

the chromic acid with organic substances combine with chromic oxide, this entails a very considerable waste of chrome.

I have examined and analyzed a number of chrome liquors which are now being placed upon the market and I find that nearly all of them are produced by the reduction of potassium or sodium bichromate by means of glycerol, alcohol or glucose, most of them being sulphates. Some are of the formula  $\text{Cr}_2(\text{SO}_4)_3$  + organic acids, while others are of a more basic formula as  $\text{Cr}_2(\text{SO}_4)_2$  + organic acids. Some contain free glucose and others traces of formaldehyde.

The basic chrome salt produced by adding carbonate of sodium to chrome alum or chromium sulphate, while heating, proved to be a very good tanning material. It quickly deposits a very basic chromium sulphate in the skin and leaves a decidedly acid salt in the solution and the color of the skin is pale lilac, almost white.

If a basic sulphate of chromium is used, of the same formula as the above, but prepared by reducing a bichromate or chromic acid by means of sulphurous acid, the skin takes up the basic sulphate as such, and the tanning bath will not show an increase of acid; the color of the skin in this case is a pale bluish green.

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### NEW BOOKS.

HIGHER MATHEMATICS FOR STUDENTS OF CHEMISTRY AND PHYSICS WITH SPECIAL REFERENCE TO PRACTICAL WORK. By J. W. MELLOR, D.Sc. Second edition, enlarged. London and New York: Longmans, Green & Co. 1905. 8vo., xxii+632 pp. Price, \$4.50.

Since the first edition of this work, which appeared in 1902, has been critically reviewed in this Journal (25, 103 (1903)), it is only necessary to call attention to the appearance of a new edition and to the changes that have been made in it. These are fairly extensive ones, but they consist in the revision and expansion of the subjects previously treated and in minor modifications in the order of presentation rather than in the inclusion of new branches of mathematics, or in any radical change in the point of view. Without depreciating the value of the book to advanced students of chemistry and physics, the reviewer wishes to express the opinion that there is no direction in which it could be made of so great service to education as by placing it in the hands of all those teachers of the higher mathematics who lay more stress on the relatively insignificant matter of mathematical technique—such as the more complicated processes of algebraic reduction,

differentiation, and integration—than on applications of mathematical conceptions, by which alone their real significance can be made intelligible.

A. A. NOYES.

CONVERSATIONS ON CHEMISTRY: PART II. THE CHEMISTRY OF THE MOST IMPORTANT ELEMENTS AND COMPOUNDS. By WILHELM OSTWALD. Translated by STUART TURNBULL. New York: John Wiley & Sons. 1906. viii+373 pp. Price, \$2.00.

The second part of Professor Ostwald's latest book is largely descriptive and deals with the more familiar elements and compounds. There is included, however, a very lucid series of dialogues on combining proportions and the laws connected therewith. The atomic, molecular, and ionic hypotheses are also set forth, and are used to explain chemical facts. Electrolysis is discussed and much attention is given to acids, bases, and salts.

The characteristics which made Part I so brilliant a piece of work, and which were described in the former review,<sup>1</sup> are equally conspicuous in the part before us. The author is to be congratulated on having given to all his readers, and particularly to teachers, an example of how to bring elementary chemistry up to date without destroying its simplicity.

The translator seems to be unfamiliar with Ostwald's other works, and on the last page confuses the "Outlines of General Chemistry," translated by Walker, with the "Principles of Inorganic Chemistry," translated by Findlay, the latter being the work whose title is given in the original. In all other respects the translator has performed a difficult task with distinct success.

A. S.

CHEMISTRY OF THE ALBUMENS. By S. B. SCHRUYVER, Lecturer in Physiological Chemistry to University College, London. Philadelphia, Pa.: P. Blakiston's Son & Co. 1906. Price, \$2.00.

This book, as its name indicates, deals almost wholly with the chemistry of the "Albumens," that is, with the decomposition products which they yield and with the structure of these products.

Facts relating to the solubility, physical properties, precipitation by salts, coagulation, behavior towards acids and bases, etc., which have, in the past, formed so large a part of the accounts that have been written of these bodies occupy in this book but a very insignificant place. This fact shows the great progress made

<sup>1</sup> This Journal, 27, 1020 (1905).