

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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The American Geologist for 1893.

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