norm by which the aggregate is defined. Or again, page 239, " . . . an aggregate has a cardinal number only when it is one of a plurality of equivalent aggregates, distinct from one another." Again, what success can be expected from an attempt to clarify the notion of aggregate by the introduction of a new word, "norm," itself of debatable meaning? Professor Hobson intimates that something must be "universally accepted" to be admitted as mathematical knowledge; but he does not mention the attack made by Brouwer and Weyl upon some of the fundamental theorems in Analysis. Still again, it may be asked, if (page 6) "the justification [for a certain assumption] is to be found in the fact that no contradiction arises in the theory based on it," why is not the multiplicative axiom justified? Zermelo's *Grundlagen* have led to no contradiction.

The present edition is "revised throughout"; "the parts of the subject dealt with in the first five chapters of the first edition have been expanded into the eight chapters of the present volume." This expansion is due chiefly to the recent developments in the Theory of Integration. The theories of Hellinger, Young and Denjoy are also included. The mathematical world owes a debt of gratitude to Professor Hobson for presenting in a smooth, connected exposition a huge mass of research, a considerable part of which is of recent origin.

The style is, on the whole, very lucid, great pains being taken to prepare the reader's mind for the reception of new ideas. However, here and there we find a lack of compactness—witness the proofs that cover pages 97 and 98, and which may be compressed into one tenth of the space by the use of points with rational coordinates. The treatment retains, in part, something of the freshness of a memoir and will thus prove more stimulating, in one way, than treatises written with a constraining finish.

At this late date, strange to say, the definition of cardinal number as given by Professor Hobson is not without an objectionable feature. Russel is right. Professor Hobson's reference to the "degree of plurality" is like saying, "You know what I mean"; it does not make his definition mathematically acceptable.

On page 259 occurs the following statement: "No elaborate theory is required for functions which retain their complete generality, . . . since few deductions of importance can be made from that definition which will be valid for all functions." It may be of interest to remark that this view is rendered untenable in the light of the results to be announced soon in the *Proceedings of the National Academy of Sciences* in a paper by the reviewer, entitled "New Properties of All Real Functions."

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Analysis Situs. The Cambridge Colloquium Lectures, Part II, Vol. V. By Oswald Veblen. Published by the American Mathematical Society, 501 West 116th Street, New York. 150 pp., octavo. 1922.

The Cambridge Colloquium lectures on Analysis Situs were delivered in 1916, but the publication having been postponed because of the war, the lectures were completely rewritten before publication, and the resulting book is a treatise on the elements of Analysis Situs. It is furthermore the only modern book on the subject. By a study of this book it is possible to acquire a knowledge of Analysis Situs without going through the many widely scattered memoirs as was formerly the case. Every one interested in Analysis Situs will welcome Professor Veblen's book as an important and useful contribution to the subject. Part I by G. C. Evans on Functionals and their Applications was published in 1918.

H. L. Rietz

SPECIAL ARTICLES

ZOSTERA MARINA IN ITS RELATION TO TEMPERATURE[1]

In connection with some work on the temperature control of the geographical distribution of the marine algæ, it seems to be demonstrated that the terms eurythermal and stenothermal apply only to the power of endurance of a wider or narrower range of temperature

[1] Preliminary communication.