

have been added on inheritance in pure lines, and on the effects of environment, besides a large amount of new matter in the old chapters. A considerable part of the added matter refers to the more recent developments of Mendelian work; four lectures on this subject are almost entirely new, and include discussions of such matters as sex-limited inheritance and sex-determination, genetic coupling and repulsion, sterility, etc. Papers published during 1913 are referred to, but although up-to-date, the book is far more than a mere compilation, it rather presents the author's view of the subject illustrated by examples chosen from the work of many investigators. It is, of course, impossible that in so large a book, dealing with matters which are still the subject of controversy, there should not be much with which many readers will disagree. But of the book as a whole our chief criticism is that it is too long; although one could ill spare the many half-humorous touches which reveal the author's kindly personality and enthusiasm, yet 700 pages of closely printed German are more than the majority of us have time to read. As a book of reference it should be accessible to every student, but it is written to be read, rather than referred to.

(2) The third edition of Plate's "Selektionsprinzip und Probleme der Artbildung" has also been reviewed in NATURE (October 15, 1908), so that in this case also only the changes introduced in the fourth edition need be referred to. As mentioned in the preface, the chief alteration is the omission of the section on alternative inheritance, since this is dealt with in the author's "Vererbungslehre mit besonderer Berücksichtigung des Menschen" (reviewed in NATURE, May 22, 1913). This omission is counterbalanced by a great enlargement of the chapter on inheritance of acquired characters, so that the total size of the book is increased by more than 150 pages and many figures. This enlargement is due, to a considerable extent, to a full account of the experiments of Kammerer and others, which have been published since the previous edition was issued. The author's general attitude is illustrated by his statement in the preface that "de Vries has misrepresented the views of Darwin, and that his mutations are identical with Darwin's individual variations"; and "dass nur Lamarckismus und Selektionismus zusammen die Entstehung der Anpassungen und der Arten verständlich machen." The book is very valuable as a summary, but appears to us insufficiently critical in the case of some of the examples cited.

(3) Goldschmidt's "Einführung in die Vererbungs Wissenschaft" (second edition) belongs to a somewhat different category. It consists of

twenty-two lectures, and is based, as the preface tells us, on the author's university course on the subject. It has the merits and defects of this kind of treatment; that is to say, its title correctly describes it as an introduction to, rather than a treatise on, genetics. It is expository rather than critical, and in places leaves an unsatisfactory sense of not getting to the bottom of the subject. It covers a wide range of subjects, is well illustrated, has a useful bibliography, and throughout contains much valuable matter. This is especially the case where it deals with the author's special branch of the subject, the inheritance of secondary sexual characters. In particular, the author's hypothesis of varying "potency" of the factors for secondary sexual characters, and of the sex-factors themselves, is perhaps the most interesting section of the book (lecture xviii.). He considers that in certain circumstances a zygote which contains factors which would normally produce one sex may develop into a hermaphrodite, or even an individual of the other sex in consequence of "Potenzverschiebung" of the sex-factors. Lack of space prevents our giving an adequate account of the hypothesis, which may have important bearing on the theory of sex-determination. In places the book conveys the impression of haste, and it would perhaps be improved if fewer examples were described, and these treated more fully.

(4) Prof. Schmucker's "Meaning of Evolution" belongs to quite a different class. It is a popular book on the general principles of the evolution theory, and makes no claim to be an original contribution to the subject. One of its objects is to show that there is no necessary inconsistency between a belief in organic evolution and religion. It is in general pleasantly written, but does not differ conspicuously from other books of the same type.

OUR BOOKSHELF.

A Descriptive Catalogue of the Marine Reptiles of the Oxford Clay. Based on the Leeds Collection in the British Museum (Natural History). Part ii. By Dr. C. W. Andrews. Pp. xxiv + 206 + xiii plates. (London: British Museum (Natural History). Longmans, Green and Co., 1913.) Price 25s.

The scientific value of the remains obtained by Messrs. Leeds from the Oxford Clay near Peterborough is exemplified by the groups forming the subject of the present, and concluding, volume of this excellent and exhaustive catalogue. In order to realise this, a visit is almost essential to the Natural History Museum, where a mounted skeleton of the pliosaurian *Peloneustes* will come as a revelation to those unacquainted with the state of

preservation of many items in the Leeds collection.

At the epoch of the Oxford Clay pliosaurs (together with their cousins the elasmosaurs) and the marine crocodiles of the families Teleosauridæ and Geosauridæ were at the zenith of their development, and therefore too advanced to afford clues to the relationships and origin of the order to which they pertain. Nevertheless, the point is not passed over by Dr. Andrews, who, after rejecting the theory of an affinity between plesiosaurs and pliosaurs on the one hand and tortoises and turtles on the other, supports the opinion that the two former are descended from the carnivorous mammal-like reptiles of the Permian and Trias. As regards Oxfordian crocodiles, the author merely affirms that while the steneosaurs (Teleosauridæ) are derived from the mystriosaurs (of the Lias, the species of *Metriorhynchus* (Geosauridæ)), on account of differences in the structure of the base of the skull, had a different origin.

As the Oxfordian crocodiles appear to have been more aquatic than any existing members of their order, while the contemporary ichthyosaurs, elasmosaurs, and pliosaurs were completely so, the Jurassic seas must have swarmed with a medley of reptilian forms of life, in striking contrast to the more uniform type presented by their cetacean supplinters of to-day. With their large heads and short necks, the Oxfordian plesiosaurs appear to have been better adapted to a pelagic existence than the contemporary elasmosaurs; and it is of interest to note that in respect of food they appear to have presented a parallelism to cetaceans, some having subsisted on cephalopods, while others attacked and devoured larger and more formidable prey.

R. L.

The Future of Education. By F. C. C. Egerton. Pp. 303. (London: G. Bell and Sons, Ltd., 1914.) Price 3s. 6d. net.

THIS is a book provocative of serious thought in these days of educational misgiving and unrest. The author raises a strong indictment against present educational aims and methods, and adduces in support of his contentions some extraordinary incidents which have come within his immediate experience.

Especially is he wroth with our system of elementary education, and declares with emphasis:—"There is only one word that adequately describes the state of education in this country, and that is 'chaos,'" and further remarks that "as a system it is absolutely rotten from beginning to end," and that "what is said with regard to the elementary school applies with nearly equal force to the secondary school—the same narrowness of outlook, the same lack of adjustment to the requirements of life, the same unreality and artificiality characterises both types of schools."

He declares that "our organisation is entirely disjointed. Each elementary school is conducted haphazard, each secondary school is a law unto itself, and the public schools and universities go their own way, good or bad." The only comfort we receive is in the fact that "it is quite true that

other countries stand in exactly the same position."

Much stress is properly laid upon the importance of the elementary school, public and private, through which ninety-five out of every hundred men and women pass. "It is the hope of the country, and it has in its power to lay the foundations of many noble lives." The writer condemns formal and disciplinary methods of education, and directs strong attention to Montessorian aims and methods, and the need for the child to be allowed fully to realise itself. In spite of some extravagance of statement, the book is well worthy of serious study.

J. H. R.

Coast Sand Dunes, Sand Spits and Sand Wastes. By G. O. Case. Pp. xi+162. (London: St. Bride's Press, Ltd., 1914.) Price 5s. net.

THE object of this book, as stated by the author in the preface, is to direct attention to the advantage of controlling the blown sand dunes on the sea-coast so as to make them act as a protection to the land behind from erosion by the sea; to prevent them from advancing inland and destroying existing vegetation, and to enable sand wastes where they exist to be reclaimed and planted with trees.

The book does not contain any, or very little, information that is not already given in the work on "The Sea Coast" published in Longman's Engineering Series, or in the report of the Royal Commission on Coast Erosion. The information on the subject dealt with is, however, given in a handy form, and will be found useful and instructive to those interested in coast geology or having charge of land bordering on the sea shore.

The subjects dealt with are: the area of land covered by sand dunes in Europe, the transportation of sand by wind action and formation of dunes, description of existing dunes in this and other countries, devastation caused by inland movement of dunes, methods for preventing dunes moving inland, protective works for face of dunes, and the reclamation of sand wastes.

Notes on the Blue-Green Algae. By Harold Wager. Pp. 48. (London: A. Brown and Sons, Ltd., 1914.) Price 2s. 6d. net.

THIS little book should be of considerable service to those who desire to study systematically this group of plants, which is characterised by the presence of a bluish-purple colouring matter, phycocyanin, in addition to chlorophyll, in the cells. The cell-membrane is not composed of cellulose and glycogen takes the place of starch in the protoplasm. Mr. Wager first gives a general introduction on the structure, reproduction, and classification of the group, then keys to the orders and families, a key to the genera of the Oscillatoriaceæ, and finally a key to those species of *Oscillatoria* and *Phormidium* which are fairly well determined. In the latter it would have been of service if the localities in which they have been found had been mentioned. The book concludes with a glossary and references to monographs and blank pages for notes.