Thrall on "Mathematical models and measurement theory," which reviews the role of mathematical models in a science and their application in measurement theory.

The volume is divided into four parts. The first part deals with both the standard problem of statistical decision and the problem of group choice. Milnor, in "Games against nature," discusses the properties of four decision-making criteria. Coombs, in "Social choice and strength of preference," shows how to derive, under certain conditions, a social utility function that explicitly weights individuals' strength of preference. Part 2 deals with learning theory, with contributions by Bush, Mosteller, Thompson, Estes, and Flood.

Part 3 deals with the problem of utility that has been a central one in economic theory for many years. In this section, Marschak, in "Towards an economic theory of organization and information," extends ". . . the economic theory of a rational firm into the domain of uncertainty, giving special regard to the character of a firm as a team." How shall a team, a group for which the group interest coincides with the individual's interest, act to maximize its gain? Part 4 describes some experimental studies. Thus, for example, Hoffman, Festinger, and Lawrence, in "Tendencies toward group comparability in competitive bargaining," examine experimentally the game-theory assumption that players decide on coalitions strictly on the basis of their desire to maximize their returns. They examine the behavior of players in terms of more realistic utility systems that include a comparison of one's own performance ". . . with the performance of others whom they accept as comparable to themselves."

Decision Processes contains a stimulating series of articles, adding significantly to the growing body of literature on the role of mathematics in the social sciences. The papers that I have singled out for mention met only one criterion—their interest to me.

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Advances in Catalysis and Related Subjects. vol. VI. W. G. Frankenburg, V. I. Komarewsky, and E. K. Rideal, Eds. Academic Press, New York, 1954. xiii + 467 pp. Illus. $10.50.

A very puzzling problem in the behavior of contact catalysts is the increase in the frequency factor with decreasing activation energy when the simple Arrhenius equation is used for many reactions. Two possible explanations are presented in this book. In a stimulating chapter on the general aspects of chemisorption and catalysis, Takao Kwan shows that both the frequency factor and the activation energy vary with the fraction of the surface covered by adsorption, and he calculates the extent of the variation from an almost bare surface to one that is completely covered. P. B. Weisz and C. D. Prater, in their chapter on interpretation of measurements in experimental catalysis, discuss results of rate measurements on catalysts of the same chemical composition but of different physical form (for example, pore size distribution). They show that an apparent linear relationship between the logarithm of the frequency factor and the activation energy results from influences of different diffusion factors on the rate of reaction.

This volume also contains informative reviews of catalysis and reaction kinetics at liquid interfaces by J. T. Davies, synthetic polymer catalysts by W. P. Dunworth and F. F. Nord, commercial isomerization by B. L. Evering, acidic and basic catalysis by M. Kilpatrick, and industrial catalytic cracking by R. V. Shankland. This last-mentioned topic is the largest section of the book and is an excellent presentation of the current state of the art of catalytic cracking of petroleum.

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Miscellaneous Publications

Anales. vol. III, No. 3. Ministerio de Agricultura. Instituto Nacional de Investigaciones Agronomicas, Madrid, 1954. 134 pp. Illus.

A Systematic Monograph of the Dermaptera of the World. Based on material in the British Museum (Natural History). Pt. 1, *Pygidicranidae.* W. D. Hincks. British Museum (Natural History), London, 1955. £1 15s. 132 pp.

Malaria: A World Problem. vol. 9, Nos. 2–3, of *Chronicle of the World Health Organization.* World Health Organization, Geneva, 100 pp. 60¢.

Jaarboek der Koninklijke Nederlandse Akademie van Wetenschappen, 1953–1954. The Akademie. North-Holland, Amsterdam, 1954. 315 pp. Illus.

Carnegie Institution of Washington Year Book No. 53. The Institution, Washington, 1954. 311 pp. Illus. Paper, $1; cloth, $1.50.

Recent Sediments of the Gulf of Paria. Reports of the Orinoco Shelf Expedition. vol. I. Tj. Van Andel and H. Postma. North-Holland, Amsterdam, 1954. 240 pp.

Pericula Prope Amenanum Zuri Epistola ad Discipulum. Certaminis Poetici Hoeufftiani. Academia Regia Disciplinarum Nederlandica, Amsterdam, 1954. 18 pp.

Nuclear Science Abstracts. vol. 9, No. 6A. U.S. Atomic Energy Commission, Technical Information Service, Oak Ridge, Tenn., 1955. 48 pp.

Shopping Habits and Travel Patterns. Highway Res. Bd. Special Rpt. 11-B. Natl. Acad. Sciences–Natl. Research Council, Washington 25, 1955. 21 pp. 75¢.

Aphids and Scale Insects on Ornamentals. Bull. 588. John C. Schread. Connecticut Agr. Expt. Sta., New Haven, 1955. 22 pp.

Bulletin de l'Institut International de Statistique. Methodologie generale et statistique mathematique, statistique economique, enseignement de la statistique. Tome XXIV, 2eme livraison. L'Institut, Rome, 1954. 723 pp.

Heralds of Science. As represented by 200 epochal books and pamphlets selected from the Burndy Library. Burndy Library, Norwalk, Conn., 1955. 96 pp.