

extends to general games results of Krental, McKinsey, and Quine (Duke Math. J. vol. 18 (1951) pp. 885–900). In paper no. 13 Gale and Stewart study z-s t-p games with perfect information (chess is such a game). It was proved by v. Neumann (e.g., v. Neumann and Morgenstern, *Theory of games and economic behavior*, 2d. ed., Princeton University Press, 1947, p. 112; see also E. Zermelo, *Ueber eine Anwendung der Mengenlehre auf die Theorie des Schachspiels*, Proceedings of the Fifth International Congress of Mathematicians, Cambridge, 1912, vol. II, p. 501) that every such game whose number of moves is finite has a solution in pure strategies. Gale and Stewart consider games where the number of moves is infinite, and among their results is the construction of a game with perfect information which has no solution in pure strategies. In paper no. 14, G. L. Thompson studies signaling strategies and applies his results in paper no. 15 to a model of the game of bridge. A signaling strategy for a player is “a pure strategy for that player restricted to that subset of his information sets which prevent him from having perfect recall.” In paper no. 16, J. W. Milnor analyzes a situation which occurs in certain games, where “one can measure the ‘incentive’ to move at any particular configuration by imagining the possibility of passing instead.”

The fourth and final section is devoted to n -person games. In paper no. 17 L. S. Shapley proposes to evaluate the equities of the players of an arbitrary n -person game. Whether such a game has a solution in the sense of v. Neumann and Morgenstern is an unsolved problem. In papers no. 18, no. 19, and no. 20, R. Bott, D. B. Gillies, and L. S. Shapley, respectively, introduce interesting classes of games for which they obtain solutions. In paper no. 21 H. Raiffa proposes “arbitration conventions” for choosing an imputation from the solution set of v. Neumann and Morgenstern.

Each section of the volume is preceded by an excellent editorial introduction which summarizes the various papers and indicates lines of further research. The volume itself is indispensable for students of the subject.

J. WOLFOWITZ

NEW JOURNALS

Mathematica Scandinavica. Vol. 1, no. 1. Copenhagen, 1953. 192+12 pp. 40 Danish crowns per volume of two numbers; 20 crowns to members of the sponsoring societies and members of societies (including the American Mathematical Society) having reciprocity agreements with them.

Nordisk Matematisk Tidsskrift. Vol. 1, no. 1. Oslo, 1953. 64 pp.
Foreign subscriptions, 22 Norwegian crowns per volume of four numbers.

These two journals replace Matematisk Tidsskrift A and B and Norsk Matematisk Tidsskrift. They are published by the five Scandinavian mathematical societies, the second in conjunction with the Scandinavian associations of teachers of mathematics. They are intended to take, more or less, the places in Scandinavia which are occupied in the U.S.A. by this Bulletin together with Proceedings of the American Mathematical Society and by the American Mathematical Monthly, respectively. Thus *Mathematica Scandinavica* publishes short research and expository papers (in English, French or German); as far as this portion goes, it differs from Proceedings of the American Mathematical Society chiefly in that the papers are supposed to be mostly by Scandinavian authors (all but one in this issue are); they are fewer in number (17 in this issue), more restricted in subject matter (reflecting the special interests of Scandinavian mathematicians, they are mostly in analysis), and more interesting (possibly reflecting the lesser pressure for publication which distinguishes European from American mathematical life). *Mathematica Scandinavica* also contains problems, book reviews, and notes on mathematics in Scandinavia; the latter include, in the first issue, a useful directory of mathematicians at Scandinavian institutions of higher education and research. The supplementary pages at the end contain, on one side, abstracts of the papers in this issue (suitable for cutting out and mounting on cards); on the other side, announcements of new publications.

Nordisk Matematisk Tidsskrift corresponds more closely to its British counterpart, the *Mathematical Gazette*, than to the *American Mathematical Monthly*; it covers secondary-school as well as college mathematics. The contents range from short research papers on subjects of general interest to discussions on teaching problems. The languages of this journal are Danish, Norwegian and Swedish, although English, French and German are also admitted, and articles in the Scandinavian languages are provided with English summaries.

R. P. BOAS, JR.

BRIEF MENTION

Les systèmes axiomatiques de la théorie des ensembles. By H. Wang and R. McNaughton. (Collection de Logique Mathématique, Série A.) Paris, Gauthier-Villars, 1953. 56 pp. 750 fr.