Mathematische Statistik der Personenversicherung. By G. Rosmanith. Leipzig and Berlin, Teubner, 1930 (Sammlung Mathematisch-Physikalischer Lehrbücher—E. Treftz). vi+141 pp.

In his preface, the author states that he is trying to present in simple form material found largely in the books of such authors as Czuber, Blaschke, and Broggi. This has been done admirably—with the omission of difficult proofs—so that the book is within reach of students who have had a good one-year course in calculus.

The book does not pretend to be a text on actuarial mathematics. It does not carry the student through the calculation of premiums and reserves in life insurance. It takes up, rather, the processes connected with the construction of mortality tables, and explains in an interesting manner numerous methods used in graduation.

The first chapter deals with calculations that can be based upon the experience of insurance companies. Withdrawals are considered—the number supposed known—in the construction of *Select Tables.* Subnormal lives are discussed, as is also disability. In the second chapter population statistics are discussed, with graphical representations of the two survivor aggregates and the three death aggregates, from which the elementary death aggregates are to be computed. In Chapter 3, continuous variables are introduced, properties of the force of mortality are developed, also formulas for the probabilities of exit from a group through several causes, death, disability, etc. Then follow chapters dealing with the mortality laws proposed by De Moivre, Lambert, Gompertz, Makeham, Wittstein, Lazarus, Quiquet, and Dormoy. To the list given could have been added the product of the Makeham function by h^{x^2}. The computation of parameters for theoretical mortality curves is given in some detail, the King-Hardy method and the least square method with various adaptations. The last chapter deals with graduation by averaging and kindred processes, exhibiting the methods of Woolhouse, Karup, Jörgensen, Sprague, Higham, King, Gram, and Koeppler.

In a short appendix, the elements of the theory of probability are presented, followed by a sketch of Bernoulli's Theorem and its inverse, Bayes' Theorem, adjustment of measurements, Lexian ratio, frequency curves, and correlation. In places the appendix appears too condensed; in particular, on page 118, second paragraph; page 122, first two lines; page 134, second paragraph, this being an attempt to characterize in nine lines the Pearson system of curves. More light, however, is thrown by the example of a Pearson Type III, which follows. On page 127, the arithmetic mean is declared to be the "most probable" value—as is so often done. On page 132, the Lexian ratio is unfortunately inverted. At the middle of page 136, the range of the coefficient of correlation is set down as from 0 to 1, instead of from -1 to 1. Numerous numerical illustrations in the appendix make this part of the book decidedly helpful, in spite of its brevity.

Two mortality tables, the English Healthy Males HM, and Höckners LM, terminate the book.

A few misprints have crept into numbered formulas, such as μ_x for p_x, page 57, line 1; $x+n$ for $x+1$, page 60 (24); t for $-t$, page 87, (3); an extra x_i in the numerator of the last fraction, page 90, (11). On page 69, t appears in the denominator instead of i, and r is introduced without explanation. At the foot of page 61, it is not clear whether the probabilities are for exit or for remaining. At the foot of page 35, the nth root appears to be required. For the most part, the printing seems to be very good.

Rosmanith's book would be of great value to an actuary, as it gives in compact form so many different methods for constructing tables upon which the superstructure of actuarial mathematics is built.

E. L. DODD

Bibliography of Projective Differential Geometry. By Pauline Sperry. University of California Publications in Mathematics (Vol. 2, No. 6 (1931), pp. 119–127).

It has been said that a mathematician's laboratory is his library. The author of this remark neglected to tell us whether a bibliography of a particular field of mathematics is a test tube. At any rate a reliable bibliography is an essential instrument.

In the field of projective differential geometry anything like a complete bibliography has been lacking until recently. The reviewer in the current volume of this Bulletin called attention to an extensive and very valuable bibliography in the book *Introduction à la Géométrie Projective Différentielle des Surfaces* by Fubini and Čech.

Now we have to thank Miss Sperry for a bibliography of the publications of the projective differential geometers of the United States, Canada, and Japan. This bibliography has been compiled with painstaking care, and is complete as far as it goes. Actual count indicates that it includes references to the works of twelve authors and to sixty-one papers omitted from the bibliography of Fubini and Čech.

E. P. LANE

Lehrbuch der Funktionentheorie. By L. Bieberbach. Vol. I, third edition. Leipzig and Berlin, Teubner, 1930. vii+322 pp.

This revised edition is not appreciably an enlargement. The reviewer noted a few additions to the first edition: Schwarz's inequality, a theorem on power series, and some historical matter on normal families. Various errors in the earlier edition are eliminated, certain changes in notation are made, and numerous slight textual alterations improve the presentation. The most important change is the introduction into the text of sub-headings. These are in heavy type. They improve the appearance of the page and make the finding of desired subjects a great deal easier.

The third edition is thus not essentially different from the first edition of ten years ago. Bieberbach's volume remains, however, one of the best introductions to the theory of functions of a complex variable. It is comprehensive enough for the purpose, and its presentation is clear. The development leans less on the real variable than that of most texts. The point of view is thoroughly modern. The author has applied his unusual skill as a text-book writer to his favorite field with very happy results.

L. R. FORD