The Meaning of Evolution. By SAMUEL CHRISTIAN SCHMUCKER, Ph.D. New York, The Macmillan Company. 1913. 12mo. Pp. 298.

This is a very readable book upon what is no longer a new theme. Following a literary "foreword" the pre-Darwinian history of evolution is sketched as a background for Darwin and Wallace. The historical chapter about Darwin presents the essentials of his career in a charmingly vivid and sympathetic manner. Then follows the "Underlying Idea" of natural selection as the method of evolution illustrated largely by means of the English sparrow, of which the author incidentally says (p. 84): "This pestiferous creature should be exterminated . . . but personally I am taking no share in his destruction . . . I confess that it would be with regret that I should see him disappear from the landscape."

Chapters IV. and V. deal with adaptation for the individual and for the species. The general attitude toward Lamarck is occasionally rather more conciliatory than the militant Weismannian would approve of, but this is not to be wondered at in one who is proud of having been a student of Professor Cope. It seems to be very easy to drop into Lamarckian explanations for adaptation. For instance (p. 89): "The modern scientist feels sure not only that the animal is fitted to his work, but that he has been so fitted by the work." It will probably always be a bone of contention whether the exercise of an organ determines its structure or the structure of an organ sets the limits to its exercise.

With respect to protective coloration and sexual selection the author proposes to retain the Darwinian interpretation until something better arises in spite of the recent loss of confidence in the adequacy of these explanations.

The three succeeding chapters upon "Life in the Past," "How the Mammals Developed," and "The Story of the Horse" marshal in review some of the classified evidence in support of animal evolution, while Chapter IX. takes up "Evolutionary Theories Since Darwin."

In this last chapter Weismann, whose name will doubtless be correctly spelled in subsequent editions, is justly given prominence because his "work has made us cautious and prevented our lightly accepting a belief in the influence of the environment." Moritz Wagner and Romanes with their isolation theories and the orthogenists receive attention, and finally Hugo deVries with mutation closes the chapter.

The book could have been written fifteen years ago so far as any analysis of the significant bearing which Mendelism or the pure-line theory of Johannsen has upon the question of evolution.

Chapter X. turns optimistically to the "Future Evolution of Man" and is sociological rather than biological in its treatment, while the final chapter, "Science and the Book" gives the impression that the professor has stepped out of the class room and is speaking to a church audience and speaking withal extremely well.

The word "Evolution" has lost most of its incendiary character of a generation ago yet there are no doubt many in whose minds it still stands contrasted with religion and the Bible as a faith-destroying invention of godless scientists. To all such persons this book is a welcome message of reassurance and peace while to others who no longer need to be convinced of the essential truth of the evolutionary processes, the pages will be turned with approving delight.

Dr. Schmucker has stated the facts of the case in clear non-technical language with much literary grace and with scientific accuracy, consequently the book is well adapted to a wide range of readers even outside the biologically initiated.

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Animals of the Past. By FREDERICK A. LUCAS. American Museum of Natural History, Handbook series No. 4. New York. 1913. Pp. xx + 266, with a frontispiece and 50 full-page and text figures.

This volume is an exact reprint of Lucas's

"Animals of the Past," of which the last edition was published in 1902, with the addition of a prefatory note bearing a picture of the mounted skeleton of *Allosaurus* on the reverse side of the leaf, and a final chapter containing a retrospect of the last twelve years, and summarizing the latest additions to our knowledge, especially such as have been gained through the medium of exploration.

The printing is from the original plates, which ultimately became the property of the author, and the general appearance of the book, the paper cover of which bears Gleeson's spirited restoration of *Tylosaurus,* is of the degree of excellence which one is led to expect in publications of the American Museum.

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A History of Chemistry from the Earliest Times to the Present Day. By the late James Campbell Brown, D.Sc., LL.D., Professor of Chemistry in the University of Liverpool. Philadelphia, P. Blakiston's Son & Co. 1913. Octavo. Pp. 558, with 107 illustrations. Cloth. $3.50 postpaid.

As stated by the editor (a cousin of the author) the present work comprises a course of lectures which the late Dr. Campbell Brown was accustomed to deliver before the chemistry students of Liverpool University. The lectures were left as manuscript notes which the author intended to revise for publication, but his sudden death in 1910 prevented the execution of this plan. Notwithstanding the imperfect shape of some of the material, the friends of the author considered that it would be a cause for regret if the information, which represented years of patient research and study were not made available to former students and to any others who might be interested in the history of chemistry. The lectures have, therefore, been printed, in much the same shape as delivered, the editor making such changes and revisions as seemed necessary for proper presentation in book form.

Following the example of Kopp (whose monumental "Geschichte der Chemie" must form a basis for every historian of chemistry) the author has divided his subject into five sections—the Prehistoric, the Alchemical, the Iatrochemical, the Phlogiston and the Quantitative Periods. The lectures upon the first four of these periods cover their ground most minutely, and indicate that the author must have had a particular fondness for ancient chemical lore. This section of the book is profusely illustrated with old drawings of alchemical apparatus, mystical diagrams and specimen pages of Greek, Syriac and Arabian texts. The lists of writers and of bibliographies are very full, making the book of service, both to those who wish to consult the old authors as well as to the collector of rare books. For the abundance of material supplied in this particular branch of chemical history, we know of no other book in English with which it can be compared.

In discussing the work of the ancient Greek and early medieval alchemists the author has made extensive use, as every historian of chemistry must, of the invaluable researches of Berthelot. The lecturer cautions his students to distinguish carefully between the genuine works of Democritus, Geber, etc., and those of their pseudo-namesakes; it seems that the editor has not heeded this caution in revising the late author's notes. The story told on page 30 of the miraculous opening which Democritus saw in the pillar of the temple at Memphis and the two prescriptions for making gold on page 31 are found in sections 3, 4 and 5, of the "Physica et Mystica," a work which belongs, as the author correctly states elsewhere (pp. 43, 182), to the pseudo-Democritus and not to the founder of the atomic school.

We fear that the remarks of the author upon page 14 regarding the chemical knowledge of the Hebrew law-giver Moses may cause considerable perplexity. The statement that Moses comminuted the golden calf and "rendered it soluble by fusion with an alkaline or alkaline-earthy sulphide" revives a strange speculation indulged in by the ancient alchemists. The verse in Exodus 32:20, which states that Moses took the golden calf "burnt it in the fire and ground it to powder and strewed it upon the water and made the