eucalypts in the Coalgate district; native podocarps (rimu, matai and kahikatea) in an isolated remnant of native bush at Geraldine; larch, spruce, *P. ponderosa* and Austrian pine at Raincliff Forest.

Trees that showed practically no damage were the cypresses and, to a lesser extent, cedars.

It would have been decidedly interesting to have had reliable local records of the velocity of the wind at its peak. Information is needed on the velocity of wind that can be withstood by trees in various sites and the replacement of the ordinary cup anemometer by instruments recording wind intensity is highly desirable.

W. H. JOLLIFFE.

REVIEWS.

Introduction to Forestry.—Study Course, Army Education Welfare Service, New Zealand. pp. 83, figs. 23, paper covers, Government Printer, 1944.

The preface to this booklet states that it is intended to serve as an introduction to the subject, and aims at presenting, simply, the objects and methods of forestry as practised in the Dominion. In some 80 pages of letterpress, of which approximately 13 are taken up by figures and illustrations, it covers the evolution of forestry, the tree, the forest, silviculture, protection, measurement of wood, management, harvesting the crop, conversion and processing of timber, and properties and uses of wood. Inevitably it suffers from the compression necessary to contain so ambitious a scope within such a small compass, and the concentrated knowledge offered must appear somewhat difficult of digestion to a beginner.

The treatment of different branches is distinctly uneven, varying from the elementary nature which appears appropriate in an introduction to the assumption of a considerable degree of prior knowledge of cognate subjects. Thus in the chapter dealing with The Tree, the functions of root, stem and crown are explained in a manner suitable for readers with no botanical knowledge. In the chapter on Silviculture on the other hand the student is told that he must have previously studied at least plant physiology, taxonomic botany, ecological botany, mycology and, though less intensively, entomology, ornithology and pedology (science of soils); it is assumed that he is "sufficiently well acquainted with their nature to understand their bearing on silviculture"; it is further assumed that he has studied horticulture for tree nursery purposes.

It is no doubt right and proper to acquaint those contemplating forestry as a career with the wide variety of knowledge requisite for full technical competence, but one can hardly repress a wondering

loubt as to the impact upon the mind of a serviceman, particularly f no friendly counsel of experience is available to him, of the truly ormidable list scattered through the pages of the Introduction. In addition to the subjects mentioned in the previous paragraph, the aspiring forester is told that he should know, **as part** of his silvicultural equipment, "all that is to be known about every species of tree with which he is called upon to deal," must have a knowledge of the elementary principles of the law of contracts, the law of property, the laws relating to the use, ownership and occupation of land—all of them as modified or affected by his special forest laws ; must have a full knowledge of logging methods and costs ; must be fully conversant with the various processes of manufacturing timber, such as grading, seasoning, planing and preservative treatment. Note that in almost every case "full knowledge" is required ; note too that this list does not include sundry other necessary features in a forester's equipment ; small wonder that the forester has been defined as a "combination business man, diplomat, evangelist, technician and labourer, who knows plenty about trees," or that the opinion has been voiced that such a paragon must be hard to find.

In parts the booklet presents difficulties to unaided study, and demands suitable exposition to enable full benefit to be derived ; even to the unaided student, however, it has much of value to offer, and if he reads intelligently and with diligence, undeterred by what at first sight may seem hard to comprehend, he will acquire a deal of useful knowledge on basic principles. The evolution of forestry, the forest policy of New Zealand and the main requirements for carrying it out, are well and clearly stated ; the importance of silviculture as the essence of forestry, its pre-eminence for securing healthy stands and in questions of management generally, the need for personal field observation to supplement theoretical book knowledge, are all rightly stressed ; the mutual influence of forests and their environment, a feature of vital importance in the economy of New Zealand to-day as in so many parts of the world, is concisely dealt with ; and there are sound comments on the subject of forest grazing.

To the brevity with which each branch of the subject has of necessity been treated, may probably be ascribed the dogmatic nature of some of the statements made. Thus "no consideration of profitable markets should ever be allowed to interfere with measures for the complete annihilation of any animals that rank as forest pests" is at least arguable under certain conditions ; and "it is a fundamental principal of forest management that the yield of timber in any one period should not exceed the volume of timber actually grown during the same period," obviously needs qualification when the growing stock is abnormal.

In the chapters dealing with utilisation it is emphasised that "the main objective of sound forest utilisation is that wastage of forest produce be reduced to a minimum " ; in accordance with that ideal

it is urged that in sales of forest produce the wood should be measured in as raw a state as possible. The demand for skill in all forms of logging work and its general remoteness from populous centres, with the consequent necessity for adequate wages and reasonable amenities in order to attract the right type, are pointed out; may it not be overlooked that the same applies also to the forester.

The booklet is well printed on good paper; the figures and illustrations are for the most part well chosen and helpful, though in some cases they could be clearer.

O.J.

Soil Erosion in New Zealand.—By K. B. Cumberland, M.A., pp. 227. Soil Conservation and Rivers Control Council, Wellington, 1944. 20/-.

The author of this book has been Lecturer in Geography at Canterbury University College since 1938. He describes it as a broad geographic approach to the soil erosion problem in New Zealand: a reconnaissance not intended to deal with scientific details and exact quantitative measurements.

Though the youngest British Dominion, New Zealand has a greater erosion problem than the older members of the Commonwealth. Small in area, she yet presents strongly differentiated regional contrasts, both natural and cultural. Throughout the author develops the thesis that "*soil erosion (in association with the other physical crises in land use in New Zealand) is a distinct and separate problem for different areas; that it finds differential expression in terms of the severity with which it occurs and the forms it assumes in the landscape of different regions; that each region recognised on these bases requires different solutions of its individual soil erosion problems, and finally, that soil conservation must be approached regionally and in full knowledge of the intricate interrelation of physical and cultural conditions under which soil wastage has been hastened in differentiated regions.*"

To be seen in proper perspective, soil erosion should be regarded as one of the many aspects of land use problems; as an economic maladjustment as much as a pathologic physical condition; requiring integration and co-ordination of land use and soil conservation measures in the planning of a land policy.

The first hundred pages are given to the study of eight main soil erosion regions:

North Island I: The Auckland and Coromandel Peninsulas.
II: The North Island Mountain Axis.
IIIA: The Taranaki—Wanganui Tertiary Hinterland
IIIB: Wellington—Hawke's Bay Tertiary "Hill Country."
South Island: IV: The South Island Tussock "Hill Country."
V: The Central Otago and Mackenzie Inland Basins.
VI: South Island Foothills and "Downland."
VII: The Canterbury Plains.