

ments, but at the same time in this, as in so many other cases, we hold that statistical methods cannot be safely used without proper training. Experiments of a most laborious character may be rendered nugatory because the observer has not started with a clear conception of what statistical processes he is going to employ to deduce his results, nor what observations are needful if any conclusions at all are to be reached by legitimate numerical arguments. The book shows the increasing interest in the problems of inheritance and in biometric methods; it is characterised throughout by a courtesy of tone which is very pleasing when contrasted with some recent controversial papers on heredity; but it fails, and fails badly, to prove any definite point, because the author has not clearly stated his problem, and had he done so has really not the knowledge needful to deal effectively with statistical data.

#### OUR BOOK SHELF.

*Die europäischen Laubmoose.* By George Roth. Lieferung i. Band i. Pp. 128. (Leipzig: Wilhelm Engelmann, 1903.)

THE second enlarged edition of Schimper's "Synopsis muscorum Europæorum" was published in 1876, and a list of European mosses was given by the same bryologist in "Revue bryologique" seven years later. Since that time, in this country there have appeared Hobkirk's synopsis, Braithwaite's "Moss-flora," and Dixon's handbook. In other countries there has been the same advance in bryological records, to mention only Limpricht's compilation for Germany, Austria, and Switzerland, and Husnot's "Muscologia gallica," so that the time is ripe for a new European synopsis. The work undertaken by Dr. Roth is, on the one hand, rendered easier by the existence of these authentic catalogues, but meantime the number of recorded species has increased, so that whereas Schimper enumerates 900, the author estimates European species, exclusive of Sphagna, at 1300; of these about 600 occur in Britain.

The greater portion of this, the first part, is given up to a general introduction, and only the last few pages are concerned with the enumeration of genera and species. The introduction is well written, and the author has throughout emphasised the various characters which are of immediate importance for identification and classification. There is an original chapter on the part which mosses play in the economy of nature, and some account of their distribution. The system of classification adopted by the author is nearly identical with that of Schimper and Limpricht, the critical features being the separation of Archidium as a special order, and the division of the Bryineæ into cleistocarpous and stegocarpous groups; British bryologists favour Lindberg's arrangement, in which the cleistocarpous mosses are split up amongst the other natural orders.

In the essential systematic part of the book there are only a few descriptions from which to form an opinion. The author leads off with the Andreaeaceæ, as the Sphagnaceæ will not be included, and he makes fifteen species for Andreaeæ; of these several are only accorded the rank of varieties by other authorities, e.g. of the fifteen, nine have been found in Britain, and yet Dixon only allows at the most five species. The various countries from which the species have been recorded should, we think, be definitely stated. Another very desirable, indeed necessary, addition is

the provision of tables to determine genera, and a separate species-key to each genus. The book is liberally illustrated, but the plates are far from pleasing, and the areolation of the leaves is very doubtfully shown owing to the small scale adopted for the drawings. There are obvious advantages in using a general synopsis rather than, or in addition to, the flora of a single country, so that the book is a very desirable one, but it would be made more useful by the insertion of analytical keys and critical notes dealing with the more doubtful species. The book is to be issued in eight parts at a cost of about three pounds.

*Mechanics, Molecular Physics and Heat.* By Robert Andrews Millikan, Ph.D. Pp. 242; diagrams. (Boston and London: Ginn and Co., 1903.) Price 7s.

THIS book represents the first portion of a college course in general physics, in which the primary object has been to establish an immediate and vital connection between theory and experiment. It has, therefore, been made neither a laboratory manual, in the ordinary sense of the term, nor yet a simple classroom text. Each section is introduced by a theoretic statement, and is followed by instructions with regard to an experiment to be performed. As it is only a twelve weeks' course which is represented, the experiments have had to be selected out of the large number of possible ones, and in making this selection the author has aimed at having one, and only one, experiment in illustration of each principle.

For example, there is but one general principle involved in the method of mixtures, whether it be applied to the determination of the specific heat of a solid or of a liquid, the latent heat of fusion or of vaporisation; hence only one laboratory exercise is provided in illustration of the method. This extreme pruning may sometimes be necessary in an introductory course, and where circumstances render it necessary the plan of the author is no doubt excellent. But we feel sure that such an abridgment is not to be desired. A student learns so much in finding out the variations in a method which are necessary to apply it effectively to different purposes that every opportunity for the discovery ought to be afforded.

The description of the selected experiments is excellently, if somewhat briefly, made. About half the book is devoted to mechanics, which in England is usually taken in a separate course. Each chapter is concluded with a few problems having considerable merit.

We have only to suggest that in the discussion of rotation it should be clearly brought out that the moment of the forces *must* be taken either with regard to the centre of mass or to an axis fixed in space, and further that the moment of inertia is not necessarily the same in the two cases.

*Ostwald's Klassiker der exakten Wissenschaften.* (Leipzig: Wilhelm Engelmann; London: Williams and Norgate, 1903.)

SEVERAL additions to Prof. Ostwald's important series of reprints of classical papers lie before us. We have space to do little more than mention the titles of the individual volumes, but, in general, we cannot forbear expressing pleasure at the increased facilities they afford for a student to become familiar with original papers connected with the exact sciences. Of course, to the English student, translations into English would be more acceptable. But, given a sufficient knowledge of German, the handiness of these volumes and the valuable annotations of the respective editors are sure to prove a great attraction.

The following are brief particulars:—

No. 135.—"Theorie der Gestalt von Flüssigkeiten