

The Canterbury College School of Forestry, Canterbury College, Christchurch, New Zealand

The Canterbury College School of Forestry is a professional school of forestry recognised as such in the statutes of the University of New Zealand.

WORK OF SCHOOL: The work of the School consists of:

- (1) The giving of instruction in technical forestry, and
- (2) The carrying on of research into problems relating to forestry in New Zealand.

COURSES OF INSTRUCTION: The School provides three courses of instruction:

- (1) The Degree Course.
- (2) The Associate Course.
- (3) The Ranger Course.

The Degree and Associate Courses are designed for matriculated students desirous of becoming qualified technical foresters; while the Ranger Course caters for students, matriculated or non-matriculated, who desire to pursue a course of an essentially practical nature.

The Degree Course is that prescribed for the Degree of Bachelor of Forestry Science in the University of New Zealand, and covers four years' work, a first year in pure science and thereafter three years in professional forestry subjects, as follows:—

First Year: (For Forestry Intermediate Examination)—Biology, Physics, Inorganic and Organic Chemistry.

Second Year: (For First Professional Examination)—Elements of Forestry, Forest Mensuration, Surveying and Drawing, Forest Botany, Forest Geology, Accountancy and Business Organisation.

Third Year: (For Second Professional Examination).—Wood Technology and Properties of Materials, Dendrology, Forest Zoology, Forest Exploitation and Utilisation, Silviculture I, Forest Management I.

Fourth Year: (For Third Professional Examination).—Silviculture II, Forest Management II, Forest Protection, Forest Law, Policy and Administration, Economics, History and Development of Forestry, a Specialised Subject.

The Associate Course is a three-year course of theoretical and practical forestry leading to the Certificate of Associate of the School of Forestry, Canterbury College, a certificate issued by Canterbury College alone, and carrying with it no status in the University of New Zealand. It is intended for students who, with a limited time at their disposal, wish to fit themselves for executive positions in forestry organisations. The professional work covered in this course is almost identical with that of the Degree course, but the preliminary year of study in pure science is omitted and the standard of work required is lower.

The Ranger Course comprises a series of lectures, laboratory and field work in forestry, covering two or three years according to the time and finances of the individual student. In scope the course is intensely practical, stress being laid on the field application of the work. The range of subjects to select from is the same as

that set out above in the Degree Course, and the standard is lower than that required for the Associate Course. Matriculation is not required, as the course is open to all men who wish to profit by it. Certificates are granted by Canterbury College to those students successfully completing courses of study in this course.

FACILITIES FOR LABORATORY AND OTHER FIELD WORK.

The School of Forestry is a department of Canterbury College and enjoys the full use of all facilities provided there for lectures and laboratory work. The School possesses a library, forestry museum, laboratory, lecture and draughting room, while the well-equipped lecture room and laboratories in the Department of Biology are used for instruction in certain subjects. Surveying and drawing, etc., are dealt with by the School of Engineering, while such subjects as economics, accountancy, physics, chemistry and geology are dealt with in their respective College Departments.

A very large proportion of the forestry course consists of field work, and the School possesses unique facilities for carrying this out. Nearby are the Christchurch Botanic Gardens, Hagley Park, Riccarton Bush and the Bottle Lake Plantation, while within short motoring distances are the plantations of the Selwyn Plantation Board, Greendale Estate (belonging to Canterbury College), and numerous private estates—all available for various branches of field work.

The School itself possesses a small experimental and demonstration forest nursery at Opawa, ten minutes' ride from the College, and a two hundred acre experimental forest at Burnham, twenty miles distant. This area was planted in 1926, and is intended to provide a silvicultural laboratory. Through the courtesy of the Selwyn Plantation Board a block has been set aside in one of their younger plantations, to be used by the School as a thinning practice and experimentation area.

The School possesses a car for the transport of field parties. This car when not in use by regular classes for field instructional trips may be used by senior students for research and investigational projects.

An annual field camp of three weeks is held during the spring vacation, when a varied programme of practical work is performed in connection with dendrology, silviculture, entomology, mensuration, utilisation, logging engineering, management, surveying, etc. The Camp is held alternately in Canterbury and Westland, thus gaining the full benefit of the wide range of forest types and technique presented.

During the autumn vacation of three weeks and the summer vacation of over three months, students usually gain field experience by obtaining employment with the State Forest Service or various private and municipal forestry organisations.

RESEARCH: The staff and senior students of the School are actively engaged upon various lines of research into the native and exotic forests and many contributions have already been made to the literature of New Zealand forestry.

FURTHER INFORMATION: Full details as to prescriptions of courses, fees, etc., are provided in the illustrated prospectus of the School, obtainable on application to the Registrar, Canterbury College, Christchurch, who will furnish any further information required.

RESEARCH.

Original work in forest research by staff and students of the School of Forestry was carried out during the past year as follows:—

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

This project has been mentioned in all previous issues of "Te Kura Ngahere," having been commenced in 1925. Last year's issue summarised the number of plots established in various localities and species up until the end of 1928, while the same issue contained an article by D. Kennedy setting out comparative data and tentative conclusions drawn from the records of the past four years.

The year 1929 saw a further amplification of the project in regard to the Selwyn sample plots together with certain changes in the measurements and records made. On four of the plots established in pure stands of *P. radiata*, planted in the years 1921 and 1922, diameter measurements were commenced, a considerable proportion of the trees being above four inches D.B.H. Although the average D.B.H. is still below four inches on all the plots, and although a few individuals are still less than two inches, and were not measured, the leading members of the stand are increasing rapidly in diameter as well as in height, the largest encountered being 5.7 in. in stand of 1-0 steck planted on ploughed land in 1922. Growth in height has been marked, the averages in these four plots being over 20 feet, with extremes of 27 feet in stands of both 1921 and 1922 origin. This great increase in height, together with the interlocking of the branches, and formation of a close canopy, has made it impossible to continue the former method of direct measurement of height of all individuals. Abney readings on a range of accessible trees has

therefore necessarily been substituted. Health and mortality have been noted as usual. The four older plots of *P. radiata* mentioned above have ripened cones for the past two years, on the leading individuals. In all the stands studied general health is good, and growth has been satisfactory. The incidence of the Chermes scale and the fungus *Botryodiplodia pinea* on sickly and ill-planted trees is being watched.

Two new plots were planned, and one completely installed during the past year, in the practice thinning area granted the School by the Selwyn Plantation Board. Here *P. ponderosa* and *P. laricio* planted very closely in 1913 are being thinned by students as practical work in the study of silviculture. Plots were laid out, one in each species, for measurement of the stands before and after thinning, while periodic measurements will be made in future.

II.—Westland Rimu Forest Silvical Investigation.

This project was continued by Messrs Foweraker, Hutchinson and Kennedy during the long vacation, December to February last, at the Westland Forest Experiment Station. The system of permanent sample plots initiated the previous year was extended to include further types of forest cover, re-counts and remeasurements of projects calling for annual record were made, and a number of silvicultural experiments were set on foot. These included the establishment of nurseries for young wildling rimu to be used later for planting out; the experimental liberation or cleaning of sapling rimu coming up through second-growth scrub on cutover land, and the cutting of a section of mature bush under a modified selection system, to determine possibilities of this method in securing reproduction. The report to the State Forest Service covering the season's work embodied the following results:—An interim statement of increment on pole, standard and mature stands; a finalised statement on average density of stands; an interim statement on the germination of seed in rimu; and a final discussion of the proportion and distribution of the sexes in rimu.

Of these projects, the section dealing with the germination of seed in rimu, is, at the request of the State Forest Service, now being prepared for publication, as a noteworthy contribution to the science of forestry in New Zealand.

III.—Investigations into Minute Structure of Wood.

The investigations of Mr C. S. Barker, working for the State Forest Service under the supervision of the School of Forestry,

have been recorded in previous issues of this journal, together with several articles by Mr Barker bearing upon various phases of wood anatomy.

Upon Mr Barker's departure for England last year, the work was taken in hand by Mr B. E. V. Parham, B.A., who is continuing the investigations into the structure of New Zealand woods. The major project in progress is a detailed study of the structure of the wood of the five indigenous species of *Nothofagus*, with a view to the evolution of a reliable means of specific identification. The close similarity of some of these species, and the frequent occurrence of hybrid forms makes the field identification of the material supplied a difficult matter. The co-operation of Dr. Cockayne, honorary botanist to the State Forest Service, and the authority on the taxonomy of the New Zealand beeches, has served to overcome this difficulty, and all material supplied from the field, with its accompanying foliage, is first submitted to him for certification. The past year has been occupied mainly with preparation of the material. It is expected that the structure study will be completed during the coming year.

Other projects carried out during 1929 were investigations of the nature of the heartwood and sapwood of miro and of totara. These studies were similar to that performed previously on rimu by Mr Barker, and dealt with the relative proportions of sapwood and heartwood products found in the sap, heart, and intermediate zones, as having a possible bearing upon durability.

IV.—Students' Special Studies.

It is a requirement of the course set out for the B. For. Sc. Degree in the University of New Zealand that every student shall in his third professional year take up a special study, which shall consist of an advanced treatment of some section of his course, and upon which a special report shall be submitted.

The three special studies to be undertaken by the senior students during the coming year are:—An experimental bleeding of maritime pine by M. R. Skipworth; an investigation of a fungoid complication inter-related with insect attack on exotic conifers by G. H. Hocking, and a comparative study of certain elements of cost in logging by C. T. Sando. Preliminary organisation of these projects has already been commenced.

SPECIAL COURSE IN TIMBER DRYING.

An important step toward the broadening of its teaching functions beyond that of instruction of full-time students of forestry was taken by the School of Forestry during the year just passed. This step was the holding of a special course of lectures on behalf of the North Canterbury Timber Merchants' Association dealing with the drying of timber. The course was conducted at Canterbury College during the month of June, and consisted of eight two-hour periods of lecture and discussion. The topics as set out for discussion were:—

1. The nature, composition, function, and formation of wood.
2. The moisture content, shrinkage and hygroscopicity of wood.
3. The drying of wood—necessity, effect on properties, and development of defects.
4. Basic considerations in air-drying.
5. Air-drying methods.
6. Basic considerations in kiln-drying.
7. Commercial types of dry-kilns.
8. Kiln operation.

The course was attended by eight members, representing six of the leading City firms. Interest was manifested throughout, discussion being full and free. Appreciation was expressed by those attending, at the conclusion of the course, and the suggestion put forward that any offer of future courses would meet with a willing reception. As it is one of the aims of the School to be of greatest possible use, particularly to the wood-using industries of the province, the Timber Merchants' Association and others may be assured that any avenues of co-operation suggested to the School will meet with a response limited only by the bounds of the financial and physical resources of Canterbury College.

EXPERIMENTAL THINNING AREA.

The thanks of the School of Forestry are due to the Selwyn Plantation Board for a valuable addition to our field facilities, in the making available to the School of a thinning practice and experimental area in one of its plantations. The area set aside is a portion of a fifty acre block near Coalgate, about an hour's journey from the School. It was planted in 1913 to Corsican and pondosa pines, in pure blocks, with a planting spacing of four by four feet. The stand has developed well, enclosed by chain-wide wind-breaks of insignis pine, and now, at 16 years' old, with heights up to 30 feet, and D.B.H.'s up to 7.6 inches, the close spacing is having a deleterious effect on growth.

Under the provisions of its working plan, the Board commenced the thinning of the area this year. Fourteen acres were, however, set aside for the School of Forestry to thin in the next two or three years. The portion set aside includes both Corsican and pondosa pines. A start was made this winter by the students in silviculture, the pondosa pine being commenced with. Two methods of selection of trees for felling are to be applied to each species, the different grades of severity applied. Sample plots will be installed in each section to test quantitatively the success of each undertaking. The demarcation and initial measurement of the plots was commenced this spring by the students in mensuration, who will also be responsible for the measurement of the material removed.

The granting of the use of this area by the Board is warmly appreciated, especially as it will be a number of years yet before the College's Experimental Forest at Burnham will be large enough to provide material for practice. The hearty co-operation always extended by the Selwyn Plantation Board, and all other local forestry organizations, has been a most important factor in the successful development of the School of Forestry.

Forestry Club.

CHARLES CHILTON.

On October 25th, Charles Chilton, M.A., D.Sc., C.M., LL.D., F.L.S., C.M.Z.S., F.N.Z. Inst., formerly Rector of Canterbury College and Professor of Biology, died after a brief illness.

His life work, his rich scientific honours, his devotion to science and to civic life have been ably dealt with in other journals. In these pages it is intended to pay grateful tribute to a phase of his activities unmentioned elsewhere—to his full appreciation of forestry, of what forestry stands for, of its value to the nation, and to the need of a sound scheme of forestry education for the Dominion.

Dr. Chilton was ever a tree lover. The trees of the Christchurch parks, streets, and gardens were his friends. Constantly in his lectures on botany he culled examples from his rich and varied acquaintance with trees. He was an active member of the Christchurch Beautifying Association, of the Christchurch Domains Board, of the Canterbury Horticultural Society and of the New Zealand Horticultural Institute. As first editor of that inspiring journal "*The City Beautiful*," he put his ideas and ideals

into a form capable of reaching every class of reader.

Sometime President of the Canterbury Branch of the New Zealand Forestry League, he did much in the early post-war days to arouse interest in the pressing need for true Dominion forestry. As far back as 1912 he was a prime mover in the establishment of the Canterbury College Biological Station at Cass, where he was enthusiastic in the conservation of the large areas of mountain beech—Canterbury's valuable protection forest in the larger watersheds. To his foresight, too, Canterbury College owes the cottage and freehold at Arthur's Pass, where the mountain beech forest and alpine vegetation may be studied at its best.

Associated among tree lovers with Dr. Chilton was the late T. W. Adams, of Greendale, North Canterbury, a noted arboriculturist and practically the founder of Canterbury School of Forestry. The late Mr. Adams endowed Canterbury College with an estate and a legacy for the purpose of establishing a lectureship in forestry. Thus the School came into being and it is pleasing to reflect how gratifying to Dr. Chilton was the bequest of his old friend.

The School had many vicissitudes in its early days; but it had three pillars of support—Dr. Chilton's sympathy, the use of his well-equipped Department of Biology, and the free run of the tree-planted Canterbury Province, a veritable field laboratory for forestry where Dr. Chilton's name was everywhere known and respected. Here it cannot be over-stressed how great an advantage was the free use of the Department of Biology with its lecture room well equipped for lecturing in forest botany, dendrology, silviculture and wood technology, the botanical laboratories with their full outfit of apparatus, preserved plant material and herbarium specimens. A special room, too, was allocated for research in wood technology.

Active and energetic to the last, Dr. Chilton's final service was to conduct a radio-broadcasting campaign on behalf of the primary industries, and while giving freely in this work at Dunedin, he contracted the chill which led to his last illness.

After a long, useful and busy life, he now rests amid fitting surroundings in the peaceful cemetery of his boyhood's district, East Eyreton, North Canterbury. Here, surrounded by noble trees, typical of Canterbury's arboriculture, lulled by breezes through cypress, pine and fir, he sleeps his last sleep.
