ence **128**, 1187 (1958), in which the scope of psychophysiology in Russia is emphasized]. The contributions in the present monograph show clearly how flexible and useful the conditional reflex method is when properly applied to the study of behavior. It is a true physiological method, one which requires a logical and skillful experimental approach. Perhaps this is why the method is not so popular among behaviorists who do not belong to the Pavlovian group.

Of particular interest are the studies of visceral responses and their role in altered behavior. The cardiac conditional reflex, for example, is readily established. But it is resistant to extinction, and an increased heart rate may persist for several years without reinforcement, representing an inertness to modification that is inappropriate to existing circumstances (schizokinesis).

The individual papers vary widely in subject and quality. Some read very clearly and smoothly—for example, the paper by Moore on "Conditioning and stress in the newborn lamb and kid." The clarity of this paper is accentuated by its freedom from the abbreviations that clutter up many of the other papers.

In spite of the diversity of the individual contributions and the rather haphazard organization, this is a valuable and most interesting monograph.

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Theory and Methods of Scaling. Warren S. Torgerson. Wiley, New York; Chapman and Hall, London, 1958. xiii + 460 pp. Illus. $9.50.

This book should be within arm's reach of all students, teachers, and researchers in the social sciences who are concerned with problems of measurement. It appears to cover all the important contributions to date in scaling theory and techniques. The skill and competence with which the author has organized the extensive contributions to scaling are indeed impressive.

Because of the clear perspective given by the book on the current status of scaling methodology, it is relatively easy to evaluate critically the developments to date. In fact, I would have liked a somewhat more critical evaluation in view of the great variety and diversity of methods. This was not, however, the primary task assigned the author by the committee under whose direction the book was prepared.

Perhaps it is a criticism of the mission assigned the author rather than of the book itself that it may tend to perpetuate the schism between testing and scaling theory, whereas there is mounting evidence that an integration of the two is not only feasible but highly desirable. Along the same line, those dedicated to the operational point of view may regard the rather extensive philosophical development of measurement concepts as a proliferation of semantic red herrings.

The construction of a fundamental framework within which one develops a presentation is necessarily somewhat arbitrary. The notions of *object, attribute,* and *magnitude* seem, however, most happily chosen and serve as a solid and well-anchored set of coordinates from which the more detailed framework proceeds. The utility of the additional concept of *quantity* as distinguished from *magnitude* is not so compelling, however, unless it was meant to include the concept of replication. The definition given seems to preclude this, and its function in the more detailed superstructure is not highlighted, even though it might be implied.

Although the mission of the book is essentially reportorial rather than critical in nature, two distinctly different fundamental points might appropriately have been emphasized. One of these is the vast amount of covariant information in the experimental data ignored by both the paired comparisons and successive intervals models. The other is the flagrant violation of one of the basic principles of scientific methodology—that is, the principle of parsimony, by the deterministic techniques.

In general, the material seems to be extremely well structured and well organized. However, I was surprised to find a discussion of the Horst and Guttman principal components models included in the chapter on deterministic models. These would seem to belong in the chapter on multidimensional techniques and are nothing if not probabilistic. Perhaps one of the reasons for this apparent displacement is that Guttman himself has failed either to recognize or to emphasize the true nature and importance of his contribution in the principal components approach.

A minor detail is the crediting of Horst with the least squares solution of the missing data problem for the paired comparison model rather than for the successive interval type model. Another detail which applies to all books dealing with multivariant analysis techniques concerns mathematical notation. The obvious notation for such techniques is that of matrix algebra. Although the book employs matrix notation in a few of the developments, it clings for the most part to the clumsy and untidy summation notation of scalar algebra. In this respect it merely follows an unfortunate tradition, and perhaps there is no particular reason why this book should have been the first to break with it.

The type and format are in the excellent tradition of the publisher. The only obvious improvement would have been to carry the chapter number along with the title at the head of each page. With so many back references, rapid referral to preceding relevant equations and passages would have been greatly facilitated by this device.

Although the lack of exercises and extensive numerical examples limits the usefulness of the book as a text on scaling theory and methods, its value as a ready reference for students, instructors, and researchers, striving toward greater precision in all the social sciences, cannot be overemphasized.

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Science and the Detection of Crime. C. R. M. Cuthbert. Philosophical Library, New York, 1958. 244 pp. Illus. $10.

As stated in the preface, the purpose of this book "is to provide the reader with an accurate and authoritative account of the work undertaken in the Forensic Science Laboratory at New Scotland Yard and to illustrate how a small group of scientific workers can render valuable service to the detective force in its constant war against crime. The work is not intended as a scientific text book, but it is hoped that, in addition to being of interest to the ordinary reader, it may be of some value to young detective officers and others whose work makes it necessary to know the extent to which science can assist in the investigation of crime."

On the whole, the book accomplishes the purpose for which it was designed. It is especially suitable for the lay reader who has a limited understanding of scientific crime investigation, and it will prove attractive to those who enjoy "whodunits." It is of more doubtful value to the professional policeman (unless he, too, enjoys "whodunits"), who should have a more thorough indoctrination into the facilities, operation, and investigative usefulness of a modern crime laboratory than is provided by this book.

Seven of the chapters deal with the work of laboratory specialists: the forensic pathologist, the serologist, the forensic chemist and biologist, the physicist, the toxicologist, the document examiner, and the ballistics expert, respectively. Six chapters deal with criminal specialties: stolen articles and fraud, fire and sabotage, breaking offenses, abortion, drug trafficking, and alcohol and motor accidents, respectively.

The chapters on the document examiner and the ballistics expert are not included in the group of chapters devoted to the laboratory specialists, perhaps because these two categories of specialists operate in fields that are not so clearly areas of "pure" or basic science. Instead, the two chapters devoted to the document examiner and the ballistics expert are inserted in the series devoted to criminal specialties, between the chapter on breaking offenses and that on abortion. The author has also illogically included a chapter on criminal responsibility between the chapter on drug trafficking and that on alcohol and motor accidents. It appears that the organization of the book could be improved by rearranging the chapter sequence.

The next-to-last chapter deals with instructive and unusual cases and adds materially to the "whodunit" value of the book. The introductory chapter contains an interesting account of the development of scientific crime investigation and the establishment of crime laboratories in England.

The concluding chapter—on some foreign laboratories—is not sufficiently detailed to give the criminalist an understanding of the facilities of these laboratories in terms of the quality and quantity of staff and equipment.

The author has illustrated his discussions of scientific techniques with examples drawn from actual criminal cases. It is these accounts which make the book appealing to the lay reader.

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Introduction to Historical Geology. Raymond C. Moore. McGraw-Hill, New York, ed. 2, 1958. ix + 656 pp. Illus. $7.95.

Extensive expansion and revision mark this new edition of a widely used text by one of the world's grand masters of the historical geology chessboard. Except for some illustrations, little remains unchanged in the new work. The page size is larger, the text is longer, and the 600 illustrations nearly double the number in the earlier edition.

After first treating the scope of historical geology and evolution, the book examines briefly several theories of our earth's origin, without, however, supporting any specific hypothesis. Next comes a considerably expanded coverage of the Precambrian, here called the Cryptozoic eon. After this, individual chapters treat each succeeding geologic period, describing rocks and fossils, paleogeographic history, life, climate, and economic resources, all primarily from the viewpoint of a geologist working in North America. The final chapter outlines our scanty knowledge, as of several years ago, of man's geologic history. Recent finds—such as *Oreopithecus,* the Tuscan ape man, or the Swanscombe man—are not discussed, and the reading list needs some updating. For example, Wormington's classic work, *Ancient Man in North America,* is now in its fourth edition, not its second, and although one of Sellard's earlier papers is mentioned, his later book is not.

Three appendices complete the text. The first describes fossil organisms and is a superb exposition, reflecting the author's international eminence in paleontology. The second pictures many common lithologic symbols, and the last provides a glossary of technical terms.

Completely new features in this edition, deserving of special commendation, are the list of suggested readings and the dozen or so review questions at the end of each chapter. Each of the questions is carefully designed to induce the student to think and to reason from a background of factual information acquired through previous study.

Some terms not commonly used in the United States, but eminently satisfactory, are applied throughout the book. The European division of the Cenozoic into Paleogene and Neogene is adopted, and dolomitic rocks are called dolostones. Is the influence of a standard glossary at last infiltrating geologic science? The numerous illustrations, many of them new, are uniformly clear and appropriate. Some, such as the geologic maps showing outcrop and subsurface occurrences of the rocks of each system, provide useful reference information on every period since the Cambrian.

For teachers of historical geology this book is an excellent text. It provides a wealth of factual information, useful for stretching the minds of even the most competent students.

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Scientific Manpower in Europe. Edward McCrensky. Pergamon Press, New York and London, 1958. ix + 188 pp. $4.50.

"The role of management of scientists in government is the principal theme of this study." The first three chapters consider some of the things a scientist looks for in a government career, some of the methods used by several Western European governments to attract and hold scientists in public service, and the levels and systems of payment. The material is drawn from Great Britain, France, Western Germany, the Netherlands, and the Scandinavian countries.

Three other chapters describe (i) the representation of scientists in the establishment of employment conditions and rates of pay—for example, through the highly organized unions of the Scandinavian countries and the formal channels for joint consultation in Great Britain; (ii) the higher education of engineers in several countries; and (iii) several national patterns for the organization of research. A concluding chapter makes comparisons with the United States. These topics are treated very briefly.

There is growing recognition in the United States of the need for thorough and systematic review, and probably revision, of administrative practices controlling the recruitment, promotion, payment, and transfer of civil service scientists and engineers. This is all part of the larger issue of how best to organize and manage a government scientific program of expanding immensity. McCrensky's little book touches on many aspects of these problems, describes systems in use elsewhere, once in a while expresses a judgment as to how effectively different systems work, and thus provides ideas that might well be considered in the United States. But nothing is treated in depth; decisions to change present practices would require substantially more information than the author presents.

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Principles of Research in Biology and Medicine. Dwight J. Ingle. Lippincott, Philadelphia, Pa., 1958. xv + 123 pp. $4.75.

In this unusual little book, which is addressed to "students who are preparing for or are beginning research in macrobiology and medicine," the author has attempted to survey the rationalities and methods of science all the way from basic aims and the fundamentals of logic to the selection and care of laboratory technicians. He makes this attempt in some 120 pages of short, concise assertions, aided by quotations from Lewis Carroll but without the aid of any illustrations, tables, quantitative data, or symbolic methods and with the introduction of very few examples.

The book is fundamentally sound but so condensed into generalities that controversial points are not explicitly asserted. It is hard to argue with the politician who asserts that evil is bad, and it is probably just as hard to deny, for example, that "causality is a useful assumption for scientists in the fields of