series of exercises in moulding is explained in great detail, but wherever the author ventures into the field of the science underlying any portion of foundry practice, his theory is wild and not helpful. He quotes McWilliam and Longmuir with approval (McWilliams and Longair he calls them), but is not in agreement with them when he recommends that the vent wire should be pushed down to the pattern. It is a pity that the author did not leave the science of the subject alone, for it is disheartening to find the student being told that fireclay is almost pure oxide of alumina, that copper and manganese form manganese bronze, copper and phosphorus phosphorus bronze, and like statements.

The main body of the book is, however, devoted to a simply worded and painstaking explanation of a series of exercises in moulding, so selected and arranged as to illustrate as many as practicable of the principles used in the more elementary parts of the moulder's art.

Moxly's Theory of the Tides. With a Chapter of Extracts from Moxly's Original Work. By J. F. Ruthven. Revised and enlarged edition. Pp. 103. (London: J. D. Potter, 1911.)

THIS monograph is an attempt to uphold the claims of the equilibrium theory of the tides as opposed to those of the dynamical theory now generally maintained. It is seldom possible to return to older scientific hypotheses which are of so general a nature and have been superseded, and it is impossible here.

The gist of the matter is contained in a statement by Sir George Airy, which the author quotes on page 72—"Suppose now that the water assumed the form which we have found, and that the earth revolves within its coating of water. This supposition, absurd as it is, is the only one upon which it is possible to apply the equilibrium theory." The author, following Moxly, denies the truth of this statement, and states that the equilibrium theory assumes that it is only the *form* and not the *mass* of the water which is fixed relatively to the moon. But if the form only be fixed (as *must* be assumed), then the particles of water are in relative oscillatory motion, and the tidal wave is a species of oscillation (an idea to which Moxly greatly objected, page 83)—a forced oscillation, the characteristics of which therefore depend partly on the nature of the free oscillations, and the problem is essentially dynamical.

The author seems to labour under some misconceptions of the dynamical theory in thinking, for instance, that it implies impossible ocean currents, and that the tidal crest must be 90° behind the moon (pages 8 and 9).

However, the book is a very clear exposition of the principles of the equilibrium theory, and claims to explain in general terms a number of anomalous tides; but sometimes one fails to see why the same explanation cannot hold good on the dynamical theory. The note on the tides in the Bay of Fundy (pages 88 and 89) is interesting. W. J. HARRISON.

An Introduction to Vegetable Physiology. By Prof. J. Reynolds Green, F.R.S. Third edition. Pp. xxii +470. (London: J. and A. Churchill, 1911.) Price 10*s.* 6*d.* net.

IN the preface to the present edition Prof. Reynolds Green states that he has carried out a careful revision in order to introduce alterations suggested by practical use, and to incorporate such new ideas as have met with approval. Additional paragraphs have been inserted in the second chapter to emphasise the general relations of the individual with its environment, and further explanations are given with regard to perception of stimuli; the recasting of the sections dealing with energy and respiration was prepared for the second edition.

The book has been found particularly useful for the instruction of students up to an intermediate stage. Generally speaking, the author treats his subject so far as facts are established or theories have received acceptance. Therefore the student proceeds along a course that is, for the most part, non-contentious, and his progress is made easy by the careful arrangement and clear presentation of the subject-matter. The value of the book to the advanced student would be increased if references to literature dealing with debatable or more recent arguments were provided; for instance, it would be useful to find a reference to the description of the original experiments concerned with the detection of formaldehyde in leaves.

A History of England for Schools, with Documents, Problems, and Exercises. By M. W. Keatinge and N. L. Frazer. Part i., pp. x+388. Part ii., pp. x+324. (London: A. and C. Black, 1911.) Price 2*s.* 6*d.* each part.

IN addition to its immediate good effect on the pupils themselves, the introduction of laboratory methods of teaching science has had an indirect, beneficial influence on the other work of schools. Practical exercises are becoming a necessary part of courses of study in geometry, geography, and other subjects in which originally boys and girls had little else to do than listen to the exposition of their teachers. The most recent experiment in this direction is the introduction of the "research" method in the study of history, which is, in some schools, done in specially equipped rooms.

This work is a welcome indication of the improvement in teaching history which has taken place in recent years, and it may be recommended to the careful consideration of teachers who believe in securing the active cooperation of their pupils by setting them problems to study by themselves with the view of arriving at conclusions. An excellent collection of documents is provided, and they are intended to supply the apparatus for work which to some extent at least is analogous to that provided in the laboratory in the teaching of science.

Calendar of Papers in Washington Archives relating to the Territories of the United States (to 1873). By David W. Parker. Pp. 476. (Washington, D.C.: The Carnegie Institution of Washington, 1911.)

THIS volume is the first calendar of archive materials in Washington issued by the Department of Historical Research in the Carnegie Institution. It follows upon Messrs. Van Tyne and Leland's "Guide to the Archives of the Government of the United States in Washington." Mr. J. Franklin Jameson, the editor of the series to which this book belongs, says that the interest of historical writers at the present time is greatest in respect of papers which have to do with territories as a whole, especially with their government and their constitutional and political history. Accordingly attention has, in the present volume, been concentrated upon papers of this class.

Lehrbuch der Zoologie für Studierende. By Prof. J. E. V. Boas. Sechste vermehrte und verbesserte Auflage. Pp. x+690. (Jena: Gustav Fischer, 1911.) Price 12.50 marks.

PROF. BOAS'S text-book is so well known—both the original text and the translation—that no description is necessary of the sixth revised edition now before us. The fifth edition was reviewed in NATURE of April 22, 1909 (vol. lxxx., p. 214), and the present issue differs from it only by the addition of a few pages and fifteen new illustrations.