Introduction to the theory of bases, by Jurg T. Marti. xii+149 pages. Springer Tracts in Natural Philosophy, Vol. 18, Springer-Verlag, New York, 1969. U.S. $8.80.

This concise volume (20 of its 149 pages are reserved for the bibliography and the table of content) deals almost exclusively with the rather specialized topic of bases in Banach Spaces. Some known extensions of the results to more general linear topological spaces are gathered in the last chapter of the book, but it is fair to say that foremost in the author's mind is the theory of bases in separable Banach spaces. That this should be the case is not surprising—there still lies the unresolved conjecture of S. Banach. Thirty-eight years ago, S. Banach queried whether every separable Banach Space possesses a basis; no answer is yet available.

Anyone intrigued by this outstanding open problem or bold enough to tackle it, will find Marti's book a very handy source for the well-known results on the subject. In addition, the extensive bibliography should render the lesser known results easily accessible.

The book is very well organized and quite readable for anyone familiar with only the most elementary knowledge of Banach Spaces. The first chapter summarizes (without any proofs) the definitions and basic theorems of functional analysis. In all the other chapters, the theorems are proved in great detail. Ch. II treats the various types of convergence of series in Banach Spaces and contains the proofs of the Orlicz–Pettis theorem, which links convergences in the weak and strong topologies, and of the Dvoretzky–Rogers theorem, which asserts that, in the case of infinite dimensional Banach Spaces, absolute convergence is not implied by unconditional convergence. Ch. III, IV and V present the theory of bases in Banach Spaces, and in addition, one finds here a neat summary of the well-known examples of bases for the standard spaces. Bases in Hilbert space are dealt with briefly in Ch. VI. What some authors refer to as "bases of subspaces" are called "decompositions" by Marti. They are discussed in Ch. VII and applied to the theory of Banach Algebras in Ch. VIII. Finally, Ch. IX presents the extension of the theory to more general linear topological spaces.

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Creep problems in structural members, by Yu. N. Rabotnov. xiv+82 pages. (Translation from the original Russian.) North-Holland, Amsterdam, Series in Applied Mathematics and Mechanics, 1969. U.S. $33.60.

This scholarly work combines, in an uncommonly comprehensive way, the mathematical and technical aspects of the theory of creep, the concern of which is understood to include "the totality of effects which can be explained on the assumption that the relationship between stress and strain is time-dependent." In the first three chapters the fundamental concepts of solid mechanics along with introductions to the mathematical theories of elasticity, plasticity and viscoelasticity are presented. Ch. 4 is devoted to an exposition of theories of nonlinear creep in a uniaxial state of stress and corresponding fundamental experimental results; while, in the following chapter, several possible ways of describing isotropic and anisotropic creep are considered and a selection among these is made on the basis of agreement with the experimental results that are available for this case. Ch. 6 presents a review of criteria, mostly restricted to the case of a uniaxial stress state, for the long term failure of materials. In Ch. 7 the general theory of steady state creep is given and certain methods of approximation are introduced; while in the following three chapters application is made to bending and torsion, plane axisymmetric problems and plates and shells. In Ch. 11 problems of transient creep are treated while in Ch. 12 methods of solving certain geometrically nonlinear problems including buckling and stability problems, are described. Finally, there is a bibliography of almost four hundred references.

The book is written in a clear and lucid style.

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Linear algebra and matrix theory, by E. D. Nering. xii+352 pages. 2nd ed., Wiley , New York, 1970. U.S. $10.95.

This book, in its general conception the same as the first edition (1963), tries to do justice to two of the competing methods of teaching linear algebra; the modern algebraic method built on the axiomatic introduction of a vector space and the approach through coordinates, using matrices as representatives of linear homogeneous transformations, bilinear and quadratic forms. After a thorough treatment of the usual material geometrical aspects are dealt with only in the last chapter (VI) to serve as a background for a brief treatment of linear inequalities and linear programming, communication theory, calculus of vector valued functions, linear differential equations, oscillations of mechanical systems, and finally, representation theory of finite groups with applications to symmetric mechanical systems. From this list it is clear that the book cannot possibly be entirely self sufficient. Indeed at the end of each section one finds references to more specialized works.

The reader is evidently not meant to be a newcomer to this kind of mathematics or to mathematics in general. The style is concise and to the point. Illustrative examples often refer to other parts of mathematics. There are plenty of exercise examples with some answers put together at the end of the book. It is a work book which can serve as a text or companion to many courses on linear algebra.

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