

would run a risk in that by failing to include the whole scope of forestry in his study he jeopardized his chance of subsequent employment.

The imperative need of practical experience in the bush and mill, actually taking a hand in all the various operations, was stressed by all the writers. It was clearly stated that a young man with theoretical training alone was of no value until he had actually performed himself the work which as an executive he would be expected to control. This view is heartily concurred in. It is considered that the contribution of the logging engineer to the industry will be of the head, not of the hand—that his value will lie in his ability to co-ordinate and plan, not in his physique; but the brain, however highly trained theoretically, can make no concrete application until the hand has taught it the physical factors of time and space through personal experience. This need for practical experience is fully recognized, and every opportunity is taken to work it into the teaching syllabus at the University through field camps and tours of inspection. One direct result of the enquiry already has been the extension of possibilities in this direction by the offer of two or three firms to take students during their summer vacations, and give them a chance at all operations in progress under experienced supervision.

In general, however, the training outlined seemed to meet with considered approval. Most replies were to the effect that the writers considered there was room in the industry for training of this sort, though opinions differed as to the opportunities open to young men at the present moment. The restriction of activities due to exhaustion of the native bush was mentioned as applying particularly to the North, where a few of

the firms approached were contracting rather than expanding. The smallness of the average New Zealand unit, which makes it impossible for many firms to retain the services of a full-time highly-trained man, was also mentioned. Co-operative effort among a group of adjacent units was mentioned as a possible solution.

It was from the larger firms, naturally, that the affirmative replies to the third question were received. In one case such a man was required at once, and it was doubted that the firm could wait until a student might be available. In two other cases such a man could be placed at once, while in three further cases, while not feeling the need at the present time, the firm was sympathetic towards the idea and willing to take a graduate, and try out his capabilities. One or two other cases made a reference to possible future developments.

It would seem, therefore, that there is already in New Zealand a small but definite field for young men to enter logging engineering work with private firms. What the possibilities in such work might be would be governed by the qualities revealed by the first few students who go into such work, and by the extent to which co-operative effort supplants individual effort among the smaller firms. The School of Forestry has in the past been diffident about encouraging students to take up this special work, fearing that they might not be able to make use of it at the finish. It is now revealed that there are definitely places open at the present time for two or three such men, which the School is unable at the moment to supply. Encouragement can now be given to likely students of stamina and character to take up this work in the definite knowledge that scope for their capability can be found at the conclusion of the course.

### *Special Courses for Wood-Working Industries*

Following on the special course in timber drying given by the School last year to members of the North Canterbury Timber Merchants' Association, a request for a similar course was received this year from a

group of interested timber workers at Ongarue, one of the large King Country mills of the well-known firm of Ellis and Burnand. Sufficient support has been pledged to ensure its success, so that arrangements have been

completed for Mr. Hutchinson, Lecturer in Forest Utilisation, to hold a series of lectures and demonstrations at Ongarue during the first fortnight of February, 1931. The course will be similar to that held in Christchurch last year, covering the structure and formation of wood, moisture content, shrinkage, hygroscopicity, principles of drying, and commercial seasoning practice. All arrangements for the actual giving of the course are being made by those interested at Ongarue.

A further request for another course of lectures to be given in 1931, dealing more

fully with the nature and properties of wood has also been received from the North Canterbury Association.

The School of Forestry is gratified to receive requests such as the ones just quoted, regarding them as the surest proof that the work of the School is appreciated by the forest using industries as having a practical bearing upon their own problems. Its response to such suggestions is limited only by the capacity of its staff and finance, and an enlargement of this field of its teaching work is a constant aim.

## Research

The programme of research carried out by the staff and students of the School of Forestry during the past year is as follows:—

### I. Investigation into Growth and Yield of Exotic Plantations in Canterbury.

This project was continued as usual during the past year, measurements on the various plots being performed by student parties under supervision of Mr. Hutchinson, as part of the practical work in forest mensuration. Four more plots were added during the year, two in the thinning area near Hororata, and two at Homebush, the estate of Jas. Deans, Esq. The system thus embraces twenty-three plots in young stands planted since 1921, two plots in stands planted 1913 (the two on the thinning area), one plot in 60-year Douglas fir, and one in 30-year larch-bigtree, both these latter being at Homebush.

The twenty-three plots in the young stands have hitherto been measured annually to afford detailed information on early height growth, seedling mortality, and time taken to establish crown contact. For many of the plots these questions have been settled, the stands having already entered the pole stage for the insignis pine at least. A change to periodic measurements is therefore contemplated. Initial measurements for volume of material four inches and over were made on all stands now of pole size, and future measurements on these plots will be made at five-year intervals.

At Homebush, one plot has been installed in a stand planted 60 years ago to Douglas fir with spruce, larch, various pines, oak, bigtree, etc., the fir being spaced 18 feet apart, in a general spacing of 9 x 9. The Douglas fir has dominated the other species, which are now being removed, leaving an almost full stocking of fir on an 18 x 18 spacing. These trees are now 16in. to 22in. in D.B.H., about 95 feet in total height, and 60 to 80 feet to an 8in. top. The estimated super. ft. vol. is 56 M.B.F. per acre. The removal of the other species should make for good growth for the next decade or more.

The other plot at Homebush is in a 30-year mixture of European larch with bigtree, the spacing being 9 x 9. The larch is now 9 to 15 inches D.B.H. and 60 feet in height, and is being cut out for posts and mine props, while the bigtree, which is now 16in. to 20in. D.B.H. and 60 feet high, and is spaced 18 x 18, will carry on as a pure stand.

On the thinning area, one plot each was installed in the Corsican and pondosa pines, planted 4 x 4 in 1913. Measurements were taken of stocking and volume of material 4.0 inches and over just prior to the thinning, and again immediately after. The felled material was cut and stacked, and the utilizable volume in cords of firewood recorded. As these figures will probably prove of general