is to be commended almost as much for what it omits as for what it includes. It shows evidence of accurate knowledge and careful preparation, as might be expected from the pen of the associate editor of the *Engineering News*. Several chapters were written by the author's wife, Mrs. Ella Babbitt Baker, and these are among the most interesting in the book. The book gives comparatively few references, a fault for which the author atones by referring to Robert C. Brook's 'Bibliography of Municipal Problems and City Conditions' (New York, 1901).

A comparison of the title of the book with its table of contents shows to what wide limits the scope of the 'engineer' has extended. 'Municipal housekeeping' is a term which has been applied not inappropriately to certain groups of activities, but 'municipal engineering' is much nearer the truth. Whenever forces are to be controlled and materials handled on a large scale, there the engineer is to the fore. So in our growing cities activities that once were domestic or individual have become engineering in their nature and must be entrusted to technical men. The author well says: 'Happily the day is coming when permanent and well-paid technical men will be put in charge of all technical work, and the most experienced specialists of the country will be called in to aid in the construction and testing of all public works and to advise from time to time regarding the best mode of operation.'

American Municipal Progress—Chapters in Municipal Sociology. By CHARLES ZUEBLIN. New York, The Macmillan Company. 1902. 12mo. Pp. 380. $1.25. In the Citizen's Library.

The author begins his introductory chapter in the good old German way by defining his terms. He draws a distinction between the 'urban district,' 'city' and 'municipality'; the first having 'a psychological and industrial unity,' the second, 'a legal and topographical unity,' and the third 'a functional unity.' He considers the municipality as the organization for supplying communal needs, and defines 'municipal sociology' as the science which 'investigates the means of satisfying communal wants through public activity.' Illustrations of these definitions then follow.

The work is divided into chapters which treat respectively of 'Municipal Sociology'; 'Transportation'; 'Public Works'; 'Sanitation'; 'Schools'; 'Libraries'; 'Public Buildings'; 'Parks'; 'Public Recreation'; 'Public Control, Ownership and Operation.' It is written in a discursive style, and the principles set forth are sometimes obscured by an overabundance of illustration. It is in these illustrations, however, that the work is chiefly valuable. The author, who is professor of sociology in the University of Chicago, evidently has at hand an extensive collection of data from the chief cities of America upon all phases of municipal work, and the comparisons which he makes between the different cities are most instructive. It is interesting to observe the different directions in which engineering effort has been bent in different cities. One city, for example, excels in its parks, another in its streets, another in its schools, another in its water supply, etc. The book gives the impression of being written by one who has studied the work of others rather than by one who has taken part in it himself. It is somewhat inclined to be theoretical rather than practical. For instance, the author still clings to the idea that the cost of sewage disposal may be met by separating the solid matter 'through familiar processes' and selling it as a fertilizing material, while sanitary engineers agree that this is, at present at least, impractical. The last chapter, on 'Political Control, Ownership and Operation,' is perhaps the most valuable one in the book. It shows the modern tendency towards public absorption of municipal functions, an evolution towards socialism which the author manifestly approves. The work concludes with numerous appendices giving interesting statistics for various American cities, and digests of laws affecting schools, child labor, etc. G. C. WHIPPLE.

A Text-book of Quantitative Chemical Analysis. By FRANK JULIAN. St. Paul, Minn., The Ramsey Publishing Company. 1902. 8vo. Pp. 604. Illustrated. $6.00.

This voluminous work is from the brain and pen, not of a teacher, but of the chief chemist in the Great Northern Railway Shops, St. Paul, and naturally reflects the practical experience of its industrious author. To attempt to review in a conscientious manner a closely printed volume of more than six hundred pages, estimated to contain over four hundred thousand words, is impossible in the time and space that can be given. The author states that the 'volume is intended for the aid of students who have a fair acquaintance with the elements of general chemistry and can devote a limited time to quantitative analysis concurrent with or following the usual qualitative course.' At the same time it will form 'an introduction to the monographs on special departments of technical analysis for those purposing to engage in some particular branch as a future occupation.'

After outlining the general principles of the subject and describing the operations usually employed, the book presents a graded series of exercises for practice; these comprise twenty-four examples of great diversity, alcohol, ferrous sulfate, coffee, cast iron, ether, vinegar, hydrastis, metol, steel, barium chloride, lard, air and wollastonite, with others, in the sequence here given.

Then Part III. begins, at page 259, and deals with the analytical behavior of articles of commercial importance; these embrace, among others, iron ores, coal, natural water, fertilizers, alkaloids, tannins, carbohydrates, soap, milk and butter, and urine, besides methods based on colorimetry, electrolysis, and organic analysis both proximate and ultimate.

Part IV., beginning at page 521, gives notes and observations relating to the art in general. The volume closes with an appendix on 'Technical and Industrial Analysis,' and an index.

This work is in some degree encyclopedic; the author shows familiarity with many branches of the subject, and the numerous citations show a wide knowledge of the literature, especially American. He has rescued from the pages of periodicals many good methods little used in laboratories, giving their authors due credit. He shows throughout ability, thoughtfulness and universality. The arrangement of some of the matter is open to criticism. The book adopts the modern spelling of 'sulfur'; it is freely illustrated; its rather small type was probably necessitated by its length; there are about seven hundred words on each page. The paper, type and binding are hardly up to the high standard adopted for other works of like character.

This comprehensive treatise of Mr. Julian contains many processes, as well as specific details of ordinary methods, not easily found elsewhere, and ought to be serviceable in the libraries of technical schools and universities as a work of reference. H. C. B.

SCIENTIFIC JOURNALS AND ARTICLES.

BIOLOGICAL BULLETIN.

VOLUME IV., No. 1, December, 1902:

1. G. T. Hargitt, 'Notes on the Regeneration of *Gonionema*.'

A résumé of experiments conducted at the Marine Biological Laboratory, Woods Holl, during the summer of 1901, and extending the previous work of C. W. Hargitt and Morgan.

2. C. W. Hargitt, 'Notes on a few Medusæ new to Woods Holl.'

This paper is part of the synopsis of the medusoid fauna of the region which it is hoped may be ready within the year.

3. Walter S. Sutton, 'On the Morphology of the Chromosome Group in *Brachystola magna*.'

The conclusion is that the association of paternal and maternal chromosomes in pairs and their subsequent separation during the reducing division may constitute the physical basis of the Mendelian law of heredity. This subject will be continued in a later number of the *Bulletin*.

4. Ida H. Hyde, 'The Nervous System in *Gonionema Murbachii*.'

A study of the distribution of the nervous system with reference to its physiology.

VOLUME IV., No. 2, January, 1903:

1. Harold Heath, 'The Habits of California Termites.'

2. J. H. Elliot, 'A Preliminary Note on the Occurrence of a *Filaria* in the Crow.'

Records the discovery of embryo filariæ in the blood and of *Halderidium* in the red corpuscles.