REFERENCES

1. S. Kobayashi, *Transformation groups in differential geometry*, Springer-Verlag, New York, 1972.

2. T. Levi-Civita, *The absolute differential calculus (calculus of tensors)*, Blackie, Glasgow, 1926; republished by Dover, N. Y., 1977.

HOWARD JACOBOWITZ

Theory of group representations, by M. A. Naĭmark and A. I. Štern, translated by Elizabeth Hewitt, translation edited by Edwin Hewitt, Grundlehren der mathematischen Wissenschaften, vol. 246, Springer-Verlag, Berlin, Heidelberg, and New York, 1982, ix + 568 pp., $59.00. ISBN 0-3879-0602-9

A group representation is a homomorphism $G \to GL(V)$, from a given group G into the group of invertible linear operators on some vector space V (usually, but not always, over C). The modern theory of such representations first came into being in a remarkable series of papers by Frobenius in 1896–1900 (which, incidentally, still make excellent reading today; see [4]). Frobenius and his immediate followers (notably Schur and Burnside) dealt with finite groups, but their ideas were soon carried over to compact groups, where they blossomed in the 1920s into the beautiful Cartan-Weyl theory of representations of compact Lie groups.

Since then, group representations have cropped up in virtually every major area of mathematics, not to mention large chunks of theoretical chemistry and physics. Thus representation theory (especially of finite groups and of Lie groups) has become not only a specialty in its own right, but also a tool that almost every mathematician or physicist can make use of. It is not surprising, therefore, that one sees more and more basic textbooks on group representations these days, written from all sorts of perspectives and for all sorts of audiences.

The late Professor M. A. Naĭmark was one of the most important pioneers in several areas of functional analysis. He is probably best remembered for his work with I. M. Gel'fand in the 1940s on the foundations of C^*-algebra theory and on the unitary representations of the classical semisimple Lie groups. As explained in the translators' preface, this monograph on representation theory was Naĭmark's last major project before his death in 1978. He enlisted as a collaborator in this effort one of his former students, A. I. Štern, who has worked mostly on unitary representations of locally compact groups.

This book is "written for advanced students, for predoctoral graduate students, and for professional scientists—mathematicians, physicists, and chemists—who desire to study the foundations of the theory of finite-dimensional representations of groups". A broad audience indeed! No wonder, then,