

BOOK-REVIEWS.

Waterdale Researches; or, Fresh Light on Dynamic Action. By "WATERDALE." London, Chapman & Hall, 1892. 12mo. pp. vi., 293.

Cosmical Evolution: A New Theory of the Mechanism of Nature. By E. McLENNAN. Chicago, Donahue, Hennenberry, & Co., 1890. 12mo. 399 p. \$2.

IN these volumes we have interesting illustrations of those methods of thought, and their results, which are characteristic of the attempts of amateurs in science to bring contributions of new thought and novel theories to the attention of scientific men. In the first-named, the anonymous author, writing under the *nom de plume* "Waterdale," presents his "discovery of a cause for gravity other than the hypothesis of attraction," and "other theorems as important." That an amateur should, especially in physical science, have the courage to propose to lead the connoisseur in the serious consideration of presumably crude notions—in these days of higher research, when even the professional expert finds himself entirely at a loss to find a way, even in following the specialist in other lines than his own, and entirely unable to propose original theories—speaks well for the confidence, if not for the discretion, of the ingenuous adventurer. We regret to say that we must coincide with the reviewer in *Nature* and the critic in *Science and Art*, who are apparently unable to find anything novel in what is right in the book, or anything right in what is novel. The idea that some other explanation of the action of forces on matter than that provisionally held, that of an inherent attractive "action at a distance," is as old as Greek philosophy, and remains, no doubt, an admitted probability among the best thinkers and most expert physicists and chemists of the time; but our author and Sir Isaac Newton are alike in the dark as to the real nature of the action noted. The proposed substitution of

another term for the well-understood and precisely-defined word *mass*, certainly affords no aid to either imagination or experience.

The author introduces his book into the United States "in the hope that there is there less clique-prejudice among scientists than in England;" but we fear that, here as in Europe, the prejudice that the man who has made a life-work of the study of a subject and has acquired reputation through actual investigation and systematic research, through exact and productive measurement, is competent to act as the adviser of the laymen, and that the amateur with an unscientific imagination, unfamiliar even with the precision of scientific definition, can claim little consideration when thus out of his element, will be found unconquerable. This book is written in such vague and ill-defined language that its assertion that it presents "substantial evidence that energy pervades the ethereal fluid with which every sphere is surrounded" will hardly be taken as substantiated, however well established the fact may be; and its "law of induction" that "every substance, by exchange during pulsation of fine matter internally from one atom to another, sets up increased hydraulic force with fine matter, which force decreases inversely as the square of the distance through which the force has at any point reached" will hardly displace Newton's laws. Its author is not yet a sufficiently advanced student to be prepared to teach.

Of Mr. McLennan's book, it may at least be said that, although the author is an amateur in that lofty region of scientific philosophy into which he endeavors to find entrance, and has as yet never earned that right of prophecy which only comes to the man who becomes known as thoroughly familiar with existing human knowledge and the grandest of modern achievements, and who himself has done his part in promoting positive learning, he has certainly collated numerous facts of real interest and of possible, if not probable, importance in the relations to which he seeks to attach them. But his supposed original matter seems based upon imagination rather than ascertained fact; and we can find little

CALENDAR OF SOCIETIES.

Anthropological Society, Washington.

Dec. 20.—Symposium, Is Simplified Spelling Feasible? Discussion by F. A. March, A. R. Spofford, Wm. T. Harris, and Edwin Willits.

Dec. 27.—Continuation of Symposium, Is Simplified Spelling Feasible? Discussion by Alexander Melville Bell, E. M. Gallaudet, John M. Gregory, Benj. E. Smith, Charles R. G. Scott, and W. B. Owen.

Jan. 3.—Close of the Symposium, Is Simplified Spelling Feasible as Proposed by the English and American Philological Societies? Discussion by Lester F. Ward, Wm. B. Powell, Benj. E. Smith, Charles R. G. Scott, E. T. Peters, John W. Powell, and Weston Flint. The discussion will be closed by A. R. Spofford and Wm. T. Harris.

Philosophical Society, Washington.

Jan. 7.—G. K. Gilbert, Illustrations of the Physical History of the Moon (lantern slides); T. C. Mendenhall, The Use of Planes and Knife-Edges in Pendulums.

Appalachian Mountain Club, Boston.

Jan. 11.—Warren Upham, Drumlins Near Boston.

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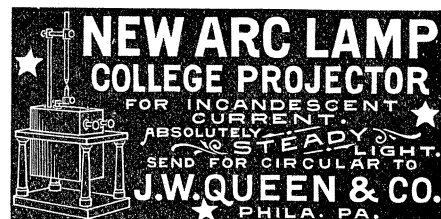
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connection between the undeniably interesting facts related and that "material connection" between the bodies of our universe, which he claims to have discovered. Whatever may be the real nature of that connection—and we doubt if our author has hit upon it—these facts will, unquestionably, be found perfectly consistent with it, and a part of it; but a thousand other schemes than this may be produced by the poetic imagination of the amateur in science into which these facts may be also worked, and it remains, most likely, for direct investigation, with all the aid of the most perfect modern apparatus and methods, to finally determine solutions of the still numerous problems of contemporary science. The Greek methods of speculation and non-scientific imagination are not of much promise where a "material connection" between the bodies of the solar and other systems of the universe is the subject-matter of investigation. The machinery of the universe must probably be ultimately revealed by expert and practised mechanicians.

Dynamics of Rotation. By A. M. WORTHINGTON. London, Longmans & Co. 1892. 155 p. 12°.

A LITTLE book on a very elementary portion of the science of mechanics, as here treated, but an excellent treatise for beginners. Professor Worthington has made his process of instruction a most practical and sensible one—giving first a statement of the facts and data as developed by experiment and then deducing the laws of mechanics applying to the case and finally applying those laws and the equations expressing them to the solution of problems. Such applications are well illustrated by considerable numbers of well-chosen examples. This method of treatment is certainly well suited to the instruction of young students, and we are not sure that it is not the best for older ones in many cases in which the opposite course of enunciating the law and later illustrating it and deducing constants by experiment. We observe that the new term, "torque," is accepted by the author and that he also adopts the "poundal" and the conventional distinction

pound for force and lb. for mass. We are not sure that either is needed or desirable; but fashion and convention have almost as much influence in science as in *modes de Paris*. They have probably come to stay, like the barbarous nomenclature of the electricians; but, in this book, the frequent use of the "engineers, or gravitation" units, as its author calls them, will go far toward relieving the mind of its readers of those misapprehensions and confusions which so constantly arise in the study of the older text-books.

Mechanical Drawing. By C. W. McCORD, A.M., Sc.D. New York, J. Wiley & Sons. 245 p. 4°.

THIS large and handsomely made book contains the line of work proposed for use in the elementary instruction of the technical schools, especially those of engineering. The exercises given are those which have proved successful, during twenty years of work, by its author. They are intended to train eye, hand, and judgment as well. "The artificial and often useless stage machinery of descriptive geometry" is kept out of sight as far as possible, although they are not considered entirely useless, nevertheless. Maxims, bits of condensed wisdom, are sprinkled throughout the work, as "Pencil lightly," "Pencil clearly," "Make haste slowly," and are clearly themselves the result of long experience and a fruitful observation. The methods are excellent, the manner of doing the work no less satisfactory; and the whole constitutes one of those rare treatises on a technical subject which can only be produced by an author who is wise in the principles of his craft and experienced, practically, in their application to the actual, live problems of the profession in which he is an expert. The principles of projection, the laying-out of curves, and the construction of problems in connection with the design and adaptation of gearing to its work, illustrate especially this advantage possessed by the author in the present case. This is an admirable work, and author and publishers are alike entitled to great credit.

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