

UNIVERSITY EXPANSION.

The Waite Bequest.

Its Administration.

We have received from the Registrar of the University of Adelaide (Mr. Charles R. Hodge) copies of the following communications regarding, among other matters, the munificent bequest to the cause of scientific agricultural education of landed estate by the late Mr. Peter Waite. In accordance with the letter from the Chancellor (Sir George Murray), the Premier received a deputation from the University, consisting of the Chancellor and Vice-Chancellor and two members of the finance committee (Sir George Brookman and Mr. H. S. Hudd). The Premier promised to place the subject matter of the deputation favourably before Cabinet.

LETTER FROM THE CHANCELLOR.

The University of Adelaide, August 7, 1923.

Sir—Early in the year the council of the University appointed a large committee to consider how the Waite bequest may best be used for the advancement of agriculture. The problems which ought to be undertaken were found to be so important, and the joint resources of Urrbrae and the University laboratories so well fitted to deal with them that the main recommendation of the committee was to present the case to the Government in order that the great opportunity which Mr. Waite placed in our hand may not be lost. It will be seen from the report of the committee that after allowing for the cost of labour, the public park or arboretum, and the salary of the professor, the income available is less than £1,000, even if the estates of Claremont and Netherby are let and not used as Mr. Waite intended. In the documents appended to the report it will be seen that the Director of Agriculture has classified under 14 heads the kinds of problem that can be investigated with immediate economic advantage. One item under the first head is a soil survey of the State; and all of them bear on the permanent problem of securing the closest settlement on the soil. The professors indicate how their laboratories and services can be used in solving the problems.

The University is required to maintain half the area of the Urrbrae portion of the estate as a public park. It has been decided to make this an arboretum, and to plant about six acres a year for the next 12 years. Part of it will be experimental, and the main purpose of the whole will be to demonstrate the kinds of tree that may thrive in the State. For this reason it would be a pity if the hill constituting the Netherby estate is not also used for the same purpose.

The situation would be adequately met if the Government were to grant a petition which the council presented in 1920, and was then requested to repeat when the restriction in the University Act of 1874 became operative. By that Act the Government pays 5 per cent. per annum on private endowments made to the University subject to the restriction "provided that no such grant shall exceed £10,000 in any one year." That limit has now been reached. The council therefore thinks it well to revert to the three requests which were then set out.

1. In order to complete the undergraduate schools in the University so that the future professional men of the State should be as well equipped as if they had been trained in Melbourne or Sydney, it was estimated in detail that an additional income of £20,000 was required. This request was granted, and the council believes that a few years hence, when the full amount is released from the cost of building, it can be said with confidence that the equipment has been provided.

2. In its request for additional buildings the council pointed out that the Governments of all the other Australian States took this charge on themselves, and that the Government of New South Wales had just set aside £300,000, and the Government of Victoria nearly as much, for immediate additions to their university buildings. The request was met with the promise to erect a new building to house physics and engineering. But the equipment, which will probably amount to 15 per cent. of the cost of the building,

and the erection and equipment of all other buildings were left a charge against the University revenues. During the past three years the council has made extensions for anatomy costing £2,714, for geology £5,417, and for chemistry £3,678. The Darling medical building was completed at a cost of £47,630, of which £15,000 was the gift of the family of the late Mr. John Darling.

3. There remained the matter of research, a duty on every university, and with a bearing of its own in a country whose resources are still undeveloped. This is the appropriate field for private endowments, and it was for this reason and that purpose that the council petitioned for the removal of the restriction in the Act of 1874. Such removal on the eve of the jubilee of the University would inaugurate a new epoch by giving the University a definite part and duty in the development of the State.

The council takes this opportunity to recall another anomaly. No other university in the Commonwealth pays land tax. The last royal commission on education recommended its abolition, and in an interview with the Chancellor and members of the council on October 7, 1918, the then Treasurer also approved of this, but no action has been taken.

I should be glad if you will, at your convenience, grant an interview to me and the committee which drew up the accompanying report.

I have the honour to be, Sir, your obedient servant, (signed) G. J. R. Murray, Chancellor.

The Hon. Sir Henry Barwell, Premier of South Australia.

REPORT OF COMMITTEE ON THE WAITE BEQUEST.

Members—Vice-Chancellor, Sir George Brookman, Mr. Justice Angus Parsons, Mr. E. Anthony, Mr. H. S. Hudd, Mr. A. J. Perkins, Mr. Walter Young, Professors Cleland, Harvey Johnston, Osborn, Rennie, and Brailsford Robertson.

1. The income from the capital controlled by Elder's Trustee Company, less the annual charge of £100 15/ made by the company is £3,105 5/. The taxes on the whole property amounted last year to £116 4/8; the municipal rates to £136 12/10; the water rates to £65. Total £317 17/6. The committee thinks that the council should take action with regard to the taxation of its land here

and on North terrace. The income from Claremont and Netherby last year was £174. Assuming that they continue to be let for the present, the available income is thus £2,961 7/6.

2. The first charge on this income is the planting and maintenance as a public park of half the area of Urrbrae. The committee is unanimous that these 67 acres should be planted as an arboretum. This might be done at the rate of four or five acres a year, once the whole lay-out has been approved. The provision that must be made for adequate fencing and public paths may be undertaken as planting proceeds. If this plan is adopted it may require a sum averaging £300 a year for 12 or 15 years. The value of the arboretum will be readily appreciated. It will be a demonstration in forestry, and its experience with different kinds of tree will be of advantage and an example to every district in the State. The council has retained three workmen, who had previously been in permanent employment on the estate. Their wages amount to £559 a year. This labour is required for the up-keep of the estate, and more will be necessary when the director is appointed. Assuming that Claremont and Netherby are let, and including the £300 for the public park, the committee calculates the labour cost at £1,000 a year. Last year the council, in appointing a plant pathologist, decided to charge his salary to the Waite bequest. It amounts to £450, and will rise. These three items of expenditure amount to £1,450. The annual sum available for carrying out the purpose of the bequest is thus about £1,500.

3. In order to secure that as much as possible of this may go to research, the question has been fully considered whether it might not be well to alter the recommendation of the report of 1913, which was then adopted by the council. It laid down that the first step should be the appointment of a director, and that, pending his appointment, no other step should be taken. Mr. Waite emphasized his approval of this, and the committee does not recommend an alteration, but thinks it essential that the director should be personally qualified to carry out researches fundamental to agriculture.

4. The director should have the title "The Waite Professor of Agriculture." His salary should be equal to that of the other professors, viz., £1,100, but he should be required to occupy a sufficient portion of Urrbrae House, and pay a reasonable rent.

5. The council should create a board of management of which three ex officio members should be the Chairman of the finance committee, the director, and a representative of Elder's Trustee Company.

6. The director should, as professor, be a member of the Faculty of Science; and the faculty should have the same power with respect to the educational work of the chair that it has with respect to other chairs.

7. The estate should be given a name that defines its function. The committee suggests "The Waite Agricultural Research Institute."

8. At the request of the committee the heads of laboratories at the University have reported on the most economical manner in which they can co-operate in the work of the institute. Their reports are appended.

9. But the committee has realized that while the possible service of the institute to the agriculture of the State is immense, little can be realized with the income available. Some of the more important problems in general agriculture may be seen from the list made by the Director of Agriculture. He has also undertaken to set out the more particular problems which the institute may solve for South Australia. If funds were available educational work could also be undertaken. Finally, there is great scope for co-operation between the University laboratories and the work of the institute. Having in view the advantage of the fullest development of science to the practice of agriculture the committee urges the council to approach the Government and seek the repeal of the final words of Clause 15 of the University Act of Incorporation 1874, viz., "Provided that no such grant shall exceed ten thousand pounds in any one year." That limit has been reached after 40 years, and so the Waite bequest is excluded from the benefit of the Act.

FROM THE DIRECTOR OF AGRICULTURE.

(Professor A. J. Perkins.)

There are problems and difficulties awaiting investigation in every branch of rural occupation; and although according to circumstances they call for assistance from chemists, biologists, engineers, &c., agricultural experience alone can give them practical every-day value. I suggest that they can be grouped, roughly, under the following headings:—1. Soil problems, involving composition, biology, relationship to plant growth, salts and conditions injurious to vegetation, &c. Under this heading might be associated a "soil survey" of the State, radiating from the Urrbrae Estate as original nucleus. No doubt assistance from the State Geological Department could be secured towards this end.

2. Crop investigations, involving enquiries into existing local cropping difficulties and aiming essentially at improved economic yields. Under this heading would be included general methods of treatment, rotations, manures, seeds, varieties, improvement of varieties and creation of new ones, &c.

3. The improvement of pastures, involving soil treatment, manures, introductions of new grasses and study and improvement of indigenous grasses and forage crops.

4. Horticultural and viticultural research, involving improvement of methods, new varieties, pruning, manures, &c.

5. The study of local irrigation problems, involving adaptability of crops, soil conditions, drainage, alkali accumulation, water and its composition, study of local underground water supplies, &c.

6. The study of animal nutrition, involving the determination of suitable rations and foodstuffs and the improvement of local feeding practices for all forms of live stock.

7. Animal husbandry in such aspects of the question as the area of land available will permit.

8. The study of plant diseases, including both vegetable and animal parasites.

9. The general study of plant growth under local conditions of climate, involving questions of water and mineral requirements, influence of temperature, both favourable and adverse, &c.

10. The connection of meteorological factors with plant growth.

11. The improvement of farm machinery and the study of "power" for the farm.

12. The study of dairying from the point of view of increase in mean yields and general improvement in practice.

13. Study of rural technology, involving manufactured products such as butter, cheese, wine, jam, bacon, &c.

14. A study of rural economics, with the assistance of local farmers willing to act. I do not pretend that the list is exhaustive, or even that the items follow in logical sequence. I am of the opinion, however, that under these headings the chief lines of research could easily be grouped. I have purposely left out any reference to

animal pathology, because I am of the opinion, in view of the limited funds available, that work of this kind can well be left to the adequately equipped and staffed veterinary colleges of Sydney and Melbourne.

FROM PROFESSOR E. H. RENNIE.

I am quite willing to co-operate, and shall have pleasure in co-operating so far as other University work will allow, but there are some matters which require to be explained to prevent misunderstanding in the future. One large part of the chemist's work in connection with such research station is the analysis of soils, manures, foodstuffs, &c. That is mere routine work, and can be carried out by any properly trained man, but it takes up a very large amount of time, and could not be accomplished by our present staff, nor without increased space and equipment. Moreover, it is not the kind of work to which we could put advanced students, because they require to be trained in a much wider variety of operations. Provided, however, that additional assistance is obtained for such special analysis, it would be quite possible for the staff and myself to exercise the necessary superintendence. There might, of course, be chemical problems to be studied of a more advanced kind, for which we might be able to obtain the help of post graduate men, but it is very seldom that we are able to keep such men here for more than a very brief period. Naturally they all want to make a living. Personally I have found it extremely difficult to get on with researches I have had in hand for years. So much time is necessary for teaching, and preparations for teaching, and for the organization of the now large laboratories that it is practically impossible to get my work done except by the occasional aid of advanced students, and they are few.

FROM PROFESSOR T. G. B. OSBORN.

The Department of Botany hopes to co-operate with the Institute at Urrbrae and the Waite, Professor of Agriculture on the following lines:—

1. Ecology, soil problems, improvements of pasture, study of plant growth in relation to local conditions of climate and the relation of meteorological factors to plant growth are parts of ecology from a botanical point of view. We are anxious to see a soil laboratory established at Urrbrae for chemical and

bacteriological study of the soil. Some chemical analyses are already being made in this department, but we should welcome the help of a soil laboratory. We hope to be allowed small portions of the estates for experiments on natural regeneration of native plants when grazing animals are excluded.

2. Crop and fodder plant investigation.—We are anxious to have a portion of Urrbrae garden for growing a collection of native grasses and fodder plants; e.g., saltbushes. Such a collection will provide us with material for the study of the biology and physiology of these plants. It will also be useful for investigations on the composition, chemistry, and food value of these plants in other departments.

3. Arboretum.—We hope to assist in the establishment of this by finding some of the seeds of rare or interesting trees. The collection, when formed, will be of value to this department, as a source of material for teaching and investigation in botany, no less than in forestry.

4. Plant Pathology.—The lecturer in plant pathology will, I am sure, do all in his power to co-operate with Urrbrae, and will appreciate the advice of the Director of Agriculture. A portion of the garden, orchard, and greenhouse should be available for experiments on plant diseases. Gardening labour should be provided. This, of course, would be used with the approval and under the authority of the Professor of Agriculture. As soon as practicable it is hoped that a room may be allotted to the lecturer in plant pathology at Urrbrae for use as a field laboratory.

5. Field Laboratory.—The Department of Botany applies for the allocation of a room as a field laboratory for work in physiology, ecology or other investigations being carried out on the Urrbrae Estates.

6. General Co-operation.—The staff of the Department of Botany will be glad to do all in their power to co-operate with the Professor of Agriculture or other researchers at Urrbrae by personal assistance, use of books, apparatus, &c., in order to further the aims of the institution.

7. In an Advisory Capacity.—Advice and information on biochemical questions will be at the disposal of the Professor of Agriculture whenever he may seek them.

2. Growth and Nutrition of Animals.—Investigations which have been conducted by the Professor of Physiology and Biochemistry during the past 10 years, in America as well as here, have resulted in the formulation of algebraic equations which express and define the average growth of laboratory animals. These equations and the methods of computing growth which we have established have been applied to farm animals (cows and fowls) in recent years by Brody and Ragsdale of the Missouri State Agricultural Experiment Station, with results which fully substantiate the applicability of the equations and the important nature of the practical and theoretical conclusions which may be deduced therefrom. Thus it has been shown that the effect of race and sex, upon rate of growth and amount of growth is not the same, and that, in fact, rate of growth and amount of growth are largely independent variables, and may be separately influenced. The same principles might be extended to the effects of diet, and if a given feed or forage were found favourably to influence rate of growth and another the ultimate amount of growth, we might predict a combination of the two which would ensure maximum development in a minimum of time. The question of inheritance of size also awaits investigation by these new methods of research. It will be important to extend the scope of Brody's investigations on cows, and to repeat and extend them on sheep, in the latter case correlating the growth-data with data on wool-production. It would, however, be necessary to enlist the interest and collaboration of the Professor of Agriculture for this purpose. He would have to approve the whole plan of research, suggest the most suitable breeds of animals for employment, provide feed and accommodation for them, and the necessary manual labour. We could, on our part, furnish the plan of research, subject to his critical supervision, and bring to the problem our special experience and knowledge of these methods. The animal products research foundation would furnish the clerical assistance which might be necessary to carry out the arithmetical computations involved, and members of our staff, or advanced students, could carry out or supervise the necessary weighings. It might also be possible to defray the expense of the necessary weighing machines out of the funds of the animal products research foundation or from private sources.

3. Agricultural Technology.—In several branches of agricultural technology, particularly the utilization of dairy by-products (casein), leather manufacture, and fruit-jelly manufacture, we have special information and facilities which should be of service in elucidating particular problems. Advanced students who are studying biochemistry with a view to its subsequent commercial employment would usually be available to conduct such researches under the direction of the Professor of Physiology and Biochemistry. We possess the necessary facilities for laboratory-scale work on these problems, and, in fact, work of this character is at present actually being carried out in our laboratories. We are greatly hampered, however, by lack of knowledge, from the practical agriculturist's point of view, of what are the most urgent problems of this kind existing in our locality. If the Professor of Agriculture were to point out problems of this kind such suggestions would be welcome and most carefully considered and, if the nature of the problems and our facilities permitted, the work would undoubtedly be undertaken.

As a rule, in problems of this class, no expenditure from the Waite Bequest would be necessary, our general equipment being quite adequate to carry on such investigations. Collaboration in this type of research, therefore, would meet the call for the special knowledge and advice of the Professor of Agriculture, we, on our part, whenever possible, being prepared to apply our equipment to the problems indicated by him.

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