BOOK REVIEWS

Foundations of combinatorial topology. By L. S. Pontryagin. Trans.
from the first (1947) Russian ed. by F. Bagemihl, H. Komm, and
W. Seidel. Rochester, The Graylock Press, 1952. 12+99 pp. $3.00.

In the preface, the author states his purpose as follows:
"This book represents essentially a semester course in combinatorial
topology which I have given several times at the Moscow National
University. It contains a very rigorous but concise presentation of
homology theory. The formal prerequisites are merely a few simple
facts about functions of a real variable, matrices, and commutative
groups. Actually, however, considerable mathematical maturity is
required of the reader. An essential defect in the book is its complete
omission of examples, which are so indispensable for clarifying the
geometric context of combinatorial topology. In this sense a good
complementary volume would be *Sketch of the fundamental notions
of topology* by Alexandrov and Efremovitch,[1] in which the atten-
tion is focussed on geometric content rather than on the completeness
and rigor of proofs. In spite of this shortcoming, it seems to me
that the present work has certain advantages over existing volu-
minous treatises, especially in view of its brevity. It can be used as a
reference for obtaining preliminary information required for partici-
pation in a serious seminar on combinatorial topology. It is con-
venient in preparing for an examination in a course, since the proofs
are carried out with sufficient detail. For a more qualified reader,
e.g., an aspiring mathematician, it can also serve as a source of basic
information on combinatorial topology."

The reviewer considers that the author has done an excellent job
of achieving his objectives within the limitations he has set down.
Certainly none of the existing texts on combinatorial topology at-
tains these objectives as well in so few pages. Experts may not
always agree that he has chosen the clearest or most direct method
of proof for some of his theorems, but of course this is largely a
matter of taste.

The text consists of a two-page historical introduction, and three
chapters. The introduction mentions the early ideas of Poincaré on
homology theory, and the names of Alexander, Veblen, Lefschetz,

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[1] Apparently this book has not been translated from the Russian. Such material
may be found in Chap. VI of *Anschauliche Geometrie* by D. Hilbert and S. Cohn-
Vossen or in *Einfachste Grundbegriffe der Topologie* by Paul Alexandroff.