that results have been demonstrated which have really only been suggested as possibly true. A case in which the criterion we have laid down is not satisfied, occurs on p. 35, where, after having shown that a finite series of sines can be found, the sum of which coincides with the values of a prescribed function at n points, the author states that since this result holds good however large n may be, the limiting form of the curve represented by the series absolutely coincides with the arbitrarily given curve between the limits of the variable. A precisely parallel argument would show that a similar result was true for a power series, which is well known not to be the case. No sufficient safeguard is given by the statement on the next page that the infinite series must be convergent, or by the limitation introduced on p. 38. The method by which Fourier's double integral is obtained on p. 53, is another example of a case in which the student will be apt to believe that the result has been proved. We think that it is very doubtful whether the simplification of Dirichlet's proof of the convergence of Fourier's series obtained by considering a particular case of the series, as in chapter iii., is sufficiently great to compensate for the loss of generality.

In chapter iv. a number of interesting and instructive special problems in heat and in vibrations are considered, a considerable number of exercises being left for the student to solve.

The treatment of spherical harmonics in chapters v. and vi. is satisfactory; a little more space might, however, have been with advantage devoted to the discussion of solid harmonics as developed by Thomson and Tait, and by Maxwell.

In chapter vii., in which Bessel's functions are considered, the infinities of the two Bessel's functions, both for real and imaginary arguments, should have been evaluated, as the selection of the proper forms for the solution of potential problems requires a knowledge of the values of the functions when the argument is infinite. Chapter viii. gives a good introduction to Lamé's functions, the toroidal functions being also briefly mentioned. The interesting historical summary, added by Dr. Bôcher, adds considerably to the value of the book.

In spite of some defects, the treatise is in many ways in advance of any other on the same subjects, in the English language, and should be consulted by all students of mathematical physics. E. W. H.

OUR BOOK SHELF.

Bird Life in Arctic Norway. By Robert Collett, Professor of Zoology in the University of Christiania. Translated by A. H. Cocks, M.A. (London: R. H. Porter, 1894.

THE snow-covered peaks of the Land of the Midnight Sun possess irresistible powers of attraction for most lovers of nature. And they who make periodical migrations to this Switzerland of North Europe, as well as casual tourists, cannot do better than provide themselves with a copy of the popular *brochure* now before us. In it the traits of the bird-life in the three natural zones of which Arctic Norway consists will be found interestingly treated. These three natural divisions are (1) the coast district and the belt of islands girding the coast up to North Cape; (2) the deep fjords of the Arctic Ocean and the adjacent river basins in East Finmarken; and (3) the interior plateaus of Finmarken, or Lapland proper. Each region is brightly described, and the peculiar characteristics of the bird-life in it are plainly set forth. The information imparted by the guide is accurate and well adapted for the general reader; and the ornithologist will also find in it much that is worth reading, especially as a list of the birds of Norway, arranged according to the rules of the British Ornithologists' Union, is given in an appendix. It would be an advantage if, in future editions of the book, the names of places referred to by means of capitals and dashes, thus, M——, T——, &c. were printed in full. To guess the locality from these designations is sometimes difficult, and the signs themselves are always tantalising.

A Text-Book of Euclid's Elements. (Books ii. and iii.) By H. S. Hall, M.A., and F. H. Stevens, M.A. (London: Macmillan and Co., 1894.)

IN this work the authors deal exclusively with the second and third books of Euclid. The propositions and their proofs are clearly stated and proved, and very little additional matter, with the exception of corresponding algebraical formulæ and exercises, is inserted between the propositions themselves. Later in the book, following a few words on the method of limits as applied to tangency, several of the well-known theorems on Book iii., with numerous examples, are given; thus one is brought into contact with problems on tangency, orthogonal circles, properties of the pedal triangle loci, maxima and minima, &c., concluding with a series of harder miscellaneous examples. A short appendix contains one or two propositions on the pole and polar, and radical axes. The book is thoroughly suited for work in schools and colleges, and is printed neatly with distinct figures. W.

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 intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Panmixia.

IT is now twenty years ago that I published in these columns the doctrine of Panmixia, or Cessation of Selection, and since this doctrine was independently re-enunciated by Prof. Weismann I have repeatedly had occasion both to explain and to defend our common views upon the subject. For it is surprising how many of our foremost English evolutionists seem to have found a difficulty in understanding exactly what is meant by the doctrine. In view, therefore, of Prof. Weismann's forthcoming lecture at Oxford, it seems desirable that the present standing of the matter should be presented to the consideration of English biologists. An opportunity may thus be afforded him of answering the objections which they have raised against one of the fundamental doctrines of his entire system.

In NATURE of April 12 Mr. Wallace writes:—"He (Mr. Kidd) is under the mistaken impression that the theory (*i.e.* the state) of *panmixia* leads to continuous and unlimited degeneration. Many writers have pointed out that this is an error. The amount of degeneration thus produced would be limited to that of the average of those *born* during the preceding generations in place of the average of those that had *survived*. As Prof. Lloyd Morgan puts it, the survival-mean would fall back to the birth-mean."

This way of putting it, however, was originally due to Prof. Ray Lankester, whose views and terms relating to the subject were afterwards adopted provisionally by Prof. Lloyd Morgan. It may still be remembered by your biological readers that about four years ago Prof. Ray Lankester somewhat vigorously attacked my views on the Cessation of Selection as a cause of degeneration, and disputed their identity with those of Prof. Weismann on Panmixia. He urged that by Panmixia Weismann meant, not the merely passive *cessation* of selection, but an active *reversal* of it, through Economy of Nutrition, &c.