Proceeding of the International Congress of Mathematicians 1958, edited by J. A. Todd, F. R. S. Cambridge University Press, Macmillan Company of Canada, 1960. lxiv + 573 pages. $11.25.

This volume contains the official record of the Edinburgh Congress together with the text of the invited addresses. Abstracts of the short contributed papers have not been reprinted.

Among the more formal addresses attention may be drawn to the reports by H. Davenport and H. Hopf on the recent work by K. F. Roth and R. Thom respectively who by the Fields Medals Committee of the Congress have been found worthy of the award—Roth for solving the following classical problem. Let α be an irrational number; there are an infinity of rational numbers p,q such that $\left|\frac{p}{q} - \alpha\right| < \frac{1}{q^2}$. What can be said about the number $\mu(\alpha) = \text{l.u.b.}\,\mu$ for which $\left|\frac{p}{q} - \alpha\right| < \frac{1}{q^\mu}$ if α is algebraic? Liouville had shown that $\mu(\alpha) < n$ if α is an algebraic number of degree n; smaller bounds had been obtained later by Thue, Siegel, and Dyson. In 1955 Roth showed that $\mu(\alpha) = 2$. Davenport's address ends on a hopeful note: "The Duchess, in 'Alice in Wonderland', said that there is a moral in everything if only you can find it. It is not difficult to find a moral in Dr. Roth's work. It is that the great unsolved problems of mathematics may still yield to direct attack, however difficult and forbidding they appear to be, and however much effort has already been spent on them.".

Thom received the award for creating the topological theory of 'cobordisme' which, according to Hopf, is outstanding in its influence on the further development of topology and other branches of mathematics, and particularly adapted to the study of differentiable manifolds. Hopf's address ends with some general remarks on the great success and at the same time the danger to be observed in the strong tendency of algebraization in modern topology; he points out, however, that this danger has been avoided skillfully in Thom's work.

Among the one-hour addresses one finds a lecture by Roth on the problem mentioned above and one by Thom "Des variétés triangulées aux variétés différentiables".

Seven (one of them by title only) of the nineteen one-hour addresses are concerned with topology in one way or another. There is also a survey article by H. Wielandt on the structure theory of the finite groups, an article by Kleene on mathematical logic, lectures by Feller, Garding, Pontryagin (in Russian), and Uhlenbeck on various aspects of analysis, probability, and their interrelations; and a few articles on applied subjects.

The thirty-seven half-hour addresses are classified in sections

I - VIII: I Logic and Foundations, II Algebra, III Analysis, IV Topology, V Geometry, VI Probability and Statistics, VII Applied Mathematics, VIII History and Education. It is, of course, impossible to give reviews on all these articles; but it can be said that apart from the conspicuous absence of number theory, they may be considered in the whole as representative of the present stage of mathematics all over the world.

The same classification has been applied in the list of the titles of the about seven hundred contributed papers.

Finally it must be stated that with regard to printing technique and general appearance the book is a pleasure to behold. All possible trouble has been taken to make the text (with articles in English, French, German, and Russian) as readable as possible. Editor and publisher are to be congratulated for this excellent job which has been supported by a grant from UNESCO.

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Testing Statistical Hypotheses, by E. L. Lehmann. Wiley, New York, 1959. xiii + 369 pages. $11.00.

This book is an outgrowth of a set of notes written in 1949-50, which was put out in mimeographed form at the University of California. It is an intensive, exhaustive account of the two-decision problem, and is recommended to all mathematical statisticians.

The first chapter contains an extremely good introduction to the general decision problem, while chapter 2 is an account, somewhat abbreviated, of probability as part of measure theory. Chapters 3 to 6 give an account of the Neyman-Pearson theory, uniformly most powerful tests, unbiasedness and the methods of invariance. A discussion of the linear hypothesis and applications, and the minimax principle conclude the book. In the latter chapter, it is worthwhile to point out that a proof of the Hunt-Stein lemma (called theorem) is provided, albeit for almost invariant functions, but given all the same.

The test makes full use of many interesting problems and each chapter concludes with a section given over to problems for solution, which are very well classified. In addition, the references at the end of each chapter constitute a most exhaustive and up-to-date bibliography in the area of testing of hypotheses.

Warmly recommended.

Irwin Guttman, McGill University