classification, but a good and readable " History of British Birds," and this object has, we think, been attained.

OUR BOOK SHELF

Melting and Boiling-Point Data. By T. Carnelley, D.Sc., F.C.S. Vol. I. (London : Harrison and Sons, 1885.)

THIS is a very large and important work, and one which cannot fail to be useful to the scientific chemist. It is divided into several parts, and contains, or rather consists of, tables of the elements, inorganic and organic compounds, their constitutional and empiric formulæ, melting- and boiling-points, and the authority and references to the journals, &c., in which the data are given.

The compilation of a work of this nature necessitates an enormous amount of labour and care, which in this case seems to have been expended, for misprints or mis-quotations appear to be absent.

It is the only one of the kind in English, although there are several German works of the same class, notably one by Richter, but of carbon compounds only. The only fault possible to find with a book like this, designed for use in the laboratory more than anywhere else, is its large size.

The present volume, the author tells us, contains 19,000 data, melting- and boiling-points, and with the second volume there is to be a total of about 50,000 data of this kind.

American Journal of Mathematics, Pure and Applied. Published under the auspices of the Johns Hopkins University. Vol. vii. Parts 2, 3, 4. (Baltimore : Isaac Friedenwald, January to July, 1885.)

THE first sixty-seven pages of Part 2 carry on Prof. Cayley's lectures on the abelian and theta functions, before the Johns Hopkins University (see NATURE, vol. xxxi. p. 189) to "the end of Chapter VII." Other papers in this part are " Solution of Solvable Irreducible Quintic Equations, without the Aid of a Resolvent Sextic," by G. P. Young (the same writer furnishes to Part III. " Solvable Irreducible Equations of Prime Degrees "), and " Notes on the Quintic," by J. C. Glashan. Mr. C. S. Peirce commences an article " On the Algebra of Logic," which runs into Part III. ; it is in part concerned with a discussion of De Morgan's logic of relatives. M. Poincaré contributes a paper of fifty-six pages, " Sur les Equations linéaires aux Différentielles Ordinaires et aux Différences Finies." Capt Macmahon adds a short " Second Paper on Per-petuants." The Associate-editor, Dr. Craig, likewise briefly writes " On a Certain Class of Linear Differential Equations." Other short items in this part are : " Prüfung grösserer Zahlen auf ihre Eigenschaft als Primzahlen," by P. Seelhoff ; and " Sur les Nombres de Bernoulli " (fol-lowing up a paper entitled " Some Notes on the Numbers of Bernoulli and Euler," by G. S. Ely, in vol. v.), by Prof. Teixeira, of Coimbra.

The first thirty-four pages of Part IV. are taken up with a paper by Mr. A. Buchheim entitled " A Memoir on Bi-quaternions," in which the author carries on his investi-gations in a field first opened up by Clifford. In it he aims at giving "a tolerably complete development of Clifford's calculus." Mr. J. Hammond carries on his labours on the lines of some recent papers by Cayley and Sylvester, by contributing a memoir " On the Syzygies of the Binary Sextic and their Relations." Prof. W. Woolsey Johnson writes " On a Formula of Reduction for Alternants of the Third Order," and " On the Calculation of the Operators of Alternants of the Fourth Order." Short notes are communicated by F. Franklin " On the Theorem $e^{ix} = \cos x + i \sin x$," and a " Proof of a

Theorem of Tchebycheff's on Definite Integrals ;" and W. E. Story supplies a paper on " The Addition Theorem for Elliptic Functions." The remaining article is an addi-tional Bibliography of the kind of which the *Journal* has now published some three or four most useful specimens. On this occasion Messrs. Nixon and Fields have compiled eleven pages of " Bibliography of Linear Differential Equations." All such lists, if fairly complete, are bound to be most useful. The authors solicit corrections of and addenda to the list for future publication.

A Guide to the Universal Gallery of the British Museum (Natural History). By L. Fletcher. (Printed by order of the Trustees.)

THIS excellent little guidebook is worthy of the highest praise. It is a good deal more than a book which tells you the primary facts respecting the objects in the cases, inasmuch as it contains a simple and elementary intro-duction to the study of minerals. For such a purpose the principal crystallographic, physical, and chemical charac-ters should be explained, and the way in which these characters serve as a means of classification should be shown. Mr. Fletcher has done this excellently. He shows how the science of crystallography grew by the discoveries of Steno, Romé de l'Isle, Haüy, and others to its present state, in which it serves as a most, if not the most, important element in the discrimination of mine-rals. The way in which Brewster's discoveries in crystal-optics confirmed the results of crystallographic investiga-tion is pointed out ; and a brief sketch of the progress of chemistry from the days of alchemy is also given.

This all leads up naturally to the ultimate purpose— that of classification, which is so essential in the proper display of a mineral collection. Finally, in the detailed account of the minerals in the Museum attention is specially directed to the more unique specimens.

Die Spaltpilze. Von Dr. W. Zopf. 3rd Edition. (Breslau, 1885.)

THIS, the third edition, differs in no essential respect from its predecessors. Zopf still adheres to the original proposition of Von Nägeli, that the various forms of schyzomycetes are not permanent species (Cohn), but various stages in the development of the same organism. This proposition is derived from observations of the morphological characters only, and is not based on sufficiently exact methods of *pure cultivation.*

The sections treating of the physiology and chemistry of the bacteria will be found very valuable. A complete and alphabetically-arranged bibliography at the end of the work is the best as yet published. E. KLEIN

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

The Evolution of Phanerogams

MUCH as I dislike controversy occasions arise when it must be faced ; and Mr. Starkie Gardner's notice of the two new volumes by MM. Marion and Saporta (p. 289) calls for a reply. Personally I am obliged by Mr. Gardner's obvious desire to do justice to my views ; but he must excuse me if I say that some of the " main facts " on which he relies are, like similar ones em-ployed by the two French writers, charmingly independent of anything that I can find existing in nature.

Through the kindness of my accomplished friend, the Marquis of Saporta, I received copies of his two volumes as soon as they were published. On perusing his descriptions of the carboniferous