

straight geographical text as exemplified by the volume under review has its value in the field of general education, it has its value in forcing the scientific specialist to look at the other side of the picture for a change, and it has its value as "literature"; but it contributes nothing fundamentally new to our knowledge of the facts.

There is the danger, also, that such works, being easily read and understood by the general public, tend to be accepted as authoritative and error of fact occasioned by lack of omniscience on the part of the geographer are perpetuated. Thus Clark on page 14 describes the land forms of Banks Peninsula as a consequence of erosional enlargement "of the central craters", a statement contrary to the findings of Speight and of Cotton. Again, highly fallacious figures are quoted in Table LXXVII for the areas in standing native bush in 1940, figures quoted from Agricultural and Pastoral Statistics and quite obviously having reference to some particular class of native bush only, or perhaps to native bush held in but one land ownership category. Errors of this kind must serve to cast doubts upon the accuracy of quotation of other statistical data; and such errors tend to be self-perpetuating.

All told the section on Exotic Trees and Shrubs is tenuous in the extreme. All foresters will find many points to criticise. The same applies to Clark's description of "The Animal Pests." Nebulous writing quoting unreliable authorities, criticising the more reliable (e.g. Perham's 1922 Report), and hypothesizing *ad. lib.*; this kind of half-right half-wrong summary does more harm than good.

The volume is admirably produced and the illustrations and maps are generally excellent. There are a few typographical errors. Thus on page 29, *Belschmiedia* for *Beilschmiedia*, (in any case scarcely a characteristic South Island hardwood). It is a pity the material in the book is not as free from errors as the print. It will be a greater pity if Clark's account comes to be regarded as an authoritative exposition of the subject.

J.T.H.

New Zealand Weather and Climate.—Edited by B. J. Garnier. A Special Publication of the New Zealand Geographical Society. Miscellaneous Series No. 1. 1950. 139pp. Printed by Whitcombe & Tombs Ltd.

In this volume Editor Garnier has amassed a wealth of information, statistical and otherwise, concerning the universally interesting topics of the weather and the climate. All foresters, from the timber cruiser to the fire control officer, from the man who wishes to know why it always rains to the man who sleeps uneasily after two fine days in succession, should find something of interest between its covers.

Some of the material is new ; some a republication of difficult-to-get articles, revised and brought up-to-date where necessary. In the first two chapters N. G. Robertson and Ian E. M. Watts provide us with a clear and succinct account of the "Organisation and Development of Weather Observations" and of the methods employed in "Forecasting New Zealand Weather". Close study of these chapters must inevitably add colour and understanding to our reception of the daily weather forecast and subdue any tendency to sarcasm when events do not proceed according to schedule. A reviewer generally feels it incumbent upon himself to find points of detail to criticise. In the present case repeated reading of these chapters and of the third chapter, the late E. Kidson's account of "The Elements of New Zealand's Climate", brought only increasing appreciation of the clarity of exposition of a difficult and involved subject. Admittedly there is a certain amount of repetition but we are forewarned of this and more than adequate reasons for it are given in the editor's introduction. Indeed all points which could be criticised have been criticised by editor or authors leaving scarcely a bit for the unfortunate reviewer.

The two chapters by B. J. Garnier, "The Climates of New Zealand; According to Thornthwaite's Classification", and, "The Seasonal Climates of New Zealand", the latter being here published for the first time, represent the first real attempt to analyse the regional and seasonal varieties of New Zealand climates. Garnier's application of Thornthwaite's scheme is a very real advance on previous attempts to describe New Zealand climates in terms of Koppen's system. The regional climatic varieties resulting from the interaction of the various phenomena described by Watts and by Kidson can, in this manner, be plotted on the map. But the analysis would appear to be of greatest value to overseas readers, not to New Zealanders who are only too well familiar with all the peculiar quirks of local and regional climates. Furthermore, as Garnier recognises in his second chapter, any classification based on annual mean rainfall or temperature figures, fails to take into account the marked seasonal abnormalities and variations experienced in New Zealand. Garnier's analysis of seasonal climates comes nearer the truth, therefore, but could not the method be further applied to the study of local climates as opposed to regional climates and from this point to the study of micro-climates ? That is to say : is there not here a tendency to delve into greater and greater detail to demonstrate something we already know ? We are thoroughly well aware of the fact that within New Zealand we find an infinite variety of regional, seasonal, local and micro-climates and that, as foresters, we must take all these variations into consideration in planning our operations. The climatologist has not yet produced a scheme of classification which can take the place of detailed study of local conditions. Vegetation studies still provide a better guide to an understanding of regional, seasonal, local, and micro-climates than pedagogical classifications.

But perhaps this criticism is unfair and is based on an incorrect appreciation of Garnier's objectives. The mapping and classification of these climatic variations is a well worthwhile objective in itself and Garnier's data, and his maps in particular, will undoubtedly be used and used frequently by all students of vegetation.

The volume is well, lavishly may be a better word, illustrated with maps, figures and plates. Statistical material is presented in many tables and in Appendix II a useful bibliography has been compiled by J. C. Dacre. The volume will be a most useful reference book for many years to come.

The editor and the printers are to be congratulated on the freedom of the text from errors and on the clarity of the print, maps and figures. The New Zealand Geographical Society deserves commendation on its action in filling a conspicuous gap in foresters' and other people's bookshelves.

J.T.H.

The Thinning of *Pinus radiata* Plantations in the South-east of South Australia.—By N. W. Jolly, Consultant to the Department of Woods and Forests, South Australia. Departmental Bulletin No. 4. Published by Government Printer, Adelaide. 27 pp. 1950.

This paper gives preliminary results of extensive sample plot measurements made in the past 15 years in the *P. radiata* plantations in the south-east of South Australia, together with proposals for future general practice.

The climate of the south-eastern region is generally suited to the growth of *P. radiata*. Summer temperatures seldom reach 100°F. Rainfall, falling largely in winter, averages from 25 to 32 ins. Soils vary greatly but are frequently light and sandy. Five site quality classes are recognised.

The close utilisation that is possible in this area has an important bearing on present and future treatment. There is a good market for thinnings down to a 3 in. top diameter. The smaller sizes go for pulping at 18/- per 100 cu. ft., i.e. over 2d. per cu. ft., the larger are sawn for fruit cases at higher but unspecified prices. Yields have to fall below 1,000 cu. ft. per acre at each thinning before they are unattractive to operators.

It is only possible to make here general observations on the multiplicity of facts given in this important paper. It will repay all those interested in the silviculture of *P. radiata* to make a close study of the complete booklet.

Wherever possible results are given for each pair or set of sample plots in terms of: