

it makes an admirable reference book. Czapek has also refused to assume the rôle of arbiter, but quotes, with as little prejudice as can be expected, the opinions of each individual, leaving it to the reader to arrive at his own conclusion.

In closing, a single allusion to the greater importance that is being accorded to phytochemistry in recent years may not be out of place. For more than a generation after the announcement of the benzene theory by Kekulé, organic chemists could think of little else than synthesized substances and of coal tar as their gold mine. So one-sided were they at times that they did not even see the element of the ridiculous in the suggestion to make foodstuffs artificially from this source. The other extreme has now been reached by the pure-food chemist who by big head lines in the newspapers and the waving of red rags before large audiences denounces this same coal tar as the source of everything that is bad. A much more common sense reaction has been started by those chemists who have been pointing out how the intricate process of the plant laboratory may be husbanded for the benefit of mankind by farmers who need not be Ph.D.'s but who have been taught by the biochemist to make the most of their opportunities.

Again, while we should welcome the new synthetic remedies that have been turned out by the "Farbenfabriken" of the fatherland, we should not forget that in this field also the plant still produces valuable remedies which we can obtain as well or better from living or recently dead plants than as a by-product from fossilized plants of former geological ages.

But aside from the agricultural and pharmaceutical or medical aspects which the chemical study of plants and plant life may afford, the study of these subjects for its own sake has a charm all its own. Who can view the beautiful color of the flowers or inhale their perfume without feeling that a knowledge of the processes by which the plant produces these physiological effects on the intelligent animal is in itself worth knowing though the pigment never be used to dye a fiber, nor the

perfume be extracted in order to find a place on my lady's toilet table EDWARD KREMERS

*A History of Land Mammals in the Western Hemisphere.* By WILLIAM BERRYMAN SCOTT, Blair Professor of Geology and Paleontology in Princeton University. New York, The Macmillan Company, 1913. Pp. i-xiv + 1-693, with frontispiece and 304 text-figures.

In this striking volume Professor Scott has striven to assemble and set before the lay reader a judicious selection from the great accumulation of facts which the many students of mammalian paleontology have discovered. The presentation of the subject is essentially different from that of Professor Osborn's "Age of Mammals" wherein the rise and spread of faunas are treated as a succession of historical events. In the present work, after certain introductory chapters, the treatment is zoological, the life history of each of a number of important orders being discussed from beginning to end. Thus the two works by two of the foremost American paleontologists are supplemental; collectively they give a complete picture of Tertiary time.

The first two chapters of Professor Scott's book acquaint one with the methods pursued by the student of past life, the one showing the way whereby the geological data are interpreted, and the other the methods of paleontological research—how animals are preserved from the remote past, the nature of the remains, the way in which the characters they show are explained, and the method whereby the animal is reconstructed as a living being. A chapter on the principles of taxonomy is concluded by a full mammalian classification which is almost identical with that given by Professor Osborn in the "Age of Mammals," the only differences being relatively unimportant. The discussion of the skeleton and teeth of mammals, so essential to an understanding of fossil evidence, is followed by a chapter on the principles of geographical distribution of mammals and a summary of the successive mammalian faunas.

The succeeding chapters elucidate the histories of the principal orders: the Perissodac-

tyla—horses, titanotheres, rhinoceroses; the Artiodactyla—swine, camels, deer; the Proboscidea; and of the primitive ungulates, the Amblypoda and Condylarthra. There follow a number of chapters devoted to the peculiar South American ungulates, on which Professor Scott is so pronounced an authority, and these give place to a discussion of the carnivores, primates, edentates and marsupials.

Chapter XVIII. is philosophical, in that it expresses very clearly Doctor Scott's ideas concerning the modes of mammalian evolution. He states in explanation of the variations found between the "family trees" that "It is quite impracticable to construct a genetic series without making certain assumptions as to the manner in which the developmental processes operated and the kinds of modification that actually did occur," and the facts upon which these assumptions are based are ascertained by several distinct methods. Of these the oldest is comparative anatomy, an accurate knowledge of which is indispensable to the use of the others. The second is that of embryology, for, while Haeckel's famous biogenetic law, wherein the life history of the individual is supposed to give a résumé of that of the race, is proved not to be implicitly trustworthy for the interpretation of structural features, nevertheless the information attained through study of the embryonic stages is of the greatest service in the solution of zoological problems.

The third method, experimental zoology, especially that part known as genetics, has also taught us much; but the fourth, paleontology, despite the imperfection of the record due to the irretrievable loss of much of the past history of life, nevertheless has the pre-eminent advantage of offering to the student the actual stages of development, as it preserves the original documents and in the true order of succession.

In summation, Professor Scott remarks: "It is only too clear that the principles as to the modes of mammalian development which can be deduced from the history of the various groups must, for the most part, be stated in a cautious and tentative manner, so

as not to give an undue appearance of certainty to preliminary conclusions, which should be held as subject to revision with the advance of knowledge. Much has, however, been already learned, and there is every reason to hope that experimental zoology and paleontology, by combining their resources, will eventually shed full light upon a subject of such exceptional difficulty" (p. 663). A full glossary completes the volume.

The illustrations are in part from photographs of living mammals and clear anatomical drawings of certain essential skeletal features, but what will interest the general reader most are the admirably drawn reconstructions of extinct forms done by R. Bruce Horsfall under the careful supervision of Professor Scott. There are also others by Charles R. Knight, whose work always has a realism which no other artist of the prehistoric has ever attained.

In the production of this work Professor Scott has done a lasting service to the serious student of paleontology, as well as to the lay reader, and it is to be hoped that the admirably conceived and executed volume will have the appreciation it deserves.

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*The Hill Folk.* Report on a Rural Community of Hereditary Defectives. By FLORENCE H. DANIELSON, M.A., and CHARLES B. DAVENPORT. Eugenics Record Office. Memoir No. 1.

As explained in the preface, this is the first of a projected series which is intended to embody some of the more extended research of the Record Office. Dr. Davenport calls attention to the fact of its primary value to sociologists rather than to students of inheritance traits—which latter will require much more extended study, which, we are assured, will come later.

This Hill Folk study began with pedigrees of some of the inmates of the Monson State Hospital at Palmer, Mass., and extended to a town of 2,000 inhabitants in a fertile valley on a railroad between prosperous cities. The town is frequented by tourists who about