

THORPE'S "QUANTITATIVE ANALYSIS"

*Quantitative Chemical Analysis.* By T. E. Thorpe, Ph.D., F.R.S.E., Professor of Chemistry, Andersonian University, Glasgow. (Longmans.)

WE welcome with pleasure a work which in the present state of our literature on Quantitative Chemical Analysis, may well be looked upon as a boon to the advanced chemical student. Fresenius's *Quantitative Analysis* has been so generally accepted by chemists as the standard book in this branch of Science, that we greatly regretted the unwarrantable liberties taken by the English editor in the late edition of our trusty author's work. The publishers, who did not, in justice to the accomplished author, recall that edition, may yet learn that the chemical public, at all events, know how to appreciate a good work on Quantitative Analysis. We confess to a feeling of relief, speaking as a teacher of chemical analysis, as we perused Mr. Thorpe's book; for although we have to differ from the author on some minor matters, we believe that this new work will speedily be found in the hands of every chemical student.

Our author has evidently felt what others have experienced before him, that Fresenius's *Quantitative Analysis* became with every new edition more and more unwieldy (we are speaking of the German editions), and that, at the commencement at least, a simpler guide to quantitative analysis might with advantage be placed in the hands of the student. As methods of analysis—especially volumetric methods—multiplied year after year, the teacher and the student looked to the master for some indications which methods should, under given circumstances, be adopted in preference to others. Mr. Thorpe has evidently been bent upon supplying this want. In the treatment of his subject he has followed the example set by Woehler in his "Practische Uebungen in der Chemischen Analyse," rather than that of Fresenius. It appears to us, however, that he has somewhat fallen into the other extreme, for, in the place of a series of carefully elaborated methods for the determination of each base and acid, he has contented himself with giving a few examples only of individual determinations, and has preferred to teach quantitative separations almost exclusively by describing, in language both terse and concise, a number of complex quantitative analyses, such as are likely to occur in practice. There is much to be said for this plan of teaching analysis, so to speak, *en bloc*. It involves, however, much repetition, or, at the very best, reference from one example to another, and leaves the student in considerable uncertainty whenever he has to break new ground. The aim of all quantitative teaching should be to enable the analyst to adopt or devise for himself correct methods of separation. The foundation for quantitative methods should, in fact, be laid by careful and accurate qualitative work. A good workable method may often be preferable to a more elaborate although more strictly accurate method.

In the endeavour to write as compactly as possible, the author has frequently over-estimated the mental powers and the chemical knowledge, say of second years' students, for whose use the work is apparently written, and has thus sacrificed clearness for briefness. We refer, for instance, to the methods given for the separation of iron, manganese, &c. in *Spiegeleisen*, condensed as it appears,

from Fresenius, where the ammonium carbonate method occurs, but where it would be difficult for a student, without the teacher's assistance, to trace the chemical changes. There is too much of the *how* to do a thing, and too little of the *why* to do it throughout the work, to make it as useful to the beginner as it would otherwise be. Although the several methods for the separation of manganese from iron, &c., are to be found in different parts of the book, there are scarcely sufficient hints, why and under what circumstances and conditions the one method is to be used in preference of the other. The same applies to various other methods of separation. Well known and familiar chemical methods, again, are abandoned, occasionally, for new methods of at least questionable utility. We may mention, among such, the use of hydrochloric acid, as the starting-point in alkalimetry.

The same remark applies to the apparatus described and illustrated. The woodcut on p. 142 *ex. gr.*, illustrative of the method for taking the specific gravity of ammonia, looks startlingly elaborate. Much credit is due, however, to the author and his coadjutor, Mr. Dugald Clerk, for the care bestowed upon the preparation of the woodcuts. We consider them, for the most part, well selected and well executed. There is that pleasing evidence to the chemical eye, that the illustrations have originated in the laboratory, and that they depict apparatus which can be practically used, and are not merely put in to please and catch the eye. In fact, when we compare some high-priced books of the class, which it would not be difficult to enumerate, with the elegantly got-up and cheap volume of Mr. Thorpe, we can only congratulate him on the book he has produced.

If we may be allowed to tender advice, we should say:—Condense the part on the operations of weighing; enlarge the number of examples of simple gravimetric analysis, so as to include the more important acids and bases; draw a line between determinations usually required in analyses for practical or commercial purposes, and the more elaborate complete analysis of the same bodies; and last, but not least, explain more fully, why and when one method answers better than another—if only in compassion for the weaker analyst.

We cordially recommend the book, and hope to see these suggestions adopted in the next edition, for which in all likelihood we shall not have to wait long.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

The Management of the British Museum

I BEG to protest against the remarks upon the management of the British Museum contained in your article of November 6. The general question whether a public institution of the sort is best governed by a public official or by a body of Trustees, may very likely admit of much discussion, but the decision should not be prejudiced by totally ignoring the noble work which has been and is being done by the Museum. No scientific man surely can be ignorant that the British Museum exists not so much for the momentary amusement of gaping crowds of country people, who do not understand a single object on which they gaze, as for the promotion of scientific discovery, and the advancement of literary and historical inquiry. We are told about the indifference of the Museum Trustees to the best interests of science, but we are not reminded frequently enough that it is