Among other topics, Synge has dealt with continuum mechanics, the Cauchy problem of general relativity, integral conservation laws and equations of motion, fields with special symmetries, gravitational waves, solutions of the Einstein-plus-Maxwell field equations, and geometrical optics in a curved universe.

For the record I should like to state that Synge's criticism of a statement of mine (see page 310, footnote 1) is fully justified.

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North Arabian Desert Archaeological Survey, 1925–50. Papers of the Peabody Museum of Archaeology and Ethnology, vol. 45, No. 2. Henry Field. Peabody Museum, Harvard University, Cambridge, Mass., 1960. x + 224 pp. Illus. $8.25.

In southwestern Asia few regions are so little known archeologically as the Arabian Peninsula, where serious lacunae remain in our knowledge of the cultural history of every area and of every period. Some of the gaps in the prehistory of northern Arabia are filled by this work, which contains the results of five ground surveys and one aerial crossing of the North Arabian (or Syrian) Desert, conducted by Field between 1925 and 1950.

While these surface surveys by no means covered the entire region, they yielded a sufficiently representative sampling of artifacts to permit the distinguished prehistorian Dorothy Garrod to frame tentative conclusions regarding the cultural history of the region in prehistoric times. The Paleolithic period is successively represented by Acheulean, Levalloisian, Levalloiso-Mousterian, and Aurignacian industries, with affinities to those of neighboring countries, especially Syro-Palestine. Thereafter the desert cultures apparently diverge from surrounding tradition, and Garrod typologically distinguishes three industries ranging in time from the late Paleolithic—early Mesolithic to the late Mesolithic–Neolithic. The exact nature and chronological order of these late industries must await the discovery and excavation of stratified sites. In Paleolithic times, this region seems to have enjoyed a more favorable climate, supported a larger population, and served as a route of migration between Africa and Asia. The absence of sickle blades from the latest industries suggests that desiccation was sufficiently advanced in Mesolithic times to make agriculture impossible.

Other essays deal with special features of the survey. The geology of the region is described by E. W. K. Andrau; the architecture of three Umayyad lodges is discussed by Eric Schroeder, supplemented with observations by Florence E. Day; and a Greek inscription from Qasr Burqu' is published by Sterling Dow. Appended to the report are two lists of plants from this region and a most useful list of the archeological sites visited, with a summary of the finds at each. Worthy also of special notice is the excellent three-color map showing Field's traverses, the sites and quarries discovered, and the surface features of this region. This book will be an extremely useful source for future archeological research in the region.

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The Economics of Defense in the Nuclear Age (A RAND Corporation research study). Charles J. Hitch and Roland N. McKean, Eds. Harvard University Press, Cambridge, Mass., 1960. vii + 422 pp. $9.50.

This book deals not primarily with economics, as it is ordinarily understood, but with the application of economic concepts to military decision-making at all levels. The authors "regard all military problems as, at least in one of their aspects, economic problems in the efficient allocation and use of resources." They feel that "the job of economizing, which some would leave to budgeteers and comptrollers, cannot be distinguished from the whole task of making military decisions."

Starting from this premise, the authors discuss first the general background of defense planning: the various military threats we face, the general economic-resource limitation of defense programs, the indirect effects of defense spending, and the economic strengths of the major powers.

The major portion of the book is devoted to describing and illustrating concepts and methodology for making quantitative analyses of cost versus effectiveness of alternative military programs, sometimes in dollar measures, often in physical measures, when time or other constraints require it. One excellent chapter discusses the problems of selecting appropriate criteria for evaluating the relative effectiveness of alternative programs, a particularly knotty problem in most large-scale systems analyses, particularly when various incommensurable costs or benefits are involved.

Also discussed are the difficult problems of handling uncertainty, both for the case of random variation and for uncertainty resulting from the future decisions of an enemy, who is likely to take advantage of any weakness in our defense posture. An appendix, written for readers with an elementary knowledge of differential calculus, "presents necessary and sufficient conditions for the maximum and minimum of a broad class of functions. It also includes a brief discussion of methods for finding the maximum."

Numerous examples to illustrate the concepts discussed are drawn from the Rand Corporation's 15 years of experience in analyzing, for the Air Force, problems at all levels, ranging from the broad strategy for deterring all-out war to the design of efficient logistic support procedures.

In part 2 the discussion covers a variety of special problems and applications: efficiency in military research and development; military logistics; the economics of military alliance; economic warfare and disarmament; mobilization, civil defense, and recuperation. The final chapter "Choosing policies for deterrence," is a reprint of Albert Wohlstetter's brilliant article, "The delicate balance of terror," which first appeared in the January 1959 issue of *Foreign Affairs*.

The book is well and simply written, and presupposes no special background in economics, mathematics, or operations research. The authors disclaim any intention of writing a text in "how to do" military operations research or systems analysis; but it is, in fact, one of the best general expositions of concepts in these fields which has appeared. It should be useful to military operations analysts, and invaluable to decision-makers who must use the results of military operations analysis and system analysis. It would make an excellent text for use in the service war colleges and in university courses in operations analysis.

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