

points which promise to be of great assistance . . . in connection with future research in the field of organic chemistry ; . . . the oxidation reactions which occur in the electrolysis of acids of the aliphatic series, the reduction reactions in the case of the aromatic series, and lastly the reactions involving substitutions. . . . Of these the first is apparently the most promising." The translator has performed his task with great credit to himself.

The reviewer has read the book with pleasure and profit, and is confident that it will be regarded as a welcome addition to our rapidly increasing electrolytic literature.

EDGAR F. SMITH.

MICHAEL FARADAY, HIS LIFE AND WORK. BY SILVANUS P. THOMPSON. New York: The Macmillan Co. 1898. xii + 308 pp. 12mo. Price, \$1.25.

The "Century Science Series", of which this volume forms a part, has already issued biographies of Pasteur, Davy, Dalton, and Liebig, as well as of men of science distinguished in other departments than chemistry ; but no one of those known to the writer is so charmingly written as that under review. Professor Thompson, it is true, had an uncommon man to portray, simple in his nature and grand in his achievements, and the biographer has most successfully depicted both characteristics. Michael Faraday's life is attractively described by one who sympathizes thoroughly with the gentle, lovable man, and at the same time his scientific work is skilfully reviewed by one well qualified by his own attainments to understand and appreciate it.

In his preface Dr. Thompson refers to the previous biographies of Faraday by Bence Jones, Tyndall and Gladstone, each having special merits, and modestly says "there seems room for another account of the life and labours of the man whose influence upon the century in which he lived was so great", and this volume justifies the remark.

If there be such a thing as the "spontaneous generation" of genius surely Faraday affords a striking example ; the son of a working blacksmith and a farmer's daughter, born in humble circumstances in a village near London, receiving very little schooling, serving seven years of apprenticeship to a bookbinder, reaching the age of twenty before he had an opportunity of attending a single lecture on natural philosophy, these condi-

tions would hardly be deemed favorable for producing an intellectual genius, a master in science, whom all peoples on earth delight to honor. That Faraday attained such eminence is plainly due to two controlling factors in his moral nature, an intense love for the truths of nature and indefatigable perseverance, both of which were applied to overcoming obstacles that had baffled many. Faraday's first menial position with the rather haughty Davy, their travels on the continent, which afforded Davy's "valet" so much distress as to partly counterbalance the advantages; Faraday's early studies at the Royal Institution, becoming so noteworthy as to arouse some jealousy in Davy, who, however, soon learned to appreciate the rising philosopher; the simple life of the assistant with his bride in two rooms at the top of the Royal Institution, on £100 a year; his admission into the Royal Society; all these interesting details are narrated in the first two chapters. Then follows an account of the masterly researches in electricity and magnetism, which for convenience is divided into three periods; two chapters are devoted to the circumstances of his later life and to his views on the pursuit of science and on education, and a final chapter deals sympathetically with the religious views of the simple-minded Sandemanian.

Through the pages of the volume are interspersed letters written by Faraday to his intimate friends, facsimiles of the rude sketches of novel apparatus drawn in his note-books, and a few woodcuts of scenes and objects associated with him.

Dr. Thompson remarks that he never ceases to regret that he never met Faraday, but no one of those who did know him has so well portrayed him. A charming portrait of Faraday etched by Dr. Thompson forms the frontispiece to a biography that ought to be studied by every one interested in the development of the physical sciences. HENRY CARRINGTON BOLTON.

TEXT-BOOK OF MEDICAL AND PHARMACEUTICAL CHEMISTRY. BY ELIAS H. BARTLEY, B.S., M.D., Ph.G. Fifth Edition, Revised and Enlarged. Philadelphia: P. Blakiston's Son and Co. 1898. 738 pp. Price \$3.00.

The demand for a fifth edition of a work is a most substantial tribute to its merit. A quality that has largely contributed to create such a demand, in this instance, is that the subject-matter of Prof. Bartley's work is especially adapted to meet the