this reason that on the title page the book is said to be 'for high schools and colleges.' The clause 'for high schools' is probably superfluous. If there are any high schools in which a book of this grade can be successfully employed they are quite exceptional.

Assuming that the book is exclusively for collegiate students, or others of equivalent maturity, it is very interesting and suggestive, well up to date, and abundantly worthy of cordial commendation. The first 212 pages are taken up with the mechanics of solids and fluids, each chapter being closed with a well-selected list of books of reference. About 100 pages are then devoted to the phenomena and laws of heat, including a brief chapter on thermodynamics. Vibrations and waves receive quite full treatment, 80 pages being devoted to this subject before that of sound is mentioned. The analysis of sound, musical instruments and musical compositions make up three short chapters, about 27 pages in all. To the subject of light 175 pages are given; and to magnetism and electricity, 167 pages. This may seem like a significant reaction against the popular demand for utilitarianism in physics, but it is not altogether surprising that emphasis should be laid upon the phenomena of heat and light in a laboratory where Rowland's influence in behalf of pure science was so long dominant. The theory of electricity is brought out with much clearness and in excellent style, while less than five pages are devoted to dynamos and the engineering applications of electricity to industry.

A distinct defect in this otherwise excellent book is the complete absence of illustrative problems. The author may, perhaps, prefer to avoid these as class-room tests, or he may use them spontaneously and prefer not printing problems, the solutions of which can be transmitted down from class to class. The majority of teachers are probably agreed that the use of problems is indispensable in the conveying of accurate ideas when the subject is such as necessarily to imply the application of mathematics, whether elementary or advanced.

Possibly a separate small volume of problems, as a supplement to the text-book, may be forthcoming in the near future. If so it will be welcomed by those who use this book either for reference or in the hands of their students. But, even as it stands, it is worthy of the welcome which it can not fail to receive.

W. Le Conte Stevens.

*A Catalogue of North American Diptera.* By J. M. Aldrich. Smithsonian Miscellaneous Collections, Vol. XLVI., No. 1444. 1905. Pp. 1–680.

The long-expected catalogue of North American diptera by Professor Aldrich has at last appeared. It is the first work of its scope to be published since Baron Osten Sacken's catalogue which was issued by the Smithsonian in 1878. During the intervening quarter of a century the aspect of entomology in North America has greatly changed, more especially in the diptera, rendering the new catalogue most welcome.

The following remarks from Professor Aldrich's introduction show the relation which exists between the two works:

> The great amount of work which has been done on North American Diptera within the quarter of a century has largely changed the face of the subject. Hence the reader will probably observe, especially at first, more of contrast than resemblance. The number of species has doubled; the number of references to previously known species has almost doubled; several families have been monographed or revised, with more or less change of nomenclature; along with this has gone the publication of a multitude of smaller papers, touching every family but one, and the larger part of the genera. Under these conditions it is inevitable that great changes should appear in the new catalogue.

The catalogue is rather unique among the present lists of American insects in several respects, all of them commendable. The faunal limits are not restricted to the countries north of the Mexican boundary, but are extended to include as far as Panama and the West Indies on the south. This gives a much more lasting value to the enumeration of species than is possible when the banks of the

Rio Grande and the gulf coast are regarded as the edge of a zoological chasm, which dare not be crossed except by the numerous Mexican and West Indian species which are discovered every year in Texas and Florida.

The references to strictly anatomical and biological papers are also most useful, representing a phase of the subject which is usually entirely crowded out in an essentially taxonomic catalogue. If future cataloguers of other groups would profit by this example they could greatly enhance the value of their work without an expenditure of much extra space and labor.

The special references under many of the families and separate genera to special papers relating to such groups will prove a great assistance to the inexperienced worker as well as a convenience to others more versed in the scattered literature of the subject.

The bibliography fills some 68 pages, including all papers of any importance published before January 1, 1904, while an appendix covers the literature of 1904.

As must be the case with any catalogue covering so large a group, a great number of generic and specific names have been reduced to synonymy since the last authoritative list. These have been dealt with in an admirable spirit of conservatism which contrasts sharply with the extravagant overturning of names often indulged in by insect cataloguers. To quote the writer's own words: 'I have been influenced by the feeling that my catalogue must represent the actual condition of classification, not merely my own views.'

It is to be hoped that the catalogue will stimulate the increasing interest in this group. It will certainly be a great aid towards accurate dipterological work in this country.

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## SCIENTIFIC JOURNALS AND ARTICLES.

THE June number (volume 11, number 9) of the *Bulletin of the American Mathematical Society* contains: Report of the April meeting of the Society, by F. N. Cole; Report of the April meeting of the Chicago Section, by J. W. Young; 'A general theorem on algebraic numbers,' by L. E. Dickson; 'On the deformation of surfaces of translation,' by L. P. Eisenhart; 'The groups of order $2^m$ which contain an invariant cyclic subgroup of order $2^{m-2}$,' by G. A. Miller; 'Galileo and the modern concept of infinity,' by Edward Kasner; 'Notes' and 'New Publications.'

The July number contains: 'A survey of the development of geometric methods,' by M. Gaston Darboux, translated by H. D. Thompson; 'Note on Fermat's numbers,' by J. C. Morehead; 'Simply transitive primitive groups which are simple groups,' by H. L. Rietz; 'Remarks concerning the variation of the length of a curve,' by T. J. Bromwich; Review of Joly's Manual of Quaternions, by J. B. Shaw; Shorter notices of Zeuthen's Geschichte der Mathematik in XVI. und XVII. Jahrhundert, by D. E. Smith, and of Tannery's Introduction à la théorie des fonctions d'une variable, by L. E. Dickson; 'Notes' and 'New Publications'; 'Fourteenth annual list of papers read before the society and subsequently published'; Index of volume 11.

THE July number (volume 6, number 3) of the *Transactions of the American Mathematical Society* contains the following articles:

H. POINCARÉ: 'Sur les lignes géodésiques des surfaces convexes.'

T. J. I'A. BROMWICH: 'The classification of quadrics.'

J. E. WRIGHT: 'On differential invariants.'

L. I. NEIKIRK: 'Groups of order $p^m$, which contain cyclic subgroups of order $p^{m-3}$.'

G. A. MILLER: 'On the invariant subgroups of prime index.'

E. W. BROWN: 'On a general method for treating motions and its application to indirect perturbations.'

L. E. DICKSON: 'On hypercomplex number systems.'

J. H. MACLAGAN-WEDDERBURN: 'A theorem on finite algebras.'

J. ROYCE: 'The relation of the principles of logic to the foundations of geometry.'

J. PIERPONT: 'On multiple integrals.'

*The American Naturalist* for July contains an article on the 'Restoration of the Titano-