

We cannot, however, equally praise the system of including American and other stragglers as European birds. It needlessly encumbers an already very bulky work, and leads to misconception, and it will also have the effect of making the book apparently imperfect whenever fresh stragglers reach our shores. Is it not absurd in a book of European birds to have seven pages devoted to the American Stint, with full details of its distribution over North America, and the statement that it has occurred "twice in Britain" as the sole justification for including it? Another seven pages is devoted to the American Hawk Owl on the strength of its occurrence four times in Britain. Such birds should be rigidly excluded from the body of the work, and only described in notes or an appendix when it is necessary to do so in order to avoid confusion with the allied European species.

It is a pity that the temporary paging of the letterpress to each species had not been altogether omitted, as it is of no use whatever, and occupies the prominent position which should have been left for the permanent paging. As the only means of remedying the evil, we would suggest that when the work is completed a series of numbers be printed in squares reaching to the highest number of pages in a volume, and be issued with the last part on gummied paper, so as to be cut out and fastened in the proper position over the temporary numbers.

The figures by Mr. Keulemans continue to be as spirited and lifelike as ever, and the authors devote the same attention as heretofore to giving the fullest and most reliable information obtainable. The work will thus satisfy the requirements both of the scientific naturalist and of the general reader and amateur. The former requires accurate descriptions and figures, careful measurements, and precise indications of distribution and habits. The latter wants to determine readily any bird he may meet with at home or on the Continent, with an intelligible and interesting account of its habits and distribution, and other topics of general interest. To both these classes of readers we can cordially recommend this book, and we believe that it is calculated at once to take a high position as a scientific work, and at the same time to popularise the delightful branch of natural history of which it treats.

A. R. W.

#### GEOMETRICAL CONIC SECTIONS

*Geometrical Conic Sections: an Elementary Treatise, in which the Conic Sections are defined as the Plane Sections of a Cone, and treated by the Method of Projections.* By J. Stewart Jackson, M.A. (Macmillan and Co., 1872.)

*The Geometry of Conics. Part I.* By C. Taylor, M.A. (Deighton, Bell, and Co., 1872.)

MR. TAYLOR'S present work is by no means a second edition of his "Geometrical Conics" (1863). His object in this volume is a highly laudable one; from more than one quarter has recently come the complaint that the subject of geometrical conic sections is in an unsatisfactory state. The work under consideration is stated to be "the result of an attempt to reduce the chaos of geometrical conics to order, the subject having suffered not a little from desultory treatment." As in the earlier treatise, our author does not define the conics in question

to be sections of a cone; and here he is at direct issue with Mr. Jackson:—"I am unable, despite his skilful advocacy, to acquiesce in the primary definition of conics from the solid."

This feud among writers on the conic sections is of old date. Simson, in his preface, stated that Wallis (1655) treated of these curves not as being sections of a solid (*nullâ conî habitâ ratione*), and that he was followed by De Witt and De la Hire. T. Newton, in his "Treatise" (1704), remarks that in the University of Cambridge the preference seems to have been given to that method which begins with a description of the curves *in plano*; whereas in the sister University, the Savilian professor, Abram Robertson, in a nearly contemporary work (1802), adopts the more ancient definition, and bases on it a very interesting exposition of the principal properties of conics. This latter method is the one we are inclined to prefer in a school book, though it is not that adopted by our standard writers, as Drew, Besant, and Taylor. Mr. Wilson, we were glad to see, has adopted it in his very handy though concise introduction to the study of these curves.

Putting on one side the numerous typographical errors in Mr. Jackson's work, and some few inelegancies, as we think, in the proofs—the results, doubtless, of too great haste in bringing it out—we have much pleasure in commending this volume, and hope that he will soon have an opportunity of removing these slight blemishes. If he has this opportunity, we are sure it will not be the result of luck ("in case this work should be so fortunate as to reach a second edition"), but the reward of genuine merit.

It is hardly needful to enter into any details respecting Mr. Taylor's mode of treatment of his subject. He is too well known and approved a writer upon it to need our commendation. Suffice it to say that many waifs and strays which he has previously communicated to the mathematical journals here find a fitting place. His leading principle, and that which tends so much to the clearness of his exposition, is that "Chord properties should take precedence of the Tangent properties, the latter being deduced from the former and not the former from the latter." A noteworthy feature is the prominence assigned to the treatment of a curve usually hurriedly passed over—the rectangular hyperbola. To this curve he devotes pp. 61—77. He very fully acknowledges his indebtedness to Prof. Wolstenholme's investigations of the properties of the curve. He has himself elsewhere (*Messenger of Mathematics*, vol. i. pp. 121—127) treated of the curve in question.

The book is a valuable contribution to the literature of this branch of pure geometry; and though it may not take the place of Besant's fuller treatise, as it does not go over the same extent of ground, yet it is worthy of being ranked side by side with it. We shall hail with pleasure the remaining part or parts of the work.

#### OUR BOOK SHELF

*An Introduction to the Practical and Theoretical Study of Nautical Surveying.* By J. K. Loughton, M.A. (London: Longmans and Co., 1872.)

THIS work is intended to supply a want that has long been felt by young officers of the navy who have not had an opportunity of gaining a knowledge of the methods of conducting a coast survey used on board vessels regu-