ied. It is well known that in the simplest case of Nevanlinna theory of meromorphic functions in the plane the choice of the exhaustion is decisive in such questions but there the limits are taken with respect to a particular linearly ordered exhaustion.

JAMES A. JENKINS

A Hilbert space problem book by Paul R. Halmos. The University Series in Higher Mathematics, Van Nostrand, Princeton, N. J., 1967. xvii+365 pp. $11.50.

This book consists of 199 problems with hints and solutions, comprising 20 chapters. The chapter headings are: Vectors and spaces, Weak topology, Analytic functions, Infinite matrices, Boundedness and invertibility, Multiplication operators, Operator matrices, Properties of spectra, Examples of spectra, Spectral radius, Norm topology, Strong and weak topologies, Partial isometries, Unilateral shift, Compact operators, Subnormal operators, Numerical range, Unitary dilations, Commutators of operators, Toeplitz operators.

The book is well suited for graduate students who have already had a course in Hilbert space theory. One is expected to know the spectral theorem and Fuglede's Theorem for instance, and there is a short discussion of both, but no proofs. The problems include the very simple as well as the contents of recent papers. The hints range from the pithy exhortation "Polarize" to a paragraph of detailed instructions. Accompanying the solutions are references to the literature which will easily enable one to follow up a topic of interest. (These references are by no means complete, and in several cases the author has been forced by demands of space to omit not only sharper and more technical theorems, but even the mention thereof.)

The book succeeds admirably in two respects. First, it presents a diverse collection of tools, techniques, and tricks which should prove valuable to the Hilbert space apprentice. Second, there is a reasonable survey of operator theory in the space allotted. Included, with proofs, are

(i) a characterization of the invariant subspaces of the unilateral shift,

(ii) the coisometric extension of a contraction T, where T^n converges strongly to 0,

(iii) the unitary dilation of a contraction,

(iv) von Neumann's Theorem that the unit disc is a spectral set for any contraction, and

(v) the F. and M. Riesz Theorem.

The reader is also briefly introduced to several topics of current interest, such as Toeplitz and subnormal operators, and commutator theory.

Several prominent features of the solutions deserve comment. First, the author displays a definite predilection for the soft, algebraic, discrete approach versus the hard, analytic, continuous one. Second, he eschews proofs which invoke a powerful but peripheral theorem, preferring the longer but more elementary approach. (For example, there is a careful avoidance of the Baire Category Theorem.) Finally, the solution to Problem 165 (If a contraction is similar to a unitary operator, must it be unitary?) is too clever by half. Mention should be made of the more pedestrian solution (modify one weight in the bilateral shift), which is at once, simple, constructive, and more useful.

In conclusion, the style of the text is breezy and both beginners and experts will find it a lot of fun to read. Both should encounter enough problems to puzzle over. As an added attraction, the preface contains the final score in the eigenvalue-proper value contest.

JOSEPH G. STAMPFLI

Plateau's problem: an invitation to varifold geometry by F. J. Almgren, Jr. Mathematics Monographs Series, Benjamin, New York, 1966. 74 pp. $7.00; paper.: $2.95.

This short book is devoted to the task of giving the reader a digestible, but yet a rather penetrating account of a new and promising approach to the old and formidable Plateau's problem. In simple terms, the problem of Plateau asks for the existence and behavior of a surface of smallest area with prescribed boundary. The precise formulation of the problem depends upon the definitions that are adopted for "surface," "area," and "boundary," and this book describes a setting in the framework of geometric analysis which gives meaning to these terms, so that a solution can be found to a very general form of the problem. The setting is similar to the one that was employed by W. H. Fleming and H. Federer in their development of the theory of integral currents. The concept of surface in this approach assumes a role similar to that played by distributions in the theory of differential equations and the definition used for "surface" stems from the notion of *generalized surface* which was created by L. C. Young some twenty-five years ago. Thus, a k-dimensional surface (or in the terminology of this book, a k-dimensional *varifold*) is a particular kind of functional defined on the space of infinitely differentiable k-forms. A smooth surface can be regarded as a varifold