Shepard compares the traditional theory of industrial organization with organizational traditions in science and with the new industrial organization theory, which introduces more attention to "human relations." In science, he states, "mutual confidence, rather than authority, is the integrative force in organization," and "the supervisor is the agent for maintaining intragroup and intergroup communication, rather than the agent of higher authority." Much the same views are expressed by C. R. Harington. He says, "authority is the wrong word. . . . It is above all important that the scientific staff should feel that the purpose of the administrative machine is to provide the best conditions for their work and that in no sense is it meant to control their professional activities."

In the final paper of the session on incentives, Mayne stresses the great incentive to scientists of career possibilities and of conditions of work such as freedom in research, professional association and recognition, and similar factors. Pay is important as an incentive but by no means the only factor.

The fifth session dealt with the problems of communicating technical information, both within a research establishment and from the establishment to others. C. G. Williams describes the various techniques and lines of communication in a large research laboratory (Shell Research Ltd.), with stress on the value of personal contacts and the value of colloquia and conferences. L. Moss and L. T. Wilkins describe studies in the use of technical information in the smaller industrial establishments. Their paper is supplemented by a survey of industrial technologists and sources of information in seven European countries. While the studies had not been completed at the time of the symposium, some samples of the results are described.

The remaining three papers of this session treated external communications. A. T. Green and A. E. Dodd chose as their subject, "Knowledge: Passing it On—Getting it Used." In this paper they describe the role of the written word and of exhibition, including newspapers, letters, trade literature, the trade press, research reports, popular research magazines, journals of learned societies, abstracts, memoranda, and textbooks; the appeal to the ear through personal contact, telephone communication, lectures and conferences, and radio; and the appeal to both eye and ear through film, television, and personal instruction and demonstration. Arthur Garratt covers much of the same ground in his paper entitled "Extramural Communications," but is bold enough to assign figures of merit to the various methods, personal contact and the written word being equally effective.

The final paper of this session, by M. W. Thistle, emphasizes some fundamental difficulties encountered in efforts to popularize science—for instance, the barriers of the relation between words and things, of scientific language and sophistication of expression, and of factors of security, of printability, and of receptivity.

One additional formal paper, by A. H. Wilson, on the assessment of the work of an industrial research laboratory, and reports of the chairmen of the several sessions complete the volume. Discussions of the papers, which are rather fully reported, constitute one of the most valuable aspects of the report of this symposium. There were 173 persons in attendance, from 16 different countries, but the publication of this volume makes available the major part of the proceedings to all who are willing to read. I found the report very stimulating and useful, and recommend it to all who are concerned with "the direction of research establishments."

HUGH L. DRYDEN
National Advisory Committee for Aeronautics

Operations Research for Management. vol. II, *Case Histories, Methods, Information Handling.* Joseph F. McCloskey and John M. Coppinger, Eds. Johns Hopkins Press, Baltimore, 1956. xxxiv + 563 pp. $8.

This volume presents a number of papers given before the Johns Hopkins University Informal Seminar on Operations Research during 1953–54 and 1954–55. Many of the papers have been previously published in various journals in the field of operations research.

The first half of the book is devoted to a presentation of case histories which cover such varied areas as "Traffic Delays at Toll Booths" (by Leslie C. Edie), "Revising New York's Subway Fare Structure" (by W. S. Vickrey), "Operational Research in Underground Mining" (by S. L. Cook), and "Bio-Social Research in Operations Research" (by S. W. Davis).

The second section covers discussions of a number of problem-solving procedures which are available. These include an article on experimental design (by W. J. Youden), a good review of the mathematical complexities of the traveling-salesman problem (by M. M. Flood), and an intriguing but all-too-short chapter on operational gaming (by W. E. Cushen).

The final part of the book deals with "Information Handling in Organized Groups." The subjects discussed include the experimental investigation of the efficiency of various communication patterns in small groups. In one section, J. Macy, Jr., discusses communications among human beings in terms of Shannon-Wiener information theory concepts.

This is a book, then, which illustrates the wide range of interests that "operations analysts" are concerned with.

IRVING ROSHWALB
Audits and Surveys Company, Inc., New York

Radioastronomie. Raymond Coutrez. Edition du Patrimoine de l'Observatoire Royal de Belgique, Uccle, 1956. vii + 383 pp. Illus. + plates. F. 250.

It is difficult to write a technical book of any lasting value on a new and rapidly developing subject. Radio astronomy is such a subject. Its techniques are in a state of continual change, and it is too young to have acquired any large body of well-established results. The author of *Radioastronomie,* Raymond Coutrez, points out these difficulties in his foreword and then proceeds to make a valiant effort to overcome them. According to the foreword, the book was written to provide, in the French language, an outline of the present status (through 1955) of the techniques and results of radio astronomy. In this it succeeds quite admirably. The book is, however, very much an outline in that it covers a large number of topics very briefly, without doing full justice to any. This is rather regrettable in some cases, since much of the material is straightforward astronomy, electronics, and physics, which will be familiar to most readers, or readily obtainable, and might well have been omitted in favor of fuller discussion of those techniques peculiar to radio astronomy. The book is definitely not for the layman, since the author presupposes a fair knowledge of physics and electronics on the part of the reader.

The first five chapters deal with the physics of radiation, general properties of antennas, transmission lines, receivers, and special antenna and receiver techniques used in radio astronomy. As a whole, these chapters provide what is probably the best discussion of the techniques of radio astronomy that is presently available in a single compilation. Chapters VI and VIII give a thumbnail sketch of optical astronomy, which, in my opinion, adds nothing to the book. Chapter VII discusses solar radio astronomy, chapter IX covers galactic and extragalactic radio astronomy, and the final chapter is concerned with meteors, the moon, and the planets.

In general, the book is clearly and concisely written. In only a few places—in the section describing the various defi-