of filters and filter lattices. The definition of a topology is then presented as a natural product of a notion of convergence for filters. This is followed by a development in terms of filters of the separation axioms, certain elementary topological properties, and continuous transformations. A few selected topics are then developed rather thoroughly. There are embedding and compaction theorems, the theorems of R. L. Moore and Hahn-Mazurkiewicz on arc-wise connectivity and continuous curves, theorems concerning paracompactness and the metrization theorems of Bing and Nagata-Smirnov, and a quite general development of uniform spaces. The final chapter gives a limited introduction to topological algebra as an illustration of use of the previous topics.

A statement from the introduction characterizes one aspect of the book. "They [filters] lend themselves to short, clear statements, and their use often allows us to write out proofs in formal symbolism." This brevity requires a short period of adaptation on the part of the reader.

As a text, *Topological Spaces* could best be used by students that have had some experience with analysis. There is a reasonable supply of exercises.

It must be pointed out that some errors occur in the English edition of the book, most of which are minor, but some are not (for example, the statement purported to be the Tietze Extension Theorem is false). Some people will view this as an asset from a pedagogical viewpoint, but for use as a reference, this is a definite detraction.

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Lectures on Immunology: A Teaching Aid

Immunology. An outline of basic principles, problems, and theories concerning the immunological behaviour of man and animals. David F. Gray. Elsevier, New York, 1965. xii + 154 pp. Illus. Paper, $2.95.

One who instructs in immunology faces a considerable pedagogical challenge. Even the good, highly interested student is likely to have unusual difficulty in coping with the material. He finds it complex, ambiguous, and obcure. This is the case not only because immunology is intrinsically so but also because it carries with it such a heavy freight of semantic confusion.

In this volume Gray has given us the series of tightly organized lectures that constitute his response to the challenge. On the whole, it is an excellent one.

The orientation is strongly epidemiologic, and as a consequence the origins of immunology are constantly on the reader's mind, perhaps at the expense of more recently developed facets. For example, only four pages are devoted to the mechanics of the precipitin reaction, and its value as a tool in solving biological problems is ignored.

On the other hand, the condensed and succinct treatment of host resistance, natural and acquired, is admirable and immune responses detrimental to the host are well related to those that are beneficial, although the significance of reactions of the Arthus type is surely underestimated. Gray's discussion of the several theories of antibody production, including his own, is rewarding because the issues are clearly drawn and the process itself is treated as a specific instance of metabolic activity with many homologues throughout living systems.

At the end of each chapter there is a good itemized summary of its contents. In several instances, phenomena are interpreted by excellent word diagrams.

Immunology must be considered in terms of the lecture room where the student is presumably given the opportunity to clear up points of confusion by appropriate questions. It is not a textbook but rather a contribution of an adjunct lecturer which should prove particularly valuable to the instructor emphasizing the nonclinical areas of the discipline. The book is not in itself a complete account.

Gray has successfully minimized the number of terms to be mastered by retaining only those essential to basic understanding.

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The Atom and Its Nucleus

Classical Scientific Papers: Physics. Facsimile reproductions of famous scientific papers. With an introduction by Stephen Wright. Elsevier, New York, 1965. xx + 393 pp. Illus. $7.50.

As the title tells one *Classical Scientific Papers: Physics* is a collection of papers (21) each of which marked an important advance in our understanding of the nature of the atom and its nucleus. The papers are arranged in four groups—group 1, Radioactivity; group 2, The Atom; group 3, Further Developments; and group 4, Some Tools of the Trade. The editor has written a short introduction to each group, as well as an introduction to the book as a whole, to provide something of the setting in which the papers were written. The main criticism is that although each paper is itself interesting and important there is considerable overlap—for example, two papers by Geiger and Marsden and two by Chadwick. Rutherford is author or coauthor of seven. It would seem to me that a broader representation would have been desirable. One of Bohr's papers might better have been included. One might also feel that one of the original papers on x-ray diffraction is of more interest than Compton and Doan's "X-ray spectra from a ruled grating." But these are questions of taste. The facsimile reproduction may not be entirely successful in working the "excitement" and "magic" that is felt by the student who thumbs through the original journal to read the writings of the masters. But it is certainly more efficient to have this convenient collection.

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Note

In **The Worm Re-Turns: The Best from the Worm Runner's Digest** (Prentice-Hall, Englewood Cliffs, N.J., 1965. 182 pp., $3.95), edited by James V. McConnell, one can browse among such thoughtfully selected essays as Horace Miner's study of the well-known but little-understood North American Nacirema, Garrett Hardin's "The Last Canute," and James V. McConnell's "Learning Theory."