Document Number 8452 with the ADI Publications Project, Photoduplication Service, Library of Congress, Washington 25, D.C. For photoprints or microfilm copies address inquiries to: Chief, Photoduplication Service, Library of Congress. Kindly cite document number" (p. xi).

The bibliography presented by Hodge and Smith supplements that of Roholm, although some papers published prior to 1937 are cited. Some of these entries are also cited in Roholm's book but most of them are not. That few of the citations were published after 1960 suggests that the editor and the authors should make immediate plans to provide detailed coverage of the material published after that date. The 8-page subject index covers both chapters.

Generally the authors have done most of the writing. "Effects of fluorides on enzyme systems" (p. 176) is done briefly by relying on a review published by Borie in 1945. The section "Histogenesis and mechanisms in the development of osterofluorosis" (pp. 424 to 441) was written by Lent C. Johnson.

Tabulated material, including a few brief tables not assigned numbers, fills approximately 455 pages. A list of the titles of the tables is provided (pp. xv to xviii). Some of the more than 80 figures present several aspects of the subject matter.

The following quotation is from the preface by the editor, J. H. Simons: "An extensive survey and discussion of a vast amount of research on the physiological properties of fluoride ion and of substances capable of producing it in aqueous solution are given in this volume of 'Fluorine Chemistry.' These vary from the detrimental effects of excessive fluoride ingestion, through the beneficial effects of optimal amounts, to recognized detrimental effects, i.e., the greater incidence of dental caries accompanying suboptimal fluoride intake. Fluoride metabolism is discussed fully, e.g., the capacity for storage of fluoride by the bones and the rates of excretion of fluoride from the body. Of particular importance is the relation of fluoride ion to the health of teeth and bones: this volume reviews a good deal of careful research on this problem."

Generally the sections are followed by concise, conclusive summaries stated in such a way that "lifting them from context" will be difficult.

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Laboratory Methods in Clinical Virology

The British have been major participants in the exuberant growth of virology during the past generation, and this little book, **Diagnostic Methods in Clinical Virology** (Davis, Philadelphia, 1966. 139 pp. Illus. $5), by N. R. Grist, Constance A. C. Ross, Eleanor J. Bell, and E. J. Stott, is evidence of their excellence in the practical field of laboratory diagnosis as well. The book is concise, explicit, and well organized. Although the only methods presented are those used in the Regional Laboratory in Glasgow and alternatives are not given, the selection is a good one, and laboratory workers familiar with the basic principles will doubtless find it very useful indeed.

The laboratory identification of virus infections has never reached the stage of practical value that bacteriologic diagnosis has attained. It is more cumbersome and slower. Thorough testing remains a large undertaking, and mixed infections are more difficult to identify than bacterial infections. But there is less need to identify the responsible virus, because there is little to offer in the way of specific treatment. The greatest value of the kind of procedures described in this book has come from the study of outbreaks and through better understanding of the diseases. Fortunately, good clinicians rarely need the laboratory, and, on more than one occasion, clinical findings have been more reliable than laboratory tests. Joint observations, made in hospitals by virologists and practitioners, and intensive study of particular patients may well be most rewarding, and this little manual should encourage clinical pathologists to undertake more laboratory testing. By so doing it would provide new opportunities to further define the manifestations of virus infections and the value of laboratory tests.

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Quaternary Deposits in the U.S.S.R.

Atlas and Keys of Fruits and Seeds Occurring in the Quaternary Deposits of the U.S.S.R. (Nauka, Moscow, Russia, 1965. 366 pp.), by N. Ja. Katz, S. V. Katz, and M. G. Kipiani, a manual in the Russian language with an English summary, will be of interest to all contemporary students of Pleistocene and Holocene deposits in North America. Because manuals of this caliber are needed, it forms an outstanding contribution to the existing illustrative literature on determination of Quaternary fossils.

The book provides recommendations for the collection of samples for carpological analysis, methodics of paleocarpological analysis, and methods for determining the age of floras as well as the age and genesis of the deposits containing them. Brief characteristics of carpological floras are given for different periods of the Quaternary for the U.S.S.R. and adjacent territories.

The keys, which are easy to follow, include 108 families and more than 1100 species. Two types of keys are given—a morphological key and a taxonomic one. Diagnostic features of fruits and seeds are given together with data on their present geographical affinity with each taxon. One table is devoted to line drawings of oögonia of Charophyceae, and spores of Salviniaceae, Marsileaceae, Isoëtaceae, and Selaginellaceae. Locations of fossil discoveries are listed following literature data from the U.S.S.R., Poland, Germany, and England, and findings made by the authors are included.

The authors are to be highly commended for their thoroughness and technical knowledge in preparing this manual and for the excellent line drawings of recent comparative fruits and seeds; in many cases they have provided actual drawings or photographs of fossil material. The various faces, cross sections, and detailed cell structures of fruits and seeds are well reproduced and greatly facilitate determinations of fossil material. Dimensions and magnifications are incorporated in legends or descriptions.

Although the manual deals chiefly with Russian and to some extent with European Quaternary deposits, I feel that it can be of great value to workers in Quaternary research in North America. The English summary will be useful to those who are not familiar with the Russian language. The book is attractively bound in a sturdy cover.

I recommend this manual to workers

in Pleistocene and Holocene deposits and would like to stress that it is indispensable to those who are working with Quaternary macro-subfossils.

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Botany

This volume, **A Flora of Northeastern Minnesota** (University of Minnesota Press, Minneapolis, 1965. 557 pp., $10), by Olga Lakela, is a valuable addition to the steadily accumulating list of regional floras. The book is attractively printed and bound and is a credit to both author and publisher.

It is quite true, as has been frequently pointed out, that plant distribution is not limited by political boundaries, but is controlled by natural environmental influences. Local floras limited by artificial boundaries will continue to be published, however, and will continue to have great value, both as convenient teaching aids and as contributions to the knowledge of the entire continental flora. This is consistent with man's perennial urge to pigeonhole his knowledge for ready reference.

Botanists of the mid-continent region will have abundant cause to be deeply grateful to Olga Lakela. She has spent 30 years exploring the triangular northeastern corner of Minnesota, north of Duluth, in the course of which she collected 23,000 specimens and studied thousands of others assembled by various explorers, especially G. N. Jones. And then, at the age of 75 (she was born in Finland on 11 March 1890), 7 years after she had retired from the faculty of the University of Minnesota, she brought her studies together in this scholarly work.

The area covered is a most fascinating one. The "Arrowhead," comprising St. Louis and Lake counties, includes 9229 square miles and is larger than the State of Vermont. (Cook County is not included in the present work.) Much of it is wild forested land, with rugged cliffs, or moist lowlands with meandering streams and sphagnum bogs. The boreal coniferous forest is the principal vegetational type, with jack pine predominating. But plant habitats are infinitely varied, from the sands of the 7-mile beach facing Lake Superior or the rocky shores elsewhere along the Lake to the lowland and upland forests, sedge meadows, and muskegs of the interior. Three important drainage systems meet in the region, some streams flowing north to the Rainy River and Hudson Bay, some east to Lake Superior and the Atlantic Ocean, some south to the Mississippi River and the Gulf of Mexico.

The book begins with a key to the 111 families of vascular plants treated (including the Pteridophytes). Families are briefly described and then keys lead to genera and species; these, too, are briefly described. For each species, occurrences throughout the Arrowhead region are listed, and the general continental range is given. More than 100 well-executed sketches illustrate some of the more interesting species.

The concluding portion of the work is a set of maps that show, by various symbols, the location of collections made of each species treated. Other valuable aids include a bibliography, a glossary, and an extensive index.

Another, often overlooked, value of a work of this sort is its historical significance. This vast, semiwild area is being subjected to drastic changes with the pressures of civilization, and the present vegetation may in the future be destroyed or greatly altered.

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Orchids of Venezuela

In the first four volumes of this monumental work, **Venezuelan Orchids Illustrated** (Museum Books, New York, 1959–1966), by G. C. K. Dunsterville and Leslie A. Garay, 650 species in 130 genera of orchids are described. Although the work represents the orchids of Venezuela, it in fact goes far beyond the political boundaries of that country, for almost 75 percent of the species included are known to occur in other countries of northern South America and in Central America. This enhances the value of these volumes to anyone who is interested in tropical American orchids and makes the series a standard reference.

The 650 detailed line drawings have been painstakingly executed from living material collected in the wild by Dunsterville, a research associate of the Orchid Herbarium of Oakes Ames, who lives in Caracas, Venezuela, while the identification and description of each species has been assiduously and meticulously done by Garay, the curator of the Orchid Herbarium of Oakes Ames Botanical Museum, Harvard University. In each of the four volumes the genera and species have been alphabetically arranged; each species is fully described and the description includes notes on its geographical distribution and Venezuelan habitat, as well as a complete listing of all taxonomic synonyms together with a full page of line drawings. The genera known to occur in Venezuela are also presented in a special phylogenetic arrangement. The index is cumulative in each volume, with approximately 2500 names listed in the fourth volume.

An extremely important aspect of this work, to both the amateur and professional, is the fact that about 80 percent of the species are illustrated for the first time. This is probably the only orchid publication in which every species and every name used has been checked with type material. About one-third of the species described are either new to science or are new distributional records for Venezuela.

Its dual approach makes the treatise valuable to the horticulturist and to the amateur orchid grower who can use the nontechnical descriptions which are limited to measurements, texture, and color, as well as the plates in identifying his plants, while the botanist and the orchidologist will find a complete systematic or taxonomic treatment of each species, in addition to the diagnostic botanical illustrations.

Each volume contains a special essay, both in Spanish and in English, directed to horticulturists and orchid hobbyists. Volume 1 has an introduction in which general aspects of the orchid family, ranging from general morphology to flower structure and pollination, are discussed. There is an additional section, "Geographical Notes and Climate," that describes the various topographical and ecological areas where orchids have been collected by the authors and their friends.

"Naming plants," an essay in the second volume, was written in response to a number of requests from nonbotanical readers of volume 1, who wanted to know how plant names are derived. Some of the taxonomist's problems are elucidated in lay terms —for example, name changes, conservation of names, valid names, synonyms, combination of genera and species, and problems that arise from the rediscovery of forgotten names.

"Distribution of orchids in Vene-