

It is especially to be noted that the results as herein recorded were not available to the Conference, and they therefore justify and emphasize the text of the recommendation.

Proposals for stabilizing and accelerating this important section of forestry work will therefore be submitted at an early date for Government consideration.

3. FOREST UTILIZATION.

Forest and mill utilization studies have been carried on during the year in continuation of the work commenced in 1926, and sufficient data are becoming available to enable definite conclusions to be formed as to the percentage of wood actually used in New Zealand sawmills, and also the percentage of grades obtained from the general run of logs in various parts of the country. This work is of direct utility in connection with the timber-sales operations of the Service, and should, when published, be of some considerable interest to the sawmill operators, as so far very little data based on definite facts have been available on this subject.

Another completed investigation was the test of the accuracy of various percentages of timber cruises as compared with a 100 per cent. cruise, the objective being to definitely establish the degree of accuracy given by the various forms of timber cruising.

Tapping of kauri for resin, referred to in previous reports, was continued and expanded. The present results show that the average yield from freshed taps cut on kauri rickers in 1924 is diminishing at an even rate, while the flow from unfreshed taps cut at the same time has now completely ceased in all cases. From large trees similar results were obtained. The increase in yield from taps placed higher up on the boles of the trees was verified. Yields per tap from those near the ground compared with those in the crowns were almost equal, taps at the top portion of the bole (within 15 ft. of the base of the crown) yielded 50 per cent. more resin, and those in the intermediate portion of the bole 35 per cent. more than those placed near the ground and in the crown.

Manufacture of Newsprint.

The question as to whether newsprint can be produced in New Zealand in open competition with the imported product is still engaging attention. In addition to laboratory and mill studies in North America, the Service investigated the financial and economic aspects of the newsprint industry both in America and Europe, and has also been engaged upon a survey of the commercial possibilities of establishing the industry in the Dominion, which included wood-supplies, transportation, chemical supplies, water, power, fuel, manufacturing facilities, labour conditions, markets, &c. Many of the field examinations have already been made, and it is hoped before the end of the year to present a report on the various commercial aspects of pulp and paper manufacture.

Considerable interest is now being evinced by the commercial community in this matter, and already syndicates have been formed or are in the course of formation to exploit the industry. In the interests of the public generally it must be mentioned that the manufacture of pulp and paper is so highly technical in character and involves such a large initial capital investment that the utmost care should be exercised in its establishment to ensure successful results.

Plantation Inventories.

During the year inventories of the chief old plantations were completed. This work of cataloguing the older plantations was completed in 1928. It marks one of the main steps towards scientific forestry in New Zealand, and gives for the first time a reliable indication of the growth and yield of the various species in our plantations, and also the volume of wood at present available. The knowledge that this work throws on the growth and yield of the various species so far planted in New Zealand is invaluable in the establishment of new plantations, and should operate to a great extent as a guide to future operations. The plantation inventories form the first part of the compilation of forest working-plans for the plantations, and are, in fact, the major part of the working-plans, the compilation of which would have been impossible without a detailed knowledge of the volumes and growth available. The compilation of the first forest working-plans for the major plantations is now in hand, but, as a large amount of work is still entailed, several years will probably elapse before the work is completed.

4. FOREST ECOLOGY.

Dr. L. Cockayne, F.R.S. (Honorary Botanist to the Service), in collaboration with the writer, prepared and published during the year a book of 171 pages and 118 illustrations (mostly photographs taken by an officer of the Service), entitled "The Trees of New Zealand." This work was completed just before the visit of the delegates to the Empire Forestry Conference, and was greatly appreciated by these overseas visitors as a valuable aid to the identification of our main forest species. It is also meeting with a ready sale to schools, colleges, &c., as well as to the general public.

The second edition of Dr. Cockayne's book, "The Vegetation of New Zealand," was issued from the press in December last. As mentioned in last year's report, this work presents an entirely new classification of the forests, and devotes considerable attention to the matter of their life-histories.

Other work performed by the Honorary Botanist was the publication of an account of hybridism in the forests of the Dominion in the "Birthday Book" of Professor A. J. Cajander, the eminent Finnish forester; a study of the comparative rate of growth of indigenous trees in the Esplanade Garden, Palmerston North; an examination of certain of the plantations at Whakarewarewa in order to ascertain what species Nature has introduced therein—an important matter of which accurate knowledge is essential; and a study of the vegetation of Rainbow Mountain, Rotorua, from the viewpoint of succession—an aspect of forest ecology fundamental for silviculture.