sented an immense mass of data, dissected and examined in painstakingly minute detail. It seems impossible that such a book could make pleasant reading, and yet it does. It is not easy to read; nearly every sentence requires and inspires careful thought. But it is beautifully organized and well written in plain English. It is a book that no one working in any of the social sciences can afford to be without.

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Physics

Theory of Crystal Dislocations. A. H. Cottrell. Gordon and Breach, New York, 1964. x + 91 pp. Illus. Paper, $2.50; cloth, $4.50.

This brief monograph is intended to outline the basic theory of dislocations. It is excellent in that basic ideas concerned with dislocations are very clearly described. The book is not intended to be, nor is it, a textbook on the subject. It is a pity that Cottrell did not include a few beautiful photographs of dislocations in crystals and some indication of his estimate about the future of the field. Both would have added to the value of the book.

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Psychology

New Directions in the Study of Language. Eric H. Lenneberg, Ed. M.I.T. Press, Cambridge, Mass., 1964. x + 194 pp. Illus. $5.

This book provides an excellent introduction to certain points of view toward and to some of the methods for investigating language. It consists of four papers (by Leonard Carmichael, Edmund Leach, Eric Lenneberg, who substituted for A. R. Luria, and George A. Miller) and a discussion by Frieda Goldman-Eisler which were presented in a symposium, organized by Lenneberg, held during the Seventeenth International Congress of Psychology in Washington, D.C., in 1963, and two other papers (by Roger Brown and Ursula Bellugi and by Susan Ervin) which were presented at other sessions of the congress.

Carmichael links human speech with the vocal skills and vocal functions of lower animals, thus pointing to the continuity of evolution of language, and brings out the important point that the structures involved in human speech undergo a good deal of postnatal maturation. In stressing biological aspects of human language, Carmichael is joined by Lenneberg, who argues that there may be specific biological propensities in the human species which are responsible for the appearance of the unique features of human language. Lenneberg also offers some evidence that can be interpreted as supporting genetic transmission of capacities for language. He disputes, with evidence, the notions that the appearance of human language is due to man's general intelligence or the weight of his brain, preferring the idea that species-specific biological capacities are responsible, although their character is as yet unknown. By bringing out biological aspects of human speech, Carmichael and Lenneberg emphasize viewpoints and evidence not widely considered in discussion of human language.

Miller reiterates his interest in the psychological character and effects of syntactic and semantic rules, describing some relevant research, and expresses his concern that if these rules are to be conceived as habits the habits must be of a kind that permit the language user to deal with new linguistic events—that is, to reflect the pervasive productive character of language. He reports work directed to the understanding of the process involved in negation.

The papers by Brown and Bellugi, by Ervin, and by Goldman-Eisler are data-oriented. The first two report empirical attempts to gain further understanding of the conditions and processes involved in the acquisition of language by the child. They are interesting and thought provoking. Goldman-Eisler summarizes much of her own research, designed to use the phenomenon of hesitations in the course of speech as a means of isolating the units of which speech is formed.

Leach's paper is concerned with animal names and categories involved in taboo, verbal abuse, and the like. His point appears to be that the social distance of the familiar animals from the human self provides, among other things, a basis for the distribution of these animal names into those which are affected by taboo and used in verbal abuse and those which are not.

While this collection of papers does not serve as a general introduction to all the extant and widely employed ways of thinking about and studying language, it does provide a rich, thoughtful, and interesting variety. It can be recommended.

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Allendoerfer Advanced Series

Projective and Related Geometries. Harry Levy. Macmillan, New York, 1964. x + 405 pp. Illus. $11.

During the present century research in geometry has been characterized by an ever increasing use of nongeometric tools. As a result, geometry courses required more and more outside knowledge, and finally they either disappeared altogether from the undergraduate curriculum, or became disguised courses in some other field. An important example is the linear algebra course which is presented as projective geometry. Recently, this historical trend has given rise to a counterbalancing interest in developing a 1-year geometry course for undergraduate mathematics students, a course that would somehow convey the flavor of geometry as a study in itself. An important feature of this book is that it is in fact a geometry book, although it relies more heavily than I like on linear algebra. The first chapter sets the tone, for the concept of transformation is introduced on page 1 and is immediately followed by transformation group and invariance. The inevitable digression on linear algebra is then presented. In this digression Levy fails to make use of the fact that the notion of transformation group is already available, and relies instead on the cumbersome and antiquated theory of n-dimensional determinants. The chapter ends with two examples—(i) the group of motions of the Euclidean plane, defined by equations and not by the property of being isometric, and (ii) projections in Euclidean space, for which the equations are immediately developed.

Later chapters deal with projective

spaces of dimension one and two, conics and quadratic forms, and subgeometries of real projective geometries. Geometric ideas are kept in the foreground, but algebra remains the principal tool of proof. The great defect of the book is the impression that it leaves with the student—the impression that geometric feeling becomes precise only when translated into nongeometric language. How different from the impression given by a study of the group of isometries of the Euclidean plane, based on the theorem that a rigid motion is determined by the images of three noncollinear points!

Nonetheless, I feel that this is a teachable text, worthy of consideration by anyone who contemplates teaching a basic course in geometry.

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Flora Europaea

Flora Europaea. vol. 1 *Lycopodiaceae to Platanaceae*. T. G. Tutin, V. H. Heywood, N. A. Burges, D. H. Valentine, S. M. Walters, and D. A. Webb, Eds. Cambridge University Press, New York, 1964. xxxiv + 464 pp. Maps. $16.

This is a remarkable book, the first of four projected volumes. Werner Rothmaler proposed a flora Europaea about 1940, but World War II prevented its preparation. The present work was discussed among European botanists in 1954, and in 1956 a steering committee of nine was formed at Leicester, England. In 1958 the committee published a booklet, *The Presentation of Taxonomic Information: A Short Guide for Contributors to Flora Europaea*, and appointed an editor for each family. The aim was ". . . to produce a concise and complete Flora in the shortest possible time." The measure of the committee's success is apparent, for, although over 40 committee members, advisers, and consultants plus 51 contributors were involved, manuscript was ready for the printers in January 1963!

The editorial committee chose English as the language in which to publish the book because more botanists can use that language than can adequately handle any other. The Anglo-Latinum vocabulary (Appendix v) is a concession to those more familiar with Latin than with English. English place names are used for independent states and for areas that transcend national boundaries—for example, France, Sweden, the Alps, and the Mediterranean—but the language of the country is used if the state is not independent—for example, Corse, Kriti, Slovenija, and Sardegna.

The subdivisions of Europe that are used are shown on five maps placed at the end of the volume. Each map is printed on a strip three times as long as the width of a printed page, so the map and its legend may be spread to the right and easily compared with statements of range.

The order of families follows that of Engler and Diels (1936), except that the Monocotyledones follow rather than precede the Dicotyledones. Seventy-nine families are included in volume 1. Sections are recognized in many of the larger genera, and intraspecific taxa below the rank of subspecies are rarely used.

Artificial keys are dichotomous, and provide for families, genera, species, and often for subspecies. The key to families includes all those to appear in the entire work and has indented branches that carry matching arabic numerals at the left of each branch, facilitating comparison of contrasting segments. The matching numerals might have been omitted from short keys, but they have been applied consistently throughout.

Names of authors and places of publication of taxa have been abbreviated and the abbreviations listed in appendices I, II, and III. Synonyms are given only in part, and directly following the accepted epithet only if omission would cause confusion. Other selected synonyms appear in the index in a manner that is hard to follow if one is not familiar with the flora of Europe.

Descriptions are brief but drawn carefully and apply accurately to the species *as they occur in Europe*. Characters possessed in common by several species rarely are repeated. Instead, one may find such phrases as "Like 8 but usually a tree with erect trunk to 25 m; . . ." followed by statements that further set the species apart. Some dimensions are given; an unqualified measurement refers to length, and, if followed by "×" and a second measurement, the latter refers to width. Numerals within parentheses indicate extremes beyond the normal range of variation.

Chromosome numbers are given only if the author was satisfied that the count was made from properly identified material of known wild European origin. Less than half the taxa treated have the chromosome number listed, but the average is good in some genera—56 out of 123 in *Saxifraga*.

Ecological data are given sparingly, mainly because widespread species have such a range in requirements that to list all of them in a flora is impractical.

A brief statement about the distribution of a species is given, followed by abbreviations (of two letters each) for each European country or territory in which it is known to occur. The maps help to clarify distribution statements, and the abbreviations, printed on a sheet of blue paper, are easy to locate. Solid black circles indicate endemic taxa, and extra-European distribution is given only if the total range of a species is largely outside of Europe.

Critical treatments of troublesome series of species have not been undertaken. Rather, "species groups" that fall in this category have been keyed out together; they have no nomenclatorial status, but emphasize taxonomic problems that need critical study. Such "groups" occur in *Salix, Rumex, Sisymbrium*, and a number of other genera, but are absent in *Quercus, Atriplex, Dianthus*, and *Brassica*, among other "difficult" genera!

The two-columns-per-page format and clear typography make the text easy to read. Generic and specific names are set in bold face, descriptions and abbreviations of countries in Roman, and the general distribution statement and synonyms in italics. Numerous short notes refer to relationships of one taxon to others, to possible different interpretations, to putative hybrids, plants introduced for cultivation, and the like, and add much to the value of the book.

The appendices are invaluable. The first gives the full name, date of birth, and, when known and applicable, date of death of each author who named a species treated in volume 1. Abbreviations of the names of all books and periodicals in which these names were published constitute appendices II and III. The glossary establishes a record for brevity—one page of only 29 en-