these classifications is not so much to highlight significant structural features of household composition, but to understand the kind of environment in which the child is raised. Like household composition, kinship relations are discussed primarily with the view of how the individual is socialized rather than the structural relationships exhibited by the terminology and the interpersonal relationships. Nurge's analysis and interpretations are provocative and present insights into the way households and kinship systems are organized.

Detailed comparisons with other studies of Philippine villages are not made, an omission that scholars concerned with the Philippines will miss. Perhaps this is a subject for a future study because it is important to know how typical, or atypical, "Guinhangdan" is to other Philippine communities.

In the initial chapter Nurge credits the work of Fred Eggan and his students in the Philippines. Nurge, who is one of Eggan's students, has made an important contribution to this series of significant studies.

EDWARD P. DOZIER
Department of Anthropology, University of Arizona

Polymer Technology

The scope of volume 1 of **Testing of Polymers** [Interscience (Wiley), New York, 1965. 493 pp., $19.50], the first volume of a projected series on the testing of polymers, is much narrower than its title might lead one to expect. As the editor, John V. Schmitz, points out in his preface, the series was originally planned as a multivolume *organized* treatise to cover various aspects of testing polymeric products, with emphasis on laboratory procedures for evaluating end-use performance attributes. This would have been a unique contribution to the field, markedly different in coverage from the well-known treatises on basic physical measurements and on analytical procedures for determination of chemical structure and composition. Apparently it was not possible to get the cooperation of testing engineers or management in industrial laboratories to disclose their simulated service and processability tests. Therefore, midway through the project, the format was changed to include individual articles, with no systematic attempt to maintain a rigid organization.

Two introductory chapters that give background information on standardization activities and conditioning equipment for polymer testing precede two chapters that present the theory and mathematical relationships involved in static and dynamic mechanical testing. The next five chapters, approximately one-third of the text, deal with electrical property tests. This portion of the volume appears to be part of the original outline, although here again the emphasis is on the standard electrical parameters rather than on unique evaluation tests. The chapters by Warfield (U.S. Naval Ordnance Laboratory) and Dakin (Westinghouse Electric Corporation) do introduce some discussion of the application of electrical tests to end-use problems. The final four chapters on testing procedures cover such diverse topics as cavitation erosion, odor and taste transfer, indentation and compression of floor coverings, and permeability measurements. The book is concluded with a bibliography of sources of information on properties and test methods relating to polymers, supplementing the general and special topic references cited at the end of each chapter. The author and subject indexes are adequate.

The authors have handled their assignments well. The editor and the publisher are to be commended for initiating this effort to fill a gap in the literature on the practice and application of testing of polymeric products. It will be interesting to see whether, in the subsequent volumes, the editor is successful in persuading testing engineers and their management to contribute chapters that deal with testing technology as applied to "research, development, engineering, and manufacturing objectives."

G. M. KLINE
National Bureau of Standards

Textbook of Geology

In planning and preparing **Geology: A Survey of Earth Science** (Crowell, New York, 1965. 653 pp. $9.50), the author, Edgar Winston Spencer, has attempted to provide a volume in geology and related earth sciences that will fulfill the textbook needs in several different types of elementary courses offered at the college level. No background in science is assumed. The volume's primary use is intended to be in the one-semester survey courses in earth science that are offered liberal arts students or in courses designed to train secondary school teachers of earth science.

Approximately 80 percent of the subject matter is within the scope of elementary physical and historical geology, with the coverage weighted slightly toward historical geology. The remainder of the material covers topics within the fields of meteorology and astronomy.

Spencer's treatment of historical geology is an improvement over that given in many texts. He has eliminated the pedestrian period-by-period approach to the subject and has supplanted it with what might be called a topic-by-topic approach. After developing the basic concepts and techniques pertinent to the unraveling of the record in the rocks, the author presents a series entitled "Sketches from Geologic History." The "sketches" are a series of selected topics (for example, the Appalachian Mountains) by which the philosophy and methods used in determining the effect of many interrelated physical, chemical, and biological processes during long periods of geologic time are illustrated. The material covering the history of life and the evolution of organisms, for example, is also well organized and well presented.

Considerable space throughout the text is devoted to tracing the historical development of various scientific concepts, a desirable feature in that it provides background material. It also allows students to become acquainted with the evolutionary nature of the growth of scientific ideas.

The treatment of physical geology is similar to that in most other elementary texts of this kind. However, the author's decision to rigorously avoid even simple arithmetic or chemical equations seems to have led, in many instances, to statements that are confusing. For example, the only two chemical equations that appear in the text are only partially balanced, and the three short paragraphs devoted to the first and second laws of thermodynamics will contribute very little, if anything, to a student's background information. In this portion of the text the coverage seems to be a case of too much material spread too thinly.

The book is well illustrated, although some of the photographs, particularly the close-up photographs of rocks, are poor. A list of selected references that may be used for parallel reading in a

survey course is included, but the enterprising student will find it difficult to go beyond the scope of the book, for the author provides neither an organized bibliography nor footnotes, although many references are scattered throughout the text.

The book is worthy of consideration, and indeed has much to recommend it, as a text for use in one-semester survey courses designed for students with nonscientific backgrounds. But one wonders whether, for students who wish to become secondary school science teachers, the introduction to the subject of earth science must be written at such a low level.

PAUL B. MYERS, JR.
Department of Geology,
Lehigh University

Metabolic Aspects of Cancer

There is at present no particularized and generally accepted theory of cancer, biochemical or otherwise, and any author who attempts to write a book like this one—**Biochemical Approaches to Cancer** (Pergamon, New York, 1965. 210 pp., $3.95)—will inevitably find himself cursing the darkness even while trying to light a candle. The author, Eric Reid, set out to examine cancer as a metabolic derangement, and to inquire whether there are any molecular defects which distinguish cancer tissues or which occur in precancerous tissue, but more particularly to emphasize the areas that are worthy of attention. The approaches chosen are necessarily coupled to existing theories of carcinogenesis, and Reid quickly passes over the theories of Warburg, Greenstein, and Green, dismissing the latter with a quotation by Sir Macfarlane Burnet. Later in the book (p. 155) Reid again dismisses immunological theories with the following comment— " . . . there being at present no imaginable mechanism whereby immune processes, for example at the cell surface, could influence genetic processes." Of course there *are* imaginable mechanisms, and their conception should not be discouraged in a book of this type. Reid's main preoccupation is *metabolism*, the dynamic, branched, flow pattern of chemicals that is the pulsating heart of life processes. Carbohydrate and fatty acid metabolism are discussed together, with deemphasis of the Warburg theory—"at least it seems that a respiratory defect is not a prime cause of cancer" (p. 24). Reid cited evidence that high glycolysis is probably a feature of only the advanced malignancies, and he did not have an opportunity to examine more recent claims made by Burk that, under special conditions, detectable differences between glycolysis in minimal deviation hepatomas and normal liver could be shown.

Protein and nucleic acid metabolism were covered in detail, and a special chapter on control mechanisms led to the conclusion that the choice between DNA, RNA, or protein as primary targets for carcinogens is still unclear.

Reid, who clearly favors the general idea of somatic mutation, achieves a tentative synthesis of this with the viral theory and the deletion theory, especially the more recent concept of feedback deletion. The final chapter, on biochemical pharmacology, is useful in relation to cancer chemotherapy and reiterates the earlier distinction (p. 23) between the biochemistry of carcinogenesis and the biochemistry of chemotherapy.

VAN RENSSELAER POTTER
McArdle Laboratory for Cancer Research, University of Wisconsin Medical Center, Madison

Crystallography

Sir Lawrence Bragg's well-known, classic, original edition (1937) has been revised and updated in an expanded version, **Crystal Structures of Minerals** (Cornell University Press, Ithaca, N.Y., 1965. 419 pp., $11.50) by Bragg and G. F. Claringbull, with a chapter by W. H. Taylor. Whereas the earlier edition described all of the then-known mineral structures, the present version describes all the *important* ones (the term is interpreted liberally to allow inclusion of wadeite, for example, to represent rare structure types); all other structures published by the end of 1963 are cited in useful lists at the ends of the several chapters. The broad outlines of the book are unchanged; a crystallographic information "explosion" has caused the authors to omit unnecessary sections dealing with methods of x-ray analysis, and to condense the section on the relation between optical properties and crystal structure that was an impressive addendum to the description of the structure of calcite in 1937. Important extensions of knowledge between 1937 and 1965 are reflected in the increases of certain chapters shown in the accompanying box. Certain other chapters are almost unchanged in length or, as noted above, are reduced in some sections or even deleted.

A few changes in terminology—such as that from *vesuvianite* to *idocrase* and that from *titanite* to *sphene*—may bring smiles to the faces of some mineralogists who are interested in nomenclature, and in one or two instances the lack of such change may result in critical comments. In the latter group is the failure to adopt Strunz's useful Greek names for the subgroups of the silicates. The heading of chapter 9, for example, "Silicates containing separate SiO_4 groups," could more concisely and more elegantly be "Nesosilicates," which surely is no less comprehensible to most mineralogists today. The first step in this direction had already been taken on page 172, where the Strunz names are listed. I would be better pleased if the second step had also been taken, but that is of course a matter of opinion.

Like the first edition, this new edition, published almost 30 years later, will surely become an important reference source for students at all levels

	1937 edition	*1965 edition*
Chapter 7, on oxygen compounds (carbonates, sulfates, and the like)	25 pp. 10 minerals	39 pp. 15 minerals + 112 references to other minerals
Chapter 12, on chain-structure silicates (pyroxene and amphibole)	19 pp. 2 mineral groups	27 pp. 5 or more groups + 12 references to other minerals
Chapter 13, on sheet-structure silicates	27 pp.	40 pp.