exercises at this level of a student's development. The fourth chapter treats the principal theorems of the Cauchy theory together with its applications. Here the residue calculus is studied. Account is given of the homology-theoretic formulation of the Cauchy theory.

The second part of the book turns to the Riemann-Weierstrass approach. Chapter five is concerned with representation theorems, analytic continuation and noncontinuable power series. The sixth is dedicated to the gamma and zeta functions and the prime number theorem.

The final part of the book is entitled "Maximum principle and distribution of values." Chapter seven treats well-known majorization and growth problems: the Schwarz Lemma, the three circles theorem, the Phragmén-Lindelöf-Nevanlinna theorems, the Wiman theorem, the Denjoy-Carleman-Ahlfors theorem. The last two chapters are quite extensive. Chapter eight, Geometric function theory and conformal mapping, takes up hyperbolic geometry, the Riemann mapping theorem, the Dirichlet problem, the Evans-Selberg theorem, the Picard theorem and cognate results, distortion theorems. The supplementary section of the chapter includes an extensive summary of van der Waerden's treatment of uniformization. Chapter nine is devoted to the Nevanlinna theory.

Typical for the up-to-date character of the references are the last two of the text: Matsumoto, J. Sci. Hiroshima Univ. (A) **24** (1960) and Carleson, Bull. Amer. Math. Soc. **67** (1961).

MAURICE HEINS

Differential geometrie. By Detlef Laugwitz. B. G. Teubner Verlagsgesellschaft, Stuttgart, 1960. 183 pp. DM 24.60.

This is intended to be an introduction to classical differential geometry, tensor calculus, and Riemannian geometry. It is that and much more. The amount of material packed into 180 pages is amazing. Yet the book is also readable, with many passages giving motivation and surveying the methods.

The chapters are: I. LOCAL DIFFERENTIAL GEOMETRY OF SPACE CURVES (12 pages). II. LOCAL DIFFERENTIAL GEOMETRY OF SURFACES (43 pages). III. TENSOR CALCULUS AND RIEMANNIAN GEOMETRY (43 pages). IV. FURTHER DEVELOPMENT AND APPLICATIONS OF RIEMANNIAN GEOMETRY (49 pages). V. TOPICS IN DIFFERENTIAL GEOMETRY IN THE LARGE (17 pages).

Besides most of the standard material one would expect to find under such headings, many topics not usually covered in a text at this level appear: holonomy group of an affine connection; the kinematic line element and stability in dynamics; Finsler geometry; Helmholtz and Weyl solutions of the space problem; congruence in the large of isometric convex surfaces. Often special topics are treated as motivation for general approaches. For instance, the determination of all cylindrical helices from the condition on their curvature and torsion precedes the fundamental theorem for space curves. Again, indices creep into the vector notation of the first two chapters until a definition of tensors is inevitable. Differentiability hypotheses are usually carefully stated, and over 150 exercises are included. A valuable item is the table on page 155 showing the relationships between various differential geometric structures. The typography is excellent, although, as one must expect from the above description, a great deal of collateral material appears in small type, else how would it all fit in? The reviewer detected very few misprints or errors.

Such a text must fill two sometimes antithetical roles: it must "cover" the classical material, and it must not be so divorced from modern fashions that a student who masters the book finds he can communicate only with a vanished generation. The latter requirement can lead an author into effusions of theorems without proofs, or even adequate definitions. Laugwitz carefully avoids this pitfall by giving comparatively recent results, especially in differential geometry in the large, only if easily accessible methods can be used. Thus Fenchel's theorem on the total curvature of closed space curves, Liebmann's characterizations of spheres, and the Herglotz proof of the rigidity of convex surfaces clearly give the student a taste of what modern differential geometers do, without burdening him with details about fiber bundles, Betti numbers, or elliptic equations. Neither differential forms nor Lie groups are treated, and this is a wise abstention in a book of this kind. Within the bounds he sets himself, the author has done an excellent job. One may only object that the usual estimates give much smaller bounds for a two semester course.

LEON GREEN