original value. Such a state of affairs is at least as intolerable for the physicist and engineer as for the mathematician; if a scientist is ever tempted to question the value of mathematical abstraction, he should find in this book some measure of proof of the thesis that it is out of such abstractions that the solutions to very practical problems are created.

The theory of Riemann surfaces requires for its comprehension a great deal of modern mathematics. The author assumes no such knowledge on the part of the reader; four of the ten chapters (2, 4, 5, and 7), entitled "General topology," "Covering manifolds," "Combinatorial topology," and "The Hilbert space of differentials," introduce the reader to basic ideas in modern mathematics. These chapters are not surveys of the respective subjects but rather carefully developed treatments, with selection of material judiciously made in terms of the over-all aim of the book.

Chapter 1 is largely intuitive in its mathematical approach; it seeks to familiarize the reader with fundamental questions at issue, drawing on problems from both mathematics and physics. Chapter 3 is more formal; it proceeds from the abstract definition of Riemann surfaces (given in Chapter 2) and power series to build the concept of the complete analytic configuration of the analytic function. But it is in the remaining four chapters—"Differentials and integrals," "Existence of harmonic and analytic differentials," "Uniformization," and "Compact Riemann surfaces"—that fundamentals of the theory are developed.

The author has done an excellent job on a difficult assignment. His book will be of great value to the mathematician and should prove equally valuable to many scientists.

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How to Estimate the Building Needs of a College or University. A demonstration of methods developed at the University of Minnesota. William T. Middlebrook. University of Minnesota Press, Minneapolis, 1958. 169 pp. Illus. $15.

This study of plant needs at the University of Minnesota up to the year 1970 originated in a commission set up by the state legislature in 1955 to study state building requirements. The staff assembled to undertake this long-range forecast at the state university rejected the customary procedure of calculating future requirements on a per-student square-foot basis. So general a measure was inadequate for the varied educational and research tasks of a great state university. Instead, the university undertook an elaborate inventory of existing facilities and space utilization as well as a careful projection for the future. The methods employed and the results realized are reported in this volume, by the well-known vice president for business administration of the university.

There is little in the analysis which is new to those who have been studying enrollment trends, space utilization, and plant requirements. What is impressive is the careful amassing of data for the various instructional programs and the realistic use of simple analytic tools to project future needs. For example, employing as its basic unit of measurement square footage per student station, the study envisages an improvement in space utilization as enrollments increase. With a 135 percent increase in students on the Minneapolis campus projected for the period 1954 to 1970, the report indicates a need for a 93 percent increase in laboratory space, a 44 percent increase in classroom space, a 92 percent increase in library space, a 132 percent increase in faculty offices, a 75 percent increase in research facilities, a 51 percent increase in administration space, and a 64 percent increase in plant operation facilities. The result is an expressed need for over 128 million dollars' worth of building and land expansion and rehabilitation between 1957 and 1969. One wonders how the state of Minnesota will meet this staggering, but undoubtedly worth-while burden.

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New Books

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Gestation. Transactions of the fourth conference, 5–7 Mar. 1957, Princeton, N.J. Claude A. Villee, Ed. Josiah Macy, Jr. Foundation, New York, 1958. 216 pp. $4.50.

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Fundamentals of High Polymers. O. A. Battista. Reinhold, New York; Chapman & Hall, London, 1958. 150 pp. $5.50.

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Man and His Physical Universe. Frank Covert Jean, Ezra Clarence Harrah, Fred Louis Herman. Samuel Ralph Powers, editorial collaboration. Ginn, Boston, ed. 3, 1958. 666 pp. $6.50.

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Principles of Genetics. Edmund W. Sinnott, L. C. Dunn, Theodosius Dobzhansky. McGraw-Hill, New York, 1958. 473 pp. $6.75.

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