters which promote or guarantee reproductive isolation when the external barriers break down." There must therefore exist all degrees of speciation, in which final separation into definite groups is at length attained. A discussion of this question occupies Chapter VII, and non-geographic speciation the following one, with biology of the process forming the substance of the third. We come then to a discussion of the higher categories in evolution, of which the genus is typical. Mayr quotes Thorpe, who defines the genus thus: "A genus is a systematic unit including one species or a group of species of presumably common phylogenetic origin, separated by a decided gap from similar groups." The recognition of this assemblage is regarded as a purely subjective affair, there being no real limits. The book finally ends with a discussion of macro- and micro-evolution factors, where the author reaches the conclusion that "all the available evidence indicates that the origin of the higher categories is a practice which is nothing but an extrapolation of speciation. All the processes and phenomena of macroevolution and the origin of the higher categories can be traced back to intraspecific variation, even though the first steps of such processes are usually very minute."

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#### VOLUMETRIC ANALYSIS

*Volumetric Analysis, Vol. I.* I. M. KOLTHOFF and V. A. STENGER. Second revised edition. xv + 309

pp. 31 figs. 15 × 23 cm. New York: Interscience Publishers, Inc. 1942. \$4.50.

THIS book is the first of a two-volume set covering the field of volumetric analysis. In revision, it closely follows the organization of the earlier German edition and its English translation. Volume I deals with theoretical principles, and Volume II, now in preparation, is to consider practical principles.

The book capably deals with the underlying theory of acid-base neutralization, oxidation-reduction, complex-formation and precipitation as related to volumetric analysis. In addition, there are general chapters which discuss titration errors, induced reactions, catalysis, mixed crystal formation and coprecipitation, indicators, organic analysis and physical methods of finding the equivalence point. In the revised edition, a large amount of new material has been added to the discussion of redox indicators; and a section has been added covering the rather new field of amperometric or polarimetric titrations. The chapter on organic volumetric methods has been extensively revised; however, it does little more than exemplify the application of the general theory of volumetric analysis to a few typical problems arising in the organic field. Throughout the book new references have been added, and the appendix has been changed to include new data and to take into consideration the activity principle.

The physical make-up of the book is good. The print is large and easy to read, and the binding is attractive.

The volume is highly recommended to any one interested in volumetric analysis, and should be considered an indispensable part of the library of those engaged in the development or improvement of volumetric methods.

#### QUANTITATIVE ANALYSIS

*Analytical Chemistry, Vol. II, Quantitative Analysis.*

F. P. TREADWELL and W. T. HALL. Ninth English edition. xi + 806 pp. 121 figs. 15 × 23 cm. New York: John Wiley and Sons. 1942. \$6.00.

THIS, the quantitative volume of a two-volume set, describes in detail well-known gravimetric and volumetric methods for the ions and common methods of gas analysis.

In this ninth edition, the scope of the book is unchanged from previous editions. In many cases, newer well-tried methods have replaced older ones, and the older methods have been brought up to date.

There has been a significant change in the make-up and arrangement of the book. The sections on gravimetric, volumetric and gas analysis have been divided into chapters, and the section of tables has been enlarged and brought up to date. The chapters in