for partial differential equations of elliptic and hyperbolic type with constant coefficients, in various classes of functions and distributions. However, the book is of value to the general reader, since it contains good accounts of such topics of general interest as a theory of linear topological spaces, generalized functions, distributions, convolutions, and Fourier transformations of generalized functions and distributions. It also contains a good account of such important topics in the theory of partial differential equations as fundamental solutions of equations with constant coefficients and the differentiability of solutions of hyperelliptic equations. It contains a statement and proof of the Sobolev lemma, and it is the only book which contains a proof of the important Seidenberg-Tarski theorem. One typographical error was noted: in the statement of the theorem on page 218, change sigma to a on the third line from the bottom and 16 spaces from the left.

P. D. L.

50[L].—SOLOMON LEFSCHETZ, *Differential Equations—Geometric Theory*, second edition, John Wiley & Sons, Inc., New York, 1963, x + 390 p., 23.5 cm. Price $10.00.

The second edition of Lefschetz's now classical book has a considerable amount of important new material. After the preliminary chapters containing standard information on existence theorems and linear systems, including Floquet theory and stability, the author proceeds to a detailed study of Liapunov stability. Considerable emphasis is put on the direct method. An important feature is the treatment of the converses of the Liapunov theorems in case the system is suitably stable at a critical point.

After a study of the n-dimensional case, where many of the results are still fragmentary, there is a detailed study of two-dimensional systems, including the critical cases and structural stability.

The remainder of the book is concerned with equations of the second order, including the Cartwright-Littlewood theory and the Hill-Mathieu equations.

The methods used are both analytic and topological. The reader untrained in geometry may have difficulty with the close geometric reasoning of the latter chapters. On the other hand, the material is not readily available in any other single source.

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51[P].—S. G. LEKHNITSKII, *Theory of Elasticity of an Anisotropic Elastic Body*, Holden-Day, Inc., San Francisco, 1963, xii + 404 p., 26 cm. Price $10.95.

This monograph is a translation from Russian of a text written in 1950 by one of the leading pioneers in the theory of anisotropic elasticity. His earlier book *Anisotropic Plates*, written in 1947, is already classical. The present monograph represents the results of the author's investigations (and related works) on another class of important problems in anisotropic elasticity.

The author's stated purpose in writing this book was to bring together some scattered results on anisotropic problems which have appeared in the literature and to present these results in a systematic and orderly manner, so that the basic material would then be readily available to the scientific public. The book makes no attempt to investigate all questions of the theory of elasticity for anisotropic bodies, but restricts its attention to certain parts of the theory which have been rather thoroughly studied but not previously organized. For instance, the author does not treat the questions of stability and deflections of elastic plates, since these problems were covered in his earlier book. He also omits all problems of equilibrium and stability of anistropic shells as well as questions connected with plasticity or large deformations of anisotropic bodies.

Chapter I deals with the general equations of elasticity of an anisotropic body. It contains numerous examples and the details of the derivation for various types of anisotropy. Chapter II investigates the simplest cases of elastic equilibrium—stretching and bending of rods and plates under various conditions and with various types of anisotropy. Chapters III and IV treat problems connected with an anisotropic body bounded by a cylindrical surface for which the stress does not vary along the generator. Here the author first derives the general governing equations and then treats in detail generalized plane stress problems, torsion problems, bending problems, etc., giving particular consideration to the case of cylindrical anisotropy. In these sections he extends Muskhelishvili's work in the plane theory of isotropic elasticity to the anisotropic case. Chapter V deals with the state of stress of an anisotropic cantilever of constant cross section deformed by a transverse force. The final chapter covers symmetric deformation and torsion of bodies of revolution. Here a number of examples are treated in detail.

The author has consistently kept his exposition brief but lucid. As a result the book is well within reach of the senior graduate student. The English translation will certainly be welcomed by research scientists in the physical and engineering sciences and by design engineers.

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52[Q, S].—RALPH DEUTSCH, *Orbital Dynamics of Space Vehicles*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1963, xv + 410 p., 24 cm. Price $16.00.

The advent of the Sputniks has brought a rash of what purport to be Space Age textbooks; and this is another. Some appear to be motivated by an uncontrollable desire to rush into print; and, on the other extreme, some appear to make a serious effort to make the material comprehensible to beginners and the uninitiated. The present volume under review has a peculiar place in this spectrum: it is not elementary, and it attempts to cover all aspects implied by its adopted title. Within the bounds of 410 pages, this is patently impossible, and therein lies the principal criticism. Many books come into being naturally from the notes of a course which the author has taught several times. They become "tried and true". It may well be that the present material came from a course which was taught once. But there is a wide disparity between treatments, e.g., Cowell's method is presented on one page of prose, whereas Musen's modification of Hansen's lunar theory as applied to artificial satellites is copied in great detail from the published papers. One also