lesser panda and giant panda (which are apparently related in name only) and the great variety of civets and mongooses, which are quite unfamiliar to American zoologists. The account of the whales is limited to the forms that enter fresh water, including, of course, the peculiar isolated pigmy dolphin of Tung Ting Lake in China. The rabbits and hares are treated as an order distinct from the closely allied rodents proper, and this draws attention to the presence of a variety of montane pikas closely related to those of the western mountains of North America; the rodents proper include such familiar American genera as *Citellus*, *Marmota*, and *Eutamias* and many others, which calls further attention to the zoological resemblances between North America and Asia. The elephant group is represented by the Indian elephant, which ranges eastward to Indo-China; the aquatic coastal dugong, related to the American manatees, forms one of the most distinct of the orders; the list of even-toed ungulates includes tragulids, pigs, wild cattle, goat-antelopes, true antelopes, sheep and goats, and a wealth of deer; and finally, the odd-toed ungulates are represented by the Malay tapir and three types of rhinoceroses.

Any account of the mammals of eastern Asia necessarily leans heavily on the two large volumes on the mammals of China by the late Glover M. Allen. Because of its bulk the latter work is, however, wholly unsuited to field use, and we are fortunate to have Dr. Tate's handbook-sized work. The illustrations are in general excellent. A curious vagary of typography is the capitalization of the most familiar animal group names, such as Bat, Cat, Wolf, etc., together with the common names in general. This is entirely contrary to modern zoological practice, as may be seen by reference to the *Journal of Mammalogy* or Webster's *Dictionary*.

The high price of this book, as well as of the trade edition of the Pacific World Series in general, most unhappily limits the dispersion of these introductions to natural history at the levels where they would be most useful.

KARL P. SCHMIDT

Department of Zoology,
Chicago Natural History Museum

A review of the North American species of Philanthus, north of Mexico (Hymenoptera: Sphecidae). R. W. Strandtmann. (Graduate School Studies. Conti. in Zoology and Entomology, No. 7) Columbus: Ohio State Univ. Press, 1946. Pp. 32. (Illustrated.) $2.50.

From a study of 5,500 specimens of these common wasps, Dr. Strandtmann has achieved a taxonomic analysis of the genus within the area selected. The biology, to which no contributions are made, is reviewed in a single page, and no other topics are discussed.

The well-drawn figures, both of the entire wasps and of morphological details, are pleasing. The presentation of distributional data, mostly only by state, is inadequate. From 100 to 1,200 records of each of the 7 most numerous species would have afforded a real basis for an analysis of their zoogeographic affinities and quantitative distribution—the inescapable responsibility of every taxonomist reviewing a group from adequate material.

Counting "*hirticulus*" as the male of *bicinctus*, there are 22 species, two still known from only one sex. Thirteen of these occur only west of the Mississippi, 3 are ubiquitous, 1 is Floridian, and the remaining 5, with the normal pattern of northern species, inhabit more or less of the Northeast (in one instance, entire East) and prairie and mountain states. Five species are little known, represented by 5 specimens or less, 5 by from 6 to 25, and 5 more by under 100. Of the remaining 7, three of the four represented by over 500 individuals are ubiquitous, and the fourth is widespread over the West.

The species *politus* is divided into 9 subspecies. One occupies the territory east of and including the states bordering the west shore of the Mississippi River. The others are all west of that river and, except for texana, are an aggregate of geographically intermingling forms that seem to present no basis for designating subspecies rather than variants. At least they demand a very much more detailed geographical analysis.

It is a satisfaction to see that the author has disposed of many of the unnecessary trivial names that have cluttered past literature. Yet a little time spent in correspondence could have disclosed the identity of *barbatus* Smith, *crabroniformis* Smith, and *multimaculatus* Cameron. When this has been done, we may anticipate further nomenclatorial changes.

J. C. BRADLEY

Cornell University, Ithaca, New York

Forest soils and forest growth. S. A. Wilde. Waltham, Mass.: Chronica Botanica; New York: G. E. Stechert, 1946. Pp. xx + 241. (Illustrated.) $5.00.

This is the first textbook on the subject of forest soils to appear in the American literature. It represents a scholarly attempt to cover the broad fields of soil science with emphasis on soil as a medium for the growth of forest trees.

In brief, the book might be considered as a monograph on forest soils of cool-humid climates with special emphasis on the management of forest nursery soils of the Lake States. The author's familiarity with the European literature, particularly the Russian, has resulted in the unnecessary use of many foreign terms to describe conditions which have already been acceptably described in the American literature. Examples of this are the use of the terms *melanization* for incorporation of humus, *melanized* horizon for the conventional A_1 horizon, *grood* soils, and *charral* soils.

As in many books, general statements are made which, if important, should be substantiated by quantitative evidence rather than by the citation of references from which they were derived. An example of this can be found on page 65: "In general, soils with a low content of fine soil material, *i.e.* sandy soils, support only trees which have low requirements for moisture and nutrients, such as pines, scrub oaks, white birch, and aspen. On the other hand, soils with a high content of fine particles, *i.e.* loam soils, support trees which have high requirements for moisture and nutrients, such as species of spruce and fir, hard maple, basswood, elm, and white ash (Haig, 1929; Scholz, 1931; Coile, 1935; Hosley, 1936)." The work of at least two of the authorities cited (Haig, 1929, and Coile, 1935) contained little, if anything, to verify the statement as made.

In a number of places the author speaks of "plant food" in the soil. Since plant food is manufactured in the plant through the process of photosynthesis, it is apparent that the author means "plant nutrients" when he speaks of "plant food."

Silvicultural terminology is confused where the term "selective logging" is used as a synonym for the selection system of cutting.

Chapter XII, "Productivity of Forest Soil and Forest Management," is an elementary treatise on what is commonly known as forest regulation and valuation. This information can be found in any textbook on forest management. Entirely lacking is the wealth of information available in the American literature on the relationship between soil properties and site index, rate of growth, and the composition of forest stands.

The last five chapters are concerned with forest nursery soil management. The management practices outlined are particularly adapted to the Lake States region, where they were in the main developed.

T. S. COILE

School of Forestry, Duke University

Forest soils. Harold J. Lutz and Robert F. Chandler, Jr. New York: John Wiley; London: Chapman & Hall, 1946. Pp. xi + 514. (Illustrated.) $5.25.

This book is a very welcome addition to the literature in a relatively new field of applied science in this country. Prior to 1946, material on forest soils was available only in journal articles and foreign language works. American and English texts on soil science are usually written for either the agricultural student or the pedologist (one who studies the soil and its development as a natural phenomenon without regard to its usage). The reader has only to compare the subject matter listed in the indexes of these books with that given in *Forest soils* to appreciate the inadequacy of the former works for foresters.

The thoroughness of coverage is shown by the chapter headings, which include: soil-forming minerals; soil-forming rocks; disintegration and decomposition of minerals and rocks; forest-soil organisms; the organic matter of forest soils; nature and properties of soil colloids; general physical properties of forest soils; the water relations of soils, particularly forest soils; general chemical properties of forest soils; soil formation; forest-soil classification; soil erosion and forest-soil deterioration.

The fundamentals of soil science are stressed, and much of the material is presented in considerable detail with no attempt to simplify for the reader who is not fortified with a scientific background. The treatment of the basic structure of minerals and the mechanics of base exchange, to cite two examples, will be much too technical for many readers. Students in a one-semester course who have not had adequate courses in geology and chemistry will find such portions of the text rather heavy going.

On the other hand, it is a decided advantage to have a book which contains these fundamentals of soil science as they relate to the particular subject—forestry. Recourse to other soils texts will not be necessary unless the student is specializing in a particular phase of the subject. This book will serve as an excellent reference work, and instructors of general soils courses will find it very useful because it approaches the subject from a somewhat different angle than is customary in soils texts.

In one rather specialized branch of the subject—nursery soils—treatment is much too brief to be of use to managers of forest nurseries. The authors undoubtedly preferred to leave that field to others.

Literature citations, which are abundant, are given at the end of each chapter. The text is illustrated with about 33 half tones and numerous well-chosen charts. Several minor changes, such as inclusion of a more up-to-date soil textural class chart than that shown on page 232, and the words "dissolved matter" in the title of Table 5 on page 72, will undoubtedly be made in subsequent editions.

The authors are to be congratulated on the production of this excellent volume, which will take its place along side older, well-known works of European investigators.

HERBERT A. LUNT

Connecticut Agricultural Experiment Station, New Haven

General horticulture. Thomas J. Talbert. Philadelphia: Lea & Febiger, 1946. Pp. 452. (Illustrated.) $4.00.

This book serves producers of horticultural crops and vocational and undergraduate students in schools and colleges with general information on the production and handling practices for a wide range of horticultural crops. It serves primarily the interests of students and growers of tree fruits, small fruits, and nuts in temperate climates. An over-all picture of the entire horticultural industry in the United States is given to show the production areas and relative importance of fruits, nuts, vegetables, flowers, ornamental plantings, and forestry. The reader is also introduced to the more important subtropical and tropical fruits, with pertinent comments on their cultural requirements. The last chapter gives a broad introduction to the practices involved in harvesting, handling, and distributing horticultural crops.

The printed pages are interestingly broken with 129 unusually clear illustrations which have been selected with painstaking care by the author to emphasize important practices and objectives. Most of these engravings are "close-ups," particularly as they are used to illustrate insects and diseases, their injuries, and single-step procedures used in planting, budding, grafting, pruning, and training.

At the close of each of the 21 chapters, selected references of books, bulletins, circulars, and scientific papers are listed to enable the student to give additional time to the study of specific areas in line with his interests.

Separate chapters are given to pome fruits, stone fruits, grapes, strawberries, cane and bush fruits, nut trees, vegetables, beautifying the home grounds, and tropical and subtropical fruits. Chapter I is appropriately devoted to a discussion of the horticultural industry, and the following 10 chapters develop subjects which broadly interrelate with all fruits, such as fruitfulness, pollination, thinning, propagation, soils and sites, planting procedures, soil management, use of fertilizers, pruning, insects and diseases of fruit crops, and their control by spraying and dusting.

Students whose major interest is in fruit growing will find in this book a comprehensive introduction to general horticulture, written in a style that is clear cut, forceful, and most helpful in acquiring a knowledge of sound horticultural practices.

FRANK H. BEACH

Agricultural Extension Service,
The Ohio State University