

such matters as vacation employment for students, hostels, University scholarships, College societies and athletics, etc., etc. The full page, well chosen illustrations are reproduced from photographs taken of the School's range of activities such as laboratory and field classes at work and typical forest areas where practical forestry work is carried on.

On the whole the prospectus forms a very efficient handbook for the forestry student and for those interested in forestry education, and it should do much to bring the general public into touch with what is being done at Canterbury College in providing a University course in forestry.

RESEARCH 1927

Following is the record of work achieved during the past year by the School of Forestry, in the nature of original investigations into forestry problems.

I. Canterbury Economic Survey:—

This project was again the principal effort of the year, the whole of the 1926-1927 long vacation having been devoted to this project by Mr. Hutchinson, assisted by A. W. Russell. This was the second and final section of the survey and comprised a forest policy for Canterbury, based on the situation in regard to forest economics revealed by the survey of the previous year. The sections of the policy concerned themselves with the mountain protection forests, the forests of the plains, and the matter of improved forest utilisation. The first dealt with the control of flooding in the large rivers, the efficacy of forests in controlling run-off and erosion, the adequacy of the present forests, and advisable extensions of the forest area, together with a full discussion of matters pertaining to the management of such forests, including the problem of establishing cheaply a forest cover on hillsides now bare, the question of grazing control, and the menace of the deer to the well-being of the forest.

The second section dealt with the artificial forests of the plains, the systems of exotic plantations now in existence as a result of private, local body, and State enterprise; their present value, their utility, and their future possibilities in the way of waste land utilisation close to the consuming centres of the province. The third section had for its field the matter of forest utilisation in the province. The present methods of production, consumption and distribution, but primarily the latter, were analysed, avenues of wastage and inefficiency indicated, and possible ways

and means of improving the present state of affairs were put forward and discussed.

The report was furnished to the State Forest Service in April of this year, and that Department has now asked that an abridged edition, suitable for publication, be prepared, with a view to its issuance as a bulletin some time during the coming year.

II. Investigations into Growth and Yield of Exotic Plantations in Canterbury:—

The past year saw a considerable increase in the scope of this project, the number of plots being considerably increased, so that not only will the data gathered be enlarged, but the new plots will considerably enhance the value of the results from those already under observation. Activities commenced during the Easter vacation when a new plot was established in a Douglas fir stand at "Springbank," the estate of H. B. S. Johnstone, Esq., of Otaio. Douglas fir, among other species, is being used here in the planting up of steep terrace faces to prevent their inundation with gorse and other noxious weeds. This is the first of the plots to be established so far south, but it is hoped to extend the range of observation plots in this district in time to come. The Burke's Pass plots were remeasured also at this time, and good growth recorded, the average increase in height being two to three feet, the former figure representing the *P. ponderosa*, and the latter the larch, with *P. laricio* in between. For all three species, mortality for the sixteen months elapsed was nil.

The eight plots established in 1925 in various young stands of the Selwyn Plantation Board were next remeasured, and increases of over three feet in height were recorded for *P. radiata* in the open. On the whole the growing year was good throughout Canterbury, and losses were slight in all species. Four new plots were established in the Selwyn system, all being plots which were needed to correlate site or other factors under observation on the eight original plots. For instance, one plot was installed at Kirwee in a stand of diseased eucalypts underplanted by pines, where the effect of the shading was to be observed. The new plot being established close by in a large opening in the gum overstand gives a comparative study which will enable the effect of the shading to be recorded on the basis of a similar site quality. The other three plots in a similar way are designed to furnish comparative data between different species on the same site or different sites for the same purpose.

The result of the three years' work to date on this project has now been compiled, and a typed copy is available for study in the School of Forestry Library. This will be enlarged each year with the current season's data.

III. A Text Book on Logging in New Zealand:—

Work has been commenced by Mr. Hutchinson on a text book dealing with logging in New Zealand, to fill the need of students of forestry and others interested in this phase of forest utilisation in this country. The work is one of a series of three the writer has in mind, the other two to deal respectively with the milling and marketing of timber in New Zealand, and with the production and use of forest products in the Dominion. The collection of material for the initial volume is well in hand, and the outline prepared. A good deal has yet to be done in the assembling of more data in regard to this subject in various parts of the country, which it is hoped may be accomplished in the next field season. As elaboration of the text is a spare-time project, it will be some time before the volume is ready for the press.

IV. A Text on New Zealand Forest Law:—

The Government of New Zealand is rather unique in that so great a part of its actual workings and daily contacts with its citizens are controlled and ordered not by Statute but by regulations, the Statutes in many cases leaving wide discretionary powers to "the Governor-General in Council" to lay down such regulations as are deemed fit. These regulations are issued from time to time in the "Gazette," and however much such a system of government may make for elasticity of administration, one great defect is the lack of any easy and quick reference to the whole body of legislation and regulation governing any particular subject.

Mr. T. W. Rowe, Lecturer in Forest Law, has compiled, during the past year, a text book on New Zealand's Forest Law, for the use of forestry students, in which are presented not only the full text of all existing legislation bearing on forests in this country, but all the regulations issued under the various Acts at various times, the whole being brought up to the present time, so that a reference to this book by forest officer, forestry student, or forest user will show immediately the position of affairs in regard to regulation and statute as it exists to-day.

The text contains nine chapters devoted to all of the Acts which bear in any way upon forestry and forest administration, such as "The State Forests' Act," "The Kauri Gum Acts," "The Land Act" and "Mining Act" in so far as they apply to forest lands, and the Acts for the encouragement of forestry with all regulations gazetted under the various Acts which are still in force, and with a chapter devoted to export and import duties on

forest products and to taxes and rates upon forest land and forest industries. The book does not pretend to be a critical analysis of New Zealand's forest legislation from the view point of constructive forest policy, but is a compilation of all the existing legislation and regulation in such form as to be easily accessible. Such a compilation, in view of the large body of regulations mentioned above, and the impossibility of laymen being able to search it out from among the files of the Gazette, is a real and urgent want in this country, and it is hoped that arrangements for its publication may be satisfactorily made.

V. Investigations in Forest Entomology:—

In the field of entomological research, Mr. A. F. Clark, acting Lecturer in Forest Entomology, has had in progress two lines of investigation regarding the horntail, *Sirex* investigation regarding the horntail, *Syrex* *juvencus*, in Canterbury, covering the positive identification of the pest as *Sirex* *juvencus*; the extent and nature of the damage done, and the menace presented to forestry in Canterbury by the pest; the partial working out of the life history of the insect; and the tentative selection of plans of control covering both silvicultural and biological measures. Some aspects of this investigation are presented in an article by Mr. Clark in this number of *Te Kura Ngahere*.

The second investigation dealt with *Megastigmus spermotrophus*, a pest responsible for large losses of Douglas fir seed. The work done consisted of the securing and positive identification of the fly from the imported Douglas fir seed, the breeding out and positive identification of the same insect from New Zealand grown seed from Tapanui, and some development of means of chemical control.

VI. Investigation into Minute Structure of Wood:—

Mr. C. S. Barker has continued throughout the past year his investigations into wood structure, working for the State Forest Service, under the supervision of the School of Forestry. An account of the work done by Mr. Barker during 1926, together with an article from his pen dealing with the preparation of woods for microscopic study, appeared in last year's number of *Te Kura Ngahere*. Since that time the following major projects have been dealt with:—

First, an investigation into the difference in character between heartwood and sapwood in rimu, and second, a detailed study of the structure of *Pinus radiata*. In addition to these major projects, such minor projects as the identification of wood specimens has been performed from time to time.