

## BOOK REVIEWS

### SILVICS OF FOREST TREES OF THE UNITED STATES, 1965.

U.S. Dept of Agric. For. Serv. Handbook No. 271. 760 pp, with paper cover. \$USA 4.25.

This large work, comprehensive and extremely well edited and produced, attempts the herculean task of collating silvicultural information for the hundreds of forest tree species in the United States. Its predecessor was the well-known and much used *Woody Plant Seed Manual*, 1948. Like that work, it presents its information in a manner which other publications would do well to follow.

Anyone who has attempted to define, classify and publish ecological and silvicultural information for even one species will be aware of the difficulties, both in ensuring reasonably full coverage of recorded data and in adequately and concisely summarizing this to produce clear and interesting reading. This book is the work of many people; and in many cases original work on tree response to environmental factors is published herein for the first time. That this is a satisfactory outcome for the many foresters who will refer to the book can be judged by the reader, but it is a salutary example of scientific workers meeting the need for compact presentation of information by forgoing the personal kudos from individual publication.

The aim throughout is to define and correlate environmental factors and species' requirements. There is a useful introductory generalization characterizing broad environmental regions and the main factors of climate and soil, but detailed information about species on the one hand, and the site concerned on the other, is to be found in the discussion for each species. Nomenclature for forest trees follows the *Check List of Native and Naturalised Trees of the United States* (including Alaska, but Hawaiian species are not discussed) and definition of forest types follows the Society of American Foresters' *Forest Cover Types of North America, exclusive of Mexico*. References abound throughout; general textbook references are listed in one block at the beginning, while specialized sources of data appropriate to a single species are shown in the appropriate section for that species. There are several appendixes in map form, showing certain aspects of climate, regional soil groups and forest cover types.

The detailed information is presented for genera which appear in alphabetical sequence regardless of any taxonomic order. Each genus is introduced by a brief but useful statement about its world-wide distribution; and salient generic characteristics, phenological habits and so on are mentioned. It is this reviewer's opinion that concepts of ecological significance could also have been mentioned here, where these are specific and characteristic—e.g., "*Abies*, generally extremely shade tolerant, climax-type species requiring or tolerating high humidities and moist soils." This comment has less relevance for the painstaking enquirer who delves into the detailed notes for each species.

Here is to be found a wealth of data covering distribution (including a useful map), requirements and limitations of climate and soil, details of forest types for both major and minor associations and of associated plants, especially shrubs, but including

other plants which are commonly referred to when describing forest types — the so-called forest-type indicators. There is adequate information, well presented, of life history, including flowering and fruiting, seed production and dispersal, seedling development and growth habits, together with critical or limiting habitat factors.

Growth and yield are itemized and tabulated to a considerable degree, including the variations which can be expected on different sites (site index is shown by height/age relationships for all major species) and under different conditions of competition and forest types. The individual section for each species concludes with a reasonably comprehensive statement about pathogens under the subtitle of "Principal enemies" which, when read with the bibliography, is probably adequate for the generally interested enquirer. Finally, the main contributor for each species is identified.

The reviewer has read through and studied this work in detail. There are many minor points which could be commented on, but in most cases any implied criticism would be unwarranted — the comment being occasioned by surprise rather than disagreement with the facts as written. A few of the photographs add nothing to the text, such as the photograph of white fir crowns on p. 46 captioned as "white fir gradually invading an old brush field in California". The presence of photographs throughout, however, generally adds much interest and value to most sections.

Many foresters and scientists will want to have ready access to this book, which attempts an almost impossible task, and has achieved its objective in a masterly and praiseworthy manner. It is feared that the binding will not withstand the frequent, continued use that will be made of this work.

W. J. WENDELKEN

## PRINCIPLES OF FOREST TREE AND CROP VOLUME GROWTH

by H. R. Gray, 1966. Bull. 42, For. & Timber Bureau, Canberra. 54 pp., 7 tables, 29 graphs, 22 references.

This mensuration monograph is based on a further development of the "taper line" theory as presented by the same author in an earlier paper: "The form and taper of forest tree stems" (*Imp. For. Inst. Paper No. 32*, Oxford, 1956). The author points out that the material contained in the present paper is based on theories he has developed and tested from 1936 onwards. The bulletin is divided into four parts:

Part I. The volume line.

Part II. The volume growth of a single tree.

Part III. The "pattern" of volume growth in an unthinned even aged coniferous crop, as exemplified by the volume, at different stages, of the hypothetical 'α' tree falling on an envelope curve to successive volume lines.

Part IV. A hypothesis for principles of forest tree and crop volume growth in general.

After reviewing the work by other investigators and by himself on the "volume line", the author shows how the parameters of this conventional regression of tree volume on tree basal area can be related to those of the equivalent taper-line-based regression,