of Frobenius are proven. Here the exposition differs necessarily from the standard treatment of the finite-dimensional case, and is very pretty. Except for the theory of the Lie derivative, the main features of the standard theory are all present. The integration of forms is excluded of course.

In addition to these chapters, the book contains secondary material on differential calculus, including an elegant proof of the inverse function theorem (Chapter I), on Riemannian metrics, including their relation to sprays (Chapter VII), on the spectral theorem for Hermitian operators (Appendix I gives a complete exposition of the subject in 7 pages), and on the classical language of the finite-dimensional calculus (Appendix II).

The extra care required by the infinite-dimensional extension is more than compensated by the clarification of the standard theory it provides, and the intrinsic geometric intuition it teaches. Thus the author's claim is justified, that the generalization is achieved "at no extra cost." Nevertheless, many a reader will feel frustrated by the lack of a significant example of a differentiable manifold which is not finite-dimensional. An example (credited to J. Eells, Jr.) is mentioned in the foreword, however, which is of central importance in current applications of differential calculus, and strongly reinforces the author's choices of definitions.

Finally, the author should be rebuked for allowing several careless errors to appear in the book. Although these are mathematically insignificant, they obscure the most important virtue of the book: the really subtle pitfalls have been expertly skirted. In spite of this minor negligence, the *Introduction* at once provides the expert with a fundamentally reliable handbook in an area of current research, and the novice with an elegant exposition of a basic category.

<div align="right">Ralph Abraham</div>

Differential geometry and symmetric spaces. By S. Helgason. Pure and Applied Mathematics Series, Vol. 12. Academic Press, New York, 1962. 14+486 pp. $12.50.

The mathematical community has long been in need of a book on symmetric spaces. S. Helgason has admirably satisfied this need with his book *Differential geometry and symmetric spaces*. It is a remarkably well written book that takes the "and" in its title seriously in both a material and spiritual sense. Indeed, about the first third of the book is devoted to a concise exposition of the differential geometry of abstract manifolds and Lie groups. But in addition to this obvious physical fact, the author has, whenever possible, chosen to emphasize the geometric point of view rather than the algebraic. The end result