

account of the factors leading to the development of landslides, including those aspects which can be treated in terms of soil and rock mechanics. There follows a brief discussion of the division of sliding phenomena into groups, possibly one of the most difficult problems in dealing with this subject. The classification adopted by the authors is simple and practical and can be used in the British Isles. In later sections of the book, processes involved in field and laboratory investigations of landslides are considered. A short treatment of the interpretation of exploration results and stability analysis is followed by consideration of stabilization techniques. These aspects are of prime importance to the civil engineer.

For the general public, who usually foot the bill, prevention of failure is even more important. This aspect receives more attention in chapter nine and might perhaps have been elaborated with advantage. The essential message can be deduced, however, from the contents of the book.

The function of geologists in feasibility studies, either for major works such as motorways or the siting of new towns, is very important. Once planning is completed and the siting of a highway or dam has been decided, it may be impossible, even with the use of remedial measures, to avoid serious loss. In any case, as the authors point out, there are "so many forms of landslides and so many factors contributing to their onset" that it is not possible to formulate simple rules that will cover all cases.

Ultimately, therefore, the need is for the engineer to know when and where geological advice is required. For the administrators of public funds the aim should be to ensure that adequate geological advice is available from the conception of any scheme. The task of the geologist is in some ways more difficult. As the authors indicate, success depends in part on knowing the ground in sufficient detail and on an intuitive approach to the possible behaviour of the rocks. Investigation of the soil mechanics carried out in ignorance of the basic geology may be a waste of money. The study of this book can be heartily recommended to all those who are engaged in the planning, designing or execution of major civil engineering works where stability problems are involved.

G. A. KELLAWAY

SYMBOLOMANIA

Topological Geometry

By I. R. Porteous. (The New University Mathematics Series.) Pp. vii + 457. (Van Nostrand: London and New York, December 1969.) 110s.

THIS carefully written book is an attempt to spread the gospel of coordinate free calculus to undergraduates in the tradition of earlier writers, notably Dieudonné. After dealing with sets and functions and the elements of linear spaces, the book picks up speed and discusses quaternions, Grassmannians, the Cayley numbers, normed linear spaces. Scarcely pausing for breath, the author defines a topology on a set and, using this, discusses the notion of tangency and the affine approximation of a differentiable map. In the last two chapters the author proves the inverse function theorem and then moves on to smooth manifolds, Lie groups and Lie algebras.

Having seen the contents of this book, one can only congratulate the author on squeezing so much material into one book, especially material much of which has never before been considered at an undergraduate level. In spite of the mouthwatering appearances of the book's contents, I suspect, however, that it will be little read by undergraduates because the author falls into the error of trying to map the set of symbols used in a bijective fashion onto the mathematics proved. This is only possible if one is a logician writing logic for other logicians to read. Mere mathematicians must accept that symbols will have to be used ambiguously sometimes, and hope that the reader will use his intelligence to place the appropriate

meaning on them at the appropriate time. Any other course, as this book shows, results in such a hornet's nest of symbols, wiggly lines, prefixes, suffixes and the like, that the reader, despairing of ever reaching the goodies obscured by the fog of symbolomania, may come to think that this new approach to mathematics is not worth while. This would be a shame.

ROGER FENN

STATISTICAL JOURNAL

Journal of Statistical Physics

Vol. 1, No. 1, October 1969. Quarterly. (Plenum Press: New York and London.) \$26; \$16 for individuals.

IT is well known that certain problems in statistical physics have analogues in other fields of application of the mathematical theory of probability, for example, in information and communication theory. The existence of analogies between certain aspects of these various fields has led, from time to time, to a productive use in one field of methods originally developed for another. Thus, there seems to be a natural place in scientific literature for a journal which publishes articles not only in statistical physics but also in other fields of application of the theory of probability. The *Journal of Statistical Physics* is precisely such a journal. Its policy is to publish research articles involving the use of statistical methods in the physical, biological and social sciences. Some of these articles may lie clearly within the domain of one of these disciplines: others may be of an interdisciplinary type.

The sample of articles provided by the first issue of the journal conforms with the editorial policy of establishing intra and interdisciplinary activity within fields of application of probability theory. This issue contains thirteen articles, of which seven fall clearly within the framework of statistical physics. Three of the remaining articles are concerned with applications to other fields of methods originally developed in statistical physics—these other fields are biophysics, information theory and theory of pattern recognition. Another interdisciplinary article concerns the application to statistical physics of methods developed in the theory of pattern recognition. Finally, there is an article on the mathematical theory of noise, and one on formulations of entropy in the mathematical theory of probability.

The issue also contains a news calendar of meetings that are likely to be of interest to readers of the journal.

G. L. SEWELL

HONOURS PLASMA PHYSICS

Plasma Dynamics

By T. J. M. Boyd and J. J. Sanderson. (Applications of Mathematics Series.) Pp. vi + 348. (Nelson: London, November 1969.) 100s boards; 65s paper.

THIS is an honours-level introductory text which contains portions of interest to graduate students; it will also be useful as a reference book to those proceeding to research.

After an introductory chapter, the theory of particle orbits in various electromagnetic fields is considered and this is followed by a discussion of adiabatic invariants. The third chapter is concerned with the moment equations of the kinetic equation and contains a discussion of the validity of a hydromagnetic description of the plasma. Following this, basic hydromagnetics, including kinematics, statics, stability theory and propagation of magnetohydrodynamic waves, precedes a discussion of Hartmann and Couette flow.

Shock waves are dealt with in a short chapter and the authors then turn to the study of wave propagation in general. This subject is considered in some detail in two chapters. First, waves in cold plasmas where the propagation of Alfvén waves along and at right angles to field