

PRINCIPLES OF ANALYTICAL CHEMISTRY.

Theoretical Principles of the Methods of Analytical Chemistry based upon Chemical Reactions. By Prof. M. G. Chesneau. Authorised translation by Prof. Azariah Thomas Lincoln and Prof. David Hobart Carnahan. Pp. x+184. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1910.) Price 7s. 6d. net.

IN the introduction it is stated that this book represents the reproduction of a series of lectures delivered in the College de France on the principles involved in the methods of analytical chemistry. The reversible and irreversible reactions which are involved in analytical processes are discussed, on the one hand, from the point of view of the theory of electrolytic association, and, on the other, from that of the heat changes which accompany these reactions.

It is obvious that the comparative examination of the facts of analytical chemistry from these two points of view represents a theme to which considerable interest would attach if the comparison were made by a chemist thoroughly familiar with both aspects of the question, and yet untrammelled by adhesion to any particular doctrine. Unfortunately this is not the case, and it is perhaps partly due to the author's lack of familiarity with the present position of the ionic theory that his verdict is given in favour of the so-called calorimetric theory. The evidence which leads to this result is very far from convincing, for whereas great stress is laid on the difficulties, real and apparent, which are involved in the adoption of the ionic theory, the improbable consequences which attach to the application of the calorimetric hypothesis are accepted without criticism.

Only a brief reference can be made to a few of the many points which call for comment. In terms of the calorimetric theory we find that acids are classified as strong, medium, and weak according to the quantities of heat liberated in the process of neutralisation. The decrease in the activity of a weak base, such as ammonia, on the addition of a corresponding salt, is attributed to the production of acid by hydrolytic decomposition of the salt. An attempt is made to refute the ionic explanation of the similar influence of salts on weak acids by reference to experiments on the rate of solution of zinc in solutions of acetic acid to which various metallic acetates were added. Such experiments are in reality of far too complicated a nature to allow of the results being interpreted in favour of or against any particular theory.

In the discussion of osmotic pressure, the early measurements of Pfeffer and Ponsot are cited, but no reference whatever is made to the work of Morse and his collaborators, or to that of Hartley and the Earl of Berkeley.

Certain generalisations, drawn by Ponsot from transport measurements by Chassy, are brought forward as being more important than all the excellent experimental work done on the subject from the time of Hittorf onwards. Here, as in so many other instances, the lack of the author's knowledge of recent work on the nature of solutions of salts is lamentably apparent.

In the treatment of indicators, Ostwald's long-discarded ionic explanation is the only one which the author sees fit to compare with that based upon the calorimetric theory.

These references suffice to indicate that the author has failed to do justice to his subject, but this review would be incomplete if attention were not directed to the unsatisfactory character of the translation. In view of the fact that the academic title of the second translator is that of associate professor of Romance languages, a rendering of the original into tolerable English might have been reasonably expected. To show that this anticipation is not fulfilled, the first paragraph on p. 4 may be quoted:—

"The processes of analytical chemistry consist, in general, in bringing each element successively to the state of a definite compound in a final system, formed of distinct phases, whose nature lends itself easily to a separation by purely mechanical processes."

This conglomeration would appear to be the result of a too literal translation.

Apart from the publisher's share in the production of the work, the reviewer can find nothing to recommend it, and the translation represents a good deal of misspent time and energy. H. M. DAWSON.

MORE MOSQUITOES.

A Monograph of the Culicidae or Mosquitoes. Mainly Compiled from Collections Received at the British Museum. By Fred V. Theobald. Vol. v. Pp. xv+646+6 plates. (London: British Museum (Natural History), Longmans and Co., B. Quaritch, and Dulau and Co., 1910.) Price 1l. 5s.

SOME few years ago a critic observed that, owing to the system of classification adopted for the Culicidae, to describe a new species "and call it a genus" was far easier than to determine its true systematic position. Since then, such has been the activity of genus-makers, the condition of affairs as regards the nomenclature and taxonomy of the known mosquitoes has become infinitely worse. No entomologist of repute will deny that, were characters so trivial as those now employed for the distinction of most of the so-called "genera" among Culicidae made use of in other orders of insects, or in other families of Diptera, the result would be little short of chaos. Sooner or later the whole question of mosquito classification will have to be reconsidered; meanwhile the subject awaits the advent of a properly qualified systematist, gifted with breadth of view and possessing a sound knowledge of fundamental principles.

The book before us, which is a continuation, and, in some respects, a *résumé* of the previously published volumes of Mr. Theobald's well-known work, is constructed upon the same lines as its predecessors, and certainly bears witness to the industry of its author. We are told in the "Introduction" that, since the appearance of vol. iv. in 1907, the genera of Culicidae have been increased by twenty-one and the recognised species by no fewer than three hundred and ninety-two, though it would seem that not all of the latter are actually new; thirteen of the genera, however, and eighty of the species are now described for the