1925.

NEW ZEALAND.

# AGRICULTURAL INSTRUCTION IN NEW ZEALAND

(REPORT OF THE BOARD OF AGRICULTURE ON).

*Laid on the Table of the House of Representatives by Leave.*

## PREFACE.

### I. NOTES ON THE SYSTEM OF PUBLIC EDUCATION IN THE DOMINION, WITH SPECIAL REFERENCE TO THE PRESENT PROVISION FOR INSTRUCTION IN AGRICULTURAL SCIENCE.

THE general control of public education, and the inspection of all public primary, secondary, and technical schools are in the hands of the Education Department, which administers the funds provided by Parliament for educational purposes. The Department also controls directly the Native primary schools, and special schools of various kinds. The Department classifies all teachers and fixes all salaries, conducts examinations, prescribes syllabuses of instruction. The direct control of primary schools and district high schools is, however, in the hands of the Education Boards of the nine education districts, each school being also managed by a local School Committee under the Board. The Boards of Education are also in most cases controlling authorities of technical schools, which, however, are directly managed by more or less independent Technical School Boards wherever the importance of the school warrants the employment of a full-time staff. Secondary schools generally are controlled by independent Boards of Governors, subject, however, to the Act and regulations administered by the Education Department, which thus exercises a general supervision over all schools supported by public funds.

The total cost of public education in the Dominion amounts to about £3,250,000 per annum, of which less than £200,000 is provided from reserves revenue, over £3,000,000 being paid from parliamentary votes.

#### PRIMARY SCHOOLS.

Primary education is free and compulsory for children between the ages of seven and fourteen. The primary-school life of the children extends normally over a period of about eight years, between the ages of five and thirteen, but no child may leave school before gaining a Sixth Standard certificate of proficiency unless he has reached the age of fourteen years. Statutory provision exists for increasing the age-limit of compulsory attendance at school to fifteen years.

The primary-school syllabus includes subjects of instruction grouped under the general headings of—

(1.) English—including oral and written expression.
(2.) "Graphic" expression—including drawing and handwork.
(3.) Arithmetic.
(4.) Man and nature—including nature-study, geography, elementary science, and home science.
(5.) Man and society—including history, civics, and moral instruction.
(6.) Physical training—including physical exercises, swimming, and lessons on hygiene and health.

No attempt is made to treat any of the subjects from a vocational point of view, the aim of primary-school instruction in the subjects included under heading (4) not being directed towards any particular occupation, but rather towards awakening the interest of children in natural phenomena, inculcating a love of nature, and also giving an elementary training in scientific method.

The nature-study and elementary-science work in the primary schools is, however, generally supervised by instructors who have had special training in agriculture and agricultural science, and in this way these studies are given a practical flavour, which is, moreover, reinforced by actual practical work in the school-garden, and, in some districts, in the home plot cultivated by the child in connection with agricultural-club competitions.

### Junior High Schools.

Legislative provision was made in 1924 for the establishment of junior high schools which should form a connecting-link and trying-out field between the primary school and the secondary school. Such schools provide a three-years course for pupils who have qualified for attendance by gaining a certificate of competency of Standard IV of the primary-school course—*i.e.*, the curriculum is intended to cove what has ordinarily been the last two years of the primary course and the first year of a secondary course. All pupils in the junior high school are required to take, for approximately half the school week, the same instruction in the subjects of the primary-school syllabus; for the remainder of the school week the pupils take, according to the decision of the Principal after consultation with the parent and the head teacher of the school previously attended, a supplementary course of instruction taken from the following: Academic, manual, commercial, agricultural, art, or other approved course. Provision is made for change of course. It is not intended that the supplementary course shall be vocational in character, but rather that it shall be designed to discover the special aptitudes of pupils, with a view to their transfer from the junior high school to a suitable calling, or to an appropriate higher educational institution, at the end of the three-years course. One such school is being established at the present time in a country district, but no information is yet available as to the character of the course in rural science which will doubtless be a leading feature of its curriculum. A junior high school may be placed under an Education Board (and School Committee) or under a High School or Technical School Board.

### Public Institutions for Secondary Education.

In addition to the junior high school, three classes of full-time post-primary schools are provided for under the Education Act—namely, district high schools, technical high schools, and secondary schools.

A district high school is a public school having a primary department in which primary instruction is given and a secondary department in which secondary instruction is given. A district high school is governed by the Education Board and School Committee. District high schools are established mainly in rural centres where only a moderate demand for secondary instruction exists. The headmaster manages both secondary and primary departments, and receives extra salary on account of the secondary department, in which special secondary assistants are employed. A district high school may be established where there are at least twenty prospective secondary pupils.

Technical high schools are full-time day schools providing secondary instruction, including vocational and technical courses. A technical high school is not usually established unless at least one hundred secondary pupils are qualified and willing to attend. Such schools are usually under the direct management of a Technical School Board, which may be under the general control of the Education Board of the district.

The term "secondary school" is restricted to schools of more academic type, usually possessed of special endowments, and governed by an independent Board of Governors. Substantially the same qualification for free admission is required in all post-primary schools, the minimum qualification being a Sixth Standard certificate of proficiency or its equivalent, which entitles the holder to free secondary education for two or three years, according to circumstances, while at the end of two years the pupil may qualify for a further period of free tuition up to the age of nineteen years.

About two-thirds of all the pupils in Standard VI in the primary schools proceed to free tuition in post-primary day schools under these conditions. The courses in secondary schools and district high schools are usually taken in preparation for the Public Service Entrance and Matriculation Examinations, and preponderance is given to the more academic types of studies. In the country district high schools, however, provision is made by regulation that all boys holding junior free places—practically all boys in the first two years—shall take practical agriculture and dairy science for at least two hours weekly, unless equivalent instruction of a vocational character is otherwise provided. In most of the secondary schools also provision is made for training in elementary agricultural science, and in many cases practical work is also done in the field. In some of the technical high schools, particularly in country districts, prominence is given to the agricultural course (the Feilding Technical High School, for example, definitely calls itself the Feilding Agricultural High School).

The course in agriculture in all post-primary schools is usually under the direction of instructors who have specialized in agricultural science and possess either a degree or a diploma in agriculture. In the district high schools the work is supervised, and often largely done, by the itinerant instructors in agriculture appointed by the Education Boards to take charge of the supervision of nature-study and elementary science in the primary schools. There are, however, some sixty-eight district high schools, and about 2,570 primary schools, while the number of itinerant instructors in agriculture employed by the Education Boards is only about twenty-five, so that in the main the science and agriculture must be taught by the permanent staff with, in many cases, little or no personal assistance from the itinerant instructors in agriculture except by way of rare visits, and during refresher courses held from time to time, sometimes at a State farm, where the instructors under the Department of Agriculture are also available.

In the secondary schools and technical high schools the subject is in the hands of specialists with training in farm practice and agricultural science, several of whom hold the Bachelor of Science degree in addition to a degree or diploma in agriculture. The agricultural course is not at present popular, being taken by a comparatively small proportion of boys in post-primary schools—not probably by more than one in ten—in spite of the fact that over 30 per cent. of boys leaving secondary schools go farming. Even in technical high schools, where courses in preparation for vocations are specially

encouraged, there is a strong demand for instruction in the subjects which are regarded as the best from the point of view of the Public Service Entrance and Matriculation Examinations. In the Matriculation Examination the subject of agriculture may be taken as an alternative to botany or physiology as the second half of the subject of natural science, which is itself an optional subject in the examination. For the Public Service Entrance Examination, agriculture is also an optional subject, ranking, however, with physical science and home science, while dairy science is also included as a separate subject, ranking with hygiene, geology, botany, and zoology.

### Higher Agricultural Education.

A University course in agricultural, leading formerly to the B.Sc. in Agriculture, and latterly to the B.Ag., has been in existence for more than twenty years, the Canterbury Agricultural College at Lincoln having been recognized by the Senate for many years as a School of Agriculture.

The statute in operation some twenty years ago required that students should matriculate and then take a four-years course, keeping terms for two years at a University College, and thereafter for two years at a recognized School of Agriculture, and should, in addition to keeping terms by attending lectures and passing the college examinations, also hold a certificate from the School of Agriculture of having passed an examination in practical farm-work. The University examinations for B.Sc. in Agriculture at that time included fifteen subjects, as follows:—

(1.) Mathematics and mechanics.
(2.) Physics } as for the B.Sc. degree.
(3.) Chemistry }
(4.) Biology.
(5.) Mechanical drawing—as for the B.Sc. in Engineering.

(These five subjects could be taken at the end of the second year, or even one section at the end of the first year, at a University College.)

(6.) General principles of agriculture.
(8.) Botany.
(9.) Physiography and meteorology.
(10.) Entomology.
(12.) Mechanics applied to agriculture.

(These five subjects could not be taken before the end of the third year.)

(7.) Practical agriculture.
(11.) Veterinary science and hygiene.
(13.) Agricultural chemistry.
(14.) Book-keeping.
(15.) Surveying and levelling.

(These five subjects could not be taken before the end of the fourth year.)

In the year 1915 agricultural science was introduced for the first time as an optional subject in the Matriculation Examination. Certain changes were also made in the prescription for the Degree in Agriculture, which is now called the B.Ag. The subject of mathematics and mechanics was removed from the syllabus, but algebra and geometry had to be taken at the Matriculation Examination. The degree course was shortened to three years, including only one year at a University College, the subjects being biology, physics, inorganic chemistry, and organic chemistry to the standard of the medical intermediate examination, and mechanical drawing. The B.Ag. examination in those five subjects could be taken at the end of the first year, and the remaining subjects at the end of the second or third year, but not more than six subjects in any one year. In place of the second year at a University College the student was required to do in some year outside the three years of the course such practical work as the Director of the School of Agriculture might prescribe, and to hold a certificate from the School of Agriculture of having passed an examination in practical work. In 1916 agricultural science was made an alternative to botany or physiology as the second paper in the optional subject of natural science for the Matriculation Examination, and it has so continued ever since. In the prescription for the B.Ag. examination the subject of farm engineering (including heat engines) was substituted for mechanics applied to agriculture of previous years.

Few alterations have since been made in the B.Ag. course, and none in the half-subject of agriculture for the Matriculation Examination, but in 1922 the subject of agricultural science (two papers) was introduced into the list of optional subjects for the B.A. pass examination, a practical certificate being required as for other science subjects.

In 1924 a professorship in agriculture was established at Victoria University College, Wellington, as the result of a gift of £10,000 by the late Sir Walter Buchanan, and a professorship in agriculture is being established in Auckland University College as the result of a bequest of £20,000 from the late Sir John Logan Campbell. The University Senate has recognized both these colleges as Schools of Agriculture.

### Training of Specialist Instructors in Agriculture.

Provision is made by way of agriculture bursaries for students wishing to become instructors in agriculture under the Education Department. Such bursaries may be held at a State experimental farm, an Agricultural College, a University College, or other similar institution under public control in New Zealand approved by the Minister of Education for the purpose. Candidates must have taken a satisfactory agricultural or rural course at a post-primary school and have passed the Matriculation or an equivalent examination.

### Training of Teachers.

Provision is made in the teachers' training colleges for some instruction in agricultural science so that teachers may be better prepared to link up nature-study in the country schools with farm experience, and to follow the suggestions of the itinerant instructors. The training of teachers for this work is also continued by the itinerant instructors in most districts by means of short refresher courses held during vacations and, where possible, at a State demonstration farm, so that the assistance of the experts in the Agricultural Department may be obtained. In addition, regular weekly instruction is given to pupil-teachers in science, including dairy science and agriculture, at Saturday classes conducted in suitable centres throughout the Dominion, and often taught by the itinerant instructors in agriculture. The subjects of agricultural science and dairy science are two among six optional subjects for the Teachers' Class D Examination, and two among twenty optional subjects for the Teachers' Class C Examination. The Class D Examination is the lower qualification, and corresponds in standard roughly to the Matriculation Examination. More than 80 per cent. of classified teachers in primary schools hold either the D or the C certificate.

## II. NOTES ON THE FUNCTIONS PERFORMED BY THE DEPARTMENT OF AGRICULTURE IN RELATION TO INSTRUCTION IN AGRICULTURE.

The main part taken by the Department of Agriculture in agricultural education, besides the administration of the Ruakura Farm School, referred to elsewhere in this report, has been that of diffusing knowledge by means of more or less direct advice given to producers by the general staff of the various divisions of the Department, aided by its scientifically trained officers. Though its functions were originally purely administrative, the Department, having an intelligent and progressive farming community to deal with, has gradually evolved methods by which a considerable section of the officers engaged in the duties imposed by the various Acts which it has to administer have now become a medium for conveying to producers practical knowledge, based upon scientific facts or conclusions, for the purpose of enabling them to cope to the best advantage with the various animal and plant diseases or pests for the repression of which the legislation entrusted to the Department's administration is designed. The system is by no means uniform throughout, neither is it complete; but it does, on the whole, prove of marked value to producers, and it is satisfactory to note that as instruction has increased the necessity for inspection has diminished.

Apart from this combination of instruction with inspection, certain more or less exclusively instructional services are maintained.

The lately established Fields Division is almost entirely devoted to instruction, its field officers' duties consisting mainly of advising farmers, often upon the farm itself, on matters relating to crops, pastures, fertilizers, &c. The keenness of the demand for the services of these officers well illustrates the usefulness of their work. The Dairy Division has its dairy instructors advising and assisting dairy-factory managers, its farm dairy instructors acting in co-operation with dairy factories in advising and assisting dairy-farmers to furnish clean milk; and its milk-testers doing their part towards building up better-yielding herds. The Horticulture Division has its orchard instructors and apiary instructors, both combining instruction with inspection. The Live-stock Division has a large staff of inspectors, many of whom now combine instruction with inspection; field veterinarians who give much instruction and advice to pastoralists and dairy-farmers on matter pertaining to animal health; poultry instructors; a wool instructor; and an instructor in swine-husbandry.

Side by side with this work, investigation and research are carried on in the field in close co-ordination with, and based upon, the activities of the three laboratories—veterinary, chemical, and biological—maintained at headquarters by the Department. Each of these establishments is staffed by capable officers, well equipped with scientific knowledge, who work in conjunction with the field officers, thus enabling the results of laboratory work to be tested out and given practical effect in the field. The Biological Laboratory staff has been considerably increased in late years, and a fourth laboratory, associated with the Dairy Division, and intended to deal with matters of dairy-produce manufacture, is being established. These laboratories have done good work in assisting to meet the requirements of the quickly expanding primary industries in the direction of investigation and research. It is recognized that due regard has been given by the Government to their requirements as to staff and equipment, and no doubt, in view of the present-day realization of the necessity for assisting agricultural education and aiding the further development of the resources of the land, provision will be made for any necessary further growth on sound lines, both as regards staff and accommodation of these valuable branches of the Department's activities.

Further lines of instructional work lie in the short courses for farmers given in country centres—mostly in the off-season. These are organized by the Fields Division, and officers of all branches of the Department take part in giving lectures and demonstrations to the farmers attending. These courses, termed "farm schools," each occupying about a week, are evidently appreciated by farmers, and they constitute a distinctly valuable means of instruction.

Boys and girls' agricultural clubs are also conducted in some districts in conjunction with local farmers' organizations, with the assistance of the Education Department, the Department of Agriculture bearing most of the cost. An expansion of this means of instruction is anticipated.

The large State farms at Ruakura and Weraroa have been responsible for much demonstration work, which has proved in itself of great educational value to producers. In addition, a number of smaller farms and experimental and demonstration areas are established in suitable rural centres. Also, two demonstration dairy farms, financed and managed by local enterprise, are assisted by advice from the Department's officers and aided financially by subsidies from the State.

# REPORT.

Board of Agriculture, Wellington, 27th July, 1925.

To the Hon. the Minister of Agriculture.

SIR,—

In your letter of 20th February you express the wish that the Board of Agriculture should make an inquiry as to the steps which should be taken to give more adequate attention to agricultural education, as follows:—

"With reference to the question of agricultural instruction, the Government is desirous of having a full inquiry made into all phases of it, including the extent to which further instructional facilities in the form of an Agricultural College or Colleges need to be provided in order to adequately meet the requirements of the Dominion as a whole. The matter has been discussed in Cabinet, and a decision arrived at that your Board should be asked if it would undertake this inquiry.

"The order of reference will be as follows:—

"(*a.*) What new agricultural training institution or institutions are required in order to provide facilities in accordance with the Dominion's present-day requirements for the efficient training of—

"(i.) Students desirous of taking a University degree in agriculture, fitting them fully to become either instructors or research workers in agriculture:

"(ii.) Students desirous of becoming farmers, well equipped with a knowledge of the principles of scientific agriculture as applied to the work of practical farming in all its branches?

"(*b.*) The probable number of students of the kind mentioned in sub-paragraph (i) of (*a*) that could be utilized in New Zealand after taking their degrees.

"(*c.*) How such an institution or institutions should be equipped as regards staff, laboratories, and farming-land.

"(*d.*) Where each or any of such institutions should be situated in order to serve most efficiently the present requirements of the Dominion as a whole.

"(*e.*) To what extent, and under what conditions, could the Canterbury Agricultural College be utilized (subject to the approval of the Board of Governors) as an integral portion of the general scheme?

"(*f.*) What estimated Government expenditure would be involved by giving effect to the Committee's recommendations regarding paragraphs (*a*), (*c*), (*d*), and (*e*) immediately above.

"I appreciate the fact that the members of the Board are all more or less busy men, and that it may be a matter of some difficulty for them all to find sufficient time to devote to this inquiry, but it is felt that, with the knowledge already in their possession, and their intimate knowledge of the requirements of the Dominion in the matter of agricultural instruction, they are well equipped to go into the whole question to the best advantage, and to advise the Government as to the course which should be adopted in establishing a higher and better system of agricultural instruction than exists at the present time.

"It was further decided to ask the Board to associate two responsible Government officers representing the Education and Agricultural Departments respectively with it in the inquiry. I should be glad if the Board would undertake this responsibility, and commence its sittings for the purpose at as early a date as is quite convenient to you and to its members.

"Full discretion will be given to call evidence, visit existing educational institutions, Government farms, &c., and generally to do any acts which may seem necessary or desirable in order to enable information to be obtained and fully consider a report to be prepared for the information and guidance of the Government.

"The Director-General, Department of Agriculture, will be pleased to confer with you at any time with a view to making detailed arrangements as to procedure, and any other matters which require to be settled in connection with the conduct of the inquiry."

The Hon. George Fowlds represented the Senate of the New Zealand University, Dr. Reakes represented the Agriculture Department (at times, in his unavoidable absence, Mr. Cockayne took his place), and Mr. La Trobe represented the Education Department.

In compliance with your wish, the Board held a series of meetings for the purpose of taking evidence on the subject, commencing on the 4th March, at Wellington, and continuing at Auckland, Wellington, and Christchurch. At each place educational authorities gave evidence, and public notification was given that the Board would hear any other evidence on the subject. During the course of our visits we inspected Ruakura Farm in connection with the instruction given to lads in agriculture. At Auckland, Orakei was viewed, as it was stated that some 50 or 100 acres of this land would be allocated to the Auckland University College Council. Calling at Levin on our way to Wellington, we made a thorough inspection of the Agriculture Department's Weraroa Farm. We then visited the Wairarapa to see the farm given by the people of the district for the training of returned soldiers who wished to go on the land. Evidence was taken as to the suitability of these two latter farms as a site for an Agricultural College. At Christchurch further evidence was taken and a representative of the Otago University Council stated the views of his Council so that the Board had

the advantage of hearing the opinions of the four University College Councils on the subject. The Board paid a visit to Canterbury Agricultural College, inspecting the buildings, meeting the staff, and inquiring as to its needs. The Board's meetings were adjourned at Christchurch on the 19th March, and members returned home.

To complete the itinerary the Board reassembled at Waipawa on the 22nd April, in order to take evidence from Hawke's Bay witnesses, and to visit the Smedley Estate, which was bequeathed to the Crown by the late Mr. Josiah Howard for agricultural education.

Returning to Wellington on the 23rd April, the Board inspected the Biological Laboratory of the Department of Agriculture at Kelburn, and later the Wallaceville Laboratory and farm. The remainder of the time in Wellington was spent in the consideration and final adoption of the report. The Board concluded its sittings on this inquiry on the 27th April.

In order to be in a position to answer the questions in the order of reference it was first necessary for the Board to ascertain officially the extent and quality of the provision now made by the Departments of Agriculture and Education by way of agricultural instruction. Representatives of each Department were invited to give evidence, and submitted full information, which is summarized in the preface to this report.

Having in mind that the schools are the nurseries of future farmers, farm training-college pupils, and University students in agriculture, the Board went fully into their relation to agriculture, with a view to discovering not only the extent to which subjects relating to the agricultural industry were taken in the schools, but more particularly as to how far the general curricula of the schools and the work of the teachers were directed towards fostering an understanding and love of country life and country occupations; how far, in short, the education system was being used to oppose the "drift to the town." In this connection the evidence showed that though agriculture was taken seriously in many of the secondary schools, and though considerable sums had in many cases been spent on laboratories and equipment, yet on the whole agriculture was not a popular subject, various reasons being assigned by different witnesses to account for this disconcerting fact. The Board was thus led to a consideration of various matters not definitely included in the order of reference, but having a direct bearing on the question of agricultural education. In regard to some of these the Board would like to express its opinion. Before doing so, however, it will endeavour to give answers to the specific questions set out in the order of reference.

## Definition of Terms.

During the course of the inquiry it became evident that much misconception existed in regard to the various teaching institutions, and the Board considered that it would be well to define the meaning of the names adopted in this report as follows:—

In the recommendations of the Board—

*College of Agriculture* means a college either associated with a University College or an institution recognized by the University Senate. It would in either case be under the government of a Council associated with the Senate, for the purpose of—

(i.) Training students in the science of agriculture so that they may become teachers or instructors, or

(ii.) Permitting those who intend to become farmers to take a course leading to a diploma or degree if they so desire, or

(iii.) Carrying on "extension classes" for farmers, teachers, or others interested in the industry of agriculture.

*Farm Training College*, or vocational school, means a farm school under the control of the Department of Agriculture, or any properly representative authority which may be established by the Government for the purpose of training students desirous of becoming farmers, well equipped with a knowledge of the principles of scientific agriculture as applied to the work of practical farming in all its branches.

*Agricultural High School* means a technical high school established under the control of a Board of Managers on which Board the Education Board of the district is represented, for the purpose of training pupils leaving the primary school and wishing to study the science of agriculture in conjunction with the subjects of a general secondary education.

*Primary school* means a public school managed by a School Committee under the Education Board of the district, in which primary instruction is given, including training the pupils to take an interest in agricultural matters by means of nature-study and observation.

Question (*a.*)—**What new agricultural training institution or institutions are required in order to provide facilities in accordance with the Dominion's present day requirements for the efficient training of (i) Students desirous of taking a University degree in agriculture fitting them fully to become either instructors or research workers in agriculture?**

In discussing this question the Board was confronted by the difficulty that whereas on the one hand three University Schools of Agriculture are now recognized by the University of New Zealand (two in the North Island having been recently approved by the Senate, in addition to the Canterbury School of Agriculture at Lincoln, which has been recognized for many years), on the other hand it was overwhelmingly clear from the evidence brought forward that one fully equipped School of Agriculture of University rank could easily provide for a much larger output of trained experts with degrees in agricultural science than would probably be required to cope with the demand for many years to come.

It was, however, equally clear from the evidence that a School of Agriculture has other important functions to perform besides that of training experts in agricultural science, epecially in a new country as yet incompletely brought into profitable agricultural and pastoral conditions.

All witnesses, particularly those actually engaged in farming or directly connected with the industry, stressed the urgent necessity for investigational work on the many practical problems which vex the farmer in every branch of his business. The Board realized, therefore, that the establishment of professorships in agriculture in the several University Colleges, and the development of research stations, such as Cawthron Institute in Nelson, would have, apart altogether from the question of training undergraduates, direct results of the utmost value to the farmers and consequently to the whole Dominion, while, indirectly, the status of the profession of farming would naturally be raised, and a higher regard for the life and calling of the farmer would be fostered in the community.

Bearing these matters in mind, the Board hopes that due encouragement will be given, in the University Colleges and other research stations, to the training of research students, especially on the agricultural side, and that it may be found possible to provide, in connection with one or more of these institutions, special facilities for post-graduate training in agricultural research work.

As regards the major question of what new provision should be made at the present time for training students desirous of taking a University degree in agriculture, the Board, while fully appreciating the difficulty created by the recognition by the New Zealand University Senate of three University Schools of Agriculture, is clearly and definitely of opinion that one fully equipped and fully staffed residential College of Agriculture will be sufficient for many years to come, and that such an institution should, when established, be placed in a central position in New Zealand. The Board does not recommend that such a complete and fully equipped institution be established immediately, for reasons given in reply to question (*f*).

The Board recommends that, in the meantime, in order to provide for the efficient training of students of agriculture attending Victoria College, the Biological and Chemical Laboratories of the Agricultural Department should be transferred to Wallaceville, and that they and the existing Veterinary Laboratory and the proposed Dairy Research Laboratory should be made available for the instruction of students, to the mutual advantage of the students and the Department; further, that class-rooms and students' laboratories should be provided there for the purposes of the students' training.

The Board further recommends that the Ruakura Farm Training College be made available for co-operation with the Auckland University College in assisting in the provision of instructional facilities for students.

QUESTION (*b*.)—**What would be the probable number of students of the kind mentioned in** (*a*) **(i) that could be utilized in New Zealand after taking their degrees?**

It was shown in evidence that while the number of agricultural instructors could be largely increased in the Departments of Education and Agriculture with advantages which would probably fully justify the additional expense, it was unlikely that the demand within and without the service for experts in agricultural science would for some years warrant a large output of qualified men. In Melbourne, for example, the total number of students in the agricultural degree course is about thirty, and the demand is so small that the Government has to guarantee positions in order to get students to take the course. In Sydney University the numbers are approximately the same. In America, on the other hand, as Professor Richardson, of Melbourne University, has pointed out, the Agricultural Colleges have flourished greatly during the last twenty years, after a history of forty years of failure. Apparently the American colleges became a success when the farming community found itself compelled to take full advantage of scientific training made available to the individual farmer by the extension work of the colleges; and it may be doubted, in view of the experience of Melbourne and Sydney, and of America in its earlier development, whether such a condition yet obtains in this Dominion, or is likely to arise for some years. In the meantime the evidence indicates that if ten graduates were turned out yearly when the arrangements suggested by the Board were in full working-order, this is about the maximum number that could be employed as teachers, instructors, or research workers. Some doubtless would be otherwise absorbed by the industries of the land, and there is a wide scope in New Zealand for the scientifically trained agriculturist.

With a view to encouraging students to proceed to a degree in agriculture, the Board is of opinion that as far as possible only men with a degree in agriculture should be appointed as teachers of agricultural science in schools or as field instructors. There is an insistent demand on behalf of the farmers for field instructors, and although it was stated in evidence that a man who had just obtained his degree was not in most cases immediately suited to the position, and that more experienced men were needed, yet it is felt by the Board that a University degree should be as essential for such teachers and instructors as matriculation is for entering the University. The young graduate in agriculture, like the young doctor who takes a position in a hospital by way of novitiate in his profession, must, however, serve his apprenticeship to the business of agriculture after providing himself with the essential intellectual equipment. While, therefore, sufficient employment hardly exists at present for ten new graduates per annum, we think that a demand would arise when Government Departments, Education Boards, and the public became educated to employing men who had taken degrees. Dr. Lotsy stated that in Holland the Doctors of Agriculture are chiefly engaged in farming, and no doubt in time the same would come to pass in New Zealand. He also stated that any teacher in primary or high schools who took the special teachers' diploma in agriculture was paid an additional salary whether he was engaged in teaching agriculture or other subjects; and that in consequence nearly all male teachers made it their business to get the diploma in agriculture. The Board thinks that a similar provision might well be made in New Zealand.

QUESTION (*a*).—**What new agricultural training institutions are required . . . for the efficient training of—(ii) Students desirous of becoming farmers well equipped with a knowledge of the principles of scientific agriculture as applied to the work of practical farming in all its branches?**

The evidence showed that there is a desire among farmers to have more Farm Training Colleges established, but the number of students offering hitherto has not been sufficiently large to justify the establishment of many new institutions. It may perhaps be argued—and the fact that Lincoln College has a waiting-list supports this view—that the lack of prospective students is due to the lack of Farm Training Colleges, and that if more Farm Training Colleges were established they would become better known and more popular; but the Board, after careful inquiries, was inclined to think that the number of students offering would increase rapidly if a shorter and more intensive course of instruction were adopted. The Board found that pupils spent about half the time in actual farming operations, but that, though there was no doubt as to the quality and adequacy of the instruction given, the work done differed in some essential conditions from that which had to be performed on an ordinary farm, with the result that the boys could not get enough practice under commercial conditions, as to skill, speed, and output, to justify the time spent in practical work on the farm.

As the capital invested in Ruakura Farm as a whole amounts to some £1,500 per student, it is clear that the cost of sufficient land and plant at a Farm Training College to enable the boys to train for practical work under conditions approximating to those of the ordinary farm would be prohibitive. The Board thinks that such a course would be otherwise impracticable, being of opinion that the boys must learn the business of farming under commercial conditions after leaving the Farm Training College. Holding this view, the Board is unable to recommend that boys should spend any large proportion of their time at a Farm Training College in actually performing farming operations. We consider, however, that for boys intending to become farmers a short preliminary course of instruction at a Farm Training College, in general occupying, for seasonal reasons, at least one complete year, and covering the operations, management, economics, &c., of farming, would be of considerable value, especially if it were followed up at intervals by short courses of instruction at the Farm Training College or elsewhere after the boy has gone to work on a farm.

The Board recommends that the work of Farm Training Colleges should be arranged so that—

(1.) The course should be shortened as much as possible:

(2.) The field-work should consist mainly of demonstrations of correct methods in farming and in the breeding and management of live-stock:

(3.) The laboratory and class work should occupy a considerably larger proportion of the time than it does at present.

The course would then form a short intensive preparation for boys leaving school and intending to go farming.

The adoption of such a curriculum in Farm Training Colleges would enable these schools to deal with far larger numbers than would be possible under present conditions, so that the capital invested per student would be very greatly reduced. The Board is decidedly of opinion that institutions such as Ruakura Farm Training College and Canterbury Agricultural College, to be of real value and to be capable of such expansion as will meet the needs of the Dominion, must be rearranged so as to take at least double the present number of students. As the students become available, provision for training should be increased. In the meantime we recommend that, in addition to the proposals regarding Hawke's Bay (referred to below), Penrose, near Masterton, should be developed into a Farm Training College, seeing that the farm and quarters sufficient to accommodate twenty-six students are already available. Local interest in the matter has been evidenced by the presentation of land and by a large deputation of farmers who met the Board at Penrose.

The question of the government of Farm Training Colleges was regarded by the Board as a matter of considerable importance. The management of Farm Training Colleges is in the hands of the Department of Agriculture, but, as the Education Department has special experience of the education of young students, we are of opinion that it should be associated in the management of these institutions, especially in connection with arranging the curriculum and the teaching staff. The Board therefore recommends that a Board of Governors for Farm Training Colleges be set up consisting of the Hon. Ministers of Agriculture and Education, one member of the Department of Education, one member of the Department of Agriculture, and three members of the Board of Agriculture, which would include the President. Local Advisory Boards of, say, three members should also be appointed in connection with each Farm Training College, to act in conjunction with the Principal of the College.

*Smedley Estate.*—The Smedley Estate, which was bequeathed by the late Josiah Howard to the State for the purpose of training in agriculture, consists of 7,000 acres, practically all in grass. It is situated about twenty-four miles from Waipawa, the nearest town on the railway. It is reached by a good road as far as Tikokino, but some distance farther the road is indifferent for heavy traffic. Mr. Howard did not leave any clear statement as to his wishes how to assist education, but it is gathered from evidence that he thought the estate would itself be used to give the boys of poorer parents the opportunity of free education and experience in farming matters. The situation and character of the land, the Board thinks, preclude it from being used for this purpose. There are various estimates of what the land and stock are worth, but managed as at present, it is bringing about £4,000 a year, and there is an accumulated fund of £17,000. Suggestions were made that the property should be sold or leased, and the money invested so as to provide an income to be spent on agricultural education. The Board, however, recommends as the wisest course that it should be continued as at present under the supervision of the Department of Agriculture. When it was taken over there were many improvements needed to put the estate in order, but to-day the estate and stock

are well managed, and the income from the estate should be of great assistance to agricultural education in Hawke's Bay. In order to carry out the wishes of the testator, a sum of £1,300 per annum should be allocated from the income, £1,000 for twenty-five bursaries of £40 each to enable Hawke's Bay lads exclusively to receive a training in agriculture, and the remainder for a shcolarship or scholarships to enable a selected Hawke's Bay student or students to go to a University College, to take a degree of B.Ag. If the whole of the £1,300 were not used in any year any balance should revert to the trust.

The Board further recommends that suitable land be procured for a Farm Training College in Hawke's Bay to be developed as soon as the success of the other Farm Training Colleges demonstrates the need for such a college in Hawke's Bay; this land to be utilized as a demonstration farm in the meantime.

QUESTION (*c*).—**How should such an institution or institutions be equipped as regards staff, laboratories, and farming land?**

As, in the opinion of the Board, the time has not arrived for the establishment of one great School of Agriculture of University rank, the questions of staff, laboratories, and farming-land were not specially considered. It was clear from the evidence of experts that a considerable staff of professors and lecturers would be required, involving an annual cost of at least £10,000 for teaching alone, in addition to the annual cost of hostels and farming-lands, which could hardly be expected to be self-supporting, at any rate in the early stages of development of the college.

As regards Farm Training Colleges the Board makes the following recommendations:—

1. *Staff.*—The staff would consist of the following: The College Principal; an agricultural graduate for every thirty students; a farm overseer capable of teaching and demonstrating farm practice; skilled farm-workers specially selected so as to give instruction in farm handicrafts; a horticulturist; besides a domestic staff to deal with the management of the hostel.

2. *Equipment.*—The laboratory and class-room facilities should be sufficient to render the teaching as concrete as possible, and to enable the proportion of time at present devoted to laboratory and class-room work to be largely increased in accordance with the Board's recommendations above.

3. *Farming-land.*—Having in mind the type of training which it thinks should be given at a Farm Training College, the Board considers that a large area of first-class land need not be used. Sufficient land to grow all necessary crops and carry enough live-stock to provide adequate facilities for practical demonstrations is all that the Board would regard as essential. For these purposes it is considered that 200 hundred acres of first-class land, or its equivalent, would suffice.

4. *Curriculum.*—The Board recommends that the main subjects dealt with at Farm Training Colleges should be soils, fertilizers, crops, live-stock breeding and management, farm-management, farm economics, and horticulture.

Special emphasis was placed on the importance of sound training in connection with farm economics by many witnesses with wide experience in farming matters; while, as regards horticulture, the Board wishes to stress the opinion that no agricultural training would be complete without instruction in horticulture, and that therefore special provision should be made in Colleges of Agriculture and in Farm Training Colleges for this purpose. The Board is strongly of opinion that, apart altogether from its commercial importance and prospects, the asthetic value of horticulture amply justifies its inclusion in the course of agriculture.

In regard to Ruakura Farm Training College, the Board, when inspecting the college and seeing the pupils at work, was impressed with the necessity for additional teaching facilities, and Mr. La Trobe was asked to go into the question and report to the Board. His report, which was endorsed by the Board, is appended, and the Board trusts that its recommendations will be agreed to.

QUESTION (*d*).—**Where each or any of such institutions should be situated in order to serve most efficiently the present requirements of the Dominion as a whole?**

The Board, being of opinion that the time has not yet arrived for the establishment of one great School of Agriculture, decided not to express a definite opinion as to the particular locality in which it should be situated, beyond recommending that it should be placed in a central position in New Zealand. Mr. G. L. Marshall dissented from this view, and defines his opinion in an addendum to this report.

As regards the location of Farm Training Colleges, the Board's recommendations are contained in the answer to question (*a*) (ii) above.

QUESTION (*e*).—**To what extend and under what conditions could the Canterbury Agricultural College be utilized (subject to the approval of the Board of Governors) as an integral part of the general scheme?**

The Board expressed the opinion that in order to be of real value and to be capable of such expansion as to meet the needs of the Dominion, the vocational training must be rearranged so that the number of students completing their course each year should be at least doubled. This recommendation, while it referred mainly to Farm Training College students, assumed that degree students also would consume a much less proportion of their time at the college in actual farm-work than is the custom at present, and that accordingly more laboratory and class-room accommodation should be provided. The Board, having inspected Lincoln College, and taken note of the investigational work in progress especially in connection with plant-breeding (towards the cost of which the Department of Agriculture at present makes an annual grant of £500), is strongly of opinion that such work should be continued and expanded. The Board therefore recommends that an additional sum of £500 per annum be granted to Canterbury Agricultural College to enable it to continue and expand its plant-breeding and investigational work, and that a further sum be granted to provide a new laboratory and class-room for the accommodation of additional students.

QUESTION (*f*).—**What estimated Government expenditure would be involved by giving effect to the Committee's recommendations regarding questions (*a*), (*c*), (*d*), and (*e*) above?**

As in the opinion of the Board the time has not arrived for the establishment of one great School of Agriculture, the question of the cost has not been considered in detail, but from the evidence submitted by expert witnesses the Board estimated that it would be considerable, possibly involving a capital outlay of £250,000 for land, buildings, and equipment, besides a large annual expenditure for salaries, maintenance, and other incidentals. The Board recommends that when the number of students offering is sufficiently large this work should be undertaken.

In the meantime, if the Board's recommendations relative to the provision of class-rooms and laboratories at Wallaceville for the Victoria College agricultural students are carried out, we think that a sum of £15,000 would be required for this purpose, apart from the expenditure which would be incurred by the Department of Agriculture in providing for the transfer of its Biological and Chemical Laboratories to Wallaceville.

As regards the needs of Canterbury Agricultural College, we are of opinion that a sum of £20,000 should be provided to bring it up to the standard of modern requirements, in accordance with the Board's recommendations above.

The question of expenditure in Auckland in the matter of laboratory buildings and equipment must remain for future consideration when the school is in existence.

As regards Farm Training Colleges, the immediate needs at Ruakura are dealt with in the special report furnished by Mr. La Trobe and appended hereto. The cost of the necessary buildings and equipment is estimated at £2,100.

At Penrose the necessary additional buildings immediately required are estimated to cost £7,000, the details of which will be provided later.

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The remaining portion of the Board's report deals with matters directly related to agricultural education on which the Board desires to express its opinions, although these matters were not explicitly included in the order of reference.

### 1. TRAVELLING SCHOLARSHIPS.

In regard to post-graduate training in agriculture, the Board, besides recommending that provision should be made at one or more of the University Colleges for the training of research students in connection with agriculture, also recommends that the Government should provide for one agricultural travelling scholarship each year, tenable for two years, to enable post-graduate students to travel abroad in order to obtain further education in agricultural science.

### 2. ENDOWMENTS.

The value of endowments of land was brought forcibly before the Board on several occasions. For example, the Wesleyan Church in Auckland has been able to purchase a farm of 700 acres of land, to spend £23,000 on buildings, and to start a very successful and well-managed farm boarding-school thirty miles out of Auckland, on an endowment which was originally of little value, but is now worth some £250,000. In fifty years' time there will certainly be Agricultural Colleges attached to all the Universities in New Zealand, and of 100,000 acres of land of little present value, such as the Hautu Block in the centre of the North Island, were set aside as an endowment for agricultural education, the examples we have before us warrant the expectation that the income from such lands would ultimately go far towards meeting the expenses and upkeep of the Agricultural Colleges. Lincoln College itself is the result of the far-sighted policy adopted by the public men of Canterbury when under the Provincial Government they set aside lands to provide the wherewithal for an Agricultural College.

### 3. AGRICULTURAL EXTENSION WORK.

The evidence showed that when the instructors under the Department of Agriculture were able to get into close touch with the farmer and to gain his confidence the demand for instruction was insistant, and the instructors were unable to cover the large districts allotted to them. Many witnesses testified to the value of short winter courses conducted at State farms or other centres by the trained officers of the Department, and to the excellent use which is made of the winter short course in various branches of agriculture on other countries, such as the United Kingdom, Denmark, Holland, Canada, and the United States of America. The Board therefore recommends that provision should be made at suitable centres, including Farm Training Colleges, for winter short courses, to give an opportunity to farmers to further their education, and that the number of instructors in agriculture be increased in both Islands, provided that new appointees should have taken the B.Sc. or B.Ag. degree.

### 4. BOYS' AND GIRLS' AGRICULTURAL CLUBS.

It was shown in evidence that whatever boys' and girls' clubs were properly organized they greatly helped to awaken the interest of both parents and children in agricultural education. It was clear, however, that such clubs should be organized by experts, and that if the work devolved on the instructors in agriculture it would occupy more time than they could spare from their other duties. The Board therefore recommends that the movement be encouraged, and that the Government should appoint an officer to organize the clubs. The Board also suggests that agricultural bursaries might be awarded to boys distinguishing themselves in the competitions arranged by the clubs.

### 5. Training and Classification of Teachers.

During the inquiry the evidence brought before the Board tended to show that as far as the subjects of agriculture and nature-study are concerned, provision was wanting in the Training Colleges for the trainees to acquire a knowledge sufficient to fit them for the proper teaching of pupils in the primary schools, so that nature-study should be made attractive and the children trained to make careful observations in the district around them. It is not, of course, feasible to teach agriculture in the primary schools, but practical work in nature-study can be made at least as powerful an instrument for developing and training the mind as the more academic studies, and at the same time a knowledge and love of rural life and work can be instilled into the pupils. A pupil so trained would be prepared to take full advantage of a suitable rural course in a district high or other post-primary school, and could then pass on to a Farm Training College and be able at once to take advantage of the specialized training which the college would offer.

In order to provide an appropriate course in rural science and nature-study for teachers in training colleges, it would be necessary to give the training college sufficient land to allow for experimental work by the students in garden and nursery. In Dunedin the Training College has the use of municipal reserve lands adjoining the Botanical Gardens, and a similar provision in the other centres would be of great value. The municipal authorities might well be asked to grant the use of part of the Town Belt or other reserve for the purpose, since the proposal would not involve the sacrifice of any open-air space, but, on the other hand, would tend to beautify them.

With a view to encouraging teachers to take up seriously the study of rural science and agriculture, the Board considers that these subjects might well be made compulsory in the courses for teachers in training, or, if this were not found practicable, the Board recommends that special weight should be given to the subject of nature-study and agriculture in the Teachers' D and C Examinations and in the training-college course for primary-school teachers; and that grading increments be given for proficiency in agriculture and nature-study. In this recommendation the Board had in mind the practice in Holland, where, according to the evidence of Dr. Lotsy, teachers in the primary and high schools who have a special teacher's diploma in agriculture receive a special salary-increment whether they are actually teaching the subject or not.

In connection with the science work in the primary schools, and the supervision of the teaching in nature-study and rural science, the Board desires to call attention to the work of the itinerant instructors in agriculture who are employed by the several Boards of Education. These men are usually well qualified, and are doing excellent work in training both pupils and teachers, besides paying attention to the laying-out of school-gardens and helping the officers of the Department of Agriculture to control and judge the agricultural club competitions for girls and boys. The numbers given in the preface to this report show that additional instructors must be appointed if the supervision is to be adequate. The Board is also of opinion that the short courses in rural science and agriculture arranged for the teachers by these instructors are of great value and should be encouraged, and that for this purpose the resources of the Department of Agriculture should be used to the fullest extent possible, so that the teachers may be able to get first-hand information of the results of the investigational work of the Department of Agriculture, as well as gaining some practical experience under the direction of the expert instructors in the Farm Training Colleges.

### 6. Post-primary School Courses.

At a recent meeting of the University Senate the Chancellor prominently stressed the fact that although agriculture was the greatest industry in the Dominion, it was largely neglected in our schools. The Board had evidence that only about 10 per cent. of the boys in high schools take agriculture, although about 30 per cent. enter the industry after leaving school. The Board, therefore, made particular inquiries to find out why the subject should be so neglected. Educationists were asked whether they thought that the subject was not of sufficient educational value to be made a leading feature of the curricula of secondary schools. The replies indicated that a proper treatment of rural science and elementary agriculture in the high school would provide as fine mental training as could be had in any other way. In fact, Mr. Tate, Director of Education in Victoria, gave evidence that in his experience, though the study of agriculture apparently retarded the progress of the boys in the general subjects in the first year, yet in the sceond year the agricultural students were well to the front, and this he attributed to the fact that "many of the boys dealing merely with words in English or Latin were in the habit of reading books, and that when they got into a difficulty they turned to a dictionary, and had an attitude of mind entirely different from that of boys who were facing realities and being taught to think in terms not of words, but of things." Mr. Tate strongly expressed the opinion that "the boy who is well trained in agricultural science, and who uses the practical work, either in experimental plots on the school-farm or on a big scale, is getting a training that is very hard to beat in any school subject." The same view was expressed by officers of the Education Department, and also by other educationists. It was thus clearly established that the proper treatment of agricultural science in the high schools would not only be of immense benefit to the industry, but would also form one of the most valuable factors in the general education of the pupils.

There was also ample evidence that the Department of Education and the various Boards controlling post-primary schools were sedulously trying to make agricultural science a strong subject in the curriculum by providing facilities for teaching the subject considerably beyond the immediate demand for instruction. There being, therefore, no natural reason for the relative neglect of the subject, the Board was forced to the conclusion that some artificial restraint was at work to prevent it from becoming popular. Such a restraint was found in the conditions of the Matriculation Examination, which at present dominates the curricula of the secondary schools. Agricultural science

has only been recognized as a half-subject for the Matriculation Examination since 1916: that is to say, it may be taken as an alternative to botany or physiology in the second paper in the optional subject of natural science. The Matriculation Examination is a written examination (although certificates of having completed a practical course are required in connection with science subjects), and in consequence a book-work subject pays better than a practical subject for the time spent in preparation.

Also, agricultural science was not included among the subjects for the degree of Batchelor of Arts until 1922, so that a pupil taking this subject for matriculation could not, until recently, take it also for the ordinary degree in arts. Hence, few teachers in secondary schools have had any considerable training in agricultural science, and the natural trend has been towards more academic studies which have behind them the weight of many years of careful organization. The result is that pupils are handicapped so far as the Matriculation Examination is concerned by taking agricultural science, even if they propose to take a University course leading to the degree of Batchelor of Agriculture, and in consequence most pupils take subjects which tend rather to wean them away than to incline their hearts towards rural pursuits.

Evidence showed that the question of modifying the Matriculation Examination was being discussed by the Senate of the University, and that the Education Department and the teachers in post-primary schools were alive to the need for reform. It is possible that some kind of accrediting system whereby the pupil might be matriculated on the recommendation of the school authorities, or other authority recognized by the University, might be adopted with advantage, so that the schools would be less tied down to a single course for pupils wishing to matriculate, and other courses of a less academic character, but of equal or superior educational value, would be able to attract their share of the keener students.

The Board wishes to express the opinion that the evidence before it shows—(i) That the courses in secondary schools are dominated mainly by the requirements of the Matriculation Examination; (ii) that elementary agriculture and nature-study are taken by only a small proportion of the boys in post-primary schools.

The Board is strongly of opinion that the subject of elementary agriculture and nature-study should be taken by all boys as a carefully correlated extension of the work done in nature-study in the primary schools, and therefore recommends that this subject should be compulsory in the courses for the Public Service Entrance, Intermediate, and Matriculation Examinations. The Board is further of opinion that any pupil taking the agricultural course in a secondary school, district high school, or technical school should be entitled to receive a "lower leaving-certificate" in respect of such course, provided that a satisfactory standard has been reached by the pupil in English and the special subjects of the agricultural course. The Board suggests that such standard might be fixed by an Inspector of the Education Department, in consultation with the Principal of the school.

### 7. Agricultural High Schools.

In order to cater more especially for those pupils who intend to enter on a degree or diploma course in agriculture at a University College, and to fill the gap between the primary-school work in nature-study and the professional courses in agriculture in the University, the Board recommends that in suitable centres high schools having a special section for agricultural teaching should be established, with hostels attached, and that the Principal of such a school should have a science degree (preferably B.Ag.) so as to be able to give students a suitable preparation for entering on the diploma or degree course in agriculture at the University. The evidence clearly showed that where high schools in rural centres surrounded by a large agricultural population were under the direction of suitable teachers holding science degrees, and managed by a Board of Managers in sympathy with the agricultural work, they were eminently successful. It was also noted that such success, while primarly due to the skill and enthusiasm of the teachers, was very considerably promoted by local interest and local financial support.

The Board therefore, without specifying any particular district where Agricultural High Schools should be established, thinks that the success of the whole scheme of agricultural education would be greatly furthered by the founding of such schools in places where the settlers themselves are prepared to come forward in support of the school and the teachers.

The Board further recommends, failing the adoption of a satisfactory system of accrediting students to the University, that there be instituted an agricultural preliminary examination in place of the Matriculation Examination for the degree of Batchelor of Agriculture, such examination to be the same as that of Matriculation, with the exception that an additional science subject may be taken in place of a foreign language.

## SUMMARY OF RECOMMENDATIONS OF THE BOARD.

The Board recommends—

I. *College of Agriculture:—*

(1.) That one fully equipped and fully staffed residental College of Agriculture will be sufficient for many years to come, and that such an institution should not be established until a sufficient number of degree students is available, and, when established, should be placed in a central position.

(2.) That, in the meantime—

(*a.*) Provision should be made for the training of degree students by erecting laboratories and class-rooms at Wallaceville in connection with Victoria College, at a cost of some £15,000, and by transferring to the same site the Biological and Chemical Laboratories of the Agriculture Department, so that they and the existing Veterinary Laboratory and the proposed Dairy Research Laboratory, together with the expert staff, should be available in connection with the instruction of students, to the mutual advantage of the students and the Department:

(*b.*) The Ruakura Farm Training College be made available for co-operation with the Auckland University College:

(*c.*) Provision be made for accommodating additional students at Lincoln College by way of laboratories, class-rooms, and hostel accommodation; that a grant of £20,000 be made by the Government for this purpose; also that an additional grant of £500 per annum be paid to Lincoln College to enable the plant-breeding and other experimental work to be developed.

II. *Farm Training Colleges:—*

(1.) (*a.*) That laboratory and class-room accommodation be provided at Ruakura, at a cost of about £2,100; and

(*b.*) That Penrose Farm, near Masterton, be developed into a Farm Training College, at a cost for additional buildings of about £7,000.

(*c.*) That the provision for training of students in Farm Training Colleges be increased as students become available, either by additions to existing institutions or by the establishment of new ones.

(2.) (*a.*) That Farm Training Colleges should be under the control of a Board consisting of the Ministers of Agriculture and Education, also one representative of each of these Departments, and three members of the Board of Agriculture, including the President.

(*b.*) That the curriculum should be made as short and intensive as seasonal conditions will allow.

(*c.*) That the work should consist mainly of demonstrations on farm methods and management, class and laboratory work, including a minimum of actual farm labour on the part of the student.

(*d.*) That the main subjects dealt with should be soils, fertilizers, crops, live-stock breeding and management, farm-management, farm economics, and horticulture.

(*e.*) That the staff should consist of a College Principal; an agricultural graduate for every thirty students; a farm overseer; skilled farm-workers capable of giving instruction in their special crafts; a horticulturist; and the necessary domestic staff.

(*f.*) That 200 acres of first-class land or its equivalent would suffice for the purposes of a Farm Training College.

III. *The Smedley Estate, Hawke's Bay:—*

(*a.*) That the estate continue to be managed by the Department of Agriculture, in association with the Public Trustee.

(*b.*) That the sum of £1,300 per annum should be allocated from the income, £1,000 for twenty-five bursaries to enable Hawke's Bay boys to obtain a training in agriculture, and £300 for a scholarship or scholarships to enable a selected Hawke's Bay student or students to take a degree course in agriculture; any balance not used in any one year to revert to the trust.

(*c.*) That suitable land be procured in Hawke's Bay out of the income of the estate for a Farm Training College to be established as soon as the need of such a college in Hawke's Bay has been demonstrated, such land to be used in the meantime as a demonstration farm.

IV. *Post-graduate Training:—*

(*a.*) That research work in agricultural problems should be encouraged at one or more of the University Colleges and at research stations, such as the Cawthron Institute at Nelson, at which special facilities for post-graduates training in agricultural work should be provided.

(*b.*) That a travelling scholarship be established to enable selected post-graduate students to proceed abroad for the purpose of furthering their education in agricultural science.

V. *Endowments:—*

That considerable areas of land of little present value, such as the Hautu Block in the centre of the North Island, should be set aside, where possible, as endowments for agricultural education.

With regard to matters not explicitly included in the order of reference the Board makes the following suggestions:—

1. *Agricultural Extension Works.*—That the number of instructors in agriculture in both Islands be increased, provided that new appointees should have taken the B.Sc. or B.Ag. degree.

2. That the number of agricultural instructors engaged in advising teachers and in directing the nature-study and elementary agriculture in primary and post-primary schools should be increased.

3. *Training and Classification of Teachers :—*

(*a.*) That improved facilities be given for training teachers in nature-study and elementary agriculture.

(*b.*) That these subjects should be made compulsory in the D and C Examinations.

(*c.*) That teachers attaining to proficiency in these subjects should receive grading-increments.

(*d.*) That the training colleges should be provided with land for experimental plots and for nurseries.

4. *Boys' and Girls' Agricultural Clubs :—*

(*a.*) That the movement be encouraged, and that to this end the Government should appoint an officer to organize the clubs.

(*b.*) That agricultural bursaries should be awarded to boys distinguishing themselves in the club competitions.

5. *Post-primary School Course.*—That, in view of the comparative neglect of agriculture in the post-primary course, due to the present conditions of the Matriculation Examination—

(*a.*) Elementary agriculture and nature-study should be made compulsory in the courses for the Public Service Entrance, Intermediate, and Matriculation Examinations.

(*b.*) That a lower leaving-certificate should be given in respect of the agricultural course in a secondary school, district high school, or technical school, provided that a satisfactory standard is attained in English and the special subjects of the agricultural course.

6. *Agricultural High Schools.*—That in order to cater more especially for those pupils who enter on a degree or diploma course in agriculture at a University College, and to fill the gap between the primary-school work in nature-study and the professional courses in agriculture in the University, Agricultural High Schools should be established wherever the settlers themselves are prepared to come forward in support of the school and the teachers.

7. *Accrediting System : Agricultural Preliminary Examination.*—That a system of accrediting students to the University should be established as soon as possible, and that in the meantime an agricultural preliminary examination should be instituted in place of the Matriculation Examination for the degree of B.Ag., such examination to be the same as that of Matriculation except that an additional science subject may be taken in place of a foreign language.

JAMES G. WILSON,
President, Board of Agriculture.

JAMES BEGG,
G. L. MARSHALL,
E. AVERILL,
EWEN D. MCLENNAN,
DAVID MARSHALL,
WM. B. GRANS,
W. D. PIKE,
WM. PERRY,
D. W. WESTENRA,
EDWIN HALL,
} Members, Board of Agriculture.

GEO. FOWLDS,
Representative, N.Z. University Senate.

W. S. LA TROBE,
Representative, Education Department.

C. J. REAKES,
Representative, Department of Agriculture.

# REPORT ON REQUIREMENTS AT RUAKURA FARM OF INSTRUCTION FOR THE TRAINING OF STUDENTS.

(Mr. W. S. La Trobe, Superintendent of Technical Education.)

1. *Present Accommodation.*—(*a.*) A large class-room holding about forty pupils (this room is not always available in the evenings); (*b*) a small dining-room which just holds the present thirty-eight pupils; (*c*) a small recreation-room adjoining the dining-room. (Any further increase in numbers will make it necessary to use this room as an annex to the dining-room.)

2. *Numbers to be accommodated.*—The sleeping-quarters and dining-room with annex will take about fifty pupils. In addition it would be possible to utilize the homestead for fifteen to twenty more if seperate quarters were provided for the Farm Manager.

The farm at present provides work of more or less suitable character for thirty-eight pupils for half their time. It could probably provide quite satisfactory practical training for sixty pupils working one-third time, or even more if a larger proportion of the farm work were done by the boys.

I think we must expect that some sixty pupils at least will attend when the scheme is in full swing, and that two weeks out of three might well be devoted to theory, observation, and laboratory-work. This would mean that two classes of twenty each would be engaged during the daytime in the class-room and laboratory, while in the evening three such groups would have to be provided for.

3. *Accommodation for Sixty Pupils.*—These could be reasonably well provided for in two class-rooms in addition to the dining-room and annex, though it would be a considerable help to have also a library for reference and study available day or evening for any pupils desiring to work up special points or subjects. I do not think any room in the homestead would serve for a library, even if a portion of the pupils were housed there, since the library should be available for the boys at any time during the day as well as at nights. In addition to two class-rooms and a library there should certainly be a laboratory for chemistry mainly, which could, however, be used for other subjects on occasions. Two teachers with the assistance of the specialists on the farm should be able to take care of sixty pupils, and in so doing they would probably be working at maximum teaching efficiency for this type of student.

4. *Defects of the Present Accommodation*:—

(*a.*) There is no laboratory.

(*b.*) There is one class-room too few, and the class-room in use is not always available when most needed—viz., at night.

(*c.*) There is no suitable room for use as a library.

(*d.*) There is additional accommodation not fully utilized at the homestead, but there would be considerable difficulty in remodelling it for class-room and laboratory purposes, and the result could never be so serviceable as rooms specially built in juxtaposition to the present school-buildings,

5. *Consequences of the Defects of Present Accommodation.*—The lack of proper class-room and laboratory accommodation very seriously handicaps the efforts of both masters and pupils.

(*a.*) Since no practical laboratory work can be done, a considerable part of the theory, and not the least important, is "in the air."

(*b.*) Class-work has to be cut down and lecture work substituted, although the pupils are too young and too inexperienced to be able to get full value out of lectures, and do need considerable class-work and preparation under the eye of the teacher.

(*c.*) There is no room regularly available for the group of pupils at work in the fields to do home-work, say, three evenings weekly, and so maintain the essential condition of continuity in theory work. The masters state that a complete break every other week plays havoc with the indoor studies—the boys losing time in picking up the threads after a week off.

(*d.*) It is difficult under present conditions to hold the boys in the evenings, and to be certain that they are kept healthily occupied.

I need not emphasize the danger of such a condition in a boarding-school.

6. *Recommendations.*—In view of the above considerations, I am strongly of opinion that the school cannot become a well-organized and efficient institution until the necessary facilities are provided.

I would therefore urge that the Government be recommended to provide as soon as possible the following additional rooms: (*a*) Chemical laboratory—36 ft. by 24 ft. by 13 ft. high; (*b*) demonstration class-room—30 ft. by 24 ft, by 13 ft high; (*c*) preparation-room—18 ft. by 14 ft. by 13 ft high. Such accommodation is usually provided for every high school and technical high school, and I believe it is even more necessary in a farm school.

The approximate cost of buildings, fittings, and furniture, apparatus and material, would be about £2,100, if a simple form of construction and simple fittings were chosen.

## ADDENDUM TO REPORT.

Mr. G. L. MARSHALL wishes to add the following note :—

While fully in accord with the above report, as far as it goes, I am of opinion that a site for a Central College of Agriculture of University rank should be selected on the main arterial road between Auckland and Wellington, so that the necessary planting and preparation of the property can be gone on with until funds are available for the establishment of the college. The most suitable and central site would be the Marton, Feilding, or Palmerston North district. Marton is geographically more central than any other, and the railways from Taranaki, Wanganui, Auckland, Wellington, and Hawke's Bay via Palmerston all give easy access to the district. The land and climate are also very suitable for the purpose (*vide* Professor Peren's report). A slight alteration to the Agricultural College at Lincoln will serve the needs of the South Island.

G. L. MARSHALL.

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