than in discovering a remedy for the Potato Disease. The questions which would present themselves for solution in such an inquiry are numerous. It would not be difficult to collect the facts; but they have never yet been tabulated or presented to the public in such a form that any conclusions can be drawn unquestionably from them. A competent authority on these subjects, the *Gardener's Chronicle*, recently remarked:—"Though for nearly a quarter of a century, more or less, cultivators have had to wince under the losses inflicted by the enemy, they have not yet learnt either the mode of invasion or the method of destruction." The Commission would have to inquire whether the disease is most prevalent on any particular soil; whether, as some assert, seed left in the ground through the winter enjoys comparative immunity as contrasted with that sown in the spring; whether seed introduced from a distance is safer than that grown in the neighbourhood; whether old varieties are dying out and new ones comparatively healthy; whether, if the disease can by any means be warded off till August 10, the crop is then comparatively safe, and very many others, on which every diversity of opinion exists at present? On one point almost all authorities are agreed, viz., that the disease generally makes its first decided appearance during thundery weather. The exceptional amount of electrical disturbance which extended over almost the whole country during July of the present year appears to have been most unfavourable to the potato crop; while a clergyman, writing from a district where thunderstorms are remarkably rare, in the portion of the county of Devon to the south of Dartmoor, averaging about six in twelve years, states that it is there almost free from disease.

It is worthy of note that an unusual development of the potato blight has been hitherto accompanied by murrain or epidemic diseases in animals and in other crops, and that a certain periodicity appears to be manifested. The present year has witnessed the most virulent outbreak since 1846; the worst of the intermediate years were nearly midway, from 1859 to 1861, showing an approximate recurring interval of about twelve years. A writer in the *Gardener's Chronicle* thus describes the crops in the latter year:—"My potatoes are in as bad a state as I ever remember to have seen them; my turnips are rapidly rotting, and many are filled with a semi-fluid offensive matter; the lettuces in various parts of the kitchen-garden are nearly all rotten; the roots are found generally diseased; the cabbages, savoys, and others of the *Brassica* are what gardeners term blind; the beans are spoiled by the black fly; the peas are all more or less blighted or mildewed; many of the plum and cherry trees are destroyed; I never witnessed anything more lamentable and disheartening." Other accounts agree in the main with this, at least as regards the potatoes in that year. Now, it is very remarkable that an interval of from eleven to twelve years coincides with the period of maximum sun-spots. The present time is near the maximum of sun-spots, so was 1860, so was 1848, the curve showing but little decline for one or two years on each side of the actual maximum. Now, if it can be shown that epidemics like the potato blight are connected with great cosmical cycles, an important step is gained. Physicists are now nearly of accord that a connection exists between the sun-spot period and the recurrence of electrical and other disturbances in the earth's atmosphere. It may be urged that such a conclusion as this would make cure hopeless, and paralyse, instead of stimulating, energy, by inducing a kind of hopeless fatalism. Not at all. An evil which cannot be avoided may, nevertheless, be greatly mitigated by scientific knowledge and skill. To be forewarned is to be forearmed, and a knowledge of the cause of a disease is already halfway towards its cure. If we were certain that in another twelve years we should be liable to a recurrence of the blight with unusual severity, the farmers might be persuaded to plant only so much as would be likely to yield seed for the next year, and that only under the most favourable circumstances, where comparative immunity might be predicted; and large breadths might be devoted to turnips, beet, or other root-crops which experience showed to be likely to yield good results, and which would furnish some substitute for the lost potato.

We have endeavoured to sketch out only a few of the questions which would present themselves for solution were we in earnest to institute a thorough scientific investigation of the cause and cure of the potato blight, and to point out that few subjects are more worthy the attention of a commercial and practical nation.

SHARPE & DRESSER'S BIRDS OF EUROPE

The Birds of Europe. By R. B. Sharpe and H. E. Dresser. Parts xi. and xii. (Published privately.)

THE completion of the first volume of this important work by the issue of Parts xi. and xii., affords the authors an opportunity of expressing their determination to continue the monthly issue with as much punctuality as is compatible with the fulness and accuracy at which they aim. This volume has occupied eighteen months in its publication; but as it contains 101 coloured plates and about 800 or 900 pages of letterpress of large quarto size, the wonder is rather that so near an approach to regularity has been attained in a work which is taking so much larger dimensions than was at first anticipated.

The present parts show no lack of the energy and care hitherto exhibited. In addition to the seventeen species figured and copiously described, we have three additional plates with eight figures of the Sparrow Hawk in various states of plumage, and two others with additional figures of the Ring Ouzel and the Rock Thrush. As an example of the great care bestowed by the authors in the accumulation and critical comparison of specimens from all parts of Europe, and from other quarters of the world where necessary, we may state that the present part discriminates between several birds that have hitherto been confounded, and thus adds two species to the list of European birds, and one to that of Britain. A fine Woodpecker (*Picus lilfordi*), found in Greece and Turkey, has been separated from *Picus leuconotus* which inhabits the more northern parts of Europe; while the British form of the Cole Tit (*Parus ater*) is found to be so constantly different from that which inhabits the Continent as to require a distinct specific name, and it has accordingly been called *Parus brittanicus*. To illustrate these minute specific differences the excellent plan is adopted of giving figures of the allied species on the same plate.

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 gummed 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 coni habitâ ratione*), and that he was followed by De Witt and De la Hire. T. Newton, in his "Treatise" (1794), 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. Laughton, 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-