FORENINGS SKRIFTER, is clearly and fully written, and very interesting reading. An excellent outline of the properties of vectors and dyadics covers 32 pages. A triadic is then defined, as in the Gibbs-Wilson vector analysis, to be a sum of terms of the form $\boldsymbol{abc}$ where $\boldsymbol{a}$, $\boldsymbol{b}$, and $\boldsymbol{c}$ are vectors, and it is shown that the most general triadic can be written $\boldsymbol{i}\Psi_1 + \boldsymbol{j}\Psi_2 + \boldsymbol{k}\Psi_3$, where $\boldsymbol{i}$, $\boldsymbol{j}$, and $\boldsymbol{k}$ are rectangular unit vectors and Ψ_1, Ψ_2, and Ψ_3 are dyadics. It is this latter, semi-cartesian, form which is chiefly used in obtaining the results which follow.

It is a little surprising that, in a work otherwise so clearly permeated with the spirit of Gibbs, not more use is made of the first definition, from which, for example, the conjugate systems would follow much more compactly; for they are equivalent to permutations of the vectors in $\boldsymbol{abc}$. If this be a fault, however, it is merely one of procedure, and in no sense implies any criticism of the spirit, purpose, or results of the work. A large number of identical relations are obtained, which appear to be useful, and these are frequently given in a final form free from the arbitrary units $\boldsymbol{i}, \boldsymbol{j}, \boldsymbol{k}$, frequently in determinant form, often very elegantly conceived. In short, the semi-cartesian method is employed with great skill and leads naturally to the cubic matrix of the triadic. It would have appeared equally natural to introduce the cubic determinant. Dot products of triadics, and other products leading to tetradics, are also avoided.

An excellent feature is the continual application of the formulas to the differential operator (given its original name of Nabla). Students of vector analysis and related methods will await with interest further developments from the same pen.

F. L. HITCHCOCK.

Untersuchungen über das Endliche und das Unendliche. By C. Isenkrahe. Bonn, Marcus and Weber, 1920. Erstes Heft, viii + 224 pp.; zweites Heft, viii + 230 pp.; drittes Heft, ix + 245 pp. 16 mks. each.

These three divisions of the book under review are entitled:

1. Three detailed discussions of questions in the borderland between mathematics, natural science, and the theory of belief. 2. The teaching of St. Thomas as to the infinite, its application by Prof. Langenberg, and its relation to modern mathematics. 3. Letters between Sawicki and Isenkrahe on a problem in infinity, which is fundamental in the apologetic proof of entropy. The three divisions consist almost entirely of controversial matter in reply to various criticisms passed upon writings of Isenkrahe by Hartmann and others. Not much gain for the subjects under discussion is visible, much of the controversy seeming to relate to different uses of the terms. The discussions are of little interest mathematically. The author seems called upon to defend certain views for the sake of their possible religious significance. Recriminations of orthodoxy and unorthodoxy are found in places, and the argument waxes hot occasionally,—as one might expect.

J. B. SHAW.