black-and-white photography and hence are just as useful today as they were yesterday. Allen's personal comments are apt and reflect years of experience. My review is intended to indicate the scope and place of the book and not to criticize an elder statesman of microscopy.

OSCAR W. RICHARDS
Research Center,
American Optical Company

Historical Geography of the North Carolina Outer Banks. Gary S. Dunbar. Louisiana State University Press, Baton Rouge, 1959. xii + 234 pp. Illus.

This well-written, logically organized, well-documented book deals with the barrier island chain between North Carolina's Cape Lookout and the Virginia line. These barrier islands lie far from the mainland. Since so much of the Banks consists of sandy waste, the reader constantly asks himself what it was that attracted the original settlers.

Though Roanoke Island is not a part of the Outer Banks, it is included in the study because of its proximity, cultural similarity, and historical significance. It was selected by the English settlers under Raleigh as the site for a colony and as a base from which to launch raids on the Spanish Indies; but, as the author brings out, the English "could not have made a worse selection." This colony became the "lost colony"; what happened to it is not known, but destruction by Indians seems probable. The colony contributed nothing to the permanent settlement of the Banks. The Jamestown colony of 1607, however, was able to start with a somewhat better knowledge of the topography and natural resources as a result of the Roanoke experiments.

It is primarily to describe the nature of the settlements of the Carolina Banks that this study was made and that the volume was published. An interesting and valuable part of the study deals with the introduction of plants by the settlers, who envisioned them as profitable export products; the new settlements positively had to produce some item or items needed by the mother country. Cultivation of mulberry trees for a silk industry, viniferous grapes, figs, lemons, almonds, olives, and cassava was tried; most of these projects either failed completely or showed little promise of success. By this time, however, the Virginia agriculturists had found in tobacco the economically successful crop they sought.

The author points out the value to the white settlers of the cultivated Indian plants—in particular of the great "crop trilogy," maize, beans, and cucurbits. Indian stores of corn were invaluable in helping the colonists through the first winters.

The first permanent settlement on the Outer Banks was made in the 1660's; almost all of these settlers were Virginians, who by this time had solved most of the problems of pioneering in the New World and who brought with them the Virginia system of growing tobacco on riverine plantations and of rearing livestock on necks and islands. The first homes on the Outer Banks were all built on the "hammocks" (variant of "hummocks")—wooded tracts usually slightly above the surrounding area and on the sound side. These "hammocks" are also the homesites today. Yards and gardens were enclosed by fences to protect them from roving livestock.

Fishing in the sound waters soon became an important activity. Menhaden fishing was unsuccessful, however, because the water in the sounds is so shallow that fish do not congregate there in great numbers and purse seines cannot be used effectively. North Carolina's impressive menhaden-fishing industry is carried on in outside waters and hence is of no direct concern to the "Bankers."

The tourist business seems to hold about the only promise for the "Bankers" today. A flood of tourists descends on the Banks each summer, raising the incomes of all local residents.

Extensive and detailed notes cover each chapter in this book; these are so interesting and so informative that even the casual reader finds himself delving into them. The person much interested in the area would find these notes one of the most satisfactory parts of the volume. The cartographic work is of high quality—accurate, meaningful, and pleasing to the eye. There is an excellent bibliography and a helpful index.

C. LANGDON WHITE
Geography Department,
Stanford University

The Measurement of Values. L. L. Thurstone. University of Chicago Press, Chicago, 1959. viii + 322 pp. $7.50.

This volume brings together 27 of Thurstone's hitherto scattered papers on the measurement of attitudes and subjective values. Included are all of his classic contributions to psychophysics.

When Thurstone went to the University of Chicago in the 1920's he began a sweeping reanalysis of the logic of psychophysics, the field of inquiry started by E. H. Weber and G. T. Fechner in an attempt to develop rigorous statements of the relations between sensations and the stimuli that produced them. One of Thurstone's distinctive contributions was to develop experimental methods and a rationale for dealing with values, attitudes, and similar subjective variables that cannot be related to physical quantities.

Thurstone's papers on subjective measurement and attitude measurement pretty completely made over the field of psychophysics, replacing its former limitations with a wide range of useful applications in the social sciences and substituting a systematic and meaningful understanding for the empirical "Weber's law" and "Fechner's law." Such papers as "A law of comparative judgment," "A mental unit of measurement," "Rank order as a psychophysical method," "The indifference function," "Theory of attitude measurement," and "The measurement of change in social attitude" are essential reading for any student of psychological measurement. But copies have been increasingly hard to acquire. The new book solves that problem and will be of great convenience.

The idea for the collection came originally from some of Thurstone's former students, but he himself was largely responsible for selecting the papers to be included. Mrs. Thurstone, always his close professional colleague, prepared an explanatory preface and saw the volume through the press.

DAEL WOLFLE
American Association for the Advancement of Science

Inside the Living Cell. Some secrets of life. J. A. V. Butler. Basic Books, New York, 1959. 174 pp. Illus. $3.50.

Perhaps the most useful way to evaluate this book is to compare it with R. W. Gerard's *Unresting Cells,* published almost 20 years earlier. Both books are popularizations of cell physiology, but popularizations at a very high level of sophistication. Each presents a view of the facts as seen through the prism of the author's own lucid and critical intellect. Both books are excellent.

It is interesting to note the large number of topics in Butler's book that were either entirely unknown in 1940 or but dimly foreshadowed: the existence and importance of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA); heredity as a problem in code construction; the Watson-Crick model of DNA replication; the role of antivitamins; the relation of genes to enzymes, as shown by the Beadle-Tatum school; the strange behavior of bacteriophages; and Oparin-style theories of the origin of life. Who