BOOK REVIEWS

torsion coefficients. Two applications of these inequalities are made. The first is to the function $f_A: X \to \mathbb{R}$ where $A \in \mathbb{R}^{n+1}$, X is a compact *n*-manifold imbedded in \mathbb{R}^{n+1} , and $f_A(x) = |x-A|$. The second applies the analysis of this distance function to prove that a Stein manifold has no integral homology past the middle dimension. This in turn yields the Lefschetz theorem relating the cohomology of a compact complex subvariety of complex projective space with that of its intersection with a complex hypersurface.

HAROLD I. LEVINE

Foundations of constructive analysis by Errett Bishop. McGraw-Hill, New York, 1967. xiii+370 pp. \$12.00.

> For, compared with the immense expanse of modern mathematics, what would the wretched remnants mean, the few isolated results, incomplete and unrelated, that the intuitionists have obtained... $(Hilbert, 1927)^1$

> While in a few cases one has succeeded in replacing certain intuitionistically void proofs by constructive ones, for the majority this has not been achieved nor is there a prospect of achieving it. . . (Fraenkel & Bar-Hillel, 1958)²

> L'école intuitionniste, dont le souvenir n'est sans doute destiné a subsister qu'à titre de curiosité historique... (Bourbaki, 1960)³

> Almost every conceivable type of resistance has been offered to a straightforward realistic treatment of mathematics. . . . It is time to make the attempt. (Bishop, 1967)⁴

Bishop's attempt has succeeded. Within a constructive framework intimately related to Brouwer's intuitionism—though with important differences—he has developed a substantial portion of abstract analysis, thereby arithmetizing it; and, moreover, he has done it in such a way as to establish the general feasibility and desirability of his constructivist program. He is not joking when he suggests that classical mathematics, as presently practiced, will probably cease to exist as an independent discipline once the implications and advantages of the constructivist program are realized. After more than two

1970]

¹ The foundations of mathematics. All quotes from Hilbert, Kolmogorov, Skolem, and Weyl are from the translations in J. van Heijenoort's From Frege to Gödel, a source book in mathematical logic, 1879–1931, Harvard Univ. Press, Cambridge, Mass., 1967.

² Foundations of set theory, North-Holland, Amsterdam.

³ Éléments d'histoire des mathématiques, Hermann, Paris.

⁴ From the first chapter of the book under review.