

1905.

QUEENSLAND.

REPORT OF THE DEPARTMENT OF AGRICULTURE AND STOCK FOR THE YEAR 1904-1905.

Presented to both Houses of Parliament by Command.

TO THE HONOURABLE THE SECRETARY FOR AGRICULTURE.

Brisbane, 29th July, 1905.

SIR,—I have the honour to submit to you the Report of this Department for the year ending the 30th June, 1905.

The organisation of this Department, which at its initiation was connected with the Department of Public Lands, was entrusted by the Hon. C. B. Dutton to Mr. P. McLean, and on the 31st of December last, that gentleman, the first Under Secretary for Agriculture, retired from the Public Service. By the severance the State has lost the services of one who was unremitting in his efforts to further agriculture in Queensland. Consequent upon the retirement of Mr. McLean from his appointment as Agricultural Adviser, Mr. H. C. Quodling, then manager of the State Farm, Hermitage, was appointed Agricultural Inspector, and Mr. A. Martin was appointed to the vacancy thus caused.

In February last I visited the Southern States, and obtained information upon many matters that will be valuable to the Department when circumstances are more favourable. A full report has been submitted to you, but as some of the subjects of inquiry were of considerable moment, extracts therefrom are included herein.

COLD STORAGE.

“Although the Department of Agriculture in each of the States visited have cold storage accommodation of considerable magnitude, there appears to be diversity of opinion as to the wisdom of doing business to the extent that has been done in competition with private firms following the same lines; but, notwithstanding this diversity, it was clearly expressed that the reputation of a State in connection with exports requiring cold storage would sometimes be in danger if the State, and, consequently, the Department of Agriculture as the Department most intimately connected with exports, did not control cold storage accommodation sufficient for its purposes. The systems in the different States do not permit a statement that they are profitable to the State; indeed, from the information gathered, it would seem that generally the balance is on the debit side. A factor in this unprofitable result can be found in the claims from constituents in good seasons for a reduction of charges, and protests against the revision of charges in bad season, the protesters being unmindful of the fact that the cost of running such huge concerns does not diminish whether the seasons are good or bad. Conversations on these matters naturally raised the question of the ownership by the Government of cold storage buildings, and the balance of argument seemed to be in favour of renting such space as may be needed and postponing the erection of buildings at considerable cost until the volume of business warrants such a course, providing always that the premises offered are in every way suitable.

The greatest objection to rented buildings is that the machinery is the property of and the engineers the employees of the proprietors of the buildings, a serious matter in the case of any friction. In South Australia the cold storage buildings are the property of and are occupied by the Government. In Victoria the buildings are owned by the Municipal Council, who erected them in 1891 to serve as a market for perishable farm produce, the cost of erection, including plant, approximating, it is understood, £150,000. The object for which the buildings were erected was not attained, and they were eventually leased by the Department of Agriculture, a portion at first, then an increase of space, and finally the whole of the building. The city corporation provides engineers, coal, and general lighting, for which the Department of Agriculture pays a rental of £15,000 per annum. In addition to this rental, the Department pays a rent for the electric power used in handling goods, rent of offices, lighting, and for hydraulic water. In New South Wales the Government own the buildings, which are leased to Messrs. Birt and Company, who sublet to the Department of Agriculture such parts of it as may be required at a general rental of about 3s. per 100 cubic feet per annum for cold storage and about 2s. 9d. for handling space, the lessors finding all machinery, &c.

In each of the States, the Department of Agriculture handles on the owner's account—butter, cheese, eggs, fruit, hares, poultry, and such small goods. Victoria handles meat also, and South Australia will kill and handle meat of all kinds on owner's account.

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Receipts for goods for shipment are given, the holder of which is the recognised owner of the goods. These receipts have by custom become negotiable, and may so pass through several hands before delivery is taken of the goods in store, all charges on which must be paid before delivery will be given. The system in each State may thus be summarised:—

NEW SOUTH WALES.

Goods must be delivered at the cold stores, free of all charges, where the Department will receive, grade, brand, pack, store, and freeze, &c.

Receipts are issued for completed crates or boxes only; partially filled cases are not received.

The receipts for transferred goods must bear the endorsement of the transferee.

Owners must make all arrangements for shipping.

Twenty-four hours' notice must be given of the time when goods are required at the ship's side, and the original store receipt must be handed to the officer in charge before delivery can be taken. No responsibility will attach to the Government for damage that may be incurred as the result of any delay in shipping or injury in handling, or in treating goods while in store or in transit. Rabbits and hares are not held in storage for a longer period than six months.

Goods not paid for within the prescribed period are sold at owner's risk or dealt with as the Department may decide.

Terms of payment, prompt cash on demand.

Any loss or injury resulting from an inspection by a ship's officer or other authorised person or from other causes after delivery at the ship's side will be at the owner's risk and cost, the responsibility of the Department having ceased at that point; and such goods can be received at the Government Cold Stores again, only at the owner's expense and risk.

The Government has a first lien over all goods stored in the cold stores depôt to the extent of the charges on those goods.

Any goods stored in the cold storage depôt that are obnoxious through decay, leakage, or otherwise may be condemned, removed, and stored elsewhere at the risk and expense of the owner.

No complaints will be recognised unless deposited within forty eight hours of the time of alleged occurrence of the cause of such complaints.

The Department is not responsible for loss or damage resulting from accidents to machinery, fire, water, electrical disturbances, strikes, or other reservations usually included in contracts.

The charges for receiving, grading, and freezing goods for export are:—

	Number in Case or Crates.	Grading and Packing Cases Included.	Storage per Case per Week, or Portion of Week.
Hares	12	2s. 3d. per crate	1½d. after first 14 days
Rabbits	12 pairs	1s. 10d. "	1½d. " "
Rabbits (skinned)	30 to 36 in case ...	1s. 10d. "	1½d. " "
Wallaby tails ... ..	...	1d. each	1½d. " "
Kangaroo " ... ..	...	1d. "	2d. " 10
Geese ... ..	...	6d. "	2½d. " "
Turkeys	8	6d. "	2½d. " "
Fowls and Ducks	12, 15, or 25 ...	3d. "	2d. " "
Eggs	36 dozen	3d. per case ...	3d. per week
Export butter	56 lb.	1d. per box ...	1d. "

The rabbits, poultry, and eggs received at the cold stores during the past three years were:—

	Rabbits.	Hares.	Poultry.	Eggs.
1902	113,125	64,448	120,161	130,524
1903	640,541	42,796	4,487	151,128
1904	915,999	53,616	3,928	251,640

The value of the goods, packed, frozen, and delivered from the Government cold stores during last year is estimated to have amounted in value to £49,092, in which are included fowls, ducks, turkeys, rabbits, hares, eggs, butchers' sundries, milk, poultry, and sundry small items. It is to be noted that butter and cheese, in consequence of no export laws compelling the passing of these commodities through the Government cold stores, are not deposited there in sufficient volume to warrant the mention of them in the summary of quantities.

Specimen samples of crates for packing hares and rabbits, and for the conveyance of them from the country districts have been promised by the Department of Agriculture, and will be received in due course.

The temperatures kept are:—Lambs, rabbits, poultry, 10° Fahr. and under. The time in the chamber to be at least four days before shipping, the last twenty-four hours of which are at 10° Fahr. With regard to rabbits and hares, the object is to get them frozen down quickly, in order to lessen as far as possible the danger of taint. A curious feature about hares and rabbits is that apparently private firms object to entering upon the business, notwithstanding that every opportunity is present for so doing. It seems that they prefer to leave the matter in the hands of the Government.

Eggs—about 40° Fahr.

Butter, as elsewhere, from 15° Fahr. to 20° Fahr.

The Department of Agriculture does not touch the grading of meat.

STAFF OF COLD STORES.—Excepting the manager and storekeeper, the whole of the staff are employed as there may be work to be done—the graders being paid for fowls and ducks 1½d. per head, and for geese and turkeys 3d. per head, the balance of the fees received being devoted to packing, branding, &c. Graders are lent to private factories, the owners of which pay all charges in connection with the work done.

VICTORIA.

In this State the cold stores are in charge of the dairy expert, who is responsible for the grading, packing, &c., of all goods that may be sent to the stores; but, as in New South Wales, there is no law compelling exporters to grade for export, consequently the business is voluntary. The supervisor has to assist him, inspectors, graders, and experts, who are in the public service; but there are graders of poultry, hares, and rabbits who, however, are casually employed at 1s. per hour upon a guarantee of forty-eight hours' work per week, one foreman receiving 1s. per day extra. Should a factory require a grader, a competent man is sent upon prepayment of expenses and wages for a given time; but no receipt is given or any connection recognised by the Department in connection with the work done by the grader.

For work to last three months or over a fixed charge of £35 per quarter, plus travelling expenses, is made.

BUTTER.—The grading of butter is done voluntarily by the dairy expert, certificates for which are given in much the same form as that adopted under the Queensland Dairy Act. Private firms are registered as receiving stores, and trade marks are registered; but the private receiving stores are not favoured by the Department, which prefers that all butter for export should pass through its hands.

Butter for export is analysed and manufacturers are advised of faults, if any.

The temperature of the grading room is from 56° Fahr. to 60° Fahr., and of the cold stores from 10° Fahr. to 20° Fahr.

LAMBS AND MUTTON FOR EXPORT.—It is in this connection that the main difference between the systems of New South Wales and Victoria lies.

The former State does not interfere with meat at all there; so far as the cold stores building is concerned, it is handled by Messrs. Birt and Company, the lessees of the cold stores. In Victoria, the Government undertakes to freeze, handle, provide wraps, place on board ship, prepare, and deliver bills of lading for lamb and mutton for a charge of 7d. per carcase for lamb and 9d. per carcase for sheep, including twenty-one days' storage, these charges being subject to revision. Kidneys and tongues are also received, frozen, packed, and shipped for 1s. per 50 lb. Railage to ship's side has to be paid by the consignor, the cost being about ½d. per carcase for lamb and about two-thirds of a penny for mutton, a charge of ¾d. per carcase being charged for grading. Slaughtering is not done by the Department, but arrangements can be made with butchers, who cater specially for the export trade, the charges being approximately 1s. 6d., including delivery at the Government cold stores. Special arrangements are usually made as to slaughtering, disposal of skins, tongues, kidneys, fat, and offal. During the season upwards of 18,000 carcasses per week have been treated at the Government cold stores, and it is expected that during the coming season the weekly handlings will approximate 28,000 carcasses. Indication of grading is exemplified by tags affixed to the carcase reading thus—

Good lamb (or mutton)	...	...	...	L	White-coloured tags.
Prime "	"	...	...	A	Red-coloured tags.
Plain "	"	...	...	B	Blue-coloured tags.

(Weight denoted on each ticket.)

For grading the meat is classed:—

		Lambs.		Mutton.	
L	under	29 lb.	...	under	58 lb.
A	"	29 lb. to 37 lb.	...	"	58 lb. to 73 lb.
B	"	37 lb. to 44 lb.	...	"	74 lb. to 88 lb.
H	over	44 lb.	...	over	88 lb.

} Green Weight.

A certificate showing the grades and classes is given in each case to the shipper or owner.

HARES AND RABBITS.—These are dealt with on the same lines as lambs and mutton, the grading being indicated by a stamp impressed upon the case, thus—"Approved for Export No. 1," or "Approved for Export No. 2, Second Grade."

The classification for rabbits for grading is:—

A	Large, 2½ lb. and over in weight, 12 pairs per crate	...	} Brand No. 1.
B	Young, over 2 lb. and under 2½ lb.	...	
C	Small, over 1½ lb. and under 2 lb.	...	
D	Size 1, 2nd grade, 12 pairs, over 60 lb. in weight	...	} Brand No. 2.
E	Size 2, 2nd grade, 12 pairs, over 48 lb. in weight	...	
F	Size 3, 2nd grade, 12 pairs, over 36 lb. in weight	...	

Skinned rabbits are graded separately, the same grading stamps being used.

The charge made for crates, grading, packing, handling, freezing, and shipping, including twenty-one days' storage, is 1s. 9d. per crate. After that time a charge of 1½d. per week or portion of a week is made.

The temperature in the cold stores is from 10° Fahr. to 20° Fahr., with a preference for the lower temperature.

SOUTH AUSTRALIA.

The cold stores in this State differ from those of New South Wales and Victoria, in so far that they are entirely under the control of the Department of Agriculture, and that the management undertakes slaughtering.

LAMBS AND MUTTON.—Delivery is taken by the Department, which will slaughter, weigh, grade, freeze, bag, and brand lambs at '35d. per lb., a reduction to '30d. being made when the total from one owner reaches 10,000 carcasses per season.

Mutton is treated at '30d. per lb. under 50 lb. weight, and '28d. per lb. over 50 lb. An additional charge of 1s. 6d. per ton measurement to include wharfage is made on shipping.

Storage is free for thirty-five days, but after that a charge of 11'16d. per carcase per week is made.

The Department will undertake the sale of a consignment, and in such cases—advances are made on produce at 5 per cent. per annum, the interest ceasing on cable advice from London of a sale having been made; the Department takes no responsibility in the case of consignments shipped by exporters, who are required to have their own tally clerk present at shipment; the Department reserves the right of rejection, alive or dead, and no responsibility is accepted in connection with any rejection that may be made. The usual reservations are also made in connection with strikes, delays, accidents, &c.

HARES, RABBITS, POULTRY.—The notes made for New South Wales and Victoria apply also to this State, there being but little difference in the arrangements made.

BUTTER.—The brand used for butter passed by the dairy expert is "Approved for Export." The charge for receiving, examining, chilling, and delivering to lighters is 3d. per box for seven days' storage, after which period a charge is made of 1d. per box.

Temperature for grading, 50° Fahr. to 60° Fahr; for freezing, 15° Fahr. to 20° Fahr.

HARES AND RABBITS—TRANSPORT TO COLD STORES.—The climate which will be the great difficulty to overcome when the export of hares and rabbits in this State is practically undertaken is also met with in the southern States, though, perhaps, in a lesser degree. In New South Wales, the Department of Agriculture declines to receive these goods during the summer months, so great is the fear of taint, which if present in a crate will contaminate the whole of the contents of the crate. Rabbits and hares are found to be in good condition after at least thirty-six hours on the rail, in addition to the time from killing to placing on the rail. The point apparently in treating rabbits and hares during transport is to keep them in a hanging condition from the time they are gutted after killing until they are in the freezing chamber, when they are placed in crates in a horizontal position (the liver is left in the rabbit or hare). In the bush they are hung on saplings, and the railway journey is made in specially constructed crates, which have horizontal rails whereon to hang them. This question of hanging was impressed upon me in each State when making inquiries. Transport in New South Wales is facilitated by the concession on the railways of a truck for these goods and other perishable articles attached to passenger trains other than express or mail trains. In this State there are, so far, at least chilling factories up country, whence rabbits and hares are transported in chilled cars to Sydney. These factories are situated at Forbes, Young, and Narrandera. For a comparison of distance, it may be mentioned that rabbits are received at the cold stores in Sydney from Bourke, Dubbo, and Wagga.

In Victoria the conditions for transport are similar to those in New South Wales, but there they receive at the cold stores throughout the summer, providing the rabbits have not been too long on the journey, say, eighteen hours. In the winter and autumn the time occupied for the far journey is about thirty-six hours, and the greatest distance is about 200 miles. There are no special arrangements made by the Railway Department other than the provision of louvre cars in summer time which are attached to ordinary passenger trains. In South Australia rabbits only are received at the cold stores, there being no trade in hares. The trade in this State differs from the others in so far that practically all the rabbits come from Mount Gambier, where there are freezing works owned by a private company, who pack, grade, and freeze their own rabbits, and send them to the Government cold stores prior to shipment. All rabbits and hares for freezing are treated with the fur left on.

It is evident from the inquiries made that any business that may be done in Queensland must, for the first year at least, be confined to the winter months. Later, with the experience gained, the period may be extended.

LAMBS FOR EXPORT.—The breeding of lambs for this purpose is generally upon the same lines in the several States. In New South Wales the direct cross of a Shropshire and merino is favoured. Victoria follows suit, but South Australia has different ideas. The breeds of sheep used in the production of lambs for export are large-framed merino ewes or the first cross therefrom.

These are mated with Shropshire, Lincoln, South Downs, or Dorset, the breeds being valued in the order in which they are given. The Shropshires are used to the greatest extent, then Lincoln, and but few South Downs or Dorsets. The Dorsets are, however, advancing in favour, and when obtainable at reasonable rates will be largely used. In wet lands the Romney Marsh ram is in demand, and the lambs from the cross are said to be of a high quality. During 1904, some 200,000 lambs were exported from South Australia, for the most part by big companies, but many farmers shipped on their own account through the Produce Export Department, and realised satisfactory prices, varying from 12s. 6d. to 16s. per head, at an average weight of 36 lb. The Director of Agriculture recommends a trial of a merino crossed by a Hampshire Down, a cross that he found to pay well in Great Britain for the lamb trade.

APPLIANCES AND ACCOMMODATION FOR DEALING WITH WHEAT IN NEW SOUTH WALES.

The Railway Commissioners have provided in the wheat areas a number of grain sheds, ranging in capacity from 10,000 to 25,000 bags. The sheds now in working order may be classified as to number thus:—

Southern District	22
Western District	8
Northern District	6

The total storage capacity being equal to 510,000 bags, or, at 4 bushels to the bag, 2,040,000 bushels.

The sheds which are open, with concrete floors and galvanised iron roofs, are leased to farmers, who make their own arrangements as to the charges to be made. The rates levied are, however, subject to the approval of the Railway Commissioners. The rents charged to the lessees of the sheds are:—

10,000-bag shed,	£20	per annum	=	12d.	per bushel
15,000-	£25	„	=	10d.	„
20,000-	£30	„	=	09d.	„
250,000-	£35	„	=	08d.	„

The use of the sheds is strictly confined to the storage of wheat for conveyance by the railway, and the same restriction is placed upon sites allotted at railway stations to private firms for the erection of sheds. The rent for a site is £2 per annum.

Stacking sites at stations, where there may be room, are provided free of charge, the persons using the ground having to cover the grain and to take all responsibility.

In Sydney the wheat traffic is dealt with at Darling Island, where there is a grain shed, with wharfage space alongside of 1,300 feet.

The shed is fitted with the latest form of electrical and mechanical appliances for dealing rapidly with a heavy wheat traffic. It is 1,050 feet long, 80 feet wide, and has a capacity of 300,000 bags of wheat. In an emergency a large number of bags can be stacked outside the shed under cover. It is divided into seven sections, each of which is fitted with an electrical elevator and conveyor for moving the bags of wheat from the trucks to the shed or from the shed to the ships. The rate of conveyance from the rail to the shed is equal to about 60 tons per hour, and from the shed to the ship about 90 tons per hour. Wheat can also be loaded at the same time from trucks by means of the ship's slings. Each of the seven sections is provided with a truck weighbridge up to 40 tons, and electric capstans have been installed for moving trucks about the shed.

AGRICULTURAL CLASSES IN COUNTRY DISTRICTS, VICTORIA.

These classes originated with the object of bringing under the notice of young farmers who had not the privilege of an education at a college, the principles which underlie and govern all operations on the farm. Supplementary to these principles were, as far as possible, the practical results, as found by the Department of Agriculture through its experimental work in the direction of manures, crop trials, fruit disease, stock matters, and so forth. The staff engaged in this work was composed of the technical officers of the Department, augmented by gentlemen from outside the Department, whose qualifications were exceptional for the delivery of lectures or for demonstrations. For instance, a veterinary surgeon was engaged for four afternoon lectures and one evening lecture with lantern for £2 2s. a day, with railway fare and hotel expenses provided. A surveyor for two afternoon lectures and one field demonstration at £5 and railway fare. A farrier for two morning demonstrations, the Department providing forge, iron, and a striker, fee £3 3s. and railway fare. The fees for outside lectures are under no particular scale, each case being taken separately.

Advertisements are inserted in the Press inviting applications from agricultural or other societies, a date being fixed, after which no further applications are considered. The society or body making application is required to guarantee an average daily attendance of forty persons engaged in agricultural pursuits to provide a suitable hall, seating accommodation, and desks, as well as advertising the class throughout the district through which it operates. The Department of Agriculture pays all salaries of lecturers, railway fares, and travelling allowances. An officer of the Department is usually sent to the districts two months ahead of the time fixed for the class, to explain the nature and scope of the work to be done, the regulations, the hours of the class, and many other details necessary. He makes inquiries as to the intentions of the students that are entered, and reports to the officer in charge of the work.

Arrangements are made with the railway authorities for return fares at excursion rates, upon production of a certificate from the officer in charge of the class.

During the last week of the class, examination papers are set by the different lecturers, attendance at the examination on the part of the students being voluntary. The examinations take place after the usual lectures, an hour or half an hour being devoted each day for that purpose.

The officer in charge makes a detailed examination report with comments on the manner in which the instructions was received, and, if necessary, he recommends the allotment of prizes or trophies.

The Department, however, does not offer any awards in the shape of prizes or medals, but it issues certificates of attendance to all students who submit themselves for examination. Prizes or medals are permitted from local residents or any person interested in the classes.

A feature in connection with these classes is a library of approved modern text books, suitable to each class, a supply of which is provided by the Department for sale to students. Students may also borrow books from the library without fee. Visitors to each class are welcomed.

The general regulations for these classes may be summarised thus:—

An attendance roll is kept, the calling over of which takes place daily at the conclusion of the first lecture. The number of visitors is also recorded.

The class at each centre, as a rule, is opened by the parliamentary representative, or by a representative of a local body.

The officer in charge is paramount, is responsible for the arrangement of all details, the reception of visitors, enquiries from students, complaints, &c.

The officer in charge reports on the progress of the work, attendance of students, &c.

A list of books recommended for the course is also attached. The classes are held during the winter months as that time is the least likely to interfere with farm work. The first class was opened in August, 1902, at Tatura, followed during that year by classes at Bacchus Marsh and Charlton. Classes were afterwards held at Boort, with 25 students; Warrnambool, with 16; Maffra, with 6; Shepharton, with 23; Geelong, with 23; Kyneton, with 12. The subjects for the course were: Agricultural subjects,

Animal Nutrition, Poultry Breeding and Management, Sheepbreeding and Woolsorting, Agricultural Botany, Viticulture, Insect Pests and Plant Diseases, Theoretical and Agricultural Chemistry. The value of these classes has, as can be gathered, been abundantly proved by the success attending their institution. The main idea permeating the lectures is, that they shall be delivered in the style generally spoken of as popular, as distinct from the technical or scientific, and so presenting education to men who have had no opportunity for the higher education, in language which they can understand. The class now being held is at Nhill.

(List of books for classes, and details of classes at Nhill, during March, 1905, with original of the report.)

EXPERIMENTS IN THE FIELD.—The origin of this work upon the holdings of farmers dates from 1886, when the suggestion in this direction emanating from Mr. Pearson, the chemist of the department, received the sanction of the Minister. Since that time the experimental field work, under the control of the chemist and his assistants, has been continuous. The system as it is at present can be outlined thus:—

The Department will co-operate with farmers in a series of field tests to continue over seven years from the first sowing on fallowed and unfallowed land. Each farmer co-operating is required to place five or six or more acres at the disposal of the Department, with a guarantee that if the farm be sold or rented during the period, a continuation of the tests shall be a condition of sale or rent. The soil to be of uniform even character and free of rent.

The farmer supplies horses, machinery, implements, &c., prepares the land, sows and reaps, for which an annual payment of £15 is made.

The farmer removes from, and returns to the railway station free of charge, all implements, manures, stores, &c., that the Department requires for use on the ground. He is also required to house the field officers at ordinary boarding house rates. The farmer erects the fencing required, the material being supplied by the Department, and, in the event of the experiments being discontinued during the progress of the agreement through any action on his part, he may be called upon to pay the actual cost of the fencing.

The farmer retains all seed from the experiment area, excepting such quantity as may be needed for the continuation of the operations.

The Department supplies all seed and manures used free of cost. In this outline, manurial experiments are referred to, but the system also includes tests with forage crops, different depths of ploughing, depths of seeding, rates of seeding, and other tests. Before starting upon this work the chemists analysed and classed typical soils of Victoria, and upon the classification, determined the class of manures to be used. The agricultural societies were then communicated with and asked for the names of farmers willing to co-operate. An officer was then sent to the district to explain matters. An opinion on the detailed value of this experimental work would be of greater worth when obtained from a chemist, but it is evident that here, in Australia, we have little or nothing of the accumulated knowledge of those countries that have an agricultural history of many centuries. The Department in Victoria places great value upon this work, and the chemical branch which controls it is well equipped.

FORESTRY.—To South Australia belongs the honour of having been persistent and consistent in conserving its forests. New South Wales, after many vicissitudes, has now taken the question up in earnest, and a Bill is now in preparation for presentation to Parliament defining the objects and requirements of forestry in that State. In Victoria, forestry seems to be about on a par with the work done up to the present in Queensland. There is a forestry branch, but, so far as can be gathered, nothing of any moment or with any definite object is being accomplished. Under "The Woods and Forests Act of 1882," South Australia has a Department of Woods and Forests, established under the Commissioner of Forest Lands, the office including under the regulations a library of books on forest culture and cognate subjects, together with a museum of economic forestry. The Commissioner has immediate control of the forest reserves, has authority to employ foresters, nurserymen, and labourers to sell timber and produce and generally conduct the business of the Department. The Department has now in working a small sawmill that will cut timber for customers; the work being done for the most part is the cutting of timber for cases. Excluding the Commissioner and the clerical staff, the outside staff consists of three foresters at £160, one at £150, and 1 at £140. Six nurserymen at from 8s. to 10s. a day, and three foremen at 8s., and one at 7s.

The foresters, who are each of them in direct control, subject to the Commissioner of a forest reserve, have authority to mark timber for sale and generally to control the forest.

Assisting the foresters are the nurserymen and foreman, labourers being employed as occasion may arise. Horses are found for these officers, who are allowed also to keep stock in the forests for their own purposes, but not for trading. No forage or travelling allowances are paid within the district, but if they have occasion to travel outside their district, then the travelling allowances authorised by the public service are allowed.

The present state of forestry in New South Wales commenced in New South Wales in 1902, when new forest regulations were brought into operation. These were based mainly on the principle of a royalty payment on all Crown timber and the rigid protection of all immature timbers of commercial value.

To uphold these regulations a scheme of supervision became essential. The design and organisation of which may be thus described:—

The timbered portions of the State were divided into nine main districts or circles, the boundaries of which were carefully located in relation to the physical features, markets, and the existing sawmilling and timber industry.

The administration of each of these districts was given to a district forester, an officer with sound forestry experience, and, as far as possible, local knowledge. The salaries attached to these appointments range from £200 to £300 per annum, with £125 to each officer for allowances and 10s. a day when travelling. Assistant foresters are appointed to carefully study the districts and to organise and

administer any subdivisions of a district. The salaries attaching to these appointments are £150 per annum, with an allowance of £90 per annum and travelling allowance of 7s. 6d. a day. The third rank in the forest service is that of forest guard, a temporary appointment from an official standpoint, but permanent in reality. The wages attaching to these appointments are 8s. a day with 2s. 2d. for forage allowance to enable them to keep the necessary horse equipment. The duties of these men mainly consist in checking and measuring timber, the preparation and transmission of returns and the collection of timber dues. In addition, the police are utilised as acting foresters. The staff employed in 1903, excluding the office staff, consisted of:—A chief surveyor, nine district foresters, ten assistant foresters, twenty-seven forest guards, eleven mounted police as acting foresters, for the control of 7,271,100 acres, an increase of 307,440 acres over the area reserved in 1902.

A Bill is now in preparation for presentation to Parliament, a copy of which has been promised, which has for its object a clearer definition of the needs of forestry. It is an axiom that a country does not appreciate the necessity for conserving its timbers until that timber has been destroyed or nearly so. It is, therefore, necessary that any laws dealing with this subject should completely alienate the land set apart for that purpose. It is of no use from a forestry point of view to reserve lands as forests, and later, should the drift of settlement set in the direction of that land, to give way to pressure and withdraw that reserve. Settlement for agricultural purposes is an enemy to forestry, and it is upon this basis that the New South Wales Bill has been prepared. The Bill provides also for the classification of lands within a period of three years, the time necessary to determine the sites of the forests. Lessees of Crown lands within the area proclaimed for forests are to be protected during the continuance of their leases; but six months' notice is to be given to each of them to the effect that the leases may be renewed, providing they accept the conditions of the Forestry Department, otherwise the leases will lapse on the expiration thereof.

The argument of conservation against reforestation that has long unsettled the minds of foresters, has apparently been settled in favour of the former course, and the tendency is towards the conservation of the natural timbers and to the protecting of the natural growth.

The cultivation of trees by local bodies and by all persons should be encouraged to the utmost, and the establishment of nurseries should, it is thought, be an important adjunct to a properly equipped forestry office. Plants should be freely distributed from such nurseries free of charge, excepting, perhaps, the cost of railage and packing.

PLANTING AT RAILWAY STATIONS AND IN OTHER PLACES.

In this respect, Queensland is very much behind New South Wales, Victoria, and South Australia. Throughout the journey to Adelaide it is pleasant to see the gardens, trees, and plants in a thriving condition at almost every railway station; but in Queensland there is so little done in this respect that the exceptions can be remembered. The open places in Sydney, Melbourne, and Adelaide, laid down in grass, trees, and non-flowering shrubs, accessible to the public at all hours of the day and night, are features that, if considered necessary for the convenience of the people in those cities, are so much the more necessary in Queensland, where they are conspicuous by their absence. Here, any places set apart for the public recreation are surrounded by railings and gates, religiously shut and locked at sundown; there provision is made for the public, who from a love of Nature may prefer to pass their evenings in company with trees and plants instead of parading the hard and unpicturesque streets. In this matter of open places, Queensland suffers greatly in comparison with the southern States."

BORDER STOCK RESTRICTIONS.

Later, in consequence of the restrictions placed by New South Wales upon the interchange of stock with this State, which threatened to seriously interfere, if not to destroy, the horse markets at Toowoomba and Warwick—markets that are now of considerable dimensions and of repute with buyers from outside the Commonwealth—Mr. J. P. Orr, the Deputy Chief Inspector of Stock, was instructed to proceed to New South Wales to confer with the officers of the Department of Agriculture and Stock in that State and to endeavour to secure a removal of restrictions that were causing serious inconvenience in this State. The mission was in every way successful, and arrangements made which meet many of the claims preferred by Queensland. The alteration in the regulations is mainly in regard to horses, and practically abolishes the system of quarantine in favour of dipping, an argument which has been always advocated by this Department. The position with regard to horses before and at the time the correspondence commenced with the Department of Agriculture in New South Wales, and the results of the Conference will, perhaps, be better understood by the following summary thereof:—

The last New South Wales stock restrictions issued on 10th March, 1905, provided that all horses that entered the areas, Schedules T and Z (Darling Downs), would require to remain in those areas at least four months and another two months in the area known as Schedule W (Maranoa), or six months in all in the latter area, and then be dipped again at the border. As a result of the Conference the New South Wales authorities have agreed to have their regulations altered as follows:—

1. Allow clean horses from the Darling Downs, areas T and Z, to proceed direct to New South Wales on dipping at Warwick, Stanthorpe, and the border with seven days between each dipping; or
2. Dip at Warwick or Toowoomba, then remain two months in Schedule W (Maranoa) before crossing the border after dipping thereat, which was the restriction prior to March, 1905; or
3. Remain six months in Schedule T, Z, and W, according to regulation of 10th March, 1905.

The new regulations will also allow the New South Wales stock inspector stationed at Tweed Heads discretionary power to admit saddles, bridles, harness, and vehicles after inspection and disinfection to cross the border, without the owners, as formerly, being required to obtain permission from the head office in Sydney.

The New South Wales authorities have also promised that if Queensland can show in the future reasonable grounds, consistent with safety, for further relaxation, same would be favourably received, and in the meantime will consider applications for the interchange of stud swine, and thus reciprocate with

Queensland. Furthermore, as this State has promised to notify New South Wales of any advance of the tick pest towards the border, that State will in return notify Queensland of any contemplated regulations.

The two Departments are now working in harmony, and one or two further minor concessions have recently been conceded.

It is regretted that the restrictions on cattle could not be modified, but it is hoped that the extra precautions which are being taken by the Department, particularly the enforced dipping, will be the means of staying the march of the ticks, and that in the near future the Department will be able to obtain further concessions to owners of all classes of stock.

Apart from ordinary courses, the Department has been instrumental in advertising the productions of this State in three ways that would seem to deserve record. An effort has been made to open a market in the Philippine Islands for such of our fruits that can be procured easily and in quantity. In like manner, samples of Queensland timbers that are usually found upon the market were sent to the exhibition now open in Oregon, United States of America. The merchantable timbers of Queensland, in relation principally to railway work, have been brought under the notice of the railway authorities with whom there is a possibility of doing trade. This work was compiled by Mr. P. Mac Mahon, the Director of the Botanic Gardens, and will be of great value commercially by directing attention to our timbers.

During the latter part of 1904, at the time the Victorian Butter Commission was sitting, there was an evident movement to decri the value of Queensland pine for butter boxes, in favour of New Zealand pine, and the *Station, Farm, and Dairy*, a newspaper published in Sydney, went so far as to publish an article over the signature of the Austral Timber Company, in which the following passage occurred:—

“If factories are so foolish as to entertain Queensland timber they will rue it, as it is not inodorous, and besides which it is considerably heavier than a white pine box, and we could use our Richmond pine, but that would be just as absurd.”

This unwarrantable action to injure our trade without proof, naturally caused a reply to the paper controverting the statement, but, so far as is known, the letter was not published. Following this, a letter was received in the early part of the year asking certain questions concerning Queensland timber for butter boxes, one of which was an inquiry as to its relative merits as compared with New Zealand or other imported timber. The answer to that question was, that Queensland white pine is eminently suited for butter boxes, is innocuous, clean, makes up well, and is thought to be superior to the white pine of New Zealand, and freer from knots than the kinds of pine usually imported from America and Europe.

The Collector of Customs was further informed that all butter boxes used in Queensland are made from Queensland timber. The matter was not allowed to rest here, however, and tests were made practically and by analysis to prove the statement that appeared in the *Station, Farm, and Dairy*, to be utterly without foundation. It was intended by the Associated Timber Merchants that the results of this inquiry should be laid before the Federal Tariff Commission in order that an objection might be laid against any alteration in the tariff which would admit New Zealand pine into competition with Queensland pine, but the Commission left Brisbane without taking evidence.

The results of the experiments made by the Agricultural Chemist and the Dairy Expert are:—

QUEENSLAND TIMBER FOR BUTTER-BOXES—ANALYSES OF BUTTER-BOX TIMBERS.

	QUEENSLAND WHITE PINE.				NEW ZEALAND WHITE PINE.	
	Half-dry.		Dry.		Dry.	
Percentage of moisture in the wood	10.53		10.34		8.81	
Percentage of ash in the wood ... ..	.60		.64		1.57	
Percentage of watery extract from the wood	1.10		.75		1.21	
Weight of wood (wood lb.) per cubic foot	38.2		40.3		30.0	
Weight of water absorbed, lb. per cubic foot	9.8		9.5		9.3	
Weight of water evaporated—	Lb.	Per cent.	Lb.	Per cent.	Lb.	Per cent.
Per cubic foot in 2 hours	3.1	31.6	3.9	41.1	3.6	38.7
Per cubic foot in 6 hours	6.6	67.4	6.2	65.3	6.5	69.9
Per cubic foot in 24 hours	8.8	89.8	7.9	83.2	8.3	89.3

An analytical investigation of timbers suitable for butter boxes will, in the first place, take into consideration the action of water on such woods, particularly with regard to the taste of such extracts.

The watery extracts of the two Queensland pines and the New Zealand white pine, which were obtained by letting sawdust of these timbers soak for twenty-four hours in water, were almost tasteless, meaning that the extracts had only the very slightest woody taste, and there was no difference between the three samples. The extracts of the Queensland timbers were quite colourless, and that of the New Zealand pine of a light-yellow colour.

The amounts of extractive matters taken up by the water, of special importance in the use of these timbers for butter boxes, are the lowest in the Queensland timber, particularly in the second well-seasoned sample, which is to be considered in their favour.

Another point of importance is the amount of water absorbed by the timbers, and again the manner in which such water is given off when timbers are exposed to the air, as a criterion of the porosity and capillarity of such timbers. The experiments show that no difference exists in regard to these properties between our Queensland and the New Zealand pine.

The second sample of the Queensland timber, a well-seasoned wood, was heavier than the first half-seasoned sample, because it was a much closer-grained wood from a different locality.

PRACTICAL TESTING OF QUEENSLAND PINE FOR BUTTER BOXES.

Commenting on the charges made against the use of Queensland pine for butter boxes, the following is a copy of my memorandum of the 7th June:—

SIR,—Since an adverse criticism on Queensland pine for butter boxes appeared in the *Sydney Station, Farm, and Dairy*, I have kept a close lookout for defects in butter likely to be caused by the pine, and the grading inspectors have likewise been vigilant, but not an instance has been found to justify a belief that the quality of the wood is inferior for butter boxes. If well-seasoned pine contains injurious substances, the severe test it is put to in Queensland, where much storage of butter is carried out at different temperatures and under trying conditions, it would be readily detected in the produce.

It might be mentioned that a very searching practical test of the wood is being conducted to determine its absorptive properties, and if a flavour can be transmitted to the butter.

SUTHERLAND THOMSON.

Since the above was written, the grading inspectors attached to the Department have been most assiduous in their examinations of export butter, but no woody or mouldy flavours have been found. Special precautions were taken in the testing of stored produce with similar results. From 10th April till the time of writing 60,000 boxes of butter have been under observation, and had a taint existed in the pine, as reported, it would have been apparent in the butter following refrigeration. It is quite possible for serious mistakes to occur when the examination of butter is entrusted to incompetent persons, and no doubt flavours have been attributed to the wood when the butter itself was responsible for the taint. An illustration of butter being seriously affected with mould was brought before my notice some time ago. The butter was packed in the usual way in a 56-lb. box, but was not intended for export. The quality was inferior, being rancid and mouldy. The produce had been manufactured from stale cream, and was aged. The flavour was similar throughout, and dark patches were noticeable in the centre of the block. Cultivation of moulds was made from the patches, and the discolouration was reproduced by inoculation. Dealers in this class of butter, after a cursory examination, would be liable to blame the wood for causing the moulds and other defects; but there is a distinct difference between rancid, fishy, woody, and musty flavours, and should not be confused by those who are capable to judge.

The examination referred to in my memorandum of the 7th June was carried out at the works of the Queensland Meat Export Company, Pinkenba.

The test commenced on 8th June, and closed on 16th August—a period of sixty-nine days.

The following are the conditions under which the examination was conducted:—Five boxes made from Queensland pine were procured; two were of seasoned wood, and three were not. Two additional boxes made from imported pine (seasoned and unseasoned) were also under examination. The boxes were numbered A, B, C, E, F, G, and H; A, C, E, and G representing the unseasoned wood, and B, F, and H the seasoned.

In the manufacture of the butter the supply of cream was specially selected, and every care taken against the possibilities of errors.

The treatment of the seven boxes was as follows:—

Unseasoned Wood.		Seasoned Wood.	
Nos.		Nos.	
A	Without paper or other treatment	...	B
C	Paraffined and single paper	...	—
E	Double paper	...	F
G	Without paper or other treatment (single paper)	...	H

Concluding the first examination of the butter for flavour, the boxes were removed to a cool chamber for a period of twenty-five days. They were then taken out and thawed for the second examination. The boxes were returned for further treatment, which extended to forty-four days.

In the final examination points were awarded for flavour in the following order:—

UNSEASONED WOOD.			
		Centre of Block. Max. 50.	Side. Max. 50.
A	Without paper or other treatment	45.5	45
C	Paraffined and single paper	47	47
E	Double paper	46.5	46.5
*G	Without paper or other treatment	45	44
SEASONED WOOD.			
B	Without paper or other treatment	46	45.5
F	Double paper	46.5	46.5
*H	Single paper	45	42

In sampling the butter a steel trier with a cutting space of 1 inch was used. Each block was bored through the centre and down the side in contact with the wood. A board was removed from the side of each box, and the butter scraped from the block with the trier.

In commenting on the examination of the five boxes—A, C, E, B, and F—no trace of a woody or musty flavour was in evidence. The points will show that the keeping properties of the butter were of a very high order. The flavour of the boxes C and E was clean and nutty, each having retained the delicate aroma to a remarkable degree. Boxes made from the imported woods (G and H) were the least satisfactory, a woody flavour being pronounced on the surface of the butter, and which extended to a depth of half an inch. The extent of the test in the instance of G and H was insufficient to justify any decision regarding the value of the imported pine. Very careful data would have to be kept of experiments conducted on a large scale to determine the relative values of the different timbers used for butter boxes.

The splendid result given by the unseasoned wood (A, C, and E) is sufficient guarantee of the value of Queensland pine for butter boxes, but no liberties should be taken in the preparation of the timber for this purpose.

* Imported Wood.

CONCLUSIONS.

The charges made against Queensland pine for butter boxes have been disproved by practical and scientific examination, and the results show that the pine is admirably adapted for the export butter trade.

The practical tests carried out at the Queensland Meat Export Works, Pinkenba, were of great severity, and any weakness in the pine would have been conveyed to the butter before the expiry of the investigation.

A searching examination of export butter conducted by the grading inspectors of the Department of Agriculture has not revealed the slightest suspicion that the wood contains injurious properties.

The best results in the experiments were obtained from wood treated with paraffin wax and single parchment.

G. SUTHD. THOMSON, Dairy Expert.

These experiments conclusively contradict any objection that Queensland pine could give a peculiar flavour to butter.

If further evidence be desired, it will be found in the reply to a cable sent to London by the Agent-General when visiting Queensland, asking if there existed any serious prejudice or complaint existing there against Queensland pine for butter boxes, and the answer received from Mr. C. Lance, the Commercial Agent for New South Wales, to whom the cable was sent, was to the effect that he had recommended to his Government the use of Queensland pine for butter boxes.

CONFERENCE.

The eighth Conference organised by the Department of representatives from the different agricultural, pastoral, and horticultural societies of the State was held on the 15th, 16th, and 17th of May of this year at Cairns. Although the conditions qualifying a society for representation were more stringent than in previous years the convention was attended by sixty-two delegates from sixty-three societies. Gauged by the importance and practical nature of the subjects, and the manner in which they were discussed, the Conference was one of the most successful of its kind yet held in the State. As was natural with a gathering of agriculturists in a Northern town, the sugar industry took pride of place in their programme, and it can be anticipated, with a fair degree of confidence, that the work done at the Conference in connection with the sugar industry will be ultimately to the material benefit of the cane-growers of the State. The following are particulars of the resolutions adopted, and will give a comprehensive idea of the business transacted at the Conference:—

1. That, in view of the feeling of great doubt and unrest which exists as to the continuance of the bounty, the Federal Government be requested to introduce, at once, a Bill to extend the provisions of the *Sugar Bounty Act of 1903* for a further period of ten years at least.
2. That, in the opinion of this Conference, the extent of the industry and its prospective development require that the *Pacific Islands Labourers Act 1901*, be amended so as to provide for the continuance of the number of Pacific Island labourers now employed in the industry.
3. That the Conference desires the amendment of the *Sugar Bounty Act of 1903* by the deletion of the following words in clause 2 of section 2:—"Provided that no bounty shall be paid in respect of the production of sugar on land which has been cultivated by other than white labour after a bounty has been paid in respect of the production of sugar thereon"; and that the provision contained in the Act when first passed to the effect that all cane crops may be registered for bonus up to the 28th of February each year, and if worked solely by white labour since the previous crop on that land has been harvested shall then be eligible for bonus during the ensuing crushing season, shall be again in force.
4. That, in the event of the Federal Parliament not acceding to the former request, *re* labour from the South Seas, the Immigration Restriction Act be so amended that reliable labour can be imported under contract from Great Britain and the Continent; or, in lieu of the latter, that arrangements be made for natives of New Guinea to be introduced for the harvesting of cane.
5. That, in the opinion of this Conference, unless immediate action be taken, embracing a labour bureau for obtaining labour within the Commonwealth and elsewhere to give effect to the foregoing resolutions the sugar industry must perish.
6. That, through our chairman, we ask our State Premier to forward the foregoing resolutions to the Federal Ministry with strong representations that they be given effect to.
7. That, in the opinion of this Conference, in view of the necessity for land settlement in North Queensland, the Government be asked to continue its efforts to develop the central mill system.
8. That the Conference is of opinion that the coffee industry requires a one penny per pound further protection to cause its development.
9. That this Conference is deeply thankful to Mr. Newport for his inestimable paper on "Auxiliary Tropical Products," which clearly proves the justification of the establishment of the institution which he so ably manages, and the Conference also trusts that the Government may extend such institutions wherever it may deem it necessary.
10. That this Conference appreciates the action of the Government in their endeavour to help the agriculturist, as indicated by the establishment and amendment of the Agricultural Bank and the Dairy Act, and various other ways, and urges the need of further help in the distribution of our products as present and future developments may indicate.
11. That this Conference recognises the value of introducing good dairy bulls into our herds, and it strongly urges the Department of Agriculture to give every facility to farmers to obtain the benefit of the dairy bulls at present at the Agricultural College, at Gatton, or other Government institutions.
12. This Conference is of opinion that when the Ministry is considering the question of the employment of the unemployed, that the matter of forming large reservoirs of water by the formation of dams to provide water for irrigation, and so increase the value of the land, should be given consideration.
13. That, in the opinion of this Conference, the Government of this State should take into consideration the practicability of conserving water with a view to experimental irrigation.
14. That this meeting strongly supports the building of light lines in the West of Queensland, and the connecting of the railway systems, with the object of assisting to save live stock in droughts and of developing the country generally at a minimum cost in rolling-stock.

15. That it be a recommendation from this Conference to the Ministry that their support should be given to intercolonial transport by rail.

16. That, in the opinion of this Conference, the establishment of central elevators and graders are necessary adjuncts to the railway system of Queensland to facilitate and cheapen the cost of storing and shipment of grain.

17. That, in the opinion of this Conference, the harbour and other charges on the export of grain, fodder, and all farm produce are excessive, and should be reduced.

18. That, in the opinion of this Conference, the Government should make inquiries so that the market for Queensland fodder may be extended to foreign ports, where a market may be found.

19. That this Conference is of opinion that assistance, like that which has given such an impetus to poultry-raising, should be given by the Agricultural Department to the honey industry (which already is engaging the attention of over 1,000 persons in Queensland) by assisting in a trial shipment of honey to England.

20. That this Conference views with regret the necessity for economy, as displayed by the Department of Agriculture in connection with the issue or value of the production of the *Queensland Agricultural Journal*, and trusts that the Hon. the Minister for Agriculture may see his way clear in the near future to increase the reading matter contained therein to its original volume.

21. That, in the opinion of this Conference, the question of *Ankylostomiasis*, or earth-eating disease, demands immediate attention on the part of the Queensland Government, and that our chairman, the Hon. D. F. Denham, M.L.A., be requested to bring the matter before the Cabinet at an early date.

22. That the Department of Agriculture insist upon all papers for presentation at future conferences being submitted to the Under Secretary, who would have the right to edit same, and that every paper conclude with a resolution.

The foregoing resolutions are receiving the attention desired by the Conference, or have been transmitted to the proper quarters; but it is yet too early to write definitely on the practical outcome of each.

AGRICULTURAL EDUCATION.

The competition in all walks of life in Queensland, and the difficulty many find in obtaining suitable permanent employment at the present time, are alone sufficient reasons for again urging the extension of the opportunities for young people to learn the rudiments of the oldest of all callings. The difficulties that have to be encountered by a town-bred lad without means in obtaining work for which he may have a taste, but of which he has had no opportunity of learning, are amongst the causes of keeping him in town, and, perhaps, of his descending in the social scale. The need of a training to enable him to make the most of his farm has become the most pressing want of a young farmer, and it is also necessary that he should be a good man of business as well. A training should begin between the ages of sixteen and eighteen, when the mind is most receptive; to leave it later is to lose valuable time. The training ground in Queensland is already prepared for a good practical grounding, and were accommodation at the State farms available, there is no reason why a commencement might not be made towards that end which this Department, by reason of its machinery, is alone capable of fulfilling. Several States schoolmasters are endeavouring by theoretical instructions in the schools, and by practical teaching on land near at hand, to instil a love and knowledge of agriculture into the boys under their control, and many inquiries for advice and assistance are received by this office on their behalf; but, as most of the schools referred to and the lads taught therein are in the country, they do not, for my present purpose, enter into the proposal I am advocating. Those for whom most concern is felt are those that have not had opportunity for learning, and yet have to seek work in the country. The handicap with which they start in life does not in the majority of cases permit an advance beyond the region of situations as hired men.

In a different manner agricultural education should be at the disposal of the young farmer who, for many reasons, chief amongst which being that his services are required at home, is consequently unable to avail himself of educational advantages which, in only a few instances, present themselves in isolated centres of settlement. Schools of art exist, and so do technical colleges, but on the shelves of the libraries of the former books of reference treating of the main occupations followed in the district are conspicuous by their absence, and in the latter more attention would seem to be paid to subjects more in keeping with town life than with agriculture. In Victoria what may be termed itinerant courses are held in agricultural centres, free of charge to those attending, and it is thought that a system on similar lines might be attempted in this State. There, with greater funds at their disposal, the classes cover many subjects, such as manures, crop trials, veterinary science, fruit diseases, stock matters, and so forth, with the consequence that during the continuance of the class several officers are kept in one place. It is suggested that in this State the instruction should deal with one or two subjects, which perhaps might be taught by one instructor; and afterwards, if the classes proved to be a success, the scope of them might be enlarged. By such means there is no doubt that valuable instruction would be placed at the service of many of our young farmers, and that it would be immeasurably superior in its effects to the system hitherto followed in this State, of occasional lectures by the technical officers of the Department, which, though of great service, have not the advantage of affording personal instruction and study. Few persons attending an occasional lecture take the trouble to read up the subject beforehand, and it cannot be expected that they should do so, because although they may know the subject, they do not know the lines which will be taken by the lecturer.

MARKETS.

The reference in the last report to markets outside of Queensland, in the Commonwealth, and oversea, afforded but a slight indication of the business done during the last year, and to transactions now in progress. The officers of the Department have been called upon to inspect a far greater quantity and a greater variety of products than has ever been the case, and, if the manufactured articles be added, the inquirer will find that the trade of this State with foreign countries is increasing rapidly. It is true that upon the cessation of the war the demand may decrease, but it is to be hoped that those nations with whom we are trading will have evolved an appreciation for those commodities which we can supply, and that our

merchants will be able, by a proper attention to what is required, to keep those markets open. So far as farm produce is concerned, there is much room for improvement in attending to the wants of the purchaser, and to the waste that is found in almost every line. It is an axiom of business to sell to the buyer what he requires, but the average seller in Queensland seems to be of the opinion that the buyer must take what he, the seller, chooses to sell, and in any form of get-up. A very little inquiry will reveal a great waste of material and labour on the part of the producer, which may fairly be described as being disastrous to him. It is no uncommon thing to see and hear complaints of farm produce selling at reduced prices, and perhaps cast aside by the dealers, not, perhaps, on account of the actual quality, but owing to damaged cases or faulty get-up, which could have been avoided with reasonable care. Apart from this, the cost of freight by rail or water for such goods must amount to a great sum during a year, to which must be added cartage and commission. In a recent number of the journal of the Royal Agricultural Society of England, the loss by Ireland of a profitable trade with England in poultry, and its transfer to France, was dilated upon, and it is shown that the result is entirely due to the efforts of the shippers in the latter country to please their customers. Such an argument applies to all lines of produce and of manufactured goods, and if attention is not paid to it the trade is lost. Honesty in trade is a general principle that should be written up in every farm. The trick of placing the best on top has been so often tried that there is little doubt that many honourable men have to suffer for the misdeeds of those who are not so conscientious. The dealer knows his business as well as the farmer, and is quite ready to take all the advantage he can; but, on the other hand, with care and patience, a reputation can be built up for particular brands that will well repay the cost of building.

The export trade in grain and other products is approaching such dimensions that the time is approaching when in the interests of the State standards of quality and weight should be set up each season, and that standard samples should be held by the Department at the service of merchants who may wish to send them to any part of the world. At present, as far as grain is concerned, we are able to sell only as F.A.Q. or good or prime feed, but it is thought that the time is passing for such a general average. The standards might also pass the raw products, and include the manufactured, such, for instance, as flour, bran, pollard, &c. The adoption of a standard weight and quality, or, in other words, the grading of produce for export, would in a short time show the farmer that it would be to his material disadvantage to produce an inferior article.

Apart from the ordinary channels of commerce, the Department has taken notable steps during the year in assisting to foster industries, amongst which may be mentioned—

POULTRY.—The trial shipment that was made to prove whether the poultry of this State when grown for the London market, prepared and packed according to the requirements of that market, would not hold their own with other countries that have established their reputation, has been eminently satisfactory, and will be followed by consignments to catch the Christmas and winter markets of London. The prices realised, particulars of which have already been published, show clearly that, with attention to requirements and details, the market for poultry is far better oversea than in Queensland.

COTTON.—Though no information is yet to hand of the sales of cotton ginned at Ipswich and Cairns, on behalf of the growers, it is anticipated from the opinions passed upon it by those qualified to judge that the enterprise will well repay those who have again attempted to revive this industry. A trial consignment of the cotton ginned at the exhibition last year was sent to Japan, where it is thought a favourable market is to be found. The reply received has been to the effect that our cotton is adapted to that market, but the price offered is not sufficiently tempting in the present state of the cotton market.

FRUIT.—Assistance was again given to growers by the despatch of Mr. Knowles to New South Wales to make inquiries into the trade and to ascertain where improvements could be effected. The districts interested in the different lines of production were duly notified of the markets to be obtained. A movement initiated by the combined Moreton Agricultural Associations to obtain transport by rail instead of by sea received the assistance of this and of the Railway Department, but the idea, admirable in its object, was not consummated owing to the inability of the railway authorities in the southern States to meet Queensland.

Markets that are within reach, in India and the Philippine Islands, countries of which the inhabitants are accustomed to fruits that are grown here, should be worth the attention of exporters. In both countries the system of horticulture is far behind that of this State, and though similar fruits to ours are common, yet the best, for which trade the exporter would cater for, do not in any way compare with ours. Visitors from both countries have stated that they seldom see fruits to equal those of this country. It is true that with India shipping facilities are bad, but that is not the case with the Philippines. The contracts with the latter country require ships to visit this port at regular intervals, and the opportunity should not be lost. The occasion of the visit of the daughter of the President and the Secretary of State for War of the United States of America to Manilla has been availed of to bring under the notice of the residents of the islands the fruit that can be produced here in commercial quantities. Seventeen cases including:—Oranges, lemons, granadillas, pines, passion fruit, paw-paw apples, custard apples, strawberries, and choccos, were shipped per ss. "Empire," to arrive at Manilla about the time the visitors were expected to reach there, and the experiment will be watched with considerable interest, as upon the success of it the future of the trade will be gauged.

COFFEE.—Assistance similar to that afforded by this Department to cotton-growers has been extended to the Northern coffee-growers in handling on owner's account, preparing, and selling the coffee of those who agree to the conditions imposed. At the time of the issue of this report, sales have not been effected, but from the result of the inquiries made in the South, some time ago by the Instructor in Tropical Agriculture, it is expected that a favourable market will be secured. If the object of the Department should be attained the cultivation of coffee will receive a fresh impetus.

INTERSTATE TRADE.—Before federation, the Queensland Statistics contained full particulars of interstate trade, and were very valuable in gauging the volume of trade done, but, under the Commonwealth, no attention is apparently paid to quantity, value only being recorded, and the figures, moreover,

can only be obtained from Melbourne. The value of exports are but a small index to trade unless accompanied by quantity; but, in order to make the best use of the material available, the Comptroller General of Customs has been good enough to promise to furnish this Department with the monthly values of certain items. These for the first six months of 1905 are;—

COMMONWEALTH OF AUSTRALIA.—DEPARTMENT OF TRADE AND CUSTOMS.

RETURN SHOWING THE TRANSFERS FROM QUEENSLAND TO OTHER STATES OF AUSTRALIA OF THE ITEMS AND FOR THE MONTHS MENTIONED.

Item.	January.	February.	March.	April.	May.	June.	Total.
	£	£	£	£	£	£	£
Arrowroot ...	556	291	234	162	371	412	1,926
Butter ...	2,936	32,514	28,346	23,142	34,672	6,498	128,108
Cheese ...	620	1,043	2,477	1,128	997	794	7,059
Coffee ...	111	84	176	...	50	...	...
Apples ...	...	66	3	7	54	13	143
Bananas ...	11,011	11,952	11,311	8,660	11,058	14,579	68,571
Oranges and Lemons ...	...	...	1	199	708	699	1,607
Pineapples ...	3,690	4,753	2,605	802	1,099	1,878	14,827
Vegetables ...	284	598	235	109	107	976	2,309
Grain—							
Barley ...	878	1,459	512	2,659	46	1,148	6,702
Wheat ...	6,021	1,824	1,002	475	259	989	10,570
Honey ...	178	151	105	235	103	295	1,067
Meats—							
Bacon and Hams ...	3,803	5,458	4,934	5,452	6,681	4,690	31,018
Poultry ...	...	...	...	...	...	...	...
Milk, Preserved ...	387	380	215	185	218	290	1,705
Skins and Hides—							
Cattle ...	8,419	10,246	10,050	5,743	16,169	15,234	65,861
Horse ...	34	4	3	63	...	...	104
Sheep (with wool) ...	5,494	7,719	2,027	6,060	9,060	8,940	39,300
Sheep (without wool) ...	...	135	302	264	3,809	1,718	6,228
Sugar ...	76,091	53,556	45,164	13,220	11,449	24,164	223,644
Wool—							
Greasy ...	16,762	33,992	23,460	35,086	13,539	12,540	135,379
Scoured ...	69,820	45,613	25,400	19,956	40,774	48,242	249,835
Tallow ...	1,648	639	743	451	436	6,024	9,941

H. A. P. WOLLASTON,

Melbourne, 4th July, 1905.

Comptroller-General.

SUPERVISION OF EXPORTS.

The remarks of last year concerning the necessity for power to supervise exports has become more intense from experience gained subsequently. The export of meats and dairy produce from Queensland is already under the Live Stock and Meat Export Act and the Dairy Act respectively under stringent regulations, and the result is very satisfactory. Excepting in the case of meats and dairy produce there is no authority to examine exports of grain, bran, pollard, and hay. The services of officers of the Department are often requisitioned for inspection; but, as the inspection is only voluntary and in accordance with the certificate asked for by the shipper, it not infrequently happens that the inspector has to stand by and see grain or other material shipped that he would, for the sake of the reputation of the State, refuse to allow to be sent away had he the power to do so.

SALE OF SEED.

In this State much of the seed sown, whether it be for the farm or garden, is imported; but, there is no law under which the quality, and excepting maize, wheat, barley, and oats, the weight or measurement may be regulated. As a consequence, buyers have to accept the custom of the trade or the will of the seller. Few people, when they buy seed, take the trouble to ascertain the exact quantity by measurement of what they have purchased, and as seeds vary so much, and as the quantity required for a given area of land is such an important factor in securing a fair return, it is obvious that much money is annually lost owing to want of protection to the buyer. Although the trade in seed is principally by weight, the weight per bushel is of importance in determining the grade, especially in the case of grass seeds, which vary much in quality. The weights per bushel of grain do not vary as much as do those of grass, but even with grain the weight per bushel is an important item.

FEDERAL TARIFF COMMISSION.

During the sittings of the Commission in Brisbane in June, the opportunity was taken of presenting to the Commission facts and evidence concerning the tobacco industry, barley, and coffee, and to advocate that in the interests of Queensland the duties now obtaining should in no wise be decreased, but rather increased. The evidence and suggestions relative to tobacco were undertaken by Mr. Nevill entirely, and were based upon communications that he had previously addressed to you in support of the industry which he represents in this State. With regard to barley, Mr. Redwood, of Toowoomba, was good enough to attend and give evidence that he was well able to present, and I submitted a paper dealing with the subject generally advocating no reduction in the prevailing duty, and answered such questions as were asked by the members of the Commission. Circumstances preventing the attendance of the Instructor in Tropical Agriculture, Mr. Newport, from attending to give evidence concerning a subject of which he has such an extensive knowledge, it became my duty to present the resolutions arrived at during the

Agricultural Conference, held in Cairns in May last, dealing with the duties on coffee, in a paper covering information relative to the coffee industry, and also to give in my evidence my views concerning the industry and the effect a reduction of the duty would have upon those who are yet feeling their way with this crop. It is a matter of regret to me that an officer more able to deal with the subject was not able to be also present, but the occasion brooked no delay, and the best had to be made of the opportunity presented. The paper read before the Commission, together with those read at the Conference, and the proceedings in connection therewith, were submitted to the Commissioners, so that they would be able to clearly understand the opinions of the coffee-growers upon the question of duty.

Summarised, the points advocated by the officers of this Department and by Mr. Redwood were:—

TOBACCO.—That the tariff on tobacco be made—

	s.	d.
On imported manufactured tobacco	4	0
Unmanufactured to be manufactured within the Commonwealth (except cigar strips or stemmed tobacco)	2	0
Leaf or unstemmed tobacco	1	6
Excise on tobacco manufactured within the Commonwealth (except cigars)	1	0
Import duty on unmanufactured cigar tobacco to be manufactured into cigars within the Commonwealth	3	0
Excise on cigars manufactured within the Commonwealth		abolished

A differential of 9d. per lb. in favour of tobacco manufactured in the Commonwealth and imported into British New Guinea was recommended.

BARLEY.—That the present duty should not be reduced.

COFFEE.—As recommended by the Agricultural Conference, an addition of 1d. per lb. on to the present duty of 3d. per lb. for raw and kiln dried, and 5d. per lb. for roasted or ground and in liquid form with milk or other substances.

Mr. D. Jones, at his own instance, appeared before the Commission and advocated an increase and alteration in the duties on cotton.

STATE FARMS.

The Westbrook, Biggenden, and Gindie Farms have remained unchanged in their scope of operations, but at Hermitage preparations are in progress for enlarging the area of its work. Land is being fenced and laid down with lucerne, in anticipation of placing sheep thereon, with the view of encouraging the breeding of lambs for export; the policy of the farm is being gradually changed as funds permit, to add to the experimental work which hitherto has been the main feature of the farm, by bringing it more into line with the general farming. Cattle have not yet been included, but purebred pigs and poultry are now at the service of the surrounding farmers, and it is hoped that presently object lessons will also be at their disposal with regard to the rearing of lambs for export. Farming in the neighbourhood of Biggenden tends directly in the direction of dairying, and as the area of the State farm is but sixty acres, it is not sufficient to properly fulfil the functions of a State farm at that place—namely, that of being the leader in the line of agriculture of the district in which it is situated. The land surrounding the farm has all been alienated; therefore, to increase the area would involve buying. It is suggested that the farm be sold with all improvements, and that the purchase money be utilised in starting a farm in connection with breeding purebred stock upon a suitable area of Crown land in the neighbourhood of the extension of the railway line from Degilbo towards Gayndah.

Through the courtesy of the Scottish Australian Investment Company, the Department has been enabled this year to carry out extensive experiments in the cultivation of cereals. The land is situated at Bungeworgorai, near Roma, on the Mount Abundance Station, and, as a subsidiary to this, arrangements have been made for experiment plots at Mitchell, on the farm of Mr. Fallon, and at Yeulba, on the farm of Mr. H. P. Moloney. This work, which is under the superintendence of Mr. Quodling, the Agricultural Inspector, is the outcome of the experiments carried on in the Maranoa in 1904, and the results of the coming harvest will be of great value to those interested in farming in that portion of Queensland. Had it been possible this year, the work of the Department in that district would have been greatly enhanced if viticulture, for which the Roma district is celebrated, had been added to its operations.

ALBURY SHOW.

The exhibit sent under the direction of Mr. H. C. Quodling to this show, held in September last, was an unqualified success as an advertisement of the resources of this State. Apart from the material supplied by the Department, opportunity was taken to gather donations from the different districts and other exhibits at the National Agricultural and Industrial Associations' Exhibition. The exhibits sent, all being the products of Queensland, whether raw or manufactured, included tinned fish and meats, cotton, cornflour, mohair, sisal fibre, miscellaneous fibres, beeswax, and honey, tobacco, wheat sheaves, grain, rice, rye, barley, flax, sorghum, millets, teosinte, maize, hay, olive oil, liqueur, bottled fruits, dried figs, cassava, megas, molasses, sugar, flour, bread, seeds, vegetables, dairy produce, wool, coal, skins, and many other things.

AGRICULTURAL SOCIETIES.

Though not wishing in any way to deprecate the multiplication of agricultural societies when a fair reason exists for such multiplication, there seems to be a tendency towards the establishment of many societies or associations in a single district, each acting in its own sphere, and quite distinct one from another. Division of this kind cannot be helpful to the agriculture of a district, for the reason that it is not conducive towards united work, and no attempt seems to be made to bring societies towards amalgamation. For instance, in one town in the North there are four societies, each representing the agriculture of the district. In the Central district, with headquarters in one town, there are four societies in a similar position, and again in the South two or three societies are found hailing from one centre. In

other places an association is to be found at the head of a valley and another at the township lower down. It cannot be that the interests of a district can be so diversified as to require so many societies within its boundaries without connection one with another, and it would require but little argument to prove that the reverse would be eminently beneficial. Agricultural societies properly organised and regulated should be very influential, but they must, to attain that object, work together, and devote attention to many other things besides holding an annual show, or owe their existence to a difference of opinion on the part of a few to the actions of a parent society to which their members were formerly allied. It is submitted that the system in Canada and in the United States, where farmers' institutes are in existence would be worthy of study by the societies in Queensland. There, agricultural shows, which in Queensland are the objective of many agricultural societies, are regulated by common consent, and are held in places where they are likely to be of benefit. The institutes are practically formed for the purpose of social and educational gatherings, held at stated times, at which prearranged papers are read and discussions carried out on various subjects. These meetings do deal, not only with the plain practical side, but also cover subjects relating to farm life generally. Lantern lectures and other accessories to make the meetings enjoyable are enlisted, and it is not unknown in America for an institute meeting to conclude with a dance. Such a statement is, no doubt, not orthodox in this report, but it makes clear a line of life that is at present unknown in the country district of Queensland. When in the South in the early part of the year, inquiries were made by me as to the system upon which subsidy was paid to agricultural societies. Here, for many years past, subsidy has been paid upon subscriptions to the society without reference to the object or intention for which a subscription may be given. There are societies that include mining in the objects of their establishment, and according to the regulations now obtaining, subsidy is paid by the Department of Agriculture for purposes concerning which, *per se*, it has no interest. Again, tradesmen are interested in an exhibition, and subscribe for objects which have no connection with agriculture, and their subscriptions are subsidised. In New South Wales, subsidy is granted upon a very different basis; there it is paid upon prizes awarded for approved subjects, such as live stock, farm produce, wool, wine, dairy produce, horticulture, apiculture, jam, jellies, pickles, sauces, &c. In Victoria much the same system is followed, and it is submitted that this Department would be acting more within its functions were a similar system followed in this State.

HORSES.

The condition of the horse stock in this State is such that action should be taken to improve the breed. Apart from the general opinion of those who say that the stock is deteriorating, there is a depletion of the best mares as a consequence of the demand of foreign buyers. It is well known that in many of the transactions with foreign buyers that have lately taken place, mares have predominated in the number of animals sold, and as is highly probable buyers purchased the best of those offered, it will not take much thought to arrive at a decision as to the result. So important, in my opinion, is the matter, that I submit the time has arrived when the export of mares should be controlled, and that no mares should be permitted to leave this country except under exceptional circumstances. To remedy this state of affairs, it is necessary to interest not only the pastoralists who, hitherto, have had the monopoly of horse-breeding, but also the farmers, for it is thought that at present prices (and there is no indication of a fall) there is an excellent opportunity for raising a few horses of quality each year, as is done by the farmers in Europe. Through the courtesy of Messrs. Donely and Rogers, and Messrs. Robinson and Co., of Toowoomba, it has been ascertained that the ruling prices at the time of writing this report may be taken as follow:—

- Cavalry horses, up to 12 or 14 stone, £20 to £30.
- Heavy draughts, from four to five years, £28 to £32 10s.
- Medium draughts, five, six, and seven years, £18 to £27.
- Medium draughts, three years, £19 to £24.
- Medium draughts, two years, £18.
- Medium draughts, eighteen months, £16.
- Artillery horses, £16 to £30.
- Ponies up to 14½ hands, £5 to £15.

The foregoing prices are fair auction prices, but for prime quality higher prices can, of course, be obtained; for instance, a first-class cavalry horse would possibly bring £40, and a good artillery horse, say, £45. Other classes also would command an enhanced figure for first-class animals, and it is to the breeding of such stock that the farmer should direct his attention, for by reason of the small area on which he follows his calling he is in a better position with respect to horse-breeding than is the pastoralist, owing to the artificial feed at his command. To do this, attention must be given to the selection of the sire and the dam. Of just as much importance is the method of raising the young stock—that is, as to their food, hardening exercise, and muscular development—and these conditions are easier to the farmer than to the pastoralist, with the result that the farmer is, or should be, in a position to place the best animal on the market. There are many stallions travelled through the farming districts during the season, but of them a small proportion would, it is feared, pass a veterinary examination for the purpose of ascertaining whether they are qualified for the work they are put to. Mares are sent for service upon the strength of an advertisement in the newspapers, but inquiry is seldom made with regard to the soundness of the stallion. This, together with the sale of our best mares, may contribute to the deterioration of our stock, and it is advocated that two courses of action should be undertaken—

(1) The registration of stallions, with power to prevent any animal from serving mares for a fee that is pronounced by a veterinary surgeon to be ill-formed structurally or to be affected with any complaint that may be transmitted.

(2) The establishment by this Department of a stud farm, at which stallions and mares of approved breeds shall be kept for the purpose of rearing stallions and mares for distribution throughout the country under conditions that would tend to improve the breed of horses and encourage breeding amongst small holders. This proposition is but extending to horses what is already being done with dairy cattle at the

Agricultural College, Gatton, and the success of the work done there is a sufficient warranty, apart from the urgency of the occasion, of the success of a stud farm. Breeding, other than for pure types, should be distinctly discouraged, the object being, as before stated, to disseminate the best stock throughout the land.

STUD BULLS.

An incidence apparently of the expansion of the dairy industry is the interest displayed of late by dairymen and others in the improvement of their herds, and the inquiries made during the past year as to the sources whence good bulls of approved breeds can be obtained have been somewhat numerous. The dairy herd at the Agricultural College is in some measure spreading better blood throughout the country, but there are many men earnest in their desire to own only the best cattle, but who are unable to purchase outright bulls of pure breed. To meet these cases, it is suggested that a system of leasing bulls during the season would be well within the functions of this Department, and would be a means of improving our dairy herds to an extent that the direct loss to the State, if any, would be covered many times by the indirect gain. Without going into details, it is suggested that, say, ten bulls of approved breeds be purchased, at an outlay of about £500 landed in Brisbane. The bulls should then be leased to agricultural societies or persons willing to undertake the responsibility for the season of six months at a fixed charge, with liberty to let these bulls out for service at whatever fee may be deemed fit by the lessees, but the number of cows should be limited to thirty in the season. To obtain data upon which a calculation of the benefit derived might be based, the lessees might be required to furnish at the end of the season details of the cows served. An alternative to this system would be for the Department to buy bulls on account of agricultural and pastoral societies, or of bodies of responsible farmers banded together for the purpose, the cost of which might be repaid under proper security within a term of years, say three, with interest added. The farmers would have the chance of acquiring bulls, selected by competent men. Moreover, it is somewhat doubtful whether men in the North, much as they desire to improve their herds, would incur the risk of bringing a bull from the South under lease. Should the system of purchase here advocated be adopted, all transactions would have to be made under proper agreement and security; a substantial deposit should be paid before any steps are taken to meet the wishes of the would-be purchaser.

REGISTRATION OF DAIRY COWS.

The scheme initiated in 1897 for the improvement of the dairy herds by competitions in different districts, the successful competitors at which were to be entitled to registration in this Department, and to the right to carry a specified brand, has during the past year been revised. Conditions were not sufficiently advanced for the success of the scheme, but it is expected now it will meet with favour.

1. All applications for a test under these conditions to be made through the secretary of an agricultural and pastoral society.
2. No application will be entertained unless the milking is carried out under the auspices of some recognised agricultural society and in the presence of some officer of the Department of Agriculture or of some person appointed by the Department for the purpose.
3. Competitors must present a certificate that the cow or cows entered are and have been their property for at least three months prior to date of test.
4. Each cow entered for admission to the register to be typical of some well-defined dairy breed, and must have a record of not less than 12 lb. of butter a week.
5. Animals qualified will be entered in the departmental register, and a certificate of qualification will be issued.
6. The test will cover a period of two days, and will be under the superintendence of an officer of the Department of Agriculture, or of some person appointed for that purpose.
7. All entries must contain a full description of the animals entered, date of calving, breeding, time in milk, colour, marks, and brands.

POULTRY.

The education given by Mr. Fern during last year culminated in a trial shipment of poultry, turkeys, and ducks by the ss. "Damascus," which left Brisbane in February last, in order to test the English market. It was known that there is a practically unlimited demand for poultry in England at certain seasons of the year, but it was not known that the poultry of Queensland were altogether up to the standard of the British market; indeed, in the opinion of some who had tried it, the business was not profitable; the experiment, therefore, was in the face of somewhat adverse experience, and great care was necessary to prevent mistakes. Power was reserved by the Department to reject any birds that did not come up to the standard set, and those that were accepted were graded by Mr. Fern. The following figures show the operations of preparing for shipment:—

—	Number Received.	Number Rejected.	Number Graded.		Number Packed.
			1st.	2nd.	
Chickens	511	21	331	179	490
Ducks	609	208	...	421	401
Turkeys	85	3	82	...	82
	1,205	232	393	580	973

The report by Mr. Fern upon the consignment at the time of shipment can be summarised thus—

CHICKENS, very good; some very fine birds included. One case, No. 47, contained birds with a decided yellow skin or flesh. These were sent to test the extent of the prejudice said to exist against yellow flesh or skin in the English market.

DUCKS.—These were so disappointing that none were despatched as first grade. They were not fat enough.

TURKEYS.—A fair lot, most of the birds being really poults.

The consignment arrived in London for sale in May last, a month when the market for fowls is fairly good, but bad for turkeys—the best time for the latter being at Christmas. The poultry were placed in the hands of Mr. E. Weatherley, of the central market, a salesman of considerable repute, with the request that he would indicate any errors in packing, grading, marking, &c. The opinion upon the condition of the birds coincided with the opinion of Mr. Fern prior to the shipment. They were: That the chickens were a very satisfactory lot, and would find a ready sale. The turkeys were of good quality, particularly the hens, but there would be some difficulty in disposing of them at that time of the year (May), owing to the small demand. The ducks were unsatisfactory, because they were not fat enough, and he stated that it would be useless to send further consignments unless the birds were fatter. White Aylesbury and Pekin ducks were recommended.

The result of the consignment can be best understood from the following average account sales. Reference has been made to case No. 47, containing birds of a yellow skin or flesh, and it is interesting to know that these birds sent to test an assumed prejudice, realised in London 3s. 3d., or but 3d. less than the highest price.

It is apparent, therefore, that with proper care and attention to breeding the European market is open to Queensland, with a fair margin of profit; but, to further prove the matter, it has been decided that a shipment of turkeys shall be sent, to arrive in London for the Christmas market, to be followed later by chickens and ducks. These, if successful, will effectually prove that if the breeder here attends to the wants of his buyer, there will be no fear of a profit not resulting.

AVERAGE ACCOUNT SALES OF POULTRY SHIPPED TO LONDON PER SS. "DAMASCUS," IN
FEBRUARY, 1905.

		<i>s. d.</i>	
Fowls, average price per head	...	2	10·17
<i>Charges.</i>			
Brisbane Charges—			
Cartage	...	0	0·35
Receiving, killing, freezing, packing	...	0	7·00
Feed, insurance, &c., Trails	...	0	0·77
Freight, wage, and insurance to London	...	0	3·75
Total charges landed in London	...	0	11·87
London Charges—			
Cartage	...	0	0·25
Commission, 5 per cent.	...	0	1·71
Total London charges	...	0	1·96
Total charges	...	1	1·83
Net proceeds per head	...	1	8·34
Fowls (highest price realised per head)	...	0	3·6
Charges, <i>see</i> above	...	1	1·83
Net proceeds per head	...	2	4·17

AVERAGE ACCOUNT SALES OF POULTRY SHIPPED TO LONDON, PER SS. "DAMASCUS," IN
FEBRUARY, 1905.

		<i>s. d.</i>	
Turkeys, average price per head	...	6	2·15
<i>Charges.</i>			
Brisbane Charges—			
Cartage	...	0	0·70
Receiving, killing, freezing, &c.	...	1	4·00
Feed, insurance, &c., at Trails	...	0	1·54
Freight, wage, and insurance to London	...	0	7·50
Total charge landed in London	...	2	1·74
London Charges—			
Cartage	...	0	0·50
Commission, 5 per cent.	...	0	3·71
Total London charges	...	0	4·21
Total charges	...	2	5·95
Net proceeds per head	...	3	8·20
Turkeys averaged 11 lb. each—			
Amount realised per lb., gross	...	0	6·73
Amount realised per lb., net	...	0	4·00

AVERAGE ACCOUNT SALES OF POULTRY SHIPPED TO LONDON PER SS. "DAMASCUS," in
FEBRUARY, 1905.

		<i>s.</i>	<i>d.</i>
Ducks, average price per head	2	0	86
<i>Charges.</i>			
<i>Brisbane Charges—</i>			
Cartage	0	0	35
Receiving, killing, freezing, and packing	0	8	00
Feed, insurance, &c., at Trails	0	0	77
Freight, wage, and insurance to London	0	3	75
Total charges landed in London	1	0	87
<i>London Charges—</i>			
Cartage, &c.	0	0	25
Commission, 5 per cent.	0	1	24
Total London charges	0	1	49
Total charges	1	2	36
Net proceeds per head	0	0	10½
Ducks (highest price realised per head)	2	9	
Total charges (as above)	1	2	36
Net proceeds per head	1	6	64

ACCOUNT SALES OF POULTRY SHIPPED TO LONDON PER SS. "DAMASCUS," IN FEBRUARY, 1905.

	<i>s.</i>	<i>d.</i>		<i>£</i>	<i>s.</i>	<i>d.</i>
490 Fowls at average price of	2	10	17	69	15	2
401 Ducks at average price of	2	0	86	41	10	9
82 Turkeys at average price of	6	2	15	25	6	8
				£136	12	7

<i>Charges.</i>				<i>£</i>	<i>s.</i>	<i>d.</i>	<i>£</i>	<i>s.</i>	<i>d.</i>
<i>Brisbane Charges—</i>									
Cartage to Trails				1	1	11			
Receiving, killing, freezing, packing, &c.				33	2	6			
Feed, insurance, &c., at Trails				3	7	10			
Freight, wage, and insurance to London				16	10	4			
Total charge landed in London					54	2	7		
<i>London Charges—</i>									
Cartage, &c.				1	1	11			
Commission, 5 per cent.				6	16	8			
Total London charges					7	18	7		
Total charges							62	1	2
Net proceeds							£74	11	5

ADMINISTRATION OF ACTS OF PARLIAMENT.

THE BRANDS ACTS.

The number of three piece brands registered during the year was 803, and the total number registered up to the end of the year was 43,487.

There have been 207 symbol and cheek brands registered under "The Brands Act of 1898," 26 of which were registered during the year.

The total number transferred was 11,615, of which 749 were transferred during the year. During the same period 29 brands were cancelled, and 221 cancelled brands were reallocated.

DAIRY ACT.

This Act came into operation on 1st April last. Ten districts have been proclaimed, in which thirteen inspectors are engaged. The grading of butter and cream is under the direction of the Dairy Expert, Mr. Thomson; one inspector is permanently employed at grading, whilst at times of pressure other two assist. Although the Act is of so recent date, yet I am pleased to report farmers and dairy managers are readily complying with the provisions of the Act, with a resultant improvement in the manufactured article.

The customs of the European markets, the growth of centuries, perhaps, are in some cases intricate; and the following extracts from southern papers upon the custom of weighing butter may be of interest:—

The Age, 6th December, 1904.

"There can be little doubt that the Victorian butter exporters incur considerable loss by their frequent failure to conform strictly to the London standard of weight in packing their consignments. Under the rigid rules of the Home and Foreign Produce Exchange, which govern the wholesale trade in

such matters, the balance of the advantage appears usually to be on the side of the buyer whenever the seller has neglected to maintain accuracy in packing and weighing the butter. One of the rules of the exchange states that 'overweight on packages . . . can neither be included in the average nor charged for.' That is to say, though several boxes in a consignment or parcel may contain (as they frequently do) from $\frac{1}{2}$ lb. to $1\frac{1}{2}$ lb. more butter than the standard quantity—56 lb.—the buyers need not pay for this surplus; nor can it be put by the seller's agent as a set-off to any short weight that may be discovered in the remainder of the consignment.

"When a purchase is being made, it is customary to take the weight of three boxes as a fair indicator of the average weight of the whole parcel, though a larger number may be tested. How the regular practice often works out as regards the seller is indicated by a test made at a sale of thirty boxes this week. Two of the boxes weighed $56\frac{1}{2}$ lb., and the third 56 lb. less 2 oz. On account of this slight deficiency in the third box, the seller was obliged to make short weight allowance of $\frac{1}{2}$ lb. on every three boxes in the whole parcel. Thus, on the thirty boxes an allowance of 5 lb. in favour of the seller had to be made, while no account was taken of the probability that the majority of the boxes, like the majority of those tested, contained more than the regulation quantity of butter."

The Argus, 9th December, 1905.

" . . . From advices received by mail it appears that it is again necessary to emphasise the necessity of packing butter so that the cases can always be relied upon to contain the full 56 lb., or slightly over, which it is the custom of the trade to look for. Examination of a number of lots on arrival in London has shown instances where the net weight is only $55\frac{1}{2}$ lb., 55 lb., or even $54\frac{1}{2}$ lb.; and allowances had to be made in such proportions as 1 lb. for every three cases, $1\frac{1}{2}$ lb. on two cases, $\frac{1}{2}$ lb. on two cases, $\frac{1}{2}$ lb. on three cases, $1\frac{1}{2}$ lb. on four cases, $1\frac{1}{2}$ lb. on seven cases, and $1\frac{1}{2}$ lb. on ten cases. Similar unsatisfactory features are still observable in some of the butter as it is shipped from Melbourne. Now, the advantage of a well-known uniform out-turn of full weight is not merely in the actual quantity of butter received by the purchaser, but in the establishment of a reputation for a brand, which is of great service in making sales and obtaining full market value, especially at times when the market is somewhat flat. The same rule holds good both as regards butter intended for shipment to London and butter sold on the Melbourne market. Instances have been known in Melbourne where New Zealand butter has been preferred to Victorian butter of equal quality by purchasers for shipment to other States, for the reason only that the New Zealand brand was known to signify 'thumping weights.' Salted butter should be packed to weigh about $56\frac{3}{4}$ lb., and as regards unsalted, a weight of $56\frac{3}{4}$ lb. at shipment does not turn out satisfactorily at home. As a practical matter, also, it would be advisable for the scales used at country factories to be adjusted more frequently, in order to avoid the risk of having to work with imperfect instruments."

DISEASES IN PLANTS ACT.

The operations of this Act in the Southern part of the State have proceeded without much change worthy of recording in this report, the export being in volume about the same as in the previous year. A fumigating chamber has lately been completed on the wharf of the Adelaide Steamship Company, making the third chamber besides the departmental chamber that has to be attended to by the inspector. In the North, however, the shipments of bananas, oranges, tomatoes, cucumbers, &c., have been brisk, and the inspectors have been fully employed. A new centre for bananas export has been established at Liverpool Creek, and inspection at Port Douglas is under consideration. This, when arrangements are completed, will be carried out from Cairns. The perishable nature of the banana has been the source of considerable anxiety since the alteration in the arrangements obtaining a year ago with regard to freight accommodation. The loss to the growers, and the danger to the trade with the southern States, which approximates in value some £225,000 per annum, became so serious that special inquiry was made whilst proceeding North to the meeting of the Agricultural Conference. The southern States are very strict in their inspection, and in their desire to guard against the introduction of pests, and the trade once lost, whatever its value, will be difficult to recover. There are other colonies and islands in the Southern Pacific, the inhabitants of which are quite as ready, when the opportunity occurs, and once a hold is obtained upon the trade, Queensland will suffer. It is essential, therefore, that every facility should be available for the growers to land their fruit in the southern markets in best condition. The trade at the port of Bowen is rising in importance, and the question of making it a port of entry under the Act is under consideration.

DISEASES IN STOCK ACTS.

TICK FEVER.—This disease has not been so prevalent as in previous years. The cattle, and particularly the young stock, have apparently acquired an immunity, or rather a power of tolerating, the presence of *Piroplasma* (tick fever) organisms in their system. Dipping has undoubtedly played a great part in bringing about this condition—viz., by reducing the number of ticks on animals, thus averting mortalities, and at the same time allowing time for the toleration to take place. It has been repeatedly proved that cattle on certain stations, and in certain districts, are, whilst in their own district, very resistant to the disease, although the organisms of tick fever are in their blood. But these cattle, when travelled from place to place, lose the toleration referred to above, probably by a certain lowering of their vitalities; the organisms then become active again, and the animals exhibit all the symptoms of tick fever or redwater. Most of the cases occurring now are seen under these conditions.

BLACKLEG.—Sometimes known as quarter-ill, and also symptomatic anthrax. The latter term is certainly misleading, because blackleg is caused by a distinct organism, and the disease runs a very different course from anthrax.

Blackleg has appeared amongst the young stock in several districts, and in many cases with heavy mortalities.

It is a disease caused by the blackleg bacillus, which is generally confined to certain localities and farms. Animals most frequently affected are calves and yearlings from three months of age up to two years. Occasionally, but rarely, older animals suffer from this disease. Sheep and goats may also be

affected, but not to the same extent as yearlings. Treatment is of little avail when once the disease is established, but prevention can undoubtedly be brought about by inoculating susceptible animals with a vaccine prepared from the diseased black-quarter muscles of an animal. Two or three forms of vaccine are now on the market, which, if properly used, will reduce the mortalities to a minimum.

PLEURO PNEUMONIA CONTAGIOSA.—There have been a few sporadic cases of pleuro, but inoculation has been freely resorted to, which has had the effect of checking the spread of such disease.

RINDERPEST.—This disease, fortunately, has not yet reached the Commonwealth or New Zealand, and in consequence of the alarming reports received in connection with such disease, the department thought fit in March last to totally prohibit the introduction of any stock or any carcass from any place outside of Australasia, except in the case of stock from the United Kingdom, which may be imported or introduced in accordance with existing Acts and Regulations, provided that no stock other than stock from the United Kingdom are, or have been, carried by the same ship during the same or the last preceding voyage. The stock inspectors throughout the State, and also the Customs officers, have been communicated with to exercise the greatest vigilance in seeing that such Order-in-Council is not in any way violated.

The other States and New Zealand have also been communicated with, and the Chief Inspector of Stock, South Australia, has been asked to issue special instructions to his officer at Port Darwin, from whence infection is feared. The officer in charge of police at Thursday Island has been appointed a stock inspector, to give him the necessary power to prevent the landing of stock or carcasses thereat.

DISEASES IN SHEEP ACTS.

SHEEP.—The sheep of the State have been particularly free from all contagious diseases, the few mortalities that have occurred being from dietetic causes, caused in many cases by the eating of young herbage or poisonous plants.

A few cases have been reported of flocks being affected with worms, when advice has been given for the necessary treatment.

MARSUPIALS DESTRUCTION ACTS.

Legislation on this subject has been in force for a period extending from the year 1877 to the present time, with the exception of the years 1891 and 1892, and in this table, shown hereunder, are detailed the operations in respect of marsupial destruction for the period mentioned:—

PARTICULARS OF DESTRUCTION.

Year.	Kangaroos and Wallaroos.	Wallabies.	Bandicoots, Paddamelons, and Kangaroo Rats.	Dingoes.	Total.	Bonus Paid.	Government Endowment.
1877-1878-1879...	1,171,427	595,531	...	...	1,766,958	£ s. d. 31,056 0 5	£ s. d. 21,967 15 8
1880-1881	...	No Returns.	...	...	...	...	...
1882	424,651	551,276	...	...	975,927	19,272 2 0	4,429 4 5
1883	361,450	684,554	...	...	1,046,004	24,550 4 6	18,322 14 9
1884	380,625	570,290	...	...	950,915	24,140 4 9	12,912 2 8
1885	312,139	486,913	2,113	74	801,239	21,846 12 10	11,088 8 2
1886	284,897	449,656	13,207	9,833	757,593	*20,500 0 0	11,143 18 3
1887	175,363	316,946	8,925	11,525	512,759	17,542 18 4	12,844 14 0
1888	275,729	445,080	24,377	19,552	764,738	27,235 11 2	13,193 4 0
1889	312,476	353,994	27,424	19,570	713,464	26,741 1 11	14,617 9 10
1890 to 1 Feb., 1891	259,208	375,269	38,776	14,220	687,473	21,596 4 3	17,697 2 0
1891-1892	...	No Act in force.	...	...	...	...	7,231 13 3
1893-1894-1895...	...	No Returns furnished.	...	...	...	...	...
1896	288,658	522,653	24,449	16,782	852,542	Estimated at 106,450 0 0	16,959 4 1
1897	717,717	601,307	177,811	26,000	1,522,835		
1 Jan. to 30 June, 1898	290,163	298,078	6,505	11,090	605,836		
1898-1899	823,700	851,022	36,138	24,447	1,735,307	44,392 0 8	13,030 8 9
1899-1900	634,223	620,109	29,912	20,331	1,304,575	35,318 16 10	15,155 10 6
1900-1901	413,992	816,300	40,517	24,939	1,295,748	33,118 13 0	15,329 12 2
1901-1902	281,445	751,061	30,684	21,289	1,084,479	29,613 13 7	11,163 1 7
1902-1903	282,770	636,856	48,768	18,148	986,542	22,922 0 10	11,775 15 8
1903-1904	53,301	190,353	9,279	12,477	265,410	9,901 6 2	5,819 8 0
Total	7,743,934	10,117,248	518,885	250,277	18,630,344	£516,197 11 3	£234,681 7 9

* Estimated.

From the above table it will be seen that there has been a decrease in the number of scalps of marsupials and dingoes paid for during 1903-4, of 721,132 on the number for the previous year, with a corresponding decrease in the amount of bonus paid by the various boards, and the amount of Government endowment granted of £13,020 14s. 8d., and £5,956 7s. 8d. respectively.

NATIVE BIRDS PROTECTION ACT.

During the year the administration of this Act has been transferred to this Department. This Act, excellent in its intention and force, is, by reason of the want of interest displayed in its provisions by the public, other than by lovers of game, somewhat difficult of administration. The area of this State is so large that to advocate the employment of people to supervise the carrying out of the Act is without reason, and, consequently, excepting in those places where there are persons who are lovers of our native birds, or gun clubs directly interested, the Act is practically a dead letter. It is to be regretted that there is not more enthusiasm shown in preserving the native birds, many of which serve a useful purpose in the destruction of insect pests; but the fact is patent and beyond argument that around our towns and places of settlement the native birds have seriously diminished, for which the ease with which young people of this State can acquire firearms, and the absolute absence of the operation of any law with regard to carrying them, are largely responsible. It is advocated that some restriction, in the interests of the native birds of Queensland, especially those that are of value as destroyers of pests, should be placed

upon this facility for shooting. The Department, at some trouble and expense, is making a collection of birds that may be placed in the category of the friends of farmers; but of what use is the instruction at the service of those who may wish to learn if the wholesale destruction that is now allowed to go by default is permitted to go continue unchecked? What is everybody's business is nobody's business, and as the public will take no interest in protecting what is of value to them, it is time that restrictions should be placed upon those who have not the sense or knowledge of discrimination.

AGRICULTURE.

It has been the custom hitherto when commenting upon the different crops, to use the figures arrived at by the Government Statistician. It has been arranged, with the consent of the Hon. the Home Secretary, to include the whole of these statistics within this report, prefacing them by such general remarks upon different crops as may be necessary. It will be observed under the heading of Agriculture, page 18, that the area under crop was less in 1904 than in 1903 by 27,373 acres, a serious decrease if viewed from the standpoint of figures only, but when the great expansion that has taken place in the dairying industry during the past twelve months is considered, a very different aspect presents itself, an argument that is strengthened by the increase of 19,950 acres in the area under artificially sown pastures. It appears therefrom that general farming is to a certain extent giving way to dairying, but if this be so, it is to be hoped that the experiences of 1902 will not be without value, and that the era of dependence upon natural, and even artificially sown pastures, has passed. The time will come again when stored fodder will be needed, and if provision be not made in these years of plenty, the experience of 1902 will again be passed through.

WHEAT.—Notwithstanding an increase over 1903 of 12,862 acres in the area sown to wheat during 1904, the yield has been less than in year mentioned, has been less by 287,136 bushels, and the average returns per acre is also less by 3'41 bushels per acre.

The cause for this apparently unfavourable discrepancy can be found in the difference of the two seasons. The year of 1903 was one of abundant rainfall, and consequent abundant and rank growth, evidence of which will be found in the fact that 510,087 acres were affected with rust. Last year, however, the conditions of climate were entirely different. At the latter end of the sowing season the weather was dry, and in addition to much of the late sown wheat failing to germinate, that sown earlier in the season had to face trying circumstances in the earlier stages of its growth, and so the yield was considerably diminished, but the quality of the wheat was so good that 58,716 acres only were affected with rust. The bad reputation given to the South Australian wheats in 1903, owing, perhaps, to the want of acclimatisation and the heavy rainfall of that year, has been largely reversed, and varieties that were aforesaid condemned are now looked upon with more favour, induced, perhaps, by the season of 1904, which was more in keeping with that of South Australia. More attention is being shown by farmers to the selection and preparation of seed, but there is yet a wide field wherein experiments may be conducted for determining the varieties most suited to a district, and which are at the same time rust-resisting to a degree. The result may be looked for in the gradual elimination of undesirable kinds, and the substitution of more prolific and uniform types, possessing ability to withstand and resist infection.

During the sowing season of 1904, various wheats that had been experimented with at the State Farm, Hermitage, during a series of years, were placed with selected farmers upon the Downs and in the Maranoa. This was the first expansion of the wheat experiments at Hermitage, and was undertaken to ascertain the value of these wheats to different districts. Though some of the plots were sown under adverse conditions, the results were eminently satisfactory up to a certain point, and they have been continued this year, but in a different form. Instead of placing the experiments in the hands of the farmers, and leaving them to carry out the work, the Department has, as mentioned elsewhere in the report, undertaken direct control over two plots in the Maranoa district, thus ensuring uniformity of treatment and cultivation. Difference in climate, soil, and situation have an important bearing on the ability of certain varieties to adapt themselves to local conditions, but from an examination of the kinds that have been grown it would seem that those most in favour are—Manitoba, bald and bearded; Budd's Early; Battlefield; Defiance; Baltic Red; Ward's Prolific; Gluyas; Petatz Surprise; Allora Spring; Smart's Early; Marshall's No. 3; Newman's Early; and Improved Steinwedel.

It is to the Maranoa that the increase in the total area under wheat is attributed. The area reaped last harvest was 38,353 acres as against 28,445 acres in 1903, an increase of say 10,000 acres. It was in this area, unfortunately, that the dry weather referred to as happening at the time of late sowing was most experienced, with the consequence that instead of obtaining an average yield—13'25 bushels to the acre, which was reaped in 1903 to Maranoa—farmers had to be content with an average yield of 8'78 bushels, and here the difference between the average yield for the whole State for 1903 and 1904 is more than accounted for. The conditions and nature of the soil in the Maranoa lend themselves specially to wheat and barley, and it is recognised that in this district this Department should carry out continued experiment work on an extensive scale to determine the many factors that make for success.

Some comment concerning the value of Australian wheat that has lately appeared in the papers is worth repetition. The notice is to the effect that private advices from London dealing with the relative value of Argentine and Australian wheat, and of the prices to be returned to the producer in each country, shows that on 10th May last, New South Wales wheat weighing 59½ lb. to the bushel sold at 32s. 6d. per quarter, whereas Plate wheat was difficult to move at 29s. 10½d. per 62 lb., and 29s. 3d. per 60 lb. Thus there was a margin of 3s. per quarter, or, in Australia, 3d. per bushel. The foregoing is extracted from the *Miller*.

Summarised, the results of the plots in the Maranoa and on the Darling Downs were—

1. In many instances the good qualities recorded when under experiment at the State Farm, Hermitage, were retained in the Maranoa, and although sufficient time has not elapsed to make the area under these wheats yet noticeable, it is thought that eventually the resulting increase will have a marked effect upon the area hitherto annually recorded as being affected with rust.

BUSHELS.

BUSHELS.

2. It is against the welfare of growers to multiply the varieties in a given district, and the production of a type adapted to the requirements of that district should limit the varieties to that type. The experiments made will have a distinct influence in developing that type.

Detailed particulars of the experiments will be found in the report of the manager of the State Farm, Hermitage.

MAIZE.—This crop, which has long been looked upon as one of the staple crops of this State, and which at one time vied with sugar-cane in area under the cultivation, continues to show signs of decadence. Probably a reason that can now be attributed to the lessened area under this grain is the advance in dairying, and the tendency of dairymen to put their lands under crops of more value for their purpose; but apart from such an argument, there is the evidence that the return per acre is much below on the average what it was in the years when 30 to 40 bushels to the acre were regarded only as a fair crop. It may be that familiarity breeds contempt, and that the farmer of to-day is satisfied with any seed he may have available, instead of selecting his seed and confining his attention to one variety of it. There are few plants that are so susceptible to hybridisation as maize, and yet but little care or thought is given to the variety selected for cultivation. The years 1903 and 1904 were, generally speaking, favourable years for maize, but, notwithstanding, there was a reduction of 13,928 acres. The average yield for 1904—viz., 21·34—was an improvement on the previous year, but it was not a yield of which the farmer should be proud when the averages of the earlier days of our history are remembered. Indeed, the following figures for the last five years clearly indicate that maize cultivation looks for more careful attention.

The averages referred to were—

1900	...	...	...	...	...	19·20 bushels per acre.
1901	...	...	...	...	...	21·96 " "
1902	...	...	...	...	...	11·49 " "
1903	...	...	...	...	...	14·45 " "
1904	...	...	...	...	...	21·34 " "

ENGLISH POTATOES.—Though certain parts of the State grow potatoes exceedingly well, and it is an item of cultivation throughout the land, it would seem that the attention it deserves is not paid to it; and, moreover, like maize, it appears to be becoming less favoured by the farmer. Notwithstanding the opportunities for cultivating this plant, the imports remain high, as will be seen from the following figures:—

In 1900	Queensland imported	16,001 tons,	of the value of	£64,831
„ 1901	„	14,621	„	£81,800
„ 1902	„	27,848	„	£152,560
„ 1903	„	26,734	„	£89,605
„ 1904	„	9,936	„	£20,265

Apart from these figures, the area under cultivation is diminishing, notwithstanding that in 1904 some 3,039 acres more were under crop than in 1903, when 6,732 acres were planted. During these years only within the last ten years has the area under cultivation passed into five figures, the highest recorded being in 1900, when 11,060 acres were under crop. Excepting the years mentioned, the area has remained practically stationary, and the average yield much the same.

It will be observed that the quantity imported during 1904 dropped to a much greater extent than the increase in the production for that year—viz., 1,582 tons—but this must not in any way be taken to denote a diminished consumption, but rather that stocks, imported or otherwise, were held over from the preceding year.

In the average yield for the past ten years Queensland is behind Victoria, which has an average of 3·1 tons to the acre; Western Australia with 3 tons; and Tasmania with 4·2 tons. It may be that we cannot equal the average of the latter State, which is peculiarly adapted for this tuber, but there seems to be no reason why, as with the cultivation of wheat, we should not excel the States on the mainland, and with this end in view this Department is now undertaking experiments, to last probably during three seasons, at stations on the Logan, the Pine River, and at Gatton, to ascertain whether the potato crop in this State cannot be improved.

DAIRYING.—This has been the most prominent and promising feature in the rural economy of this State during the past year, due, perhaps, to a great degree, to the facilities for transport to, and opportunities for sale in, oversea markets. Not only has the production of butter increased to the extent, as arrived at by the Government Statistician, of one and a-half times greater than in 1903, but the manufacture of cheese has shared in the prosperous times for dairymen, for the production of it has been doubled within the past year. In 1904 there were 8,390 establishments engaged in handling dairy products for sale, an increase of 1,857 over the previous year, and the quantity of milk handled reached 40,237,540 gallons for commercial purposes, and not including the milk produced for private use.

From these figures the extraordinary progress of dairying during the past year may be gauged, a progress that is still moving onwards to the point when it will excel in volume any of the Australian States. Queensland, by reason of its climate, is able to produce, if proper attention be paid to the business, butter and cheese in excess of its requirements throughout the year, a condition of things that, under existing circumstances, the other States are not in a position to do; and, in the event of the negotiations for further facilities for oversea freight being brought to a successful issue, the opportunities for increasing the export trade will be greatly enhanced.

The exports for the past five years are a direct index of the value of this industry to Queensland, and are exemplified by the following figures:—

1900	...	...	620 tons	...	value	£51,662
1901	...	...	931 $\frac{3}{4}$	„	„	£86,150
1902	...	...	246 $\frac{1}{2}$	„	„	£24,610
1903	...	...	546	„	„	£49,804
1904	...	...	5,060	„	„	£438,023

The method of keeping the statistics by the Customs under the Commonwealth is not conducive to accuracy, in so far that as no record is kept in Queensland of the quantities of interstate trade, statistics in this direction have to be sought elsewhere, with the result that, in arriving at a total, two sets of figures, calculated from different standpoints have to be used—as, for instance, the Customs record the weight of oversea butter in pounds avoirdupois, the trade reckon the export by boxes of 56 lb. Month by month the exports for 1904 were:—

	OVERSEA.		INTERSTATE.	
	Quantity.	Value.	Quantity.	Value.
1904—	Tons.	£	Tons.	£
July	262	21,274	51	4,040
August	222	18,352	36	3,055
September	81	7,114	21	1,768
October	265	22,083	53	4,488
November	387	32,734	Nil	Nil
December... ..	600	49,560	78	6,399
1905—				
January	198	16,659	73	5,941
February	560	47,935	163	14,428
March	201	18,255	352	32,860
April	383	33,589	171	17,589
May	115	10,725	231	20,460
June	526	45,921	30	2,793

The weight of butter made during the year, excluding the quantity made for private consumption—an infinitesimal weight compared to the whole—was 17,538,473 lb.; and if the quantity exported—11,334,400 lb.—be deducted therefrom, the home consumption of 6,204,073 lb. remains, or, roughly, half of the total exports. But upon the total made it may be assumed that, calculating the value at the fair market price of 9d. a lb. throughout the year, the butter-making industry was worth in 1904 the respectable sum of £657,692, to which must be added an output of 2,607,475 lb. of cheese, of the value of £65,000. Though those engaged in general farming are interested to a greater or less extent in dairying, they do not, for statistical purposes, come within the class of dairymen, who in 1904 numbered 5,007 males and 5,930 females, an increase of 1,985 males and 1,784 females over the preceding year; and the value of the machinery and implements used in the trade during the years was £124,309, as against £104,758 in 1903, an increase of £19,551. The production of condensed and concentrated milk has not made much headway, notwithstanding the great demand for these articles. Two factories only were at the work, the output of which was valued at £17,014, the quantity produced being 965,136 lb. It is understood that a third factory is in course of erection. Pig and poultry raising—the natural adjuncts of dairying—have shared in the general prosperity of the industry. The number of pigs in the State increased from 117,553 in 1903 to 185,141 in 1904, and the number slaughtered from 54,712 in the former year to 106,633 in the latter, of which 76 per cent. were killed in the metropolitan area.

SISAL.—The cultivation in this country of the plant from which the fibre known by the name of sisal is extracted having been practically established, it may be well, in order that those who are cultivating it may learn something of the opinions held concerning it in other countries that are similar to our own, to briefly glance at those opinions. The report of Acting Governor of the Bahamas for 1903-4 states that the fibre industry has become firmly established, and that unless prices fall below expectations it will progress in public estimation as a field for investors with small capital. It is the least precarious of all agricultural industries, and the plants are hardy, and well able to withstand long droughts. The fibre product is capable of storage in bales for a length of time without suffering deterioration. The British Consul at Vera Cruz, in Mexico, says that the growers have become very wealthy (probably planters on a large scale are referred to). The exports from the Bahamas may be valued at about £40,000 per annum, and from the Mauritius at about £46,000, most, if not all, of which goes to the United States of America, which imported fibre in 1903 to the value of £2,657,888, at a cost of £30 12s. 6d. During 1904 the price rose to £35 per ton. Sisal is eminently suited to those parts of the country where the rainfall is limited, and where the thermometer does not fall below, say, 40 degrees; and upon a limestone formation it will thrive better than in situations where that quality is absent.

COTTON.—The seed indented from America last year was, after treatment by the Entomologist, offered for sale to the farmers at a price to cover the cost, and though the practical enthusiasm in the revival of the industry was not so great as in the earlier days of the movement by the British Cotton Growers' Association, due, perhaps, to the want of the definite action on the part of the association that was anticipated, still enough has been planted to prove the question about which there is yet considerable doubt in the minds of many—namely, as to whether the cultivation of cotton as a subsidiary crop is a profitable enterprise. Seed for about 300 acres was distributed for planting in the later months of last year, but as some of the crop was not gathered till June last, the statistics concerning it will not be available until next year, but sufficient has been received by the Department for the purpose of ginning, baling, and otherwise preparing for market on the owner's account, to entirely fix the position of cotton amongst the crops of Queensland, and the elucidation of the problem has been greatly helped towards elucidation by the shortage in America and the following rise in price. During the correspondence that passed with the British Cotton Growers' Association, who in the earlier days offered gins of the latest make, to be placed at convenient centres, but of which nothing further has been heard, an effort was made by the Department to obtain from the association a minimum price of 1½d. per lb., but nothing came of the attempt, nor has any minimum offer been received. The recent change in the cotton market has completely changed the face of things, and there is no reasonable doubt whatever that those who have this year ventured their crop will not only receive the minimum which the Department strove

to secure, but something in addition. Apart from Australia and Great Britain, a favourable market is at the service of this State in Japan, in which place samples have already been favourably commented upon, and the names of firms dealing in this material have been secured through the courtesy of the Japanese Consul at Townsville. It is too early to write definitely of the success or otherwise of the cotton-growing experiment of 1904-1905, but there seems a very fair prospect, if the matter be judiciously handled, that cotton-growing will before many years approach in magnitude that of past years. The requirements of the markets have completely changed the industry, for whereas in the early days of cotton, seed was sown indiscriminately, without care for variety and yield, and the resulting crop was composed of staples of many different lengths and different degrees of fineness, it is now necessary that cotton of a given bale or parcel shall be of even staple, texture, and strength. The farmer, therefore, should take great care in the selection of his seed, and grow only that kind which is best suited to his land. It was for these reasons that the Department, when ordering the seed from the United States of America, attached importance to the request that the seed selected to fill the order should be of those varieties most in favour and highest in value in the market, and that the selection should be made under the supervision of the officers of the Department of Agriculture in the States, who have a knowledge of the subject. As an instance, it may be mentioned that Mr. G. Sanderson, of Stanwell, by planting seed suitable to his locality, has gathered seed cotton at the rate of 2,000 lb. per acre, which at the minimum which this Department hoped to obtain from the British Cotton Growers' Association, is equal to £12 10s. per acre. The seed grown for the crop now under treatment has been all practically of the Upland varieties, but those farmers who this season will, from the situation of their land, be able to grow the Sea Island variety from the seed that the Department is now gathering in, should be in a position to even surpass the instance before given. This class of long-stapled cotton can only be grown in favoured localities under certain conditions, of which proximity to the sea seems to be the principal factor. In March of this year West Indian Sea Island cotton brought 2s. per lb., and the average price ranged from 1s. 3d. to 1s. 6d. per lb. for clean cotton, and if the rise in the market consequent on the failure of the American market be added to this, it will be seen that a crop of Sea Island cotton at the present juncture would be a valuable property.

MALTING BARLEY.—Information that has been received from London since the last report concerning the trial shipment by the ss. "Sophocles" in February, 1904, but confirmed the details given in that report, and made it clear that any surplus that there may be in the State, if properly graded, and shipped to reach London at the proper time, will find a good market that will bring in a fair margin of profit. It will be remembered that at the time the consignment was made plague regulations were in force, which restricted the shipment of goods from this State, if the ship carrying them had during her voyage to touch at Sydney. These regulations entailed the transport of the barley to Sydney by rail, but notwithstanding this extra cost the net results were 2s. 8½d. per bushel of 50 lb., or 2s. 5d. per bushel of 50 lb., or, by the custom of the English trade, £1 1s. 7d. per quarter of 448 lb. Had the plague restrictions not been in force, and the shipment been made from Pinkenba as originally intended, the returns would have been, for a bushel of 56 lb., 2s. 9¾d.; for one of 50 lb., 2s. 6d.; and for a quarter of 448 lb., £1 2s. 6d. It will thus be seen that the value of Queensland barley has been proved upon the most critical market in the world, and that for the future the grower here has nothing to fear, providing he is careful in the selection of his seed and the grading of his crops.

Further proof is forthcoming in the fact that Messrs. Woodley, Watson, and Richardson, the firm who had much to do with the consignment, were successful in obtaining at an exhibition a first prize for Queensland barley, together with a gold medal and a diploma. The area over which malting barley is now cultivated is but small compared with the area within the closely settled portion of the State over which it could be grown. Taking the limit of rainfall for the cultivation of this crop to be 25 inches per annum, there will be found, within fair to good means of communication with the port, about 42,000 square miles, or 2,700,000 acres, within an area bounded roughly by a line from Taroom to Gayndah on the north; thence southward by Kilkivan, Esk, Ipswich, and Dugandan to the Macpherson Range; thence to Mungindi, and northwards by the Moonie River, St. George, Surat, and Roma to Taroom, in which in places where the soil is suitable, that malting barley can be grown to perfection. Another large area would probably be found upon the Herberton tableland, lying between 17 degrees and 18 degrees south latitude. The question of the value of the Queensland barley having been settled, it is hoped that the markets of Australia will accept it freely, according to quality, and so provide a means of employment for many. Hitherto it would seem that a certain prejudice has existed in the southern States against the Queensland article, induced, possibly, by a liking for foreign barley, arising from the custom of importing regularly from a particular source; but if such a prejudice has or does exist, there remains no reason for its continuance. The production of malting barley, according to Coghlan, throughout the world in 1903 was 940,168,000 bushels, of which Australasia contributed a little over 3,800,000 bushels. There seems to be no reason why Australasia should not participate to a much greater extent in this enormous market, and incidentally that Queensland should have her share, but it will be necessary, in order to do so, to approach the buyer in this, the most delicate of the grain markets, with a grain graded to his requirements, and to offer no other. The marked increase in the area in this State sown and reaped for grain was not sustained in 1904, there being a decrease of 5,494 acres.

Although the average for last year was less by 3·23 bushels to the acre, the decrease has not affected the position of Queensland as one of the best of the grain-producing countries of the Commonwealth. The order of average yield for the past ten years has been—

Tasmania	...	...	...	24·1	bushels to the acre
Queensland	...	...	...	20·3	"
Victoria	...	...	...	17·5	"
New South Wales	...	...	...	15·2	"
South Australia	...	...	...	13·7	"
Western Australia	...	...	...	12·1	"

BROOM MILLET.—Of the subsidiary crops to which attention is now apparently being directed is that of broom millet, which can be grown excellently well in this State. The product is in demand throughout Australia, and there is no reason why any should be imported into the Commonwealth when Queensland is capable of producing all that is required. The Department, in order to be of assistance to the growers, has been in communication with the Departments of Agriculture to ascertain the names and

addresses of buyers in the southern States, and the information gained is at the service of those who may need it, interest in this crop being awakened, as evidenced by the increase of the area during the last two years. In 1903 there were but 123 acres, spread throughout the land, but this area had last year increased to 243 acres, a gain of over 100 per cent. The Moreton district, in which Beaudesert, Dugandan, Gatton, Ipswich, Laidley, the Logan, and Nerang are included, contained practically the whole of the crop. The product for the year was 158,949 lb., at an average of 654 lb. to the acre, but as the consumption of broom millet for manufacture in this State was estimated to be about 123,829 lb., a considerable margin has to be accounted for. Of the quantity mentioned as having been utilised, 54,958 lb. were from Queensland-grown millet, and 35,079 lb. from imported millet. As the production exceeded the consumption considerably, to which the quantity imported has to be added, it may reasonably be inferred that much of the Queensland-grown was not matured or prepared sufficiently for the requirements of the market. Broom millet, as with all raw material, has to be offered for sale in prime or good condition to find a ready sale, and it is upon this basis only that a trade can be built up. There is a market here and in the southern States for all that we can grow, but it is necessary in order to achieve success that only what is best should be offered. The value of broom millet does not seem to be properly understood. As a plant it is wholly valuable; the millet is used for broom-making, and the seed is of considerable importance in the economy of the poultry yard. It is also good feed for horses, and as it is a prolific bearer it might well find a place among the subsidiary crops of this State.

REPORT OF THE GOVERNMENT STATISTICIAN ON AGRICULTURAL AND PASTORAL STATISTICS FOR 1904

LIVE STOCK.

Except as to a comparatively limited area in the North-western portion of the State, the climatic conditions obtaining during 1904 were most satisfactory for pastoralists—herbage was abundant and water plentiful. Unfortunately, these very circumstances at the same time conduced to a rapid increase in the number of rabbits, which, materially reduced during the late drought, have, under more happy conditions, amply illustrated their proverbial fecundity, and have already assumed such proportions as to threaten not only the South-western areas, but extending northerly to the Gulf waters, and almost to the Gulf itself, are now advancing easterly and enveloping the whole of the Western portion of the State.

I published an advance estimate of the number of cattle and sheep on the 3rd April last. The fact that in many cases stock on agistment are not so described in returns, and as being only temporarily depastured, is always a disturbing factor when framing such advance estimates; this applies more to sheep than cattle. If the fact as to agistment was stated on the returns much closer estimates could be framed. My preliminary statement of the number of cattle approached the actual figures very closely; but, for the reasons given, I over-estimated the sheep by nearly 350,000.

All kinds of live stock showed substantial increases in 1904, amounting in the case of sheep to nearly two and a-half millions. The actual figures for the last two years are given in the following table:—

A.

Year.	Horses.	Cattle.	Sheep.	Pigs.
1903	401,984	2,481,717	8,392,044	117,553
1904	413,165	2,722,340	10,843,470	185,141
Numerical Increase in 1904	11,181	240,623	2,451,426	67,588
Numerical Decrease in 1904 ... ..	...	...	...	...
Centesimal Increase in 1904	2.78	9.70	29.21	57.50
Centesimal Decrease in 1904 ... ..	...	...	...	...

It will be seen that the increase of horses in 1904 numbered 11,181, or 2.78 per cent. on the figures for 1903. Cattle increased numerically by 240,623 and proportionately by 9.70 per cent., the like figures for sheep and pigs being 2,451,426 and 29.21 per cent., and 67,588 and 57.50 per cent. each respectively.

At the end of 1904 the numbers of each variety of live stock in Queensland were:—Horses, 413,165; cattle, 2,722,340; sheep, 10,843,470; and pigs, 185,141.

A comparison of the numbers in the State at the end of each of the past ten years shows that, notwithstanding the good progress made last year, the figures for 1904 fall far short of those for the earlier years of the decade.

A a.

SHOWING the NUMBER of HORSES, CATTLE, SHEEP, and PIGS in the STATE—RETURN for TEN YEARS.

Year.	Horses.	Cattle.	Sheep.	Pigs.
1895	468,743	6,822,401	19,856,959	100,747
1896	452,207	6,507,377	19,593,696	97,434
1897	479,280	6,089,013	17,797,883	110,855
1898	480,469	5,571,292	17,552,608	127,081
1899	479,127	5,053,836	15,226,479	139,118
1900	456,788	4,078,191	10,339,185	122,187
1901	462,119	3,772,707	10,030,971	121,641
1902	399,122	2,543,471	7,213,985	77,202
1903	401,984	2,481,717	8,392,044	117,553
1904	413,165	2,722,340	10,843,470	185,141

Horses numbered 468,743 in 1895, or 55,578 more than in 1904. Cattle fell from 6,822,401 to 2,481,717 in 1903, increasing last year so as to exceed the figures for 1902 and 1903, but still more than 1,000,000 short of the record for 1901. Sheep, which numbered 21,708,310 in 1892, decreased year by year for ten years, until in 1902 they were reduced to 7,213,985, the past two years witnessing a substantial recovery, the figures for 1904 exceeding those for any year since 1899, as during the following year—1900—practically 5,000,000 sheep were wiped from the records as a consequence of the unprecedented drought which was then making itself manifest.

The following table furnishes the ratio of increase and decrease for each of the last ten years:—

A b.

Year.	Horses.	Cattle.	Sheep.	Pigs.
1895	5·55	— 2·72	1·37	12·34
1896	— 3·53	— 4·63	— 1·33	— 3·29
1897	5·99	— 6·43	— 9·17	13·77
1898	0·25	— 8·50	— 1·38	14·64
1899	— 0·28	— 9·29	— 13·25	9·47
1900	— 4·66	— 19·31	— 32·10	— 12·17
1901	1·17	— 7·49	— 2·98	— 0·45
1902	— 13·63	— 32·58	— 28·08	— 36·53
1903	0·72	— 2·43	16·33	52·27
1904	2·78	9·70	29·21	57·50

— Decrease.

It will be seen that 1904 was the only year of the decade in which there was any increase in the number of cattle, and the increment, moreover, amounted to 10 per cent. With respect to sheep, the minus sign is not so much in evidence, 1895, 1903, and 1904 all showing increases. The decreases in two out of the other seven years—namely, that of 32 per cent. in 1900 and of 28 per cent. in 1902—were so disastrous that the very satisfactory increase for 1904 proves quite inadequate to the reinstatement of our flocks to their former numerical position.

The climate of Queensland is well adapted to the breeding and rearing of horses, partaking in so many respects of that animal's natural habitat. Experts on this subject, perhaps more even than on most others, join issue as to the best means of securing with reasonable certainty the production of serviceable horses. In any case, whether from this cause or not, the class of animal found on our pastures does not admit of the selection of any considerable number meeting the requirements of export. Under the pressure of the demand for active service in South Africa, and now in Eastern Asia, a considerable market of a temporary character has been created; but in times of peace the average Queensland horse does not meet the demands of the remount agent.

Provision was made when collecting stock returns this year to obtain a record of the number of stallions in the State, but the schedules were filled in by many owners in such a ridiculous manner that the compilation for this year at least was worthless; perhaps better results may attend next year's effort, and the information required be ascertained with some measure of accuracy.

The imports and exports of horses during 1904 were as follow:—

A c.

HORSES IMPORTED DURING 1904.

	Number.		Value.	
			£	£
<i>Oversea—</i>				
New South Wales	145	...	11,139	
Victoria	14	...	989	
New Zealand	2	...	126	
		161		12,254
<i>Interstate—</i>				
New South Wales ... ..	...	462	...	6,937
South Australia ... ..	...	1,639	...	11,513
Total ... ..	...	2,262	...	30,704

HORSES EXPORTED DURING 1904.

<i>Oversea—</i>				
United Kingdom	24	...	450	
Cape Colony	336	...	3,360	
Hong Kong	1	...	30	
India	3,317	...	37,730	
British New Guinea	17	...	187	
Mauritius	1,207	...	7,786	
German New Guinea	1	...	25	
Philippine Islands	9	...	142	
Japan	3	...	120	
		4,915		49,830
<i>Interstate—</i>				
New South Wales ... ..	...	7,361	...	84,426
South Australia ... ..	...	2,825	...	23,574
Total ... ..	...	15,101	...	157,830

The interstate exchange represents a sum of some £78,000 in favour of Queensland, the trade consisting largely of racehorses journeying either way, and of drovers' mounts and plant travelling with live stock, chiefly cattle, the bulk of which consists of export, as, on the drover reaching his destination, he usually sells off and returns north by steamer. The higher average value per head of imports being no doubt caused by the presence of a few high-priced animals imported for stud purposes, probably mostly from "oversea."

Reverting to oversea export, which has the most significance, 4,915 horses were sent away, of a value of £49,830, equal to nearly £10 3s. per head. There were a few less so exported in the preceding year—namely, 4,004, of a value of £43,711, equal to £10 18s. per head. From reports furnished in the public Press it would appear probable that the exports for the current year will be in excess of those for 1904.

The extent to which the area of Queensland is utilised for grazing, together with the ratio of live stock to the population, is shown in the following table:—

A d.

IN CONVERTING HORSES AND CATTLE TO TERMS OF SHEEP, TEN HEAD OF SHEEP ARE TAKEN AS EQUAL TO ONE HORSE OR HEAD OF CATTLE.

	Horses.	Cattle.	Sheep.	All kinds in terms of Sheep.	Pigs.	All kinds, including Pigs, in terms of Sheep.
Per Square Mile	0·62	4·07	16·22	63·12	...	...
Per Capita of Population	0·79	5·22	20·79	80·89	0·35	81·25

The larger variety of animals are in the fifth column of the table taken as each equivalent to ten of smaller kinds, not as, perhaps, exactly representing, either in grazing capacity or value for consumption, that ratio, but that proportion is sufficiently near to justify its use as a matter of convenience in conversion. Thus it will be seen that there were in Queensland in 1904 the equivalent of sixty-three sheep to each square mile of area, and of eighty-one sheep to each head of population.

DISTRIBUTION OF STOCK.

Table Nos. 1 and 2 in the Appendix give full information as to the live stock depastured in each petty sessions district and each pastoral district respectively. The petty sessions districts were altered to some extent in 1904, some new districts being proclaimed and the boundaries of others adjusted; and as Table No. 1 compares the figures relating to cattle and sheep for 1903 and 1904 in several instances the districts have had to be grouped.

The Kennedy, Port Curtis, and Darling Downs pastoral districts comprise the chief centres for the breeding of horses. Petty sessions districts, in which the numbers depastured during 1904 exceeded 10,000, being all within, or in the vicinity of, the pastoral districts mentioned, namely:—Rockhampton, 20,196; Mackay, 16,790; Charters Towers, 13,964; Toowoomba, 13,151; Gladstone, 10,667; and Bowen, 10,048.

With respect to cattle in five districts the number returned exceeded 100,000. Of these, all except Rockhampton, where 104,331 were depastured, are districts within the Gulf of Carpentaria waters, and mostly in the far North-western portion of the State:—Norman, 210,186; Burke, 108,593; Cloncurry, 106,988; and Etheridge, 106,372.

The sheep naturally are not so widely distributed as either horses or cattle. Last year in nine petty sessions districts there were no sheep depastured, and in forty districts the numbers were less than 1,000. In five of the twenty-nine districts in which the sheep depastured exceeded 100,000 there were upwards of 500,000; they were:—Longreach, 949,597; Winton, 839,160; Muttaburra, 806,248; Cunnamulla, 785,993; and Richmond, 516,363.

Attention has already been drawn to the large increase in the number of pigs returned last year, notwithstanding that many more were put to profit than in any previous year. For many years chiefly confined to the coastal districts they are now kept from one end of Queensland to the other, only one district failing to return any. Toowoomba, with 15,203, was the only district where the numbers reached to five figures.

The 2,722,340 head of cattle in the State were held by 24,615 owners, of whom 22,409, or 91 per cent., had mobs of 100 head or under; 1,209 persons owned 216,530 cattle in herds numbering from 100 to 300 each, giving an average of 179 head to each owner. Of the remainder of the cattle, numbering 2,067,598, or 76 per cent. of the total number, were the property of 997 persons, held in herds exceeding 300. Fuller particulars are contained in the following table:—

A e.

SIZES OF HERDS OF CATTLE.

Petty Sessions District.	1 to 100.		101 to 300.		301 and upwards.		Totals.	
	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.
Boulia	8	216	3	682	16	75,164	27	76,062
Burke	9	430	3	836	19	107,327	31	108,593
Charters Towers	275	5,161	15	2,580	26	76,517	316	84,258
Cloncurry	36	1,123	4	759	14	105,106	54	106,988
Etheridge	47	1,718	14	2,674	21	101,980	82	106,372
Gladstone	295	6,111	32	5,813	55	64,854	382	76,778
Norman	16	612	1	130	27	209,444	44	210,186
Rockhampton	746	15,393	87	15,531	64	73,407	897	104,331
All other Districts	20,977	407,448	1,050	187,525	755	1,253,799	22,782	1,848,772
Totals	22,409	438,212	1,209	216,530	997	2,067,598	24,615	2,722,340

The average number of cattle to each owner in 1904 was 111; and for each of the four preceding years—105 in 1903, 104 in 1902, 147 in 1901, and 162 in 1900.

At one time sheep were depastured in Queensland under conditions which, whilst lending themselves in normal seasons to economy of working, and, therefore, to great profit, yet in times of drought increased the difficulties of adopting measures necessary to prevent heavy loss. Enormous numbers were located on one holding under one management. These conditions have in recent years been greatly modified, and the average number of sheep to each holding has decreased. Last year there was an average of 5,441 sheep to each holding. Further particulars on this point are furnished in the following table:—

A f.
SIZES OF FLOCKS OF SHEEP.

Petty Sessions District.	50 and under.		51 to 1,000.		1,001 to 5,000.		5,001 to 20,000.		20,001 and upwards.		Totals.	
	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.
Adavale ... ..	...	...	...	...	3	11,500	2	26,005	4	308,534	9	346,039
Aramac	1	15	3	1,463	7	20,964	1	7,366	3	94,178	15	123,986
Augathella	5	61	2	440	3	6,000	2	17,859	2	127,023	14	151,383
Barcaldine	5	17	17	8,159	8	21,949	10	89,319	7	374,713	47	494,157
Blackall	3	79	4	1,285	10	28,702	8	80,479	7	335,022	32	445,567
Bollon	4	67	4	1,354	7	18,350	7	80,234	7	243,103	29	343,108
Charleville	13	281	9	3,564	8	22,440	7	61,307	4	139,675	41	227,267
Clermont	19	363	13	3,689	4	11,378	4	47,380	5	220,970	45	283,780
Cloncurry	8	95	1	85	1	5,000	1	6,986	5	230,184	16	242,350
Cunnamulla	1	40	5	2,583	53	155,369	15	147,621	8	480,380	82	785,993
Dalby	17	382	98	44,624	44	104,605	6	71,842	5	218,001	170	439,454
Eulo	1	6	2	1,350	4	11,983	7	57,030	2	60,266	16	130,635
Goondiwindi	4	79	12	6,861	12	32,497	6	57,040	3	134,615	37	231,092
Hughenden	2	17	5	3,370	7	14,013	13	126,817	4	130,337	31	274,554
Inglewood	5	99	16	4,738	4	13,653	3	34,745	2	53,552	30	106,787
Isisford	5	99	6	2,929	4	13,344	1	9,000	6	343,572	22	368,944
Jundah	3	59	1	750	6	14,193	2	23,001	2	125,887	14	163,890
Longreach	6	127	15	9,661	21	59,589	22	222,548	10	657,672	74	949,597
Muttaburra	1	1	2	894	7	21,873	16	159,430	13	624,050	39	806,248
Richmond ... ..	...	...	7	2,960	11	32,727	17	172,605	6	308,071	41	516,363
Roma	23	613	20	10,336	10	23,309	5	38,350	4	123,526	62	196,134
St. George	8	91	8	2,128	15	55,014	8	85,534	6	229,904	45	372,671
Springsure	8	165	5	2,537	7	19,707	1	16,700	3	92,072	24	131,181
Surat	3	80	15	9,030	17	40,826	4	36,350	3	124,685	42	210,971
Tambo	1	3	4	2,017	3	4,780	10	118,385	3	147,291	21	272,476
Thargomindah	2	50	1	134	1	1,500	5	73,800	2	48,000	11	123,484
Toowoomba	20	451	114	50,211	36	87,944	10	97,483	5	220,024	185	456,113
Warwick	19	497	59	21,427	11	29,809	5	44,632	1	33,600	95	129,965
Winton	9	191	4	440	4	14,474	11	97,543	12	726,512	40	839,160
All other Districts	316	6,456	260	69,763	59	123,613	22	263,334	7	216,955	664	680,121
Totals	512	10,484	712	268,782	387	1,021,105	231	2,370,725	151	7,172,374	1,993	10,843,470

It is now being generally recognised that even in Queensland the methods adopted at home may be very profitably pursued, and farmers in increasing numbers are combining the grazing of comparatively few sheep along with general agricultural operations, and the opportunities now opening for the disposal of frozen sheep and lambs by export will still further extend this tendency.

It will be seen from the above table, that, passing owners of sheep in flocks of fifty or under, 712 persons returned 268,782 sheep, in flocks between 51 and 1,000; 387 persons held 1,021,105 sheep, with not less than 1,001 nor more than 5,000 to each; 231 persons 2,370,725 head, or 22 per cent. of all sheep in flocks between 5,001 and 20,000; whilst 7,172,374, or 66 per cent. of the total, were returned by 151 persons only.

The Darling Downs, at one time occupied as large sheep-walks, grazing sheep in enormous numbers, the property of a very few wealthy proprietors, are now the centre of a large number of small sheep farmers, who in their operations are giving effect to the changing conditions to which I have already referred. During the past ten years the average size of flocks in the State have reduced from 12,130 in 1895 to 5,441 last year.

A g.

Year.	No. of Owners.	No. of Sheep.	Average Size of Flocks.
1895	1,637	19,856,959	12,130
1896	1,664	19,593,696	11,775
1897	1,793	17,797,883	9,926
1898	1,835	17,552,608	9,565
1899	1,897	15,226,479	8,027
1900	1,950	10,339,185	5,302
1901	2,018	10,030,971	4,970
1902	2,052	7,213,985	3,516
1903	1,914	8,392,044	4,385
1904	1,993	10,843,470	5,441

The smallest average was 3,516 in 1902, followed by 4,385 in the following year. The drought, covering the period 1900-3 by devastating the large holdings, reduced the averages for those years below normal.

It must, however, be borne in mind that the decreases of live stock in unfavourable seasons are augmented, and in favourable years the increases are reduced, by the large numbers put to profit by export, either alive or in a frozen or preserved condition, and in addition the needs of the population for

animal food are also met. The imports and exports of cattle and sheep for each of the last ten years were as follow:—

A h.

Year.	Horned Cattle.		Sheep.	
	Inwards.	Outwards.	Inwards.	Outwards.
	Number.	Number.	Number.	Number.
1895 ...	5,590	80,620	186,007	295,032
1896 ...	10,127	272,622	94,620	899,720
1897 ...	13,197	176,329	289,768	1,114,270
1898 ...	13,867	194,648	158,843	641,177
1899 ...	16,972	205,243	200,523	463,276
1900 ...	9,370	69,979	103,967	487,934
1901 ...	32,439	74,066	297,628	277,738
1902 ...	11,593	35,299	193,243	140,030
1903 ...	56,175	78,988	272,948	277,725
1904 ...	41,086	139,745	94,117	294,496

It will thus be seen that in 1904 practically 100,000 cattle and 200,000 sheep were sent alive out of the State in excess of those imported, and that during the ten years, shown in the table, no less than 1,117,123 cattle and 2,999,734 sheep have had to be provided for from the natural increase for this method of disposal alone.

The numbers of cattle and sheep utilised during the last two years are shown in the following table:—

A i.

	CATTLE.		SHEEP.	
	1903.	1904.	1903.	1904.
Preserved, frozen, and boiled down ...	125,414	70,753	115,426	101,034
Exported, less number imported ...	22,813	98,659	4,777	200,379
Estimated number killed for food for home consumption*	141,891	143,002	350,291	310,413
Totals put to profit ...	290,118	312,414	470,494	611,826

* N.B.—Based on estimated population of State.

Thus in 1904 no less than 312,414 head of cattle and 611,826 sheep were put to profit, and consequently these must be considered as a portion of the live stock production for the year, in addition to the increased numbers depastured returned at the end, when compared with those at the beginning of the year. Of the 312,414 cattle, 98,659 were exported alive in excess of those imported; 70,753 were shipped in the form of meat; and 143,002 were consumed for food within the State. There were 200,379 more sheep exported alive than were imported, besides 101,034 in the form of mutton, either frozen or preserved, and 310,413 were consumed for domestic use.

During 1904 there were seventeen establishments engaged in preserving meat of all kinds, chiefly for export. Their operations also, of course, included the slaughter of the necessary live stock. A summary of the capital engaged in the industry, and of the value of the output is shown in the following table:—

A k.

No. of Establishments.	Kind of Establishments.	No. of Hands Employed.	Value of Machinery and Plant.	Value of Land and Premises.	Value of Output.
6	Bacon Curing...	154	£ 45,645	£ 7,340	£ 112,998
11	Meat Preserving ...	905	265,058	361,750	937,862
17		1,059	310,703	379,090	1,050,860

Six of the factories were engaged in the slaughter of hogs only, the value of the output of this branch comprising rather more than 10 per cent. of the total. Last year there were 1,059 hands employed in the seventeen establishments, the total capital engaged amounted to £689,793, and the value of the output was £1,050,860.

Fuller details respecting the information furnished in the foregoing summary appear in Appendix Table No. 3, to be found at the end of this report.

There were 70,753 cattle and 101,034 sheep and 106,633 pigs slaughtered, chiefly for export, as a food product in 1904, as against 125,414 cattle, 115,426 sheep, and 54,712 pigs in 1903. Except as to pigs these figures do not include those slaughtered by farmers and others for domestic use, these being referred to later on.

CATTLE.—Of the 70,753 cattle slaughtered, the carcasses of 51,108 were frozen, 19,066 were preserved, and 579 were boiled down. From those frozen 36,514,333 lb. of meat were obtained, whilst the quantity preserved fresh was 10,227,433 lb., and 400,237 lb. were salted, being but little more than half the quantity turned out the previous year.

These figures give 714 lb. to each beast of those slaughtered for freezing, and 557 lb. to each head of those preserved fresh or salted. The corresponding weights in 1903 were 614 lb. and 610 lb. respectively, thus showing a substantial increase in the weight of cattle slaughtered for freezing and a decline in weight of those preserved.

The returns showing the number allotted to each method of treatment are not always quite reliable, as at times choice portions of beasts slaughtered for preserving find their way to the freezing chamber, adding weight to the frozen at the cost of the preserved.

The average weight of all cattle slaughtered in these factories was 613 lb. in 1903 and 672 lb. in 1904, an increase of 59 lb. per head in the latter year.

To the credit of cattle killed for preserving must be added the weight of essence and extract made. There was only about half as much of this in 1904 as in 1903—namely, 59,091 lb. in the former and 100,720 lb. in the latter year. Tallow is also a product of preserving rather than of freezing; the output for the last two years was 4,290 tons in 1904, and 3,661 tons in 1903, further illustrating the improved class of beast in the market during the year first mentioned.

SHEEP.—There were 90,828 sheep slaughtered for freezing in 1904, against 102,007 in 1903, a decrease of 11,179; 4,598,825 lb. of mutton were frozen in the former and 4,906,991 lb. in the latter year, a decrease of 308,166 lb., the average weight of each sheep being 51 lb. in 1904 and 48 lb. in 1903.

For preserving, 10,206 sheep were killed last year, and 13,309 the previous year, a decrease of 3,103. In 1904 there was an output of 470,645 lb. of preserved mutton, against 498,416 lb. in 1903, a decrease of 27,771 lb., the weight of each sheep slaughtered for preserving being 46 lb. in 1904 and 37 lb. in 1903. The average weight of all sheep slaughtered in each of the two years was 50 lb. in 1904 and 47 lb. in 1903. The great difficulty with regard to export of meat from Queensland is the want of continuity in supply. A market won with much difficulty is lost perhaps the following year, owing to the want of stock to supply it. Our chief competitors—New Zealand and Argentine—are not thus handicapped. The lastnamed has greatly increased its export of meat to Great Britain, driven thereto by the stoppage of the live stock trade in consequence of the existence of foot and mouth disease. Both countries maintain such a standard with regards to evenness and quality as well as the continuity of supply as to be most difficult to displace from any market. In 1903, New Zealand sent about 4,500,000 sheep and lambs, and Argentine 1,500,000 to Great Britain. Queensland sheep have at present too much of the merino type to be a good carcase animal. The live stock exports from the United States and Canada, which furnish about one-half the foreign meat supply of Great Britain, have also to be reckoned with.

Continental Europe is practically closed as a market, in consequence of the extreme demands as to shipment to enable the very rigid requirements for inspection on arrival to be complied with.

Hogs.—There were 106,633 pigs killed at the various preserving factories and by farmers during 1904, besides 27,852 returned by inspectors as slaughtered, chiefly by butchers for fresh pork only, making in all 134,485 hogs slaughtered for food during the year. As there were 117,553 pigs only in the State at the commencement and 185,141 at the end of 1904, some idea may be formed as to the prolific character of this animal, the increase for the year thus being 202,073, or 172 per cent. of the number on 1st January of that year. The metropolitan district is the principal site of the ham and bacon industry, 80,964 pigs, or 76 per cent., of the total number required for that purpose were slaughtered within that area. Full details as to the number killed, exclusive of those killed by butchers, and their disposal is given in the following table:—

A 1.

Petty Sessions District.				Hogs Slaughtered.	Fresh Pork.	Salt Pork.	Bacon and Hams.
				Number.	lb.	lb.	lb.
Allora	...	...	...	251	3,180	1,322	28,218
Beaudesert	...	...	...	399	240	7,250	41,556
Biggenden	...	...	...	223	100	2,302	22,865
Brisbane	...	...	...	73,922	1,132,802	6,330	4,201,437
Bundaberg	...	...	...	1,063	16,430	17,490	60,140
Childers	...	...	...	457	3,358	5,750	35,738
Clifton	...	...	...	337	22,789	...	22,789
Crow's Nest	...	...	...	367	56	170	47,713
Dalby	...	...	...	377	1,410	1,520	41,978
Dugandan	...	...	...	405	2,394	40,797	14,610
Gatton	...	...	...	4,258	821	6,836	501,496
Gin Gin	...	...	...	378	3,374	16,960	10,275
Gympie	...	...	...	530	13,763	2,893	33,071
Harrisville	...	...	...	570	2,085	8,640	50,677
Herberton	...	...	...	200	9,078	7,150	1,370
Highfields	...	...	...	513	259	339	73,720
Ipswich	...	...	...	386	16,701	8,192	17,873
Killarney	...	...	...	284	127	2,416	30,482
Laidley	...	...	...	438	5,978	19,924	39,299
Logan	...	...	...	696	22,397	51,602	32,553
Mackay	...	...	...	666	7,271	24,228	31,586
Marburg	...	...	...	359	2,245	11,875	44,958
Maroochy	...	...	...	540	2,855	13,265	43,342
Maryborough	...	...	...	651	16,953	12,750	33,490
Nanango	...	...	...	609	1,088	3,002	61,803
Nerang	...	...	...	214	190	1,040	25,455
Rockhampton	...	...	...	3,790	207,547	7,458	116,938
Roma	...	...	...	341	2,504	4,070	33,177
Rosewood	...	...	...	254	588	6,622	21,901
Somerset	...	...	...	251	3,940	...	...
South Brisbane	...	...	...	7,042	148,271	1,546	387,504
Tiaro	...	...	...	447	8,252	11,692	23,494
Toowoomba	...	...	...	1,138	9,728	8,430	107,763
Warwick	...	...	...	1,095	1,435	2,175	132,595
Other Districts	...	...	...	3,182	83,027	62,375	142,926
Total, 1904	...	...	...	106,633	1,753,236	378,411	6,514,852
„ 1903	...	...	...	54,712	408,734	531,755	4,145,900

N.B.—Returns received from Inspectors of Slaughter-houses for 1904 account for 27,852 pigs killed, producing 2,347,288 lb. of fresh pork in addition to the above. In a few instances it is possible that some of these have been also included in the returns from which this table is compiled, but to what extent it is impossible to determine.

It will be seen that almost twice as many pigs were killed in 1904 as in 1903, and whilst the increase in output of hams and bacon is an important one—namely, from 4,145,900 lb. in the latter to 6,514,852 lb. in the former year—yet the greatest relative increase has been in fresh pork. This is chiefly due to pigs now being numbered amongst meat frozen for export, 13,772 carcasses being included amongst the shipments for last year.

HOME CONSUMPTION OF MEAT.

This comprises the produce of live stock slaughtered by butchers, farmers, graziers, &c., for consumption within the State as distinct from export. The use of tinned provisions, the output of factories, has in recent years greatly increased in Queensland, and this should properly be included, but the extent of its use is not readily if indeed possibly returnable.

The number and weight of live stock slaughtered for domestic use is kindly furnished by officers of the Stock Department.

The consumption of meat per capita throughout all Australia is high, but in Queensland, partly on account of its comparatively low price, but mostly owing to the protracted warm weather, causing an undue proportion of waste, the quantity of domestic consumption per head, which must not be taken to mean actually eaten, is higher than elsewhere.

It is worthy of note that the weight per capita varies with good or bad seasons, following the effect of prosperous times or otherwise very closely, the quantities allotted to each inhabitant being, during each of the last five years, as follow:—1900, 268 lb.; 1901, 247 lb.; 1902, 198 lb.; 1903, 189 lb.; 1904, 208 lb. It will be noticed that the lowest figures are those of 1902 and 1903, the last years of the severe drought, when meat was scarce, lean, and prices high.

In no case has any allowance been made for suet, waste fat, &c., although during 1904, when the beasts slaughtered were in unusually good condition, the quantity of those products would, if taken into account, materially reduce the nominal consumption of that year.

Full particulars respecting each of the last five years will be found in Table IV. of the Appendix.

BY-PRODUCTS.

Full particulars as to the output and value of by-products of the meat-preserving industry are furnished in Table No. V. in the Appendix. Twelve, and these the most important, out of the seventeen establishments engaged preserve and record these very valuable adjuncts to their business. The aggregate value of all the by-products as returned was, for 1904, £145,852.

“MEAT AND DAIRY PRODUCE ENCOURAGEMENT ACT.”

Under this statute thirteen factories are still under advances from the Government, and their financial position with respect thereto is as follows:—

MEAT AND DAIRY PRODUCE ENCOURAGEMENT ACT.”

Number of works to which advances have been made	...	...	...	...	...	13
				£	s.	d.
Amount advanced to 31st December, 1904	...	...	...	100,437	5	0
Indebtedness (including interest on 31st December, 1904)	...	...	...	70,003	19	1
Number of works in operation under Act on 31st December, 1904	...	...	...	...	...	10
				£	s.	d.
Amount advanced on the said works	...	...	...	95,305	0	0
Balance owing on the said works on 31st December, 1904	...	...	...	68,317	12	6
Interest accrued but not due to 31st December, 1904	...	...	...	199	6	0
Interest due by three companies but not yet paid	...	...	...	1,487	0	7

WOOL.

The export of wool has hitherto been taken as the measure of the production, as the advantages of collecting information relating to the latter from other sources were not considered commensurate with the difficulties of doing so. In past years the Customs authorities collected data both as to quantity and value; and the wool used within the State, being extremely limited, the export figures were reliable as representing the production. Last year it was only possible with respect to exports to obtain values for that despatched to other States of Australia, though both values and quantities were supplied for that carried oversea. As a large amount of Queensland production is sent to Europe through New South Wales and Victoria the effect that the new method will have on statistics of our trade will be readily understood. The following table contains information as to the export of wool for the past two years. For 1904 the quantities have been estimated on the basis of a *pro rata* addition for interstate trade in accordance with its value:—

A m.

Exports.	QUANTITY.			VALUE.		
	Interstate.	Oversea.	Total.	Interstate.	Oversea.	Total.
	lb.	lb.	lb.	£	£	£
Wool (scoured)	*8,627,011	9,968,548	18,595,559	577,373	667,157	1,244,530
Wool (greasy)	*10,873,338	17,787,847	28,661,185	393,182	643,312	1,036,394
Total, 1904	19,500,349	27,756,395	47,256,744	970,555	1,310,369	2,280,924
Total, 1903	11,664,988	23,314,088	34,979,076	637,457	1,246,295	1,883,752
Increase, 1904	7,835,361	4,442,307	12,277,668	333,098	64,074	397,172
Decrease, 1904	...	...	...	...	...	...

* Estimated.

The wool exported and, therefore, produced, for it was practically all Queensland grown, in 1904 exceeded that for 1903 by 35 per cent. as to quantity and by 21 per cent. as to value, the export of wool in the grease preponderating in 1904. The export values per lb., as declared to the Customs, in 1903 and 1904 were practically the same for each year. The greatest variation was in scoured wool, which dropped about $\frac{1}{2}$ d. per lb. last year. The actual values were:—1903, scoured, 16 $\frac{1}{2}$ d. per lb.; in grease, 8 $\frac{1}{2}$ d. per lb.; 1904, scoured, 16 $\frac{1}{6}$ d. per lb.; in grease, 8 $\frac{5}{8}$ d. per lb. There was a slight decrease in the quantity of scoured wool exported in 1904, the substantial increase being all of unscoured wool. The export prices of wool for each of the last five years have been as follow:—

A n.

	1900.	1901.	1902.	1903.	1904.
Greasy wool (average)	8 $\frac{1}{2}$ d. per lb.	7 $\frac{1}{4}$ d. per lb.	8d. per lb.	8 $\frac{1}{2}$ d. per lb.	8 $\frac{5}{8}$ d. per lb.
Clean " "	15 $\frac{3}{4}$ d. "	13 $\frac{1}{4}$ d. "	14 $\frac{1}{4}$ d. "	16 $\frac{1}{4}$ d. "	16 $\frac{1}{8}$ d. "

Advices received by cable from London notify substantial advances in prices realised for wool at the recent sales, which, combined with the prospects of increased production, is news of a most gratifying character.

The quantity of wool used in Queensland is insignificant, as will be seen from the following statement:—

A o.

	1899.	1900.	1901.	1902.	1903.	1904.
Wool used in manufacture	lb. 192,000	lb. 175,000	lb. 156,000	lb. 109,646	lb. 84,117	lb. 92,901

There was a slight increase in 1904 over the figures of the previous year, otherwise the extent to which wool has been utilised locally has declined regularly since 1899, the first year of record.

EXPORT OF QUEENSLAND PRODUCTS.

As it is convenient to show the export of products of all kinds in a common summary, the report on the pastoral interests, that industry being the most important contributor, seems a suitable place for its inclusion.

The relative importance of the three principal interests of the State is shown in the following table:—

A p.

	1903.		1904.	
	£	Percentage, Total Exports (Home Produce).	£	Percentage, Total Exports (Home Produce).
Agricultural	956,275	10·52	2,019,049	18·60
Pastoral	4,221,780	46·46	4,842,407	44·62
Mineral	3,498,930	38·50	3,404,772	31·37
Other	410,889	4·52	587,708	5·41
	£9,087,874	100·00	£10,853,936	100·00

The great advance made in agriculture is well illustrated; providing only 11 per cent. of the total in 1903, the ratio rose to 19 per cent. last year. Details will be furnished respecting this in the general report. Pastoral products contributed 46 per cent. of the total exports of home production in 1903, and 45 per cent. in 1904, the value represented being £4,221,780 and £4,842,407 respectively.

Details as to the chief items of export last year are furnished in the following table:—

A q.

	1903.	1904.	Increase or — Decrease, 1904.
Pastoral—	£	£	£
Wool	1,867,674	2,280,924	413,250
Live stock	917,478	1,404,419	486,941
*Meat (all kinds, including Extract)	941,975	656,722	— 285,253
Tallow	119,997	183,372	63,375
Hides and skins	297,881	242,919	— 54,962
All other	76,775	74,051	— 2,724

* Exclusive of Bacon, Poultry, &c., these being treated as products of Agriculture.

The export of pastoral products increased by £620,627 in 1904, live stock increasing by £486,941, wool by £413,250, and tallow by £63,375, decreases of meat, £285,253; hides and skins, £54,962; and "other products," £2,724, cancelling some of the excess of the three first-named items.

ANGORA GOATS.

The collection of statistical data respecting the production of mohair, commenced in 1903, was continued last year. On this occasion the collection was undertaken by the police instead of by circular to the owners, with the result that somewhat more complete information has been obtained. It would

appear that the number of pure-bred Angora goats in Queensland is very limited. The exact number of these has not been ascertainable, but of these and grade animals there were some 2,000 returned from thirty-three owners, of whom eight only sold mohair. The total weight of this commodity returned was 1,216 lb., of which about 1,000 lb. was sold at prices ranging from 3d. to 2s. 6d. This great variation in price is very significant as to the quality of some of the animals returned. The maximum figure given is about double the usual price for good mohair in London, and must have proved most satisfactory to the proprietors. One owner owning a number of animals did not shear, but killed for meat, and drew his profit from the sale of the skins, which would no doubt realise a good price for mats. The industry is evidently still in its infancy, and several owners of choice herds have up to the present derived their profit largely from the sale of animals to others; the number of such sales recorded is sufficient to afford hope of a moderate expansion of the industry.

DAIRYING, ETC.

No section of the agricultural industry has manifested such progress as that of dairying. The outlet afforded to the products of the cow by the possibility of export to Europe at once placed the dairy farmer on a different footing. Provided a first-class article only is purveyed, limitation as to the quantity capable of being disposed of is indefinitely postponed. Great Britain alone offers a wide field for consumption, 70 per cent. having to be provided from without, of which Denmark contributes by far the largest proportion.

A want of evenness in the quality of butter is one of the most pronounced evils with which the exporting producer has to contend, and this in turn is chiefly due to a like condition existing with regard to cream supplied to factories for conversion into butter.

The importance assumed by dairy produce as an article of export could not be ignored, and it became apparent that without an authoritative control of the conditions under which the industry was carried on, the hold being rapidly secured of fresh outlets would be lost, owing to the selfishness of a few who, regardless of consequences, would try and force an inferior article on the export markets. Such a control could only be obtained by legislative enactment, and, after consideration at a general Agricultural Conference, a carefully drafted Bill was presented as a Government measure to Parliament, and passed on the 17th December, 1904, as "*The Dairy Produce Act of 1904*" (IV. Edw. VII., No. 18).

This statute provides for the registration of all butter factories, creameries, and dairies handling produce for sale, also of all retailers of milk, and further provides that persons acting as testers of milk and cream at such places shall obtain certificates of competency after examination. Provision is made for inspection by Government officers of all such premises as to their suitability and condition, and of persons employed or residing thereon as to their health and cleanliness, and of cattle milked, as to health and condition. The milking of the cows in the dairy and the handling of the produce, both in the dairy and at the factory, is to be rigidly supervised, whilst Government experts will undertake the grading and stamping of all produce intended for export. Provision is made for charging fees to recoup in part at least the cost of registration and inspection.

On comparing the figures of 1904 with those for the previous year, it is seen that the output of butter was one and a-half times greater in the former than in the latter year, having advanced from 7,717,325 lb. in 1903 to 17,538,473 lb. in 1904. Full particulars respecting the dairying industry for 1904 are furnished in the following table:—

B.

RETURN OF BUTTER AND CHEESE FACTORIES and the RESULTS OBTAINED therefrom during the Year 1904; also PRODUCTION by PRIVATE MAKERS.

DISTRICT.	ESTABLISHMENTS HANDLING		MILK, CREAM, AND BUTTER.					CHEESE.		
	Cream Only.	Cream and Butter.	*Milk dealt with.	*Cream Produced.	BUTTER MADE.			Producers.	Milk Dealt with.	Cheese.
					At Central Factories.	By Farmers.	Total.			
			Gallons.	Lb.	Lb.	Lb.	Lb.		Gallons.	Lb.
Allora	57	105	1,039,754	759,885	...	42,157	42,157	...	...	...
Beaudesert	49	282	2,566,551	2,064,862	432,725	75,543	508,268	...	...	...
Brisbane	82	79	608,594	412,603	3,051,769	71,012	3,122,781	1	558,583	516,494
Bundaberg	38	267	890,559	630,348	100,384	354,492	2	1,460	1,460	1,460
Caboolture	58	14	538,868	365,360	...	22,222	22,222	1	2,496	2,496
Clifton	65	8	442,594	414,161	39,390	2,726	42,116	3	75,171	75,942
Crow's Nest	57	207	956,437	761,466	...	29,460	29,460	5	12,834	12,258
Dalby	77	155	586,582	475,557	...	18,184	18,184	...	...	...
Dugandan	133	208	2,133,259	1,947,958	582,815	30,858	613,673	...	...	...
Esk	127	43	1,236,136	861,022	349,127	9,014	358,141	2	2,450	2,310
Gatton	349	208	2,760,360	2,151,526	190,650	29,146	219,796	...	...	...
Gympie	74	114	872,565	624,212	390,817	30,168	420,985	...	...	...
Harrisville	241	15	1,823,576	1,375,172	74,439	6,091	80,530	2	70,500	68,012
Highfields	281	52	1,223,595	1,019,048	...	6,925	6,925	4	113,869	121,675
Ipswich	215	44	1,723,287	1,373,690	3,004,472	15,318	3,019,790	...	...	...
Killarney	6	114	168,517	160,905	...	21,959	21,959	2	106,190	115,676
Laidley	233	11	1,376,445	1,224,026	...	7,967	7,967	...	...	...
Logan	177	153	1,018,451	741,669	...	39,023	39,023	...	...	...
Mackay	4	126	223,757	158,651	19,750	64,163	83,913	...	...	...
Marburg	193	5	2,444,776	1,875,504	735,975	741	736,716	...	...	...
Maroochy	11	173	291,486	244,999	...	48,396	48,396	1	28	28
Maryborough	41	186	814,546	565,491	441,707	64,731	506,438	...	...	...
Nerang	26	142	974,144	776,997	...	34,362	34,362	...	...	...
Redcliffe	176	22	1,193,829	839,528	531,642	28,081	559,723	1	20,000	19,000
Rockhampton	13	217	866,614	523,120	156,875	169,298	326,173	1	840	840
Rosewood	175	35	2,046,044	1,861,697	7,392	24,012	31,404	...	...	...
South Brisbane	17	65	245,636	186,398	1,876,113	51,023	1,927,136	...	...	...
Tiaro	55	134	1,783,497	893,691	559,526	26,953	586,479	4	7,695	4,907
Toowoomba	311	300	2,926,725	2,296,199	2,591,685	63,310	2,654,995	5	1,088,502	1,090,472
Warwick	98	191	1,159,885	909,274	660,777	73,973	734,750	2	502,123	486,212
Woodford	108	25	742,512	597,208	...	5,651	5,651	1	6,300	6,552
All other Districts	113	983	2,557,959	1,647,083	37,377	336,491	373,868	10	85,430	83,141
Totals ... 1904	3,660	4,683	40,237,540	30,739,310	15,989,131	1,549,342	17,538,473	47	2,654,471	2,607,475
Totals ... 1903	2,145	4,327	18,750,604	13,717,841	6,261,049	1,456,276	7,717,325	61	1,394,780	1,479,651
Increase ... 1904	1,515	356	21,486,936	17,021,469	9,728,082	93,066	9,821,148	...	1,259,691	1,127,824
Decrease ... 1904	...	...	...	...	...	...	...	14	...	...

* N.B.—The quantities of milk and cream in any district bear but little relation to the butter made in that district, as much of the milk and cream is conveyed elsewhere than the place of production for manufacture.

In 1904 there were 8,390 establishments engaged in handling dairy products for sale, or 1,857 more than in the previous year. Of 8,343 engaged in butter production, 3,660 were occupied in the extraction of cream only, and 4,683 were for the making of butter, the separation of cream being also carried on at most of them.

The quantity of milk returned as handled during 1904—namely, 40,237,540 gallons—although more than double the volume so returned in 1903, only comprises milk treated for the production of butter, the quantity consumed in its primitive state for domestic purposes not being embraced in the returns. This, if available, would undoubtedly add largely to the total milk production, but is, of course, a question altogether beside that of butter output. The purity of milk supplied for domestic use is, however, a matter of paramount importance to the community, and two recent inventions afford greatly increased facilities for securing this. One, a milking machine, whereby the fluid is conveyed to a closed bucket without exposure to the air; the other, a bottle made from paper, capable of production at such a price as to render its use possible for the conveyance of the milk direct from the farm to the consumer.

The former is worked by a pulsometer pump, is rapid in its action, and is absolutely non-injurious to the animal. The latter is made by dipping the paper in paraffine and then baking it.

It is most difficult to ascertain the number of cows represented by the milk handled for butter, as no average yield of Queensland cows has yet been determined; but, taken at half the capacity of milkers in Great Britain, and probably the average here would not exceed this, 160,000 cows were represented.

In a footnote to the foregoing table, attention is drawn to the obvious fact that there can be no relation between the quantities of cream and butter produced in any one district. The same condition applies, only to a much smaller degree, with regard to the milk and cream. The former does not lend itself to such distant carriage as the latter, and is most frequently dealt with at or near the place of milking. In sixteen districts the milk intended for the production of butter exceeded 1,000,000 gallons. The largest producers were:—Toowoomba, 2,926,725 gallons; Gatton, 2,760,360 gallons; Beaudesert, 2,566,551 gallons; and Marburg, 2,444,776 gallons.

From the 40,237,540 gallons of milk separated in 1904, 30,739,310 lb. of cream were obtained against 13,717,841 lb. in 1903, an increase of 17,021,469 lb. Districts returning upwards of 2,000,000 lb. of cream for the year were:—Toowoomba, 2,296,199 lb.; Gatton, 2,151,526 lb.; and Beaudesert, 2,064,862 lb.

BUTTER.—Last year 91 per cent. of all butter made was of factory production, an eloquent testimony to the advantages of machinery, whereby that which was years ago a mere adjunct of the farmer's business, has developed into a most important industry. The quantity of butter made in 1904 was 17,538,473 lb. against 7,717,325 lb. in the preceding year, an increase of 9,821,148 lb. Brisbane, Ipswich, and Toowoomba were the chief centres of production, these three localities returning more than half of the total output.

The average yield obtained on the total production for 1904 was 0.57 lb. of butter to each 1 lb. of cream, the latter being the product of 1.31 gallons of milk; or, expressed in inverted terms, 1 gallon of milk produced 0.76 lb. of cream or 0.40 lb. of butter, and 1 lb. of butter was obtained from 2.50 gallons of milk or 1.75 lb. of cream.

In 1903, the like ratios were 0.56 lb. of butter from 1 lb. of cream, the latter requiring 1.37 gallons of milk to produce it, whilst 1 gallon of milk yielded 0.73 lb. of cream or 0.41 lb. of butter, 1 lb. of butter being obtained from 2.43 gallons of milk and 1.78 lb. of cream.

In all, nineteen creameries have received loans from the Government under the Meat and Dairy Encouragement Act, and eight of these were still working under that statute on the 31st December last.

Further particulars are furnished in the following statement:—

B a.

	Number.	Amount.
		£ s. d.
Number of works to which advances have been made	19	...
Number of works now in operation	8	...
Amount advanced up to 31st December, 1904	...	1,909 16 2
Amount advanced to works now in operation to 31st December, 1904	...	726 0 0
Indebtedness to State on 31st December, 1904	...	632 15 5
Including interest due, but not paid	...	54 12 6
And interest accrued, but not due	...	32 8 4

From this it will be seen that the financial position of these establishments in this respect are most satisfactory.

The following statement refers to the liabilities of a like character with respect to butter factories which are in an equally satisfactory condition:—

B b.

	Number.	Amount.
		£ s. d.
Number of factories to which advances have been made	14	...
Number of factories now in operation	8	...
Amount advanced up to 31st December, 1904	...	12,316 12 6
Amount advanced to works now in operation to 31st December, 1904	...	7,357 0 3
Indebtedness to State on 31st December, 1904	...	6,542 13 1
Including interest owing, but not paid	...	11 18 10
And interest accrued, but not yet due	...	495 8 9

BUTTER EXPORTS.—The change from hand-made to machine-made butter has been of great importance to the local consumer in having resulted in the unfailing supply of a good article at a reasonable price, in place of the uncertainty on both these points which formerly prevailed; but its great

advantage to the State has been in the possibilities thus afforded for providing another staple article of export. The statute just passed will no doubt have a most beneficial effect, as the system of grading provided for, to which reference has already been made, must result in butter of a better and more uniform quality being shipped. The opportunity of direct freighting to London afforded by the Aberdeen line of steamers, which started running nearly two years ago, has been a great assistance, as butter sent coastwise for shipment at Sydney has not only to face the cost of the intermediate transit, but is placed at a disadvantage as regards freight to the United Kingdom, as compared with much of the southern product, and above all, is exposed to the risk of deterioration as a result of the conditions under which the coastwise journey and the consequent handling frequently have to be conducted.

Some modifications in the present methods and terms of shipment will have to be introduced before the conditions can be considered satisfactory, to ensure that butter once chilled is maintained in that condition until delivery at the freezing chambers in the United Kingdom. It is also considered by many competent to form an opinion that the present temperature adopted for the carriage of Australian butter should be much reduced if the delivery of the article, free of all risk of deterioration, is to be insured. This is a question of paramount importance if we are to secure and maintain a hold on the oversea markets, which are inviting such keen competition. The Argentine, with less than half the distance to freight, will prove a competitor requiring the utmost energy and care to successfully oppose.

A shipment of butter sent to England from Rockhampton, *via* Brisbane, in March last reached its destination in perfect condition, and realised the top price then ruling—viz., 92s. per cwt., or 10d. per lb. As this was manufactured during hot, muggy weather, and was, owing to transshipment, &c., fully three months in transit, it may fairly be considered that both the butter itself and the packing must have been without fault.

The statement that Queensland pine is unsuitable for butter boxes has been frequently and persistently made, chiefly by interested persons in the southern States, and, although fully refuted, the prejudice thus engendered still arises, notwithstanding the fact that the consignees in England and elsewhere speak of our timber as suitable in every respect, and that orders for material have been placed with our millers for casing southern butter. The important trade that might be done in this direction has certainly been much retarded by wilful misstatements for which trade jealousy is probably to blame.

As the Customs returns for last year supply only the value with respect to the exports to other States, comparisons with previous years as to quantities can only be made by estimating those for 1904. This has been done in the following statement of total exports on the basis of relation between quantity and value of the portion shipped oversea:—

B c.

	1899.	1900.	1901.	1902.	1903.	1904
Quantity (lb.)	1,159,255	1,389,250	2,085,998	552,625	1,223,414	*9,436,509
Value	£49,517	£51,729	£86,171	£24,610	£49,804	£345,171

* Quantity of interstate export estimated on the basis of that sent oversea.

A comparison of the figures for the past six years as given shows the enormous expansion in the volume of trade which took place during 1904, exceeding as it did the export of the previous year by nearly eight times.

It is not to be expected that such an abnormal rate of increase can be maintained, but there is little doubt but that the records of the present year will show a large increase even on the figures for 1904.

CHEESE.—Although there was during 1904 a large increase in cheese production, the output having nearly doubled during that year, yet the number of establishments making cheese decreased by fourteen, or 23 per cent.—namely, from sixty-one in 1903 to forty-seven in 1904. As good cheese is more readily manufactured on a large than on a small scale this is perhaps a matter for congratulation. A reference to Table B will furnish full information as to the district of production.

It will be seen that there were 1,394,780 gallons of milk handled for this purpose in 1903, from which 1,479,651 lb. of cheese were produced, and 2,654,471 gallons of milk in 1904, from which 2,607,475 lb. of cheese were produced. A relatively larger quantity of milk was required in 1904 as compared with 1903, 1 lb. of cheese being made from 0.94 of a gallon of milk in the former and 1.02 in the latter year, or 1 gallon of milk making 1.06 lb. in 1903 and 0.98 in 1904.

The extent to which this industry has been assisted under the Dairy Encouragement Act and the position of the fund is shown in the following statement, which speaks for itself:—

B d.

	Number.	Amount
		£ s. d.
Number of factories to which advances have been made	4	...
Number of factories now in operation	1	...
Amount advanced up to 31st December, 1904 ... ..	...	1,525 0 0
Amount advanced to works now in operation to 31st December, 1904 ... ..	...	700 0 0
Indebtedness to State on 31st December, 1904 ... ..	...	610 3 0
Including interest due, but not paid ... ..	...	Nil
And interest accrued, but not due ... ..	...	Nil

PRESERVED MILK.

The treating of milk in such a manner that, whilst preserving all its qualities for domestic or therapeutic purposes, it can be kept for an indefinite period, is a question that has involved a large amount of research, and "preserved milk" in several different forms has been an article of commerce for many years. Condensation by the application of heat has been the underlying principle of all methods adopted with success. The aim of manufacturing chemists engaged in investigating this problem of milk

preservation has been to make the condensation complete by the successful evaporation of all moisture, and, although the process had been perfected in the laboratory for many years, the resulting commodity had not until recently been produced commercially. The economic manufacture would appear to have been brought to a successful issue and dried or desiccated milk in the form of a powder is now on the market. It is naturally very portable, will keep for a long period, and, on being mixed with water, becomes reconverted into the article with which we are all familiar.

At present desiccated milk is not an article of manufacture in Queensland, but both condensed and concentrated milk have been produced for some years. During 1904, 965,136 lb., valued at £17,014, were turned out by the local factories. The values of the output for previous years were:—1902, £7,097; 1903, £12,754. Net imports of preserved milk of all kinds for last year amounted to 645,567 lb., value £11,586, so that although the industry is extending in this State there is still room for further expansion to meet the local demand alone before even considering the question of export.

Two firms engaged in the preservation of milk have availed themselves of the facilities offered by the Meat and Dairy Encouragement Act, particulars being furnished in the following table:—

B e.

	Number.	Amount.
		£ s. d.
Number of factories to which advances have been made	2	...
Number of factories now in operation	2	...
Amount advanced up to 31st December, 1904 ... ..	...	2,175 0 0
Amount advanced to works now in operation to 31st December, 1904 ... ..	...	2,175 0 0
Indebtedness to State on 31st December, 1904 ... ..	...	2,346 4 8
Including interest due, but not paid ... ..	...	Nil
And interest accrued, but not due ... ..	...	203 10 2

POULTRY.

Poultry-raising is beginning to be recognised in Queensland as one of the most important and profitable branches of farming. This has for a long time been fully realised both in America and Europe, and the industry has assumed in some places extraordinary dimensions. A small trial shipment of Queensland poultry recently reached London, realising satisfactory prices.

The numbers of each of the different kinds returned by farmers only, in each of the principal districts, together with eggs produced, are shown in the following table:—

B f.

Petty Sessions District.	Fowls.	Ducks.	Geese.	Turkeys.	Other.	Eggs.
	No.	No.	No.	No.	No.	Doz.
Allora	10,707	89	2	205	...	37,526
Beaudesert	17,390	914	185	710	7	30,482
Biggenden	5,154	66	18	81	1	18,630
Bowen	6,027	355	20	311	...	13,654
Brisbane	22,970	2,848	109	105	10	75,817
Bundaberg	19,868	567	21	196	52	67,195
Caboolture	5,997	467	29	281	2	20,138
Cairns	16,934	270	102	38	3	93,645
Childers	8,497	300	18	184	17	38,341
Clifton	20,434	750	104	567	...	47,265
Crow's Nest	15,423	123	270	46	...	25,467
Dalby	18,367	1,198	126	2,537	21	31,452
Douglas	6,846	154	17	50	...	12,969
Dugandan	26,653	2,022	545	472	22	127,087
Esk	13,003	1,104	481	810	10	90,873
Gatton	45,365	2,270	836	772	113	188,104
Gin Gin	7,153	130	47	64	3	15,988
Gympie	15,514	1,383	73	434	25	49,731
Harrisville	17,658	1,603	253	408	26	65,325
Herberton	7,599	87	19	3	3	26,709
Highfields	23,179	272	116	259	11	76,958
Ingham	6,530	533	49	29	13	12,654
Ipswich	13,900	1,225	130	308	8	43,363
Kilkivan	5,756	224	109	536	7	17,613
Killarney	9,515	595	63	231	129	30,754
Laidley	25,797	3,188	1,225	508	49	74,159
Logan	20,422	1,663	170	35	11	81,076
Mackay	20,611	599	123	236	77	58,961
Marburg	20,334	2,545	581	120	...	70,576
Maroochy	17,328	1,066	77	40	5	87,552
Maryborough	9,765	877	86	54	19	52,943
Nanango	16,445	201	93	227	6	38,168
Nerang	10,207	799	57	48	20	35,278
Redcliffe	12,408	1,413	154	33	43	38,442
Rockhampton	21,277	1,025	165	470	25	77,980
Rosewood	14,776	389	154	426	...	56,823
Roma	14,791	760	3	750	...	42,039
South Brisbane	11,812	5,606	53	22	...	57,951
Tiaro	11,485	1,194	187	527	47	29,572
Toowoomba... ..	63,196	1,634	254	2,236	4	167,823
Townsville	9,866	1,014	20	77	35	30,869
Warwick	32,661	1,206	330	3,968	1	80,240
Woodford	7,661	299	81	315	4	26,556
All other Districts	59,905	3,620	537	4,013	328	215,759
Total, 1904	777,186	48,647	8,092	23,742	1,157	2,580,507
Total, 1903	588,901	27,515	6,815	16,685	831	1,891,481
Increase, 1904	188,285	21,132	1,277	7,057	326	689,026
Decrease, 1904 ... ..	...	...	...	...	...	...

It will be noted that in 1904 there was a large increase as compared with 1903 in every kind recorded in the table, amounting to 188,285, or 32 per cent. in fowls; to 21,132, or 77 per cent. in ducks; 1,277, or 19 per cent., in geese; 7,057, or 42 per cent., in turkeys; and 689,026 dozen, or 36 per cent., in eggs. These large proportionate increases well illustrate the great development already mentioned as having taken place.

The Downs and Moreton districts are the centres where this profitable industry is chiefly pursued.

HONEY AND WAX.

The supply of honey has for a long time exceeded the State's requirements, but the production was not sufficiently extended to obtain a regularity of surplus supply for export. At one time there was a fair promise of establishing a good trade with the United Kingdom; but, unfortunately, due apparently to greed on the part of some producers, an inferior article was placed on the home market, and the opening that offered was to a great extent nullified. Consumers of this commodity are very critical, and both quality and colour must be exactly to requirements, or there is no sale. At one time honey naturally flavoured with eucalyptus was in favour, but unprincipled persons adopted artificial flavouring and prejudiced the name of "Eucalyptus" honey.

The production of honey during 1904 was as follows:—

B g.

District.	No. of Hives.		Honey.	Average per Productive Hive.	Wax.	District.	No. of Hives.		Honey.	Average per Productive Hive.	Wax.
	Productive.	Non-Productive.					Productive.	Non-Productive.			
			Lb.	Lb.	Lb.			Lb.	Lb.	Lb.	
Beaudesert ...	329	90	26,356	80	393	Marburg ...	54	55	2,005	37	29
Brisbane ...	614	209	16,950	28	422	Maroochy ...	989	139	42,780	43	517
Bundaberg ..	246	145	27,384	111	701	Maryborough ...	390	127	15,856	41	329
Caboolture ...	1,411	159	74,422	53	1,071	Nerang ...	657	95	45,833	70	615
Cook ...	253	40	10,060	40	200	Redcliffe ...	295	22	11,977	41	348
Crow's Nest ...	618	207	25,535	41	182	Rockhampton ...	707	179	59,148	84	1,015
Dugandan ...	229	220	2,810	12	178	Rosewood ...	292	147	13,017	45	265
Esk ...	157	10	15,287	97	352	South Brisbane ...	567	81	27,055	48	616
Gatton ...	486	90	13,838	28	144	Tiaro ...	120	43	8,002	67	112
Gayndah ...	106	...	1,305	12	148	Toowoomba ...	599	120	36,416	61	811
Goodna ...	527	32	22,420	43	230	Warwick ...	576	51	43,580	76	680
Gympie ...	554	37	26,318	48	636	Woodford ...	285	33	16,316	57	329
Harrisville ...	136	122	3,187	23	324	All other Districts	1,197	443	43,959	37	1,044
Herberton ...	150	25	5,180	35	68	Total for 1904 ...	15,598	3,497	783,264	50	15,883
Ipswich ...	304	153	7,846	26	189	Total for 1903 ...	13,231	4,706	647,005	49	13,621
Killarney ...	1,000	114	55,365	56	1,265	Increase for 1904	2,367	...	136,259	1	2,262
Laidley ...	366	74	10,080	28	291	Decrease for 1904	...	1,209	...	...	...
Logan ...	1,268	235	63,577	50	2,129						
Mackay ...	116	...	8,400	72	250						

There were 15,598 productive hives returned in 1904 as against 13,231 in the previous year, or an increase of 2,367 hives. Honey obtained amounted to 783,264 lb. as against 647,005 lb., or an increase of 136,259 lb. The average yield secured from each hive robbed was 50 lb. in 1904 and 49 lb. in 1903.

The quantity and value of honey exported during each of the last four years were as follow:—

B h.

HONEY EXPORTED.

Country.	1901.		1902.		1903.		1904.	
	Lb.	£	Lb.	£	Lb.	£	Lb.	£
United Kingdom ...	17,653	167	224	2	648	5	15,730	143
Australasia ...	32,953	334	208,504	2,398	140,011	1,556	*372,173	3,509
Elsewhere ...	4,110	43	7,560	74	346	13	2,937	33
	54,716	544	216,288	2,474	141,005	1,574	*390,840	3,685

* Estimated.

The bulk was returned as sent to other States of the Commonwealth, but whether for consumption or for transhipment oversea it is impossible to say.

IMPORTS OF PRODUCTS OF AGRICULTURE.

As was anticipated when writing on this subject last year, the result of the improvement in the season which exhibited itself in more satisfactory crops being garnered during 1903, had their effect in reducing the import of agricultural products during 1904. This has the appearance of a disadvantage in that it adversely affects the trade of the State, but is really a matter for congratulation, as it is evident

that an equivalent amount of money remains with our farmers instead of enriching those elsewhere. The result will be readily seen by the figures in the following statement:—

C.

Value of—	1900.	1901.	1902.	1903.	1904.
	£	£	£	£	£
Grain, &c., and various Products thereof	589,948	457,044	846,621	829,232	380,627
Fruit, and various Products thereof	155,609	160,413	186,521	} 318,667	221,582
Vegetables, Fresh and Preserved	95,922	124,296	203,640		
Other Products of Agriculture	184,148	170,388	628,531	403,632	210,701
Total	1,025,627	912,141	1,865,313	1,551,531	812,910

The benefit to our farmers, which would relate principally to the crops of 1903, is seen to have been little less than three-quarters of a million sterling. Details respecting the more important items comprised in the foregoing table will be found in the subjoined statement, which, however, has been made to embrace most of the principal articles of food, and, consequently, includes several items not strictly the output of the Queensland agriculturist:—

C a.

WHERE IMPORTS EXCEED EXPORTS.

PRINCIPAL ITEMS OF FOODSTUFFS.	IMPORTS.		EXPORTS.		NET IMPORTS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Barley (Pearl)	56,422 lb.	£ 308	...	£ 40	...	£ 268
Biscuits	514,718 "	17,868	97,244 lb.	1,620	417,474 lb.	16,248
Coffee (all kinds)	213,943 "	7,626	68,623 "	3,642	145,320 "	3,984
Flour	567,578 centals	228,558	31,368 centals	12,199	536,210 centals	216,359
Hay and Chaff	197,120 cwt.	23,666	12,068 cwt.	1,501	185,052 cwt.	22,165
Maizena and Cornflour	416,467 lb.	4,045	2,791 lb.	38	413,676 lb.	4,007
Malt	23,353 centals	18,394	...	811	...	17,583
Milk and Cream (Preserved)... ..	894,859 lb.	16,144	249,292 lb.	4,558	645,567 lb.	11,586
Oatmeal	2,778,992 "	18,006	3,724 "	61	2,775,268 "	17,945
Oats	33,200 centals	8,033	563 centals	156	32,637 centals	7,877
Onions	86,696 cwt.	12,508	498 cwt.	169	86,198 cwt.	12,339
Potatoes	198,717 "	20,265	17,522 "	3,638	181,195 "	16,627
Preserves	3,881,338 lb.	53,282	326,719 lb.	5,313	3,554,619 lb.	47,969
Rice	96,228 centals	56,066	2,488 centals	919	93,740 centals	55,147
Total Values ... ..	...	484,769	...	34,665	...	450,104

WHERE EXPORTS EXCEED IMPORTS.

PRINCIPAL ITEMS OF FOODSTUFFS.	IMPORTS.		EXPORTS.		NET EXPORTS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Arrowroot	53 lb.	£ 1	...	£ 4,386	...	£ 4,385
Bacon and Hams	139,665 "	4,936	1,447,290 lb.	42,481	1,307,625 lb.	37,545
Barley	25,063 centals	5,875	181,723 centals	47,914	156,660 centals	42,039
Butter	18,052 lb.	642	9,436,509 lb.	345,171	9,418,457 lb.	344,529
Cattle, Sheep, and Pigs ... ..	...	339,583	...	1,254,182	...	914,599
Cheese	92,686 lb.	2,501	482,322 lb.	9,235	389,636 lb.	6,734
Eggs	7,234 doz.	250	240,854 doz.	7,749	233,620 doz.	7,499
Fruit and Vegetables ... ..	...	127,077	...	149,347	...	22,270
Honey	10,997 lb.	120	...	3,694	...	3,574
Lard and Refined Animal Fats	45,984 "	597	870,111 lb.	13,914	824,127 lb.	13,317
Maize	1,587 centals	470	154,214 centals	30,356	152,627 centals	29,886
Meat (all kinds, including Extract) ... ..	...	7,864	...	664,864	...	657,000
Molasses	8 cwt.	6	...	910	...	904
Oysters ... ..	...	...	...	17,959	...	17,959
Sugar	1,669 cwt.	1,440	...	1,259,052	...	1,257,612
Wheat	6,160 centals	1,580	137,547 centals	38,437	131,387 centals	36,857
Total Values ... ..	...	492,942	...	3,889,651	...	3,396,709

In the following comments on the above table reference is made to net imports and exports. Among the items showing the most pronounced variation from the figures of the preceding year are flour, which dropped from 704,893 centals to 536,210 centals; barley, from an import of 39,363 centals to an export of 156,660 centals; butter, from an import of 313,417 lb. to an export of 9,418,457 lb.; cheese, from an import of 528,305 lb. to an export of 389,636 lb.; fruit and vegetables, from an import value of £2,692 to an export one of £22,270; wheat, from an import of 603,294 centals to an export of 131,387 centals; sugar, from an export value of £646,199 to £1,257,612, and other items of less note.

Unfortunately the export of pastoral products has not proceeded in like ratio, but this branch also shows progression, although from its very nature years must elapse before the ravages of the late drought are counteracted.

The conditions of the agricultural labour market, together with the amount invested in the necessary machinery, &c., is shown in the following table:—

C b.

DISTRICT.	LABOUR.				VALUE OF MACHINERY AND IMPLEMENTS.			
	Farming.		Dairying.		Farming.	Dairying.	Irrigation.	Total.
	Males.	Females.	Males.	Females.	£	£	£	£
Allora	350	67	128	177	24,469	2,222	360	27,051
Ayr	897	20	10	3	9,361	328	19,520	29,209
Bundaberg	2,166	146	65	122	33,721	3,254	52,377	89,352
Clifton	711	239	203	128	44,962	1,596	...	46,558
Dalby	623	7	73	65	24,357	2,451	...	26,808
Dugandan	512	27	204	366	14,465	5,429	550	20,444
Gatton	1,351	126	433	347	37,122	9,592	400	47,114
Gympie	424	35	158	111	11,519	3,442	660	15,621
Harrisville	536	8	425	132	12,565	4,731	...	17,296
Highfields	708	31	171	245	16,912	5,480	...	22,392
Ipswich	403	17	125	201	9,440	5,540	705	15,685
Killarney	406	...	3	7	19,346	842	...	20,188
Laidley	872	135	108	212	21,591	4,437	180	26,208
Mackay	2,430	87	49	66	36,522	810	711	38,043
Marburg	455	34	112	299	12,030	4,637	...	16,667
Rockhampton	537	64	251	167	15,867	2,920	1,640	20,427
Roma	543	125	14	60	29,081	650	...	29,731
Toowoomba	1,864	156	330	483	90,709	9,038	450	100,197
Warwick	1,021	10	214	150	62,621	2,974	...	65,595
All other Districts	17,148	658	1,931	2,589	217,781	53,936	23,306	295,023
Total 1904	33,957	1,992	5,007	5,930	744,441	124,309	100,859	969,609
Total 1903	33,926	2,497	3,022	4,146	724,449	104,758	98,521	927,728
Increase in 1904	31	...	1,985	1,784	19,992	19,551	2,338	41,881
Decrease in 1904 ... ..	...	505	...	...	...	...	...	...

Progress appears to be practically confined to the dairying industry, in which no less than 3,769 more persons were employed than in the previous year. In a number of districts farmers have to a considerable extent abandoned the cultivation of agricultural crops for sale, devoting their attention to dairying, producing from the soil sufficient only for that purpose. The extension of the dairying industry largely accounts for the decrease of females engaged in "farming," these being transferred to "dairying." Important additions have been made to the stocks of machinery, both for general farming and dairying purposes, the increase in the former being fairly distributed throughout the leading agricultural centres. The total increase of capital invested in the necessary adjuncts to farming of all kinds amounted to £41,881, of which £19,992 was for agricultural machinery, £19,551 for the interests of dairying, and £2,338 for irrigation.

FORESTRY.

I am disposed to think that a passing reference to forestry is justifiable, even in connection with a report on agriculture, if only for the sake of drawing attention to a subject of such paramount importance. In Queensland, it is true, we have large forest areas still untouched, but in countries more highly favoured in this respect the future outlook with respect to timber is being anxiously considered, besides which there are many products of forest trees, such as bark, &c., which are subjects of important and profitable industries, and for those in a position to wait for a return, few branches of agriculture offer so satisfactory a field of investment. In Natal, bark ranks third amongst the staple exports of the colony, and the planting of the wattle is extending with rapid strides. In the United Kingdom a great and growing demand exists for timber suitable for the manufacture of polo, golf, and croquet mallets; surely some of the many varieties of Queensland timber would be suited to meet the demand.

The excellent collections of specimens of native timbers preserved in the office of the Chief Inspector of Forests, Lands Office, and the Agricultural Department, Brisbane, afford a satisfactory assurance on this point.

AGRICULTURE PROPER.

The promise of the earlier portion of the season of 1904 was not fulfilled. Satisfactory weather was experienced from January to June, but the following spring and early summer was very dry, accompanied in some places by hot winds, and, consequently, the second planting of maize was in many instances not proceeded with, and the areas under hay and pumpkins were much circumscribed. The reduction in area of these three crops was the chief cause of the smaller area, both under crop and under cultivation in 1904, as compared with 1903. No doubt the decrease in cultivation was also in part caused by the great increase in dairying, which was apparent in all districts, the district of Esk being specially conspicuous in this respect. The expansion of agricultural pursuits, referred to as apparent during 1903 in the Burnett and Maranoa districts, was continued last year, more extended areas coming under the operations of the farmer. A marked reduction in banana production at Geraldton was also evidenced, a large number of Chinese proprietors having apparently abandoned operations.

The large amount of land taken up for settlement during the past few months, both from the Crown and also by purchase from private owners, affords a happy augury for the prospects of the current and succeeding seasons.

Although the areas cultivated and cropped during 1904 fell short of those of the previous year, yet they compare favourably with the records of other preceding years:—

	1900. Acres.	1901. Acres.	1902. Acres.	1903. Acres.	1904. Acres.
Under cultivation ...	480,372	507,317	478,121	621,693	577,896
Under crop ...	457,397	483,460	275,383	566,589	539,216

The area cultivated during 1904 was less than that of 1903 by 43,797 acres, and that under crop by 27,373 acres. The area under crop, which is after all the most important, considerably exceeded that for any other preceding year except 1903. In 1901, when the next largest area was cropped, there were 483,460 acres, a shortage as compared with 1904 of 55,756 acres.

SIZE OF CULTIVATED AREAS.

There were 16,463 individual farms in cultivation in 1904, being six more than in the previous year. As already pointed out, there were 43,797 acres less under cultivation in 1904 than in the previous year. The average area under cultivation on all farms was 35.1 acres, and in 1903 the average was 37.8 acres. Full particulars can be gathered from the following table:—

C c.

Petty Sessions District.	ACRES UNDER CULTIVATION.									
	5 Acres and under.		Above 5 and not exceeding 20 Acres.		Above 20 and not exceeding 50 Acres.		Above 50 Acres.		Totals.	
	Owners.	Acres.	Owners.	Acres.	Owners.	Acres.	Owners.	Acres.	Owners.	Acres.
Allora ...	2	5	16	213	48	1,710	158	18,445	224	20,373
Ayr ...	4	14	12	105	20	711	34	6,566	70	7,396
Beaudesert ...	29	91	108	1,267	121	3,896	43	3,454	301	8,708
Biggenden ...	13	38	86	1,172	64	1,816	5	310	168	3,336
Bowen ...	38	103	46	457	66	2,137	19	1,433	169	4,130
Brisbane ...	173	503	337	3,239	48	1,223	...	...	558	4,965
Bundaberg ...	32	89	169	1,938	175	5,574	105	19,640	481	27,241
Cairns ...	18	47	138	1,476	75	2,559	55	10,808	286	14,890
Childers ...	19	57	71	760	109	3,570	109	12,254	308	16,641
Clifton ...	...	...	14	202	62	2,223	285	32,879	361	35,304
Crow's Nest ...	13	34	153	1,914	154	4,201	28	1,689	348	7,838
Dalby ...	25	70	102	1,078	117	3,476	113	15,134	357	19,758
Douglas ...	16	35	30	306	31	1,005	48	5,566	125	6,912
Dugandan ...	13	27	143	1,961	249	7,742	18	1,115	423	10,845
Esk ...	33	93	79	778	70	1,882	11	677	193	3,430
Gatton ...	42	116	267	3,317	374	11,727	93	6,327	776	21,487
Gin Gin ...	5	16	46	579	68	2,063	49	4,066	168	6,724
Gympie ...	66	199	146	1,503	58	1,754	9	674	279	4,130
Harrisville ...	18	41	97	1,266	156	4,942	40	3,214	311	9,463
Herberton ...	31	74	37	415	38	1,228	43	4,100	149	5,817
Highfields ...	17	36	137	1,666	223	7,067	69	5,642	446	14,411
Ingham ...	6	16	16	198	35	1,146	94	11,830	151	13,190
Ipswich ...	57	142	120	1,309	77	2,083	10	850	264	4,384
Killarney ...	18	49	33	322	64	2,202	105	11,963	220	14,536
Laidley ...	8	22	123	1,695	287	9,384	92	6,740	510	17,841
Logan ...	122	336	301	3,494	61	1,643	3	178	487	5,651
Mackay ...	88	236	286	3,208	304	9,585	136	16,386	814	29,415
Marburg ...	19	50	79	1,004	191	5,536	23	1,582	312	8,172
Maroochy ...	172	435	312	2,826	93	2,400	4	286	581	5,947
Maryborough ...	104	292	168	1,853	46	1,236	7	445	325	3,826
Mitchell ...	2	5	6	72	16	501	46	8,504	70	9,082
Mourilyan ...	3	9	72	904	97	2,965	51	9,401	223	13,279
Nanango ...	26	85	129	1,550	146	4,459	44	3,449	345	9,543
Nerang ...	36	105	90	1,070	60	1,843	14	1,326	200	4,344
Redcliffe ...	51	164	163	1,904	51	1,553	2	122	267	3,743
Rockhampton ...	111	290	160	1,406	86	2,258	8	1,003	365	4,957
Roma ...	5	18	35	348	109	3,498	222	25,667	371	29,531
Rosewood ...	21	58	132	1,616	151	4,536	13	838	317	7,048
South Brisbane ...	69	171	114	1,016	30	781	3	185	216	2,153
Tiaro ...	56	109	103	1,109	87	2,548	9	839	255	4,605
Toowoomba ...	223	478	348	3,759	310	9,879	438	55,565	1,319	69,681
Warwick ...	29	87	83	809	156	4,655	315	33,523	583	39,074
Other Districts ...	701	1,725	750	7,529	242	7,219	74	7,622	1,767	24,095
Totals, 1904 ...	2,534	6,570	5,857	64,613	5,025	154,416	3,047	352,297	16,463	577,896
„ 1903 ...	3,106	8,336	5,358	63,848	4,619	149,996	3,374	399,513	16,457	621,693
Increase, 1904 ...	...	...	499	765	406	4,420	...	...	6	...
Decrease, 1904 ...	572	1,766	...	...	...	...	327	47,216	...	43,797

Last year there were decreases in farms under 5 acres and in those over 50 acres, these holdings having declined by 899 in number and 48,982 acres in area. On the other hand, farms of from 5 to 50 acres increased by 905 in number and 5,185 in acreage. The abandonment of a number of banana farms by Chinese, at Geraldton, was an important cause in the reductions of holdings under 5 acres.

IRRIGATION.

Previous experience with regard to this question has not been reversed, and with a return of more favourable weather the supply of moisture by artificial methods as an aid to farming becomes of secondary importance. A smaller area was cultivated with the aid of irrigation in 1904 than in either of the two immediately preceding years. The area under irrigation during each of the last ten years is shown in the following table:—

D

Year.					Acres Irrigated.	Year.					Acres Irrigated.
1895	...	...	...	...	6,447	1900	...	...	...	...	6,969
1896	...	...	...	...	6,395	1901	...	...	...	...	6,526
1897	...	...	...	...	5,647	1902	...	...	...	...	14,344
1898	...	...	...	...	9,648	1903	...	...	...	...	14,786
1899	...	...	...	...	6,311	1904	...	...	...	...	13,360

The great increase apparent during the last three years is to be attributed to the laying down of extensive plant in connection with sugar plantations in the Burnett district, and to the extension of existing plant in the more northerly areas around Ayr.

Details respecting the artificial conservation and application of water in connection with cultivation are furnished in the following table:—

D a.

IRRIGATION.

District.	Number of Irrigators.	Acres Irrigated.	Original Source of Water Supply.	Means Employed for Procurement and Utilisation.	Crops Treated.
Ayr	33	4,334	Creek, wells	Steam pumps, gravitation	Sugar-cane, maize, potatoes
Barcaldine	18	285	Bore	Drains	Wheat, vegetables, &c
Bowen	43	265	Wells, creeks, and river	Steam and horse pumps, windmills	Fruit and vegetables
Brisbane	12	64	Creeks and wells	Steam and horse pumps, windmills, drains and pipes	Mostly vegetables
Bundaberg	15	5,848	River and wells	Steam pumps, windmill, gravitation	Sugar-cane, fruit, lucerne, &c.
Cunnamulla	1	120	Bore	Gravitation, drains	Wheat, barley, &c.
Gatton	4	92	Creeks and well	Steam and windmill, drains and pipes	Potatoes, maize, lucerne, and fruit
Hungerford	2	98	Bore	Gravitation	Wheat
Ingham	1	170	River	Steam pumps, drains	Sugar-cane
Mackay	6	542	River, creek, and bore	Windmill and steam	Sugar-cane and fruit
Maryborough	8	50	Artesian wells	Hot air engines, pipes	Fruit and vegetables
Rockhampton... ..	23	419	Wells, river, creek, and lagoons	Oil and steam engines, horse-power, piping, and drains	do.
Townsville	43	365	do.	Oil and steam engines, horse-power, flooding	Mixed crops
All other Districts (18)	159	708	Various	Various	All descriptions, largely market gardens
Total	368	13,360			

The only areas in which upwards of 1,000 acres are irrigated are in the localities of Bundaberg and Ayr, already referred to, and practically the only crop treated is sugar-cane.

WHEAT.

After the very satisfactory results which attended the wheat campaign of 1903, and the favourable weather experienced in most localities during the planting season for the following year, it was generally anticipated that the crop for 1904 would prove a record one, both as to area and production; unfortunately, this expectation has only been partially realised. A larger area was reaped; but, as the average yield obtained in 1904 was nearly $3\frac{1}{2}$ bushels below the yield for 1903, the production in the former year was considerably below that for the latter.

In January, 1904, an advance estimate of the wheat crop for 1903 was issued, based on information, collected on post cards, obtained from the producers. An endeavour was made last December to compile a similar estimate, when it was confidently expected that even more reliable data would be collected than in the previous year. Such, however, was not the case; and although farmers were not asked to incur even the expense of a penny stamp, but were simply requested to fill into a postcard the particulars of their wheat and barley crops, and then to drop the card into a post or receiving office, only about one in six would take this small amount of trouble. Consequently the proposed estimate had to be abandoned, and the time devoted and expense incurred were lost.

This exhibition of indifference on the part of farmers as to the collection of information for their own benefit is not calculated to induce further effort in this direction; and, unless some concerted action promising support is made by representative associations, I shall not feel justified in future years in recommending the expenditure necessary to secure an advance estimate.

In Western Australia they succeed in getting advance returns of their wheat crop, the Statistical Department obtaining advices from district officers of the Lands Department. As has been the case in Queensland, they are expecting to find an increased area planted, estimated at 14 per cent., but a lower average return—namely, about 12 bushels; so that if there is any advance in production it will be fractional only.

The grain sheds provided at principal centres in 1903 proved a great convenience to growers last year, and applications were made to the Government for an extension of the system by the construction of sheds in other localities. The initiation of the system may prove the paving of the way to the establishing of central elevators as soon as the volume of the crop appears to justify the outlay.

The European advices received towards the latter end of 1904 pointed to the probability of a scarcity of breadstuffs, the crops having largely failed, especially in the south-east; whilst the United States expected a shortage.

These circumstances affording prospects for the export of cereals to the United Kingdom, it is a matter for regret that the Queensland crop was insufficient for full advantage to be taken of the opportunity.

A shipment of grain to the United Kingdom, recently landed at Leith, was described as "very irregular in quality, not equal to southern wheat, due to the want of grading." Owing to this cause, the results did not prove satisfactory, an allowance of 1s. per quarter being made on the price originally quoted to compensate for irregular quality.

Quotations have been published of sales of Queensland wheat at 3s. 4d. to 3s. 5d. for best white, and for Manitoba a little higher. This, certainly, is not high, but does not seem sufficient to justify the decision announced by some of our wheat farmers to abandon the cultivation of cereals in favour of dairying.

There were 150,958 acres of wheat land reaped for grain in 1904, against 138,096 acres in 1903—an increase on the previous year of 12,862 acres. From this area 2,149,663 bushels were obtained, whilst from the lesser area reaped in 1903, 2,436,799 bushels were garnered, or a decline in production last year of 287,136 bushels. Whilst this increased area is to some extent satisfactory, the total area appears most insignificant when the very large acreage placed under wheat in South Australia is considered, where the last crop amounted to 12,023,172 bushels—the produce of 1,728,232 acres. The average yields to each acre reaped in Queensland for the two years being—1904, 14·24 bushels; 1903, 17·65 bushels. Although the average yield for 1904 falls short of expectations, it compares very favourably with 6·96 bushels secured in last season's crop by South Australia. There were also 3,147 acres mown in 1904, from which 3,608 tons of hay were harvested, which was about half of the area so treated in 1903. Further information respecting this latter area will be found under the section dealing with "Hay Crops."

The following table furnishes particulars respecting the wheat crops of the last ten years:—

E.

WHEAT (GRAIN) RETURNS.

RETURN FOR TEN YEARS.

	FREE FROM RUST.			AFFECTED WITH RUST.			TOTAL.		
	Area.	Produce.	Average per Acre.	Area.	Produce.	Average per Acre.	Area.	Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.	Acres.	Bushels.	Bushels.	Acres.	Bushels.	Bushels.
1895	10,549	109,947	10·42	2,401	13,683	5·70	12,950	123,630	9·55
1896	34,164	598,052	17·51	506	3,202	6·33	34,670	601,254	17·34
1897	33,856	632,883	18·69	23,932	376,410	15·73	57,788	1,009,293	17·47
1898	43,342	573,000	13·22	2,877	34,012	11·82	46,219	607,012	13·13
1899	46,917	550,702	11·74	5,610	63,712	11·36	52,527	614,414	11·70
1900	79,227	1,193,193	15·06	77	895	11·62	79,304	1,194,088	15·06
1901	77,162	1,516,779	19·66	10,070	175,443	17·42	87,232	1,692,222	19·40
1902	1,875	6,122	3·27	5	43	8·60	1,880	6,165	3·28
1903	102,062	1,926,712	18·88	36,034	510,087	14·16	138,096	2,436,799	17·65
1904	145,948	2,090,947	14·33	5,010	58,716	11·71	150,958	2,149,663	14·24
Average of Ten Years	57,510	919,834	15·99	8,652	123,620	14·29	66,162	1,043,454	15·77

It will be noticed that the area reaped was practically double that for any other year of the decade, except 1903; and, as already pointed out, exceeded the area for that year by a very substantial acreage. The years 1903 and 1904 were the only ones in which the area exceeded 100,000 acres.

Unfortunately, both wet and dry weather at different periods and in different places adversely affected the results, whilst hail and vermin acted prejudicially in some districts; consequently the yield was by no means so satisfactory as was anticipated, and the average yield was so reduced, especially in the Western and Wide Bay and Burnett districts, that the total production, as already mentioned, fell below that for 1903. The records of the last two seasons, however, well illustrate the great advance made in wheat production in Queensland, the combined result exceeding those for any other four years of the decennium.

The average yield for 1904—namely, 14·24 bushels—was exceeded on five occasions during the past ten years, and was $1\frac{1}{2}$ bushels below the average for the decade and 3·41 bushels below the average yield for 1903, when a return of 17·65 was obtained.

Rust, at one time such a terrible scourge to the wheat farmer in this State, has, by improved cultivation and seed selection, been largely eliminated, and, although present to a considerable extent in 1897 and 1903, was but little in evidence last year. Of the total area reaped, 5,010 acres only were affected with rust, 145,948 acres being returned as free from the pest. On some occasions the yield appears to be but little influenced by the attack; the affected and clean areas return nearly equal averages; indeed, on the mean for the ten years 1895-1904, the difference was 1·70 bushels only; but in both 1903 and 1904 this was not the case, and the diseased crops give smaller average returns by 4·72 bushels and 2·62 bushels respectively.

The following table shows the wheat results for 1904 in each petty sessions district, discriminating between the areas free from and affected with rust:—

E a.

Divisions and Petty Sessions Districts.	RESULTS.								
	FREE FROM RUST.			AFFECTED WITH RUST.			TOTAL.		
	Area.	Produce.	Average per Acre.	Area.	Produce.	Average per Acre.	Total Extent of Land Reaped for Grain.	Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.	Acres.	Bushels.	Bushels.	Acres.	Bushels.	Bushels.
PORT CURTIS.									
Rockhampton	1	30	30·00	...	...	...	1	30	30·00
Total, Port Curtis	1	30	30·00	...	...	...	1	30	30·00
BURNETT AND WIDE BAY.									
Gayndah	18	36	2·00	...	...	...	18	36	2·00
Nanango	1,707	16,814	9·85	12	12	1·00	1,719	16,826	9·79
Tiaro	2	23	11·50	...	...	...	2	23	11·50
Total, Burnett and Wide Bay	1,727	16,873	9·77	12	12	1·00	1,739	16,885	9·71
MORETON.									
Crow's Nest	712	11,375	15·98	74	540	7·30	786	11,915	15·16
Dugandan	17	176	10·35	...	...	...	17	176	10·35
Esk	1	4	4·00	...	...	...	1	4	4·00
Gatton	31	430	13·87	20	164	8·20	51	594	11·65
Harrisville	3	45	15·00	...	...	...	3	45	15·00
Laidley	50	1,003	20·06	...	...	...	50	1,003	20·06
Rosewood	1	30	30·00	...	...	...	1	30	30·00
Total, Moreton	815	13,063	16·03	94	704	7·49	909	13,767	15·15
DOWNNS.									
Allora	10,494	210,556	20·06	70	780	11·14	10,564	211,336	20·00
Clifton	19,158	362,430	18·92	...	...	...	19,158	362,430	18·92
Condamine	260	3,357	12·91	...	...	...	260	3,357	12·91
Dalby	14,272	174,367	12·22	498	5,518	11·08	14,770	179,885	12·18
Goondiwindi	133	1,302	9·79	...	...	...	133	1,302	9·79
Highfields	4,278	63,896	14·94	366	4,938	13·49	4,644	68,834	14·82
Inglewood	763	10,919	14·31	...	...	...	763	10,919	14·31
Killarney	7,117	143,420	20·15	1,773	28,638	16·15	8,890	172,058	19·35
Stanthorpe	68	862	12·68	...	...	...	68	862	12·68
Texas	198	2,081	10·51	...	...	...	198	2,081	10·51
Toowoomba	27,372	356,851	13·04	1,176	7,174	6·10	28,548	364,025	12·75
Warwick	21,079	392,891	18·63	562	8,700	15·48	21,641	401,591	18·56
Total Downs	105,192	1,722,932	16·38	4,445	55,748	12·54	109,637	1,778,680	16·22
MARANOVA.									
Mitchel	8,550	44,142	5·16	160	428	2·68	8,710	44,570	5·12
Roma	27,340	272,770	9·98	299	1,824	6·10	27,639	274,594	9·94
St. George	116	1,103	9·51	...	...	...	116	1,103	9·51
Surat	622	5,672	9·12	...	...	...	622	5,672	9·12
Yeulba	1,266	10,941	8·64	...	...	...	1,266	10,941	8·64
Total, Maranoa	37,894	334,628	8·83	459	2,252	4·91	38,353	336,880	8·78
OTHER DISTRICTS.									
Barcaldine	159	2,814	17·70	...	...	...	159	2,814	17·70
Charleville... ..	50	164	3·28	...	...	...	50	164	3·28
Cunnamulla	70	280	4·00	...	...	...	70	280	4·00
Emerald ... ..	...	...	...	...	...	...	...	...	...
Springsure	40	163	4·08	...	...	...	40	163	4·08
Total, Other Districts	319	3,421	10·72	...	...	...	319	3,421	10·72
Total, State	145,948	2,090,947	14·33	5,010	58,716	11·71	150,958	2,149,663	14·24

Of the 150,958 acres reaped, 109,637 acres, or 73 per cent., were contributed by the Downs division. Here the average yield was 16·22 bushels to each acre, so that 1,778,680 bushels, or 83 per cent. of the total production, were garnered. Nearly half the Downs acreage was reaped in the districts of Toowoomba and Warwick; but the best results were obtained in the districts of Allora, Killarney, and Clifton, where averages of 20·00 bushels, 19·35 bushels, and 18·92 bushels were recorded. Warwick was, however, only a little below the last named with a return of 18·56 bushels to each acre.

The Western districts grouped into the division of Maranoa reaped the very considerable area of 38,353 acres—an increase of nearly 10,000 acres on that of the previous year—for a return of only 336,880 bushels; and it was this small average return of only 8·78 bushels per acre that materially reduced the total mean results for the State. The growers within this section stated that the short crop was in consequence of the dry weather experienced.

The 8,710 acres reaped in Mitchell, the most westerly of these districts, only yielded 44,570 bushels, or an average of 5·12 bushels per acre.

At Barcaldine, however, the most westerly point in the State where this cereal was cultivated, 159 acres yielded 2,814 bushels, or an average of 17·70 bushels per acre; but then this was grown with the aid of irrigation, the water being obtained from artesian sources.

The Burnett and Wide Bay division, from the experience of 1903, promised to become a wheat area of some importance. There was a small increase in the acreage farmed to this cereal in 1904, but the result was much less satisfactory than in the previous year, an average of not quite 10 bushels per acre being secured. It is open to question whether rich scrub lands cannot be put to better use than the production of wheat, as this cereal thrives better on soil less rich in alluvium. In the Moreton district an average return of 15.15 bushels were harvested from 909 acres, better than the average for the whole State, but less satisfactory than that returned from the Downs.

Wheat is exported to a considerable extent from the Commonwealth, but to make such export continue profitable it will become increasingly necessary to ship only the best grain, and that of the class most in demand.

England can obtain her supplies of soft wheats from closer markets, whilst the United States can produce for her own use an ample quantity of this description of grain, but needs to import considerable quantities of the hard wheats. In America the cultivation line for these, at one time located well to the south, is, with the exhaustion of the prairie soils, receding year by year to the north, and is now pushing across the Dominion, with the promise of there pinching-out against the barrier of extreme frost. Canada, therefore, the source of the States' supply of hard wheat, will each year be less reliable for the purpose, and the market will be open to any country able to produce the article. Nearly all the Australian wheat is soft, but hard wheat of the Manitoba variety will grow here, and, if its characteristics can be maintained, it would be well to bear in mind the possibilities which exist in catering for this trade.

BREADSTUFFS.

Taking the wheat requirements of the State for food at 6.5 bushels per head, which is about the proved consumption on the mean of a series of years, it is seen that 3,390,757 bushels of wheat are needed to meet home demands, taking the population at the end of the year; in addition to which, say, 125,000 bushels must be provided for seed purposes; so that the production in 1904 was, on this basis, insufficient to meet our requirements by 1,366,094 bushels.

The following table furnishes particulars as to imports and exports of breadstuffs during 1904:—

E b. BREADSTUFFS.

ITEM.	IMPORTED.		EXPORTED.		NET IMPORTS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Wheat (centals)	6,160	£ 1,580	137,548	£ 38,437	*131,388	*36,857
Flour (centals)	567,578	228,558	31,368	12,199	536,210	216,359
Biscuits (lb.)	514,718	17,862	97,244	1,620	417,474	16,248
Total ... ..	...	248,006	...	52,256	...	195,750

* Excess of Exports.

N.B.—Quantities of Interstate Exports estimated on the British and Foreign Trade basis of values.

The Customs authorities, owing to a new departure, having ceased to collect, are unable to furnish particulars as to quantities of interstate exports; these, consequently, have been estimated as set out as a footnote to the table.

It will be seen that on the basis of value the imports exceeded the exports last year by 5 to 1, the excess of the former amounting to £195,750, the net imports for each of the last three years being shown in the following table:—

E c.

	1902.		1903.		1904.	
		£		£		£
Wheat	125,163 centals	= 43,990	603,294 centals	= 218,059	*131,388 centals	= *36,857
Flour	699,432 "	= 317,709	704,893 "	= 393,571	536,210 "	= 216,359
Biscuits	424,892 lb.	= 15,414	464,446 lb.	= 16,447	417,474 lb.	= 16,248
		377,113		628,077		195,750

* Excess of Exports.

The mean annual value of the net imports for the three years was £400,313, representing the loss each year to our farmers and millers from failing to supply our own demands for breadstuffs.

The net import and the production for each of the past five years of wheat and flour (in terms of wheat) are shown in the following table:—

E d.

IMPORTS IN EXCESS OF EXPORTS OF WHEAT AND FLOUR, THE LATTER CONVERTED INTO TERMS OF THE FORMER.

Year.	Imported over Exported.	Grown in Queensland.	Total.
	Net Bushels.	Bushels.	Bushels.
1900	2,346,447	1,194,088	3,540,535
1901	1,820,240	1,692,222	3,512,462
1902	1,957,205	6,165	1,963,370
1903	2,767,723	2,436,799	5,204,522
1904	1,121,545	2,149,663	3,271,208

NOTE.—For the purposes of this Statement the flour imported has been converted into wheat on the basis of 1 cental of flour = 2½ bushels of wheat.

Although the estimate of the average consumption is based upon the experience of a longer period than five years, yet it will be seen that the mean annual consumption given by the five years reviewed in the above table approximates very closely to the figures previously arrived at, the difference being some 17,000 bushels only.

FLOUR-MILLS.

With an increase in the area farmed to wheat in 1903, an expansion of the milling industry was only to be expected. There were two more mills engaged in treating wheat in 1904 than in the previous year; whilst the quantity of grain passed through the rollers was very much in excess.

Full particulars respecting the production of wheaten flour are furnished in the following table:—

E e.

District.	Number of Establishments.	Number of Hands Employed.	Number of Stones.	Number of Rollers.	Wheat Treated.	FLOUR MADE.		MEAL MADE.		BRAN AND POLLARD.	
						Tons.	Value.	Tons.	Value.	Bushels.	Value.
			Pairs.	Sets.	Bushels.		£		£		£
Metropolitan ...	7	106	9	58	903,571	17,654	138,094	124	1,000	862,152	20,294
Toowoomba ...	3	32	...	35	304,299	5,990	45,804	10	70	296,226	7,506
Elsewhere ...	9	63	9	63	521,767	10,390	79,476	43	452	515,521	14,355
Total, 1904 ...	19	201	18	156	1,729,637	34,034	263,374	177	1,522	1,673,899	42,155
„ 1903 ...	17	149	13	140	1,172,908	23,738	280,996	101	1,330	781,595	39,139

At some of the above establishments but little wheat is treated, the factories being principally devoted to treating other grain. Information respecting Grain Mills will be found in Part VIII. of the Statistical Register.

There were nineteen mills working in the State during 1904: 7 in the metropolitan area, 3 at Toowoomba, 2 each at Warwick and Roma, and 1 each at Allora, Clifton, Dalby, Ipswich, and Rockhampton; and these gave employment to 201 persons last year, against 149 in 1903. One of the mills at Roma was, unfortunately, destroyed by fire towards the close of last year.

In 1903, 1,172,908 bushels of wheat were ground, and 1,729,637 bushels in 1904—an increase in the latter year of 556,729 bushels.

From the 1,172,908 bushels passing through the rollers in 1903, 23,839 tons of flour or meal were obtained, thus requiring 49.2 bushels of wheat to produce each ton of flour; whilst the 1,729,637 bushels ground in 1904 yielded 34,211 tons of flour or meal, giving a return of 1 ton to each 50.6 bushels. The meal forms such a small proportion of the total quantity in both years that no disturbance of the proportions could result from its inclusion.

State aid is afforded to this branch of the farming industry in the form of advances by way of loan to encourage the establishment of flour-mills in the various wheat-growing centres. There are two mills supported, at least in part, by loans of this character, of which the following are the particulars:—

Number of mills to which advances made	...	...	...	...	...	...	2
						£	s. d.
Amount advanced to 31st December, 1904	...	...	...	...	...	3,438	0 0
Indebtedness to 31st December, 1904, including interest	...	...	...	...	...	3,376	13 5
Including interest due, but not paid	...	...	...	...	...	154	2 7
Balance owing on said works	...	...	...	...	...	3,222	10 10

BARLEY.

Although there was a marked increase in the area placed under barley for malting purposes in 1903, the experience for 1904 was not so satisfactory, a smaller acreage being planted. This certainly cannot be attributed to any considerations of climate or soil, as it has now been conclusively proved that barley of the very best quality can be produced in Queensland. Parcels of Queensland barley have on several occasions commanded full market prices, but the want of a systematic grading before being placed on the market has, in many instances, materially reduced the pecuniary return. There is no doubt that this practice of neglecting grading, which has obtained in this State for so long, militates against securing the highest value quoted on the market, and is especially severely felt in connection with cereals. In the absence of a central establishment for the purpose, it would be difficult to secure the adoption of a satisfactory method of grading, but until something in this direction is carried out Queensland grain is not likely to receive the attention on foreign markets that its quality would justify. If even the bulk of a consignment is good, but is mixed with inferior grain, the price commanded will only be that of the lower quality.

Grading is not likely to be generally adopted until production exceeds the home requirements to a greater extent than at present. When the surplus to be exported justifies the expenditure, then, no doubt the desirableness of adopting methods necessary to secure the best prices will bring about this essential reform. In the meantime, the farmer and the local maltster will remain at variance, the former satisfied that he does not receive fair value for his crop, the latter equally assured that the price he pays, or is prepared to pay, is as much as the quality justifies.

The total area under barley is seen in the following table:—

F.

	1903.	1904.
	Acres.	Acres.
Reaped for grain	22,881	17,387
Mown for hay	660	443
Cut for green food	2,993	4,517
	26,534	22,347

Of the 22,347 acres sown with barley 78 per cent. were sown for grain, a less proportion by 8 per cent. than in the previous year, the difference being wholly in that set for green food, which rose from 2,993 acres in 1903 to 4,517 in 1904.

The area cultivated for grain and the results for the past two years are compared in the following table:—

F a.

Year.		Area for Grain.	Produce.	Average Produce per Acre.
		Acres.	Bushels.	Bushels.
1903	...	22,881	510,557	22·31
1904	...	17,387	331,772	19·08
Increase in 1904		...	...	...
Decrease in 1904		5,494	178,785	3·23

Although the result per acre was less than in 1903, the yield cannot be considered unsatisfactory, being higher than the general average of the previous ten years; and, in making this comparison, it must be borne in mind that the areas returning higher percentages in all previous years except 1903 were much smaller, in 1895 being only 4 per cent., and in 1897 only 12 per cent. of the acreage reached in the year under review. Of the area cultivated, the bulk was grown on the Darling Downs, as will be seen from the following table:—

F b.

District.	Malting Grain.			Other Varieties Grain.		
	Acres.	Bushels.	Average per Acre, Bushels.	Acres.	Bushels.	Average per Acre, Bushels.
Allora	1,216	27,948	22·98	286	6,403	22·39
Clifton	4,804	109,963	22·89	22	400	18·18
Crow's Nest	240	4,803	20·01	25	704	28·16
Dalby	945	10,535	11·15	151	1,702	11·27
Highfields	722	13,942	19·31	45	1,612	35·82
Killarney	552	16,385	29·68	105	3,682	35·07
Toowoomba	3,965	62,290	15·71	767	11,595	15·12
Warwick	2,764	48,470	17·54	527	8,044	15·26
All Other Districts	174	2,110	12·13	77	1,184	15·38
Total State	15,382	296,446	19·27	2,005	35,326	17·62

For comparative purposes, Allora and Clifton must be read together, the latter being a new petty sessions district, mainly constituted out of the Allora of previous years; there was considerably more barley of the malting variety grown in this locality, and a marked reduction in other kinds. Of the other districts mentioned in the table, Dalby is the only one showing an increase in the area planted with malting barley, but the yield there was poor, owing to the dry weather. It is in the non-malting section that the bulk of the reduction in the barley crop occurs, there being over 4,000 acres less of this kind than the previous year. The average yield in Killarney was much the best of all the districts shown, being 29·68 bushels for malting, and 35·07 bushels for other, per acre. In no other district was the average for malting so high as in the previous year.

The quantity of barley malted, which would necessarily belong to the crop of the previous year, was 113,000 bushels. This was all grown in the State. Particulars respecting this industry can be obtained from the following table:—

F c.

Year.	Made from Imported Barley.	Made from Queensland Barley.	Total Malt Made.
	Bushels.	Bushels.	Bushels.
1900	15,337	57,393	72,730
1901	1,000	69,000	70,000
1902	9,500	75,500	85,000
1903	67,500	...	67,500
1904	...	113,000	113,000

It will be noticed that during the year under review no imported barley was malted. The quantity dealt with was considerably more than in previous years, and might have been even greater but that by the time the quantity of grain available was recognised, brewers would have placed their orders elsewhere, the certainty of supply being an important factor in the trade. With a continuity of good or even fair seasons a considerable increase in this direction may be expected. The relative quantity of malt imported and made in the State can be gathered from the table printed below.

F d.

Year.	Malt made in Queensland.	Year.	Malt Imported.
	Bushels.		Bushels.
1895-96 (financial)	12,988	1895	153,843
1896-97 ditto	14,400	1896	147,474
1897-98 ditto	34,589	1897	156,613
1898 (calendar)	32,629	1898	129,811
1899 ditto	62,271	1899	127,469
1900 ditto	72,730	1900	134,098
1901 ditto	70,000	1901	121,424
1902 ditto	85,000	1902	45,507 centals = 119,755
1903 ditto	67,500	1903	35,933 ditto = 94,561
1904 ditto	113,000	1904	23,353 ditto = 61,455

The quantity of foreign malt required shows a steadily decreasing amount. The quantity made in the State during 1904 does not require to be greatly augmented to reach the total of our requirements. It would then remain to be seen whether the quality is such as to capture a fair share of the southern trade. If this should prove to be the case, a great impetus would be given to the industry.

As bearing on the subject, the quantity of beer brewed and malt actually used for the purpose during the last five years is given.

F e.

Year.											Beer.	Malt.
											Gallons.	Bushels.
1900	...	...	...	...	...	...	...	...	...	...	5,738,190	192,668
1901	...	...	...	...	...	...	...	...	...	...	5,325,314	188,100
1902	...	...	...	...	...	...	...	...	...	...	* 5,333,202	170,610
1903	...	...	...	...	...	...	...	...	...	...	† 4,489,958	147,591
1904	...	...	...	...	...	...	...	...	...	...	‡ 4,455,110	145,778

* Including waste 260,038 gallons.

† Including waste 165,622 gallons.

‡ Including waste 134,872 gallons.

The smaller quantity of beer brewed is probably due to the competition between the Queensland beverage and that of some of the southern States, notably from Victoria and Tasmania, which finds favour amongst those who prefer a light bitter beer at a moderate cost.

MAIZE.

Little attention appears to be paid to the cultivation of this crop. A considerable area is invariably planted, fluctuating according to the season, but year after year passes away without any general relative increase in the area planted, and certainly with no improvement in the average return obtained from the crop. Little care is evinced in preparing the land for maize, and too often this crop receives such scant attention that it is surprising that any return should result. Probably the prolific yields obtained from rich virgin soil leads the farmer to ignore scientific methods when dealing with maize. Small wonder then that the results fail to attain to what would certainly be secured under a more favourable method of cultivation.

In 1904 a smaller area was devoted to maize than in the previous year by 13,928 acres, but the yield was much better. Particulars for the past five years are contained in the following table:—

G.

Year.											Grain.		Average per Acre.
											Acres.	Bushels.	Bushels.
1900	...	...	...	...	...	...	...	...	...	...	127,974	2,456,647	19.20
1901	...	...	...	...	...	...	...	...	...	...	116,983	2,569,118	21.96
1902	...	...	...	...	...	...	...	...	...	...	89,923	1,033,329	11.49
1903	...	...	...	...	...	...	...	...	...	...	133,099	1,923,623	14.45
1904	...	...	...	...	...	...	...	...	...	...	119,171	2,542,766	21.34

The years 1901 and 1904 compare very closely, and the results are better than those of the other three years of the quinquennium. There has been no marked change in the area devoted to maize since 1895; and the earlier years, not only for that decade but for a much longer period, show better results than the later ones; indeed, the decline in the annual average is very marked, a fact clearly showing the absence of proper cultivation, and well illustrating the apathy of those devoting their attention to the cultivation of this cereal.

The crop for 1904 was principally obtained from the autumn planting, that sown in the spring having largely failed; the causes given being in most cases dry weather, although hot wind, mice, hail, and caterpillars receive their share of blame.

The following table shows particulars respecting this crop in various parts of the State:—

G a.

MAIZE GRAIN.

Division or Group.											Acres.	Yield.	Average.	Proportion of Area to whole Area of Maize for Grain.
												Bushels.	Bushels.	
Rockingham...	...	...	...	...	...	...	...	...	...	...	7,781	243,125	31.25	6.53
Edgecumbe ...	...	...	...	...	...	...	...	...	...	...	1,147	17,896	15.60	0.96
Port Curtis ...	...	...	...	...	...	...	...	...	...	...	1,926	52,380	27.20	1.61
Burnett and Wide Bay	...	...	...	...	...	...	...	...	...	...	20,042	497,583	24.83	16.82
Moreton ...	...	...	...	...	...	...	...	...	...	...	56,814	1,210,184	21.30	47.68
Downs ...	...	...	...	...	...	...	...	...	...	...	29,272	494,920	16.91	24.56
Maranoa ...	...	...	...	...	...	...	...	...	...	...	531	6,244	11.76	0.45
Other Districts	...	...	...	...	...	...	...	...	...	...	1,658	20,434	12.32	1.39
Total State	...	...	...	...	...	...	...	...	...	...	119,171	2,542,766	21.34	100.00

Nearly half the area planted is seen to have been in the Moreton division, where the average yield per acre of 21.30 bushels was obtained, or 8.22 bushels better than in 1903. The Downs was the next largest contributor, with nearly one-fourth of the total area; the yield in this division, however, only reached 16.91 bushels, but this was much better than in the previous year, when only 7.43 bushels were obtained. In Burnett and Wide Bay only 16.82 per cent. of the total area appears against 19.32 in 1903. The yield rose from 18.71 in 1903 to 24.83 in 1904, so that more grain was secured in the latter year

from the smaller area cultivated. The best results were obtained by the Rockingham division, where 31.25 bushels per acre were garnered, a return about equal to that of 1903. The principal maize-growing districts, and the results obtained therein, are given in the next table:—

G b.

Petty Sessions District.	Area Planted for Grain.			Yield of Grain.			Average Yield per Acre.		
	In 1903.	In 1904.	Increase or Decrease	In 1903.	In 1904.	Increase or Decrease —	In 1903.	In 1904.	Increase or Decrease
	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Allora } Allora ...	8,682	{ 2,660 } { 3,785 }	-2,237	54,154	{ 43,018 } { 51,464 }	40,328	6.24	14.66	8.42
Ayr ...	1,468	546	- 922	23,620	7,102	- 16,518	16.09	13.01	- 3.08
Beaudesert ...	3,390	2,830	- 560	53,943	67,911	13,968	15.91	24.00	8.09
Biggenden ...	2,339	1,808	- 531	53,518	51,181	- 2,337	22.88	28.31	5.43
Bundaberg ...	8,035	3,798	-4,237	195,808	105,586	- 90,222	24.37	27.80	3.43
Cairns ...	2,489	1,658	- 831	65,259	48,082	- 17,177	26.22	29.00	2.78
Childers ...	2,106	1,135	- 971	34,834	28,973	- 5,861	16.54	25.53	8.99
Crow's Nest ...	6,263	4,788	-1,475	60,854	87,502	26,648	9.72	18.28	8.56
Dalby ...	816	1,054	238	12,528	20,810	8,282	15.35	19.74	4.39
Dugandan ...	7,364	7,455	91	99,986	164,386	64,400	13.58	22.05	8.47
Esk ...	2,359	2,012	- 347	44,750	70,187	25,437	18.97	34.88	15.91
Gatton ...	12,021	9,488	-2,533	169,008	214,500	45,492	14.06	22.61	8.55
Gin Gin ...	2,405	1,642	- 763	41,064	53,920	12,856	17.07	32.84	15.77
Gympie } Gympie ...	1,928	{ 1,922 } { 1,012 }	1,006	43,492	{ 57,202 } { 16,864 }	30,574	22.56	25.24	2.68
Killarney ...	1,622	3,145	1,523	8,456	68,613	60,157	5.21	21.82	16.61
Harrisville ...	3,160	4,154	994	31,368	76,316	44,948	9.93	18.37	8.44
Highfields ...	6,780	6,189	- 591	50,275	120,789	70,514	7.42	19.52	12.10
Herberton ...	5,033	5,208	175	182,899	171,202	- 11,697	36.34	32.87	- 3.47
Ipswich ...	1,302	1,483	181	12,479	24,289	11,810	9.58	16.38	6.80
Laidley ...	9,176	10,027	851	93,824	195,351	96,527	10.77	19.48	8.71
Logan ...	2,004	1,406	- 598	44,660	33,345	- 11,315	22.29	23.72	1.43
Marburg ...	3,687	3,623	- 64	15,311	66,935	51,624	4.15	18.48	14.33
Maryborough ...	685	1,012	327	15,764	16,864	1,100	23.01	16.66	- 6.35
Nunango ...	5,892	6,202	310	47,033	93,569	46,536	7.98	15.09	7.11
Nerang ...	2,471	2,032	- 439	54,007	53,961	- 46	21.86	26.56	4.70
Redcliffe ...	2,522	1,811	- 711	37,990	32,807	- 5,183	15.06	18.12	3.06
Rockhampton ...	1,135	1,262	127	22,240	29,196	6,956	19.59	23.13	3.54
Rosewood ...	2,505	2,654	149	16,422	39,896	23,474	6.56	15.03	8.47
Tiaro ...	1,508	1,440	- 68	32,614	62,443	29,829	21.63	43.36	21.73
Toowoomba ...	7,945	7,354	- 591	77,049	111,483	34,434	9.70	15.16	5.46
Warwick ...	3,440	4,521	1,081	11,070	67,728	56,658	3.22	14.98	11.76
All other Districts ...	10,567	8,055	-2,512	212,344	189,291	- 23,053	19.15	23.50	4.35
Total State ...	133,099	119,171	13,928	1,923,623	2,542,766	619,143	14.45	21.34	6.89

In most of the larger districts there was a falling-off in area; this was principally owing to the dry weather, which set in just about the time when the second crop would otherwise have been sown. The crop at Tiaro was specially stated by the farmers to have given satisfaction, although the area affected by the dry weather extended to that district, and but little was planted late in the year. The poor yields obtained from the large areas, extending from Toowoomba south to Warwick, and west to Roma, had the effect of materially reducing the average yield for the whole State.

OATS.

Little attention is given to this cereal as a grain crop, the cultivation being more directed to its utilisation for hay or green fodder. The total area planted is shown in the following table:—

H.

Oats.	1901.	1902.	1903.	1904.
	Acres.	Acres.	Acres.	Acres.
Reaped for grain ...	1,535	78	2,808	643
Mown for hay ...	17,167	2,619	19,523	9,076
Cut for green fodder ...	4,561	1,462	1,897	3,354
Total ...	23,263	4,159	24,228	13,073

The area reaped for grain was quite insignificant. Particulars respecting the area under oats for grain for the past two years are compared below:—

H a.

Year.	Area for Grain.	Produce.	Average Produce per Acre.
	Acres.	Bushels.	Bushels.
1903 ...	2,808	70,713	25.18
1904 ...	643	15,137	23.54
Increase in 1904 ...	...	...	...
Decrease in 1904 ...	2,165	55,576	1.64

Although the area shown above is small, the yield per acre compares favourably with that of previous years, being only exceeded twice in the decade, viz., in 1903 and 1901, when 25·18 and 27·50 bushels respectively were obtained for each acre. The requirements of the State would allow for a considerable expansion in the industry, as about 300,000 bushels are annually utilised in one form or another within its confines. It is not probable the whole of the home demand for oatmeal could be locally supplied, as certain brands, which are imported from America and elsewhere, have become too popular to be readily displaced. Particulars respecting this phase of the industry can be gathered from the following table:—

H b.

ANNUAL ACQUISITION by the STATE of OATEN GRAIN and its PRODUCTS expressed in TERMS of OATS.*

		1900.	1901.	1902.	1903.	1904.	Average of the Quinquennium.
Net Imports	Oats (Grain) ...	Bushels. 194,581	Bushels. 135,365	Bushels. 266,463	Bushels. 134,443	Bushels. 81,618	Bushels. 162,494
	Products of Oats ...	87,367	102,800	139,059	93,200	123,895	109,264
Production, Oats (Grain) ...		7,855	42,208	520	70,713	15,137	27,287
Total ...		289,803	280,373	406,042	298,356	220,650	299,045

* Oatmeal converted into Oats on an approved basis.

RICE.

The cultivation of rice was, during 1904, entirely confined to the north of the State. This crop has been grown in small quantities for many years, and although seven or eight years ago it promised to attain some importance, the conditions attending its cultivation are such that only two or three growers have continued to sow rice in any appreciable quantity. The yield per acre has remained practically constant for the last six years, and, although there was a slight increase in the area planted during 1904, there does not seem much prospect of its ever attaining prominence in Queensland. The table below gives information respecting the crop for the last seven years:—

I.

Year.	Acres.	Bushels.	Average Bushels.
1898 ...	863	38,133	44·19
1899 ...	319	9,275	29·08
1900 ...	271	6,870	25·35
1901 ...	205	5,222	25·47
1902 ...	38	1,093	28·76
1903 ...	49	1,322	27·00
1904 ...	60	1,638	27·30

RYE.

This crop is only cultivated for grain by a few farmers on the Downs, who, perhaps, like occasionally to change the wheaten for rye bread. The crop is of little importance, and the demand for the grain extremely small. A little is cultivated for hay and green fodder. Particulars of the grain crop for five years are set out below:—

J.

Year.	Acres.	Yield.	Average per Acre.
		Bushels.	Bushels.
1900 ...	151	1,928	12·77
1901 ...	246	5,000	20·33
1902 ...	22	238	10·82
1903 ...	315	6,482	20·58
1904 ...	151	1,729	11·45

POTATOES (ENGLISH).

The import of potatoes has always been greater than circumstances would appear to justify. It is true that the yield per acre in Queensland falls short of that obtained in some places, and perhaps this fact, combined with the occasional failures of the crop, tends to deter farmers from extending its cultivation. As the climate and soil are suitable, there appears no sufficient reason why our agriculturists should not at least meet the needs of the home demand.

The imports for the last five years are given below:—

K.

Year.	Weight.		Value.
	Tons.		£
1900	16,001		64,831
1901	14,621		31,800
1902	27,848		152,560
1903	26,734		89,605
1904	9,936		20,265

During the years of most severe drought, the money sent out of the State assumed large proportions, as the price at that time ruled extremely high. This, however, was on that occasion unavoidable, as it is not probable that, without the aid of irrigation, even the adoption of the best methods of cultivation would at that time have yielded any satisfactory result.

The fallacy of taking the figures of any individual year as a measure of the consumption is exemplified with this crop. Although only 1,582 tons more were produced during 1904, there were 16,910 tons less, valued at nearly £70,000, imported, showing that the stock held over from 1903 must have been unduly large. There were 3,039 more acres cultivated during 1904 than in the previous year, but the yield, 19,231 tons, was not relatively as good as in the previous year, being 1.97 tons per acre as against 2.62 tons in 1903.

SWEET POTATOES.

The sweet potato, although used to some extent as a vegetable in the towns on or near the coast, does not in any great way take the place of the English potato. There were 2,983 acres planted during 1904, yielding 14,026 tons, or at the rate of 4.70 tons per acre. The area was slightly less than in the previous year, but the return was about 6 cwt. per acre better. At one time largely used by the kanakas for food, its use for this purpose has greatly declined of late years, and this to some extent accounts for so little attention being paid to the crop.

SUGAR.

The sugar season for 1904-5 was, with one exception, the best as regards output ever experienced. Approximating very closely to 150,000 tons, it fell short of the production for 1898 by some 15,000 tons, but exceeded that for any other year by a considerably greater amount.

An advance approximate return of the sugar crop was issued from this office in January of this year. The particulars were kindly supplied by mill managers, who most courteously responded to my request for information. Unfortunately, although furnished so late in the season as December, when it might have been supposed that the results of the crop could have been determined with accuracy, these advance figures differed considerably in several instances from the final returns. One important proprietary erring to the extent of an appreciable percentage of its total output, whilst in another instance a manager misunderstood the return, and gave a tonnage of sugar, although none was made, evidently estimating the product of juice supplied to another mill, which rightly, again returned the sugar. These two inaccurate returns accounted for more than two-thirds of the difference between the advance figures and the final results now published.

In 1904 there were 120,317 acres cultivated for sugar, of which the produce of 82,741 acres was cut for crushing, giving a return of 1,326,989 tons of cane, from which 147,688 tons of sugar of a saccharine contents of 94 per cent. net titre were obtained.

For the first time the quality of the sugar, as ascertained by saccharometer or polariscope, has been taken into account; previously the avoirdupois weight as returned by the mills, without regard to quality, had been tabulated. This change has been made at the suggestion of Dr. Maxwell, Comptroller of Central Mills, and the percentage of sugar contents 94 N.T. has been adopted as being the standard most generally recognised. Taking the avoirdupois weight would nominally add some 800 tons to the sugar production last season, a position not to be lost sight of in making comparisons with the results of previous years. The relative standard a few years ago was much lower, and this fact also has an important bearing on the matter.

The following table furnishes particulars respecting this crop for each of the past five years:—

L.

Year.	Acres Cultivated.	Acres Crushed.	YIELD.	
			Tons Cane.	Tons Sugar.
1900	108,535	72,651	848,328	92,554
1901	112,031	78,160	1,180,091	120,858
1902	85,338	59,102	641,927	76,626
1903	111,516	60,375	823,875	91,828
1904	120,317	82,741	1,326,989	*147,688

* 94 per cent. net titre.

It will be noted that the relation between the area planted with cane and the acreage crushed is remarkably constant. For four years of the quinquennium, the latter comprising about 70 per cent. of the former, the variation only amounting to 3 per cent. In 1903, however, but little more than half the

cultivated area (54 per cent.) was crushed, chiefly due to the large quantity of cane held over as being unfit for cutting on account of late planting the year before.

The average results of the crop for the same five years are supplied in the following table:—

L a.

Year.	TO EACH ACRE CRUSHED.		Tons of Cane to One Ton of Sugar.
	Tons of Cane.	Tons of Sugar.	
1900	11.68	1.28	9.44
1901	15.10	1.55	9.76
1902	10.86	1.30	8.38
1903	13.65	1.52	8.97
1904	16.04	1.78	8.99

The figures for 1904 compare very favourably with those for the previous years. The yield of cane and of sugar to each acre crushed are both greater than in any other year comprised in the table, whilst the sugar contents of the cane was considerably better in 1904 than in either 1900 or 1901, practically equal to that of 1903, but not quite so good as in 1902.

Although these results are satisfactory as far as they go, yet on comparison with the returns obtained in other countries where scientific and better methods of cultivation are adopted they afford scope for reflection. The Director of the Bureau of Sugar Experimental Stations in his last report, with reference to this question, writes:—"During the past fifteen years Louisiana has raised its yield per acre from 15 tons to nearly 30 tons; Hawaii from 25 tons to over 40 tons; and Java from 20 to approaching 40 tons." Experiments by Dr. Maxwell, of which the results are recorded in the same report, conclusively prove that it is not a matter of climate or of soil, but that the same results will be secured in Queensland as soon as the same methods are adopted.

The following table furnishes particulars as to the production of sugar last year in the various districts of the State:—

L b.

Division and District.	Area for Plants.	Area Stand-over or Unproductive.	Area Crushed for Sugar.	Total Area for Sugar.	Weight of Cane.	Sugar.	Molasses.
	Acres.	Acres.	Acres.	Acres.	Tons.	Tons.	Gallons.
<i>Rockingham—</i>							
Cairns and Douglas	226	3,694	13,108	17,028	223,361	26,563	895,000
Ingham and Mourilyan	463	3,892	15,189	19,544	213,027	26,089	908,544
Total	689	7,586	28,297	36,572	436,388	52,652	1,803,544
<i>Edgecumbe—</i>							
Ayr	64	1,921	4,242	6,227	95,010	10,994	176,760
Bowen	38	729	2,504	3,271	35,709	3,931	140,480
Mackay	318	10,242	17,622	28,182	253,250	28,305	979,815
Total	420	12,892	24,368	37,680	383,969	43,230	1,297,055
<i>Port Curtis—</i>							
Gladstone	2	14	8	24	30	<i>a</i>	...
<i>Burnett and Wide Bay—</i>							
Bundaberg and Gin Gin	230	6,680	16,374	23,284	270,171	30,011	785,382
Childers, Maryborough, and Tiaro	112	5,870	10,650	16,632	193,084	17,870	438,770
Gympie	2	110	77	189	1,688	<i>b</i>	...
Total	344	12,660	27,101	40,105	464,943	47,881	1,224,152
<i>Moreton—</i>							
Logan	5	1,027	1,142	2,174	12,631	980	36,501
Marburg	18	201	191	410	1,817	120	...
Maroochy	43	1,419	1,215	2,677	21,821	2,345	112,155
Nerang	13	243	419	675	5,390	480	18,000
Total	79	2,890	2,967	5,936	41,659	3,925	166,656
TOTAL STATE	1,534	36,042	82,741	120,317	1,326,989	147,688	4,491,407

a Crushed in Bundaberg.

b Crushed in Maroochy.

The divisions or groups of petty sessions districts shown in the above table, if Port Curtis and Burnett and Wide Bay are taken together, are practically conterminous with the sugar bounty districts of the Customs Department, the only disturbing factor being Gympie, which, for excise purposes, is combined with the Moreton group.

Of the total area planted with sugar-cane, 74,252 acres, or 62 per cent., and of the total area crushed 52,665 acres, or 64 per cent., were situated north of Rockhampton, in the Rockingham and Edgumbe divisions, approximately a moiety to each; the first named, although having the lesser area under cultivation, crushed some 4,000 acres more than Edgumbe. In the Burnett and Wide Day division 40,105 acres, or 33 per cent., of the area planted, and 27,101 acres, or 33 per cent., of the area crushed.

The Rockingham division returned 436,388 tons of cane and 52,652 tons of sugar, or 33 per cent. and 36 per cent. of the total production of the State respectively. Edgumbe, 383,969 tons of cane and 43,230 tons of sugar, representing 29 per cent. and 29 per cent. of the total output; and Burnett and Wide Bay, 464,943 tons of cane and 47,881 tons of sugar, or proportions of 35 and 32 per cent. The areas in the Gladstone and Moreton groups were inconsiderable, whilst the results were below those of the more Northern districts.

MOLASSES.—There were six factories, three of them important ones, which failed to return the production of this by-product, reporting that no record was kept of the quantity. From the returns received, it would appear that the output of 1904 was 4,491,407 gallons. Of this 66,300 gallons went to distilleries; 491,501 gallons were sold, chiefly no doubt for the production of golden syrup; 600,415 gallons were fed to stock; 201,600 gallons were used as fuel in the furnaces; 29,200 gallons were returned to the land as manure; 2,304,738 gallons being run to waste; whilst 797,653 gallons were still in store at the end of the year. It is a matter for regret that so large a proportion of this valuable commodity fails to be utilised.

The average returns for the whole State have already been shown in Table La—namely, 16.4 tons of cane and 1.78 tons of sugar to each acre crushed, and 8.99 tons of cane to each ton of sugar manufactured. Figures furnishing the same information in each petty sessions district or group of districts are shown in the following table:—

Lc.
SUGAR AVERAGES, 1904.

Divisions or Groups and Districts.	Tons of Cane per Acre Crushed.	Tons of Sugar per Acre Crushed.	Tons of Cane per Ton of Sugar.
<i>Rockingham—</i>			
Cairns and Douglas	17.03	2.03	8.41
Ingham and Mourilyan	14.02	1.72	8.17
Total	15.42	1.86	8.29
<i>Edgumbe—</i>			
Ayr	22.40	2.59	8.64
Bowen	14.26	1.57	9.08
Mackay	14.37	1.61	8.95
Total	15.76	1.77	8.88
<i>Port Curtis—</i>			
Gladstone	3.75	*	*
Total	3.75	...	...
<i>Burnett and Wide Bay—</i>			
Bundaberg and Gin Gin	16.50	1.83	9.00
Childers, Maryborough, and Tiaro	18.13	1.68	10.80
Gympie	21.92	†	†
Total	17.14	1.77	9.71
<i>Moreton—</i>			
Logan	11.06	0.86	12.89
Marburg	9.51	0.63	15.14
Maroochy	17.96	1.93	9.31
Nerang	12.86	1.15	11.23
Total	14.24	1.29	11.04
TOTAL STATE	16.04	1.78	8.99

* Crushed in Bundaberg.

† Crushed in Maroochy.

Taking the divisions or groups, Burnett and Wide Bay gave the best average yield of cane—viz., 17.14 tons to each acre, Edgumbe coming next with 15.76 tons, followed by Rockingham 15.42, and Moreton 14.24. The best yield in individual petty sessions districts was in Ayr with 22.40 tons per acre; Gympie, from a small area of 77 acres, coming next with 21.92 tons; no other district averaged 20 tons.

Rockingham division gave the best average return of manufactured sugar per acre—namely, 1.86 tons; Edgumbe and Wide Bay and Burnett following closely each with 1.77 tons.

The best returns in petty sessions districts was at Ayr, where the fine average yield of 2.59 tons to each acre were obtained; the next best result was at Cairns-Douglas with 2.03 tons per acre; Maroochy, in the Moreton division, ranking third with an average of 1.93 tons to each acre from an area of 1,292 acres.

Excepting that portion of the State south of Rockhampton a great uniformity was displayed in the quantity of sugar obtained from each ton of cane. Over the whole State 1 ton produced 2.22 cwt. of sugar. For the Moreton group the result was 1.81 cwt., and for Burnett and Wide Bay 2.06 cwt.; but the results obtained in the Rockingham and Edgumbe divisions were more satisfactory—namely, 2.41 cwt. and 2.25 cwt. respectively. The best average yield was secured in the petty sessions districts of Ingham-Mourilyan, where each ton of cane produced 2.45 cwt. of sugar, either as a result of greater saccharine contents of the cane or of its more satisfactory manipulation.

A comparison of the sugar crops of the past two years is portrayed in the following table:—

L d.

Petty Sessions Districts.	Cultivation.			Production.					
	Area in 1903.	Area in 1904.	Increase or —Decrease in 1904.	1903.		1904.		Increase or —Decrease in 1904.	
				Area Crushed.	Sugar.	Area Crushed.	Sugar.	Area Crushed.	Sugar.
	Acres.	Acres.	Acres.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Ayr	5,481	6,227	746	2,963	7,400	4,242	10,994	1,279	3,594
Bowen	3,047	3,271	224	1,865	2,704	2,504	3,931	639	1,227
Bundaberg, Gin Gin, and Gladstone	21,877	23,308	1,431	5,732	} 15,691	16,382	} 47,881	10,650	} 32,190
Childers, Maryborough, and Tiaro	15,207	16,632	1,425	9,504		10,650		1,146	
Cairns and Douglas	17,141	17,028	— 113	10,957	19,785	13,108	26,563	2,151	6,778
Ingham and Mourilyan	20,171	19,544	— 627	13,777	24,548	15,189	26,089	1,412	1,541
Logan	2,119	2,174	55	833	1,255	1,142	980	309	— 275
Mackay	23,473	28,182	4,709	13,245	18,329	17,622	28,305	4,377	9,976
Marburg	27	410	383	...	...	191	120	191	120
Maroochy and Gympie	2,295	2,866	571	997	1,496	1,292	2,345	295	849
Nerang	629	675	46	502	620	419	480	— 83	— 140
Rockhampton	49	...	— 49	...	...	...	...	...	...
Totals, 1903	111,516	...	...	60,375	91,828	...	...	...	...
Totals, 1904 ... ..	...	120,317	...	...	...	82,741	147,688	...	...
Increase in certain Districts, 1904 ... ..	...	...	9,590	...	...	...	...	22,449	56,275
Decrease in certain Districts, 1904 ... ..	...	...	789	...	...	...	...	83	415
Net Increase in 1904 ... ..	...	...	8,801	...	...	...	...	22,366	55,860
Net Decrease in 1904 ... ..	...	...	...	...	...	...	...	...	...

Of area under cultivation, most of the districts show an increase for 1904; small decreases, however, appear for Cairns-Douglas, Ingham-Mourilyan, whilst Rockhampton ceased to grow sugar. The largest increase was at Mackay, where 4,709 more acres were under cane in 1904 than in the previous year; substantial increases of 1,431 and 1,425 acres were recorded in the two sections of the Burnett and Wide Bay group. Except Nerang, where a small decrease of 83 acres was recorded, every district showed an increase in the area crushed. The Burnett districts stood first with an increase of 10,650 acres, although the increase in area under cane was 1,431 acres only, the hold-over from 1903 being exceptionally large, for in that year 5,732 acres only were crushed out of a total of 21,877 acres. Mackay came next with an increase of 4,377 acres, an area somewhat below the increase in acreage planted, followed by Cairns-Douglas, Ingham-Mourilyan, Ayr, and Childers-Maryborough-Tiara, in the order named, with increases of 2,151 acres, 1,412 acres, 1,279 acres, and 1,146 acres respectively.

The greatest increase in production was contributed by the Burnett and Wide Day division, where 47,881 tons of sugar were made in 1904, or 32 per cent. of the total output of the State, an increase on the tonnage of the division of 32,190 tons, or 58 per cent. of the total increased production for the year. Other substantial increases were Mackay 9,976 tons, Cairns-Douglas 6,778 tons, and Ayr 3,594 tons.

A comparison of the average returns obtained during 1903 and 1904 reflects most satisfactorily on the experience of the latter year. The following table contains information on this point of much interest:—

L e.

Division.	TO EACH ACRE CRUSHED.				TON CANE TO EACH TON SUGAR.	
	Tons of Cane.		Tons of Sugar.		1903.	1904.
	1903.	1904.	1903.	1904.		
Rockingham	14.49	15.42	1.79	1.86	8.33	8.29
Edgecumbe	14.30	15.76	1.58	1.77	9.09	8.88
Port Curtis ... ..	...	3.75	a	a	a	a
Burnett and Wide Bay ...	10.10	17.14	1.03	1.77	9.80	9.71
Moreton	18.18	14.24	1.45	1.29	12.55	11.04
State	13.65	16.04	1.52	1.79	8.97	8.99

a Crushed in Bundaberg. A small area only.

It will be noted that for the whole State the quantity of cane harvested to each acre exceeded that for the previous year by 2.39 tons, and the quantity of sugar obtained by 0.27 of a ton. The quality of the cane was apparently the same, as practically the same quantity of cane was required to make a ton of sugar in both years—namely, 9 tons. In every division except Moreton the average return of cane to each acre crushed showed an increase in 1904 over the preceding year, the improvement in Burnett and Wide Bay being very marked, advancing from 10.10 in 1903 to 17.14 in 1904. The tonnage of sugar to each acre, which for the whole State was 18 per cent. greater in 1904 than in the previous year, improved by 4 per cent. in Rockingham, by 12 per cent. in Edgecumbe, and by 72 per cent. in Burnett and Wide Bay. There was a decrease of 0.16 of a ton per acre in Moreton. The sugar results from the cane treated showed an improvement in every one of the divisions.

White-grown Cane.—The weight of cane grown and harvested by white labour, as compiled from the agricultural returns, was found to differ slightly from the quantities on which bounty was actually paid. Collected by different methods, this was to be looked for; doubtless, moreover, some of the discrepancies were caused by the Excise authorities rejecting in a few instances the claims made. Inquiries instituted into the matter, however, have enabled me to make a few adjustments, bringing the results to coincide.

There were 25,876 acres of cane returned in 1904 as both grown and harvested by white labour; this was equal to 31 per cent. of the total area crushed. The like area and ratio in 1903 were 17,080 acres and 28 per cent. respectively. The weight of cane harvested under similar conditions was 212,117 tons in 1903 and 379,884 tons in 1904, or ratios to the whole crop of 26 and 29 per cent. respectively.

The following table gives further particulars on this point:—

L f.
RETURNED AS GROWN AND HARVESTED BY WHITE LABOUR.

Rebate.	Petty Sessions District.						Area Crushed for Sugar.	Weight of Cane Harvested.
							Acres.	Tons.
No. 1 at 5s. ...	Cairns and Douglas ...	...	...	...	...	547	10,001
	Ingham and Mourilyan ...	...	...	...	...	1,687	22,130
	Total ...	...	...	...	...	2,234	32,131
No. 2 at 4s. 8d. ...	Ayr ...	...	...	...	...	860	18,998
	Bowen ...	...	...	...	...	1,733	22,945
	Mackay ...	...	...	...	...	8,304	124,489
	Total ...	...	...	...	...	10,897	166,441
No. 3 at 4s. 4d ...	Bundaberg, Gin Gin, Gladstone ...	...	...	...	...	5,291	69,989
	Childers, Maryborough, and Tiaro ...	...	...	...	...	4,827	73,432
	Total ...	...	...	...	...	10,118	143,421
No. 4 at 4s. ...	Logan ...	...	...	...	...	1,128	12,474
	Maroochy and Gympie ...	...	...	...	...	1,124	20,490
	Nerang ...	...	...	...	...	345	4,491
	Marburg ...	...	...	...	...	30	436
	Total ...	...	...	...	...	2,627	37,891
Grand total ...	...	...	...	...	25,876	379,884	

No. 1 rebate district contributed 9 per cent. of the total white-grown area and 8 per cent. of the total white-grown produce; No. 2 district, 42 per cent. and 44 per cent.; No. 3 district, 39 per cent. and 38 per cent.; and No. 4 district, 10 per cent. and 10 per cent. each respectively.

The following are the proportions in each rebate district borne by white-grown cane to the totals, area, and produce respectively:—No. 1 district, 8 per cent. area crushed and 7 per cent. cane harvested; No. 2 district, 45 per cent. and 43 per cent.; No. 3 district, 37 per cent. and 31 per cent.; No. 4 district, 86 per cent. and 87 per cent.

It is impossible to calculate the exact amount of excise payable on the sugar of 94 per cent. net titre, as embraced in this report at the request of the Director of Central Sugar Mills, inasmuch as the excise is collected on the actual weight; moreover, owing to a slight overlapping of dates, the weights would not agree, as the statistical tables cover the season and include sugar actually made in the very early months of 1905.

The following table shows the tonnage of cane and the amount of bonus paid thereon during each of the past three years:—

L g.

	1902.		1903.		1904.	
	Tonnage of Cane.	Amount of Bonus.	Tonnage of Cane.	Amount of Bonus.	Tonnage of Cane.	Amount of Bonus.
1st District ...	17,095	£ 4,274	37,660	£ 9,415	32,131	£ 8,002
2nd " ...	69,899	16,345	106,333	24,811	166,441	38,620
3rd " ...	13,730	2,974	40,283	8,728	143,421	31,055
4th " ...	4,579	917	37,500	7,500	37,891	7,534
Total ...	105,303	24,540	221,776	50,454	379,884	85,211

There were fifty-seven establishments engaged in the treatment of sugar and its products during 1904; they included two refineries, four juice mills, and fifty-one sugar mills.

The following table furnishes further particulars:—

Lh.

	Works.	Hands Employed.	VALUE.	
			Machinery.	Land and Premises.
			£	£
Refineries	No. 2	No. 276	250,000	55,943
Juice Mills	4	68	54,000	1,494
Sugar Mills	51	1,952	1,650,920	108,102
In operation, 1904	57	2,296	1,954,920	165,539
Total	57	2,296	1,954,920	165,539

The factories gave employment to 2,296 hands, or 886 more than in 1903, when eighteen mills out of the sixty then existing establishments had been shut down. The large amount of capital invested in the manufacturing branch of this industry is shown in the last two columns of the table.

Provision has been made by the Legislature for the assistance of cultivators of sugar-cane by providing for the establishment of central mills on the mutual system.

The following information, kindly furnished by the Comptroller of Central Mills, shows the financial position as between these mills and the Treasury:—

1. Number of sugar mills to which advances have been made under the Sugar Works Guarantee Act	11
2. Under other conditions	2
3. Number of tramway companies under the Sugar Works Guarantee Act	1
4. Total amount of advances up to 31st December, 1904	£ 532,786 s. 0 d. 6
5. Under other conditions	52,500 0 0
6. Indebtedness to 31st December, 1904, under Sugar Works Guarantee Act, including special temporary advances	560,864 4 3
7. Under other conditions	22,914 2 8

If the term "consumption" be limited to the meaning conveyed by the actual content of the word the average annual consumption of an article like sugar would be very difficult to determine. Figuring so largely as sugar does as a material in the production of other commodities—commodities, moreover, which are so frequently exported and imported—its having been put to use in a given country by no means determines its actual consumption there. The only means, however, under present circumstances, of arriving at any idea of the extent of its use in the States of the Commonwealth is to add the imports to the production and deduct the exports. On this basis the following table shows the annual consumption of sugar in Australasia and in each State thereof, the estimate being formulated on the experience of a number of years:—

Li.

RETURN showing the ANNUAL CONSUMPTION of SUGAR for the YEAR 1904, based on the AVERAGE ANNUAL CONSUMPTION PER CAPITA of the MEAN POPULATION, for a SERIES of YEARS.

	Queensland.	New South Wales.	Victoria.	South Australia.	Western Australia.	Tasmania.	Total Federated States.	New Zealand.	Total Australasia
Consumption for the Year 1904—Tons	26,422	67,802	51,752	16,669	10,876	7,345	180,866	39,233	220,099
Average Annual Consumption per Capita for a Series of Years. To the nearest lb.	114	105	96	101	103	92	102	104	103

To arrive at the consumption for alimentary purposes, either of Australasia or of any individual State, it would be necessary to know the amount of sugar used in making articles other than of food, and the quantity contained in articles of food imported and exported, so that there might be added to or subtracted from the relating figures as necessary.

It must be remembered that the figures for the producing States—Queensland and New South Wales—which comprise the whole production of the Commonwealth, represent to a considerable extent raw sugar. This is subsequently refined and passes into consumption at a correspondingly reduced weight, and thus the high per capita consumption of these States is to a slight extent discounted.

The total consumption of the Commonwealth is about 181,000 tons annually, towards which last year Queensland produced 147,688 tons and New South Wales 19,202 tons, so that the production of the Commonwealth for 1904 was within a measurable distance of providing for home requirements.

The following table contains information as to imports and exports of sugar into and from the Commonwealth during 1903:—

Lj.

IMPORTS and EXPORTS of SUGAR during 1903 for each AUSTRALIAN STATE from and to places beyond the COMMONWEALTH.

State.	Imports.	Exports.	Net Imports.
	Tons.	Tons.	Tons.
Queensland	29	45	— 16
New South Wales	8,169	947	7,222
Victoria	60,161	1,357	58,804
South Australia	23,135	38	23,097
Western Australia	29	...	29
Tasmania	93	...	93
Total Commonwealth	91,616	2,387	89,229

— Excess of Exports.

Of the 89,229 tons of sugar imported in excess of exports, 58,804 tons went into Victoria and 23,097 tons into South Australia, or, together, 92 per cent. of the total net imports.

COTTON.

The British Cotton-growing Association has taken action with the object of furthering the cultivation of cotton in suitable localities within British territory.

The United States, which was for many years the source from which England drew the bulk of her supplies, now requires an annually increasing quantity for her own requirements, and is not only not likely to materially increase the present export, but will certainly considerably decrease it at no distant date, and the association was formed in order to solve the difficulty arising out of the extension of demands made by the British manufacturers.

Advances have been made in support of the industry in India, West Indies, Africa, &c., especial attention being given to foster the production within British territory. At present the chief sources of supply to the United Kingdom are—the United States, which contributes about 76 per cent. of the total; Egypt, about 17; India, about 5 per cent.; and Brazil, about 2 per cent.

It is not probable that extensive areas under one management would prove remunerative in this State, owing to difficulties in connection with labour for picking; yet, no doubt, in small sections, distributed over a number of farms, the crop would prove profitable.

The Government of this State have taken action with a view to assisting the establishment of the industry, and have undertaken to gin all cotton received at an establishment at Ipswich in a clean and dry state; 1d. per lb. will be advanced on cotton in the seed, and the Department will subsequently ship and sell both ginned cotton and seed to the best possible advantage to the growers; and the year 1905 should show a marked increase in the area planted. There were 30 acres under cotton during 1904, as against 2 in the previous year. The yield amounted to 25,832 lb., or about 861 lb. per acre, the latter might be expected to return 344 lb. of clean cotton. As the present market price in England ranges from 4½d. to 7½d. per lb., according to quality, there appears to be a fair opportunity for an extension of the industry to the benefit of the farmer, but in this, as in other agricultural lines, a continuity of supply is essential to secure a full measure of success.

ARROWROOT.

There is little variation in the area devoted to this crop year by year. Most of the tubers raised last year were converted into commercial arrowroot, only about 500 tons being utilised otherwise, mostly as food for pigs. Particulars can be gathered from the following statement:—

M.

District.	1903.		1904.		Increase or Decrease —	
	Area.	Production.	Area.	Production.	Area.	Production.
<i>Rockingham—</i>						
Herberton	1	1	2	30	1	29
Mourilyan	40	800	35	350	— 5	— 450
Total Rockingham ...	41	801	37	380	— 4	— 421
<i>Moreton—</i>						
Caboulture	1	9	1	2	...	— 7
Cleveland ... ..	...	...	4	45	4	45
Logan	69	622	96	741	27	119
Marburg ... ..	...	...	2	5	2	5
Maroochy	17	184	15	202	— 2	18
Nerang	229	3,095	267	2,640	38	— 455
Redcliffe ... ..	...	...	1	7	1	7
Rosewood	1	2	2	7	1	5
Woodford	4	20	11	64	7	44
Total Moreton	321	3,932	399	3,713	78	— 219
<i>Other Districts—</i>						
Cook	1	2	1	1	...	— 1
Total State	363	4,735	437	4,094	74	— 641

The bulk of the crop was raised in the Moreton district, on the rich lands forming the valleys of the Logan, Pimpama, and Nerang Rivers. There were 78 acres more cultivated in this division during 1904 than in the previous year, and of this additional area 65 acres were in the Logan and Nerang districts, in which practically all the commercial arrowroot was made. The yield per acre was, however, far from satisfactory, only 9.37 tons of tuber being obtained. Passing over 1902, the year of extreme drought, this was the lowest return obtained for seven years, except in 1901, when practically the same quantity was obtained, and despite the larger areas cultivated, resulted in 641 tons less being obtained than in 1903.

Information respecting the manufacture of this article is given below:—

M a.

District.	Hands Employed.	Tuber.	Arrowroot.
Mourilyan	2	Tons. 350	Lb. 78,400
Logan	7	645	142,275
Nerang	20	2,598	518,540
Others ... ..	...	8	1,500
Total	29	3,601	740,715

The industry of preparing the arrowroot for market gives employment to a limited number of hands only; there were twenty-nine persons thus engaged during 1904. The tubers appear to have been of better quality than was the case in 1903, as a much greater quantity of the manufactured article was obtained from each ton of tuber in the former than in the latter year.

Last year there were 740,715 lb. of arrowroot obtained from 3,601 tons of tuber, or a little over 200 lb. per ton.

In 1903 the average yield per ton was 165 lb. only. The shortage in weight of crop caused by the dry spell at the end of the year 1904 apparently reduced the volume of moisture in the tuber without materially affecting the starch contents. Practically all the export trade in this article is with Australia, but this year I am unable to furnish the quantity sent south, as the Customs authorities have collated values only. Information under this head is given in the following statement:—

M b.
ARROWROOT.

Year.	IMPORTS.		EXPORTS.		PRODUCTION.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Manufacturers' Value.
	Lb.	£	Lb.	£	Lb.	£
1900	13,785	200	463,617	3,534	772,280	3,257
1901	2,830	26	582,069	4,278	704,480	3,554
1902	5,648	59	360,719	3,872	192,702	1,766
1903	264	7	360,748	5,058	683,883	6,903
1904	53	1	*	4,386	740,715	4,082

* Information not furnished in Customs returns.

As probably much of the arrowroot sent away would be packed for retail sale, it would command a higher price per ton than that given by the manufacturers.

TOBACCO.

As foreshadowed in my report for 1903, the average results of this crop for 1904 proved very satisfactory, realising a little more than 9 cwt. to the acre, the best return during the last ten years. The total failure of the crop in 1903 must have greatly disheartened the producers, but although some growers reduced their acreage during 1904, the area placed under cultivation by those who had not hitherto grown tobacco more than compensated for these reductions. Interest in this crop is increasing, and the area planted will probably be considerably extended in the near future. Details respecting area and yield are given in the statement below.

N.

District.	1903.		1904.		Increase or Decrease —	
	Area.	Produce Dried Leaf.	Area.	Produce Dried Leaf.		
	Acres.	Cwt.	Acres.	Cwt.	Acres.	Cwt.
<i>Moreton.</i>						
Marburg	1	5	...	...	— 1	— 5
Total Moreton	1	5	...	...	— 1	— 5
<i>Downs.</i>						
Goondiwindi	...	...	2	8	2	8
Inglewood	7	25	95	861	88	836
Killarney	...	...	8	121	8	121
Texas	764	587	679	6,135	— 85	5,548
Total Downs	771	612	784	7,125	13	6,513
Total State	772	617	784	7,125	12	6,508

Practically all the tobacco grown is found in the districts of Inglewood and Texas, Goondiwindi and Killarney, where small areas have been planted, being districts in the same vicinity. Several of the most important growers were located in the Texas district. Of these, as already stated, some placed less under cultivation than in the previous year, whilst the fresh plantations which compensated for this were found in Inglewood, where 88 more acres were returned as under this crop than in 1903. The total yield amounted to 7,125 cwt. of dried leaf, whereas only 617 cwt. were returned in the previous year.

The requirements of the State above the quantity produced can be gathered from the following table:—

N a.

Year.	Tobacco, &c.	Imported.	Entered for Home Consumption.
		Lb.	Lb.
1903	Manufactured	1,136,279	*1,068,055
	Unmanufactured	70,668	27,205
	Cigars	40,855	*44,567
	Cigarettes	112,367	*113,795
	Snuff	493	*619
	Total	1,360,662	1,254,241
1904	Manufactured	1,062,013	*1,035,024
	Unmanufactured	10,290	*272
	Cigars	41,636	*42,127
	Cigarettes	120,381	*98,499
	Snuff	591	*571
	Total	1,234,911	1,176,493

* Including imports, produce of other States, duty free.

The quantity consumed appears to be about 42 oz. per capita. This, though high, is exceeded in some countries, as will be seen from figures given by Mulhall in his Dictionary of Statistics, as follows:— United Kingdom, 23 oz.; France, 29 oz.; Germany, 48 oz.; Belgium, 84 oz.; and Switzerland, 82 oz. Naturally the larger proportion of adults in Queensland would have the effect of materially raising the per capita consumption; the quantity required per head of the adult male population would be about 8½ lb.

The quantity of tobacco manufactured within the State has fallen off greatly during the past few years.

Over 700,000 lb. were manufactured in Queensland in 1901, as compared with a little over 200,000 lb. last year. The manufacture of cigarettes ceased in 1901.

The crop for the current year now harvested is considered by the Government expert to be a considerable improvement on that for 1904, especially in quality. Mr. Neville reports that farmers are taking more pains, are importing seed of improved varieties, and consequently are reaping the benefit of their foresight in a better quality of cured leaf. The tobacco-sheds are all full, and in some instances stocks held for several years were quitted, probably as a consequence of the need for more room to house the then maturing new crop.

COFFEE.

Although there was a slightly reduced area under coffee during 1904, this resulted more from the final desertion of areas previously neglected than from any fresh abandonment of operations on the part of cultivators. Particulars respecting the crop are as follows:—

O.

DISTRICT.	Not yet Bearing.		Bearing.				Average Yield per acre (Bearing).		1904. Increase or Decrease— Bearing Area.	1904. Increase or Decrease—
	1903.	1904.	1903.		1904.		1903.	1904.		
	Acres.	Acres.	Acres.	Lb.	Acres.	Lb.	Lb.	Lb.		
<i>Rockingham—</i>										
Cairns ... ..	...	3	144	41,848	146	35,549	291	243	2	— 6,299
Douglas	5	...	16	8,404	16	8,800	525	550	...	396
Herberton	2	...	4	2,460	6	10,980	615	1,830	2	8,520
Marceba	1	...	12	5,020	6	700	418	117	— 6	— 4,320
Mourilyan ... ..	...	...	30	15,680	26	16,000	523	615	— 4	320
Total Rockingham ...	8	3	206	73,412	200	72,029	356	360	— 6	— 1,383
<i>Edgecumbe—</i>										
Mackay... ..	11	5	50	2,780	44	27,070	56	615	— 6	24,290
<i>Port Curtis—</i>										
Rockhampton	14	14	3	500	3	560	167	187	...	60
<i>Wide Bay and Burnett—</i>										
Maryborough	30	5	6	8	7	4,704	1	672	1	4,696
<i>Moreton—</i>										
Dugandan	2	...	...	...	...	...	...	...	...	...
Maroochy	11	13	36	5,562	38	28,191	155	742	2	22,629
Total Moreton	13	13	36	5,562	38	28,191	155	742	2	22,629
<i>Other Districts—</i>										
Cook ... ..	...	10	17	1,370	...	...	81	...	— 17	— 1,370
Total State	76	50	318	83,632	292	132,554	265	454	— 26	48,922

In Maryborough over 20 acres of young trees died, and in Cook one plantation was deserted, and in another the whole of the trees were killed by flood, and the ground was afterwards replanted. The total yield of coffee was 132,554 lb. fit for the market, more than 50 per cent. better than in 1903, when only 83,632 lb. were gathered. The yield per acre also rose in even better ratio, being 454 and 265 lb. per acre respectively. The far northern portion of the State, in the vicinity of Cairns, is the principal seat of coffee culture, 149 out of a total of 342 acres being there located. Some attention is paid to the cultivation of the shrub in the Maroochy district, where on the slopes of the Blackall Range 51 acres were in bearing, and the yield secured therefrom should have proved very satisfactory to the growers, an average of 742 lb. per acre being obtained, exceeding that for all other districts, except a small area at Herberton.

PUMPKINS AND MELONS.

This is a crop which must be grown in time to mature within the summer months of the year. It is frequently planted between the rows of the second crop of maize, in order that the plants whilst young may be sheltered from the scorching effect of the sun, and the area was curtailed in consequence of the small spring planting of that cereal. Unfortunately, the latter part of 1904 was characterised by a small rainfall, and culminated towards the termination of the year with a hot wind which had a disastrous effect on both these, as well as several other crops. Only 8,991 acres were planted against 18,833 acres in the previous year, and the yield in somewhat like ratio declined from 62,102 to 30,970 tons. Full particulars respecting this crop will be found in the detailed tables in the Appendix to this report.

FRUIT.

There was a marked increase in the attention paid to the orchard during 1904, and before many years elapse it appears probable that a number of the various descriptions of fruit which have hitherto been imported will be produced within our own borders, at least in sufficient quantities to meet our

requirements, if not, indeed, to form an article of export. The extended areas that have been placed under apples and other deciduous fruits point to the fact that there are many sites suitable for their cultivation, and although time must be given for young trees to come into bearing, returns have been received relating to a sufficient number to prove the remunerative nature of the crop in Queensland. The system of collection initiated last year, of recording the number of trees of each description of fruit proves much more satisfactory than the previous method of returning the acreage, as many small orchards are now recorded which under the former practice escaped collection.

Altogether there were 2,013,500 fruit trees of all kinds returned during 1904, the principal (with the figures for 1903 in brackets) being vines, 1,530,364 (1,448,300); oranges, 278,989 (265,240); apples, 46,151 (39,870); mangoes, 33,991 (33,830); peaches, 35,727 (33,210); plums, 19,906 (19,350). The average yield per tree shows a marked general improvement on the results for 1903, viz.:—Vines, 2·02 lb. (1·63); oranges, 10·11 dozen (4·34); apples, 0·42 bushels (0·46); mangoes, 25·38 dozen (9·66); peaches, 0·78 bushels (0·97); plums, 0·62 bushels (0·71). Of course, in all cases where a large increase in the number of trees has taken place the average yield would be considerably affected. The returns would be too voluminous if provision were made for eliminating non-bearing trees in the case of every description of fruit.

VINES, GRAPES, AND WINE.

The results obtained from vines varied considerably in different parts of the State; the gross yield was, however, materially better than in 1903, and this over a larger area of matured vines than in that year. The results for the past two years were as follow:—

Q.

Year.	VINEYARD.			Grapes Gathered.	Average Yield.
	Acres Bearing.	Acres not yet Bearing.	Total.		
1903	1,486	583	2,069	Lb. 2,362,520	Lb. 1,590
1904	1,647	547	2,194	3,087,835	1,875

Last year there were 125 acres more returned as under the vine than in the previous year, the yield of grapes was 725,315 lb. better, and the average per acre 285 lb. greater. The yield per acre falls considerably short of the quantity obtained in the earlier years of the decade, when over a ton to each acre was gathered for several years in succession. The results of the crop in the principal centres of its cultivation are given below:—

Q a.

Petty Sessions District.	AREA UNDER VINES.								
	1903.			1904.			Increase or Decrease— in Latter Year.	1903.	1904.
	Bearing.	Not yet Bearing.	Total Area.	Bearing.	Not yet Bearing.	Total Area.		Grapes Gathered.	Grapes Gathered.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Lb.	Lb.
Allora	41	7	48	6	5	45	— 3	42,980	72,934
Clifton				32	2				
Brisbane	166	113	279	233	67	300	21	383,390	410,148
Gatton	100	17	117	91	23	114	— 3	163,444	249,562
Gympie	38	17	55	32	17	49	— 6	29,835	37,345
Highfields	29	5	34	40	3	43	9	53,454	105,606
Logan	58	10	68	73	18	91	23	86,731	109,457
Maryborough	49	18	67	45	14	59	— 8	57,727	73,588
Rockhampton	79	4	83	69	2	71	— 12	64,913	114,560
Roma	167	228	395	216	206	422	27	312,692	322,626
Rosewood	70	1	71	59	29	88	17	30,624	48,490
South Brisbane	122	11	133	125	12	137	4	239,274	247,061
Stanthorpe	23	24	47	26	41	67	20	53,392	50,832
Toowoomba	188	21	209	201	10	211	2	313,231	391,401
Warwick	40	7	47	44	4	48	1	44,236	66,250
All other Districts	316	100	416	355	94	459	41	486,597	687,975
Total	1,486	583	2,069	1,647	547	2,194	125	2,362,520	3,087,835

It will be noticed that Roma has again added a few acres to the area cultivated. This district suffered most of all with the drought, and replanted 207 acres in 1903. The yield in this district for 1904 was, however, far from satisfactory, only returning 1,494 lb. per acre, the dry weather at the end of the year proving prejudicial to the crop. The results in the Brisbane district, the next in importance, suffered from the same cause, but hardly to the same extent, as the yield per acre was 1,761 lb., but the falling-off in the average at Roma was proportionately greater. In Toowoomba, although some of the vineyards were adversely affected by hailstorms, the returns were much better—viz., an average of 1,947 lb. per acre, which was considerably better than that for the previous year. In South Brisbane, the yield rose from 1,961 lb. in 1903 to 1,976 lb. last year. Gatton was the only other district returning not less than 100 acres, and there upwards of a ton per acre was obtained—viz., 2,742 lb. against 1,634 lb.

in 1903. The principal districts with the average yield per acre for the past five years are compared below:—

Q b.

	1900.	1901.	1902.	1903.	1904.
	Average per Acre.	Average per Acre.	Average per Acre.	Average per Acre.	Average per Acre.
	Lb.	Lb.	Lb.	Lb.	Lb.
Brisbane	2,976	3,002	2,536	2,310	1,761
Roma... ..	535	1,936	1,358	1,872	1,494
South Brisbane	2,917	2,699	1,827	1,961	1,976
Toowoomba	3,807	4,213	2,601	1,666	1,947
Total State	2,096	2,403	1,755	1,590	1,875

WINE-MAKING.

Particulars respecting this industry are given below:—

Q c.

Years.	Number of Makers.	Quantity of Wine Made.	Quantity of Brandy Distilled.
		Gallons.	Gallons.
1900	556	132,489	1,055
1901	538	148,835	1,112
1902	391	100,852	2,199
1903	251	38,558	692
1904	309	60,433	574

Although a slight improvement on the figures of 1903 is apparent, there does not seem to be much hope of a material expansion of the industry for the present. Information as to the number of makers and the quantity of wine made in each district is as follows:—

Q d.

1904.

Petty Sessions District.	Number of Makers.	Quantity of Wine Made.	Quantity of Brandy Distilled.
		Gallons.	Gallons.
Brisbane	14	6,289	174
Gatton	19	2,364	...
Highfields	54	5,452	...
Laidley	15	1,153	...
Logan	35	2,464	...
Roma	5	8,530	400
South Brisbane	19	5,339	...
Toowoomba	72	10,271	...
All other Districts	76	18,571	...
Total	309	60,433	574

The number of "makers" in a district gives no indication as to the quantity of wine made there. Most of those returning wine are small farmers who frequently manufacture sufficient for their own consumption, so that much of the wine returned is not intended for sale.

BANANAS.

There was a material reduction in 1904 in the area under bananas at Mourilyan—namely, 705 acres, or 2,848 acres in that year against 3,553 acres in 1903—caused by a number of Chinese growers having left this locality. This has, however, been more than compensated for by accessions in the adjoining districts of Cairns and Cardwell. In the aggregate there were 103 more acres utilised as banana plantations than was the case in 1903. Particulars respecting the crop for the past two years are given below:—

R.

District.	Area.		Production.		Increase, or Decrease --	
	1903.	1904.	1903.	1904.	Area.	Quantity.
	Acres.	Acres.	Bunches.	Bunches.	Acres.	Bunches.
Brisbane	253	264	22,438	51,885	11	29,447
Cairns	1,070	1,481	156,977	267,036	411	110,059
Cardwell	213	521	31,175	167,620	308	136,445
Logan	188	155	29,580	19,516	— 33	— 10,064
Maroochy	595	583	54,452	82,889	— 12	— 28,437
Maryborough	146	159	16,648	19,827	13	3,179
Mourilyan	3,553	2,848	746,945	1,287,528	— 705	— 540,583
Redcliffe	157	160	9,220	33,300	3	24,080
All other Districts	402	509	45,143	47,205	107	2,062
Total	6,577	6,680	1,112,578	1,976,806	103	864,228

Not only was there a larger acreage, but the returns per acre were much more satisfactory, there being an average return of 296 bunches per acre in 1904 against 169 bunches in the previous year. Even this, however, falls considerably short of the average obtained in 1900 and 1901, when 373 and 401 bunches respectively were obtained. The large additional area in Cairns has, however, much to do with reducing the general average, as being newly planted areas normal averages could not be looked for.

In Mourilyan, 2,848 acres yielded 1,287,528 bunches, with the very satisfactory yield of 452 bunches per acre. This district provided 43 per cent. of the total area and 65 per cent. of the total production. The averages of three other important centres were:—Cairns, 180 bunches per acre; Cardwell, 322 bunches; and Maroochy, 142 bunches.

PINEAPPLES.

Until comparatively recently pineapples were not much in evidence except in the Brisbane district. That locality still maintains its position as the principal centre, yet the areas cultivated elsewhere has increased in greater proportions. The crops for 1903 and 1904 respectively are compared below:—

S.

District.	1903.		1904.		Increase or Decrease —	
	Area.	Production.	Area.	Production.	Area.	Production.
	Acres.	Dozen.	Acres.	Dozen.	Acres.	Dozen.
Brisbane	601	155,370	731	230,155	130	74,785
Caboolture	35	5,794	49	6,890	14	1,096
Cairns	73	20,330	60	24,420	— 13	4,090
Cleveland	150	28,503	215	36,647	65	8,144
Logan	206	53,553	243	67,701	37	14,148
Maroochy	107	18,514	158	18,617	51	103
Maryborough	77	16,807	87	27,205	10	10,398
Redcliffe	46	6,413	35	5,160	— 11	— 1,253
Rockhampton	28	6,567	36	6,109	8	— 458
South Brisbane	32	8,780	38	7,652	6	— 1,128
All other Districts	138	20,296	129	23,243	— 9	3,042
Total	1,493	340,832	1,781	453,799	288	112,967

It will be seen that the bulk of the cultivation was located in the Moreton division, principally in the districts of Brisbane, Cleveland, Logan, and Maroochy. The yield per acre was somewhat better than in 1903—viz., 255 dozen against 228 dozen—but, excepting 1902, when 237 dozen were returned, the yield per acre was lower than for any other year of the decade.

ORANGES.

The orange crop proved most successful, the return obtained being the best for the last ten years and more than double that for most of them. Details respecting the crop are as follow:—

T.

Petty Sessions District.	Area.		Bearing.	Not yet bearing	Production.		Increase, or Decrease —	
	1903.	1904.	1904.	1904.	1903.	1904.	Area.	Production.
	Acres.	Acres.	Acres.	Acres.	Dozen.	Dozen.	Acres.	Dozen.
Bowen	131	153	95	58	29,299	140,268	22	110,969
Brisbane	60	57	39	18	8,392	58,589	— 3	50,197
Bundaberg	52	46	37	9	1,676	27,039	— 6	25,363
Caboolture... ..	62	62	32	30	15,935	56,418	...	40,483
Cairns	74	97	56	41	48,810	65,391	23	16,581
Cardwell	161	179	79	100	110,370	115,421	18	5,051
Charters Towers	25	29	20	9	18,130	48,872	4	30,742
Cleveland	40	37	14	23	8,296	8,898	— 3	602
Cook	50	49	41	8	58,250	40,060	— 1	— 18,190
Douglas	67	76	55	21	88,813	42,520	9	— 46,293
Gatton	143	183	161	22	54,254	494,968	40	440,714
Gympie	77	60	37	23	13,825	41,802	— 17	27,977
Herberton	31	32	23	9	45,605	63,339	1	17,734
Logan	127	135	68	67	93,423	97,523	8	4,100
Mackay	25	36	32	4	40,279	43,448	11	3,169
Maroochy	673	713	283	430	134,009	441,852	40	307,843
Maryborough	346	312	179	133	63,981	345,071	— 34	281,090
Mourilyan	29	31	27	4	3,021	24,347	2	21,326
Nerang	135	142	67	75	104,018	159,807	7	55,789
Redcliffe	22	24	18	6	10,486	18,920	2	8,434
Rockhampton	90	97	68	29	20,384	68,949	7	48,565
South Brisbane	56	51	28	23	11,749	36,013	— 5	24,264
Tiaro	56	47	26	21	9,005	35,221	— 9	26,216
Toowoomba	56	46	37	9	29,111	38,076	— 10	8,965
All other Districts... ..	348	412	268	144	129,393	306,857	64	177,464
Total	2,936	3,106	1,790	1,316	1,150,514	2,819,669	170	1,669,155

The pride of place now rests with Maroochy, where 713 acres were cultivated, this district having left Maryborough, formerly the principal centre, far in arrears. In this district there were 430 acres yet to come into bearing, pointing to a large expansion of production in the near future, by which time it is to be hoped that a regular export trade oversea may be established.

A trial shipment sent to England in 1904 was not altogether a success. Not only was the fruit packed to some extent inferior in quality, but various delays prior to shipment resulted in their reaching their destination in indifferent condition. It has, however, been clearly shown that, with selected fruit and reasonable care in shipment, oranges should reach England in perfect condition; and, as the time when they would arrive—viz., August-November—is that when the shipments from elsewhere are few and the quality poor, there appears to be a good opening in connection with the trade in this fruit. Of the 3,106 acres in the State shown to be under oranges only 1,790 acres had sufficiently matured to be bearing, leaving 1,316 acres yet to become productive, showing the large additions made to orangeries during the past few years. The bearing area produced 2,819,669 dozen, an average per acre of 1,575 dozen, or, in round figures, about $17\frac{1}{2}$ dozen per tree.

Owing to the large accessions to the acreage in recent years many of the trees recorded as bearing must necessarily have been so young as to have yielded small crops, and thus, in computing averages, have discounted the more favourable returns of the mature trees.

A better average even than that for 1904 may, therefore, be confidently expected within the next few years. For similar reasons the yield per acre in districts varies considerably, affected largely by the length of time during which the cultivation has been established, or the proportion of it that is new orchard. Thus Maroochy does not appear to such advantage as several other districts, notably Gatton, where there have not been any considerable additions to the area under oranges within recent years, the yields per acre being:—Maroochy, 1,561 dozen; Maryborough, 1,928 dozen; Gatton, 3,074 dozen; and Bowen, 1,477 dozen.

MANGOES.

This is a crop which only yields freely in alternate years; the return for 1904 was very satisfactory, as will be seen from the following table:—

U.

District.	Area.		Bearing. 1904.	Not yet Bearing. 1904.	Production.		Increase, or Decrease — 1904.	
	1903.	1904.			1903.	1904.	Acres.	Dozen.
	Acres.	Acres.	Acres.	Acres.	Dozen.	Dozen.	Acres.	Dozen.
Bowen	25	31	28	3	40,108	47,678	6	7,570
Brisbane	18	16	10	6	3,600	6,223	2	2,623
Bundaberg	21	28	26	2	1,833	49,130	7	47,297
Cleveland	15	15	9	6	2,150	1,237	...	913
Cook	16	15	13	2	39,996	73,610	1	38,614
Douglas	3	11	10	1	700	79,730	8	79,030
Ingham	3	10	9	1	15,100	18,590	7	3,490
Logan	38	30	19	11	17,552	2,565	8	14,987
Mackay	44	29	26	3	88,549	215,526	15	126,977
Maryborough	35	36	27	9	4,152	48,344	1	44,192
Mourilyan	15	13	12	1	2,652	1,862	2	790
Rockhampton	29	25	20	5	12,597	30,986	4	18,389
South Brisbane	11	14	9	5	3,065	5,537	3	2,472
Tiaro	12	11	6	5	4,253	1,015	1	3,238
Townsville	16	17	13	4	29,324	73,158	1	43,834
All other Districts	76	81	55	26	61,326	201,401	5	140,075
Total	377	382	292	90	326,957	861,592	5	534,635

There was but little variation in the acreage as returned in the previous year, but the yield increased from 326,957 dozen to 861,592 dozen. Mackay returned the largest area under mangoes in 1903, but a larger number of trees were recorded in 1904 in several other districts. Slight fluctuations will occur in the collections year by year, as in many cases the aggregate is composed of a large number of growers each returning a few trees only; when the crop is indifferent some are overlooked by the collector and again recorded in the next favourable season. It is to be regretted that the results of this crop, which is at times such a prolific one, cannot be profitably disposed of on such occasions.

STRAWBERRIES.

Not only was the whole of the area which in the drought went out of cultivation recovered during 1904, but a further acreage was planted with this fruit. Details respecting the crop are as follows:—

V.

Petty Sessions District.	Area.		Production.		Increase or Decrease —	
	1903.	1904.	1903.	1904.	1904.	1904.
	Acres.	Acres.	Quarts.	Quarts.	Acres.	Quarts.
Brisbane	4	9	5,150	7,928	5	2,778
Bundaberg	4	5	3,450	3,652	1	202
Cleveland	20	44	38,540	68,499	24	29,959
Maroochy	39	78	63,230	86,311	39	23,081
South Brisbane	14	14	40,800	15,722	...	25,078
All other Districts	10	11	8,770	5,414	1	3,356
Total	91	161	159,940	187,526	70	27,586

The slopes of the Blackall Range in the district of Maroochy constitute the area most given to the cultivation of this fruit, although an important advance has been made in the district surrounding Cleveland, on the opposite side of the metropolis. In 1904, 161 acres were cultivated, being an increase of 70 acres on the area for 1903, and 22 acres more than that of 1901, the largest previously recorded. The return per acre was, however, not satisfactory, being only 1,165 quarts per acre, or less than half what might be expected in a favourable season, the continued dry weather, and the hot wind alluded to in the earlier part of this report, having had a very prejudicial effect on the crop. The averages for the principal districts were:—Cleveland, 1,557 quarts per acre; South Brisbane, 1,123; and Maroochy, 1,107. This is less than was obtained in the previous year, when 1,927, 2,914, and 1,621 quarts respectively were obtained, equal to a reduction for each acre of 370 quarts, 1,791 quarts, and 514 quarts in the order named, a difference which would be severely felt by the growers in the monetary value of their crop.

APPLES.

The increase in the area placed under this crop was practically confined to the Stanthorpe district, which promises within a few years to attain considerable importance as a fruit-growing centre. Particulars respecting the crop are as follows:—

W.

District.	Area.		Increase, or Decrease— 1904.	Bearing. 1904.	Not yet Bearing. 1904.	Production.		Increase, or Decrease— 1904.
	1903.	1904.				1903.	1904.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Allora	9	5	5	3	2	78	397	781
Clifton ... ..	...	9		6	3	...	462	
Beaudesert	8	6	2	5	1	362	309	53
Dalby	4	6	2	3	3	75	202	127
Herberton	7	5	2	3	2	163	165	2
Highfields	3	6	3	5	1	267	571	304
Killarney	9	6	3	5	1	311	207	104
Stanthorpe	328	403	75	195	208	12,693	12,870	177
Toowoomba	35	27	8	25	2	3,028	2,619	409
Warwick	8	12	4	11	1	373	203	170
All other Districts	32	31	1	19	12	1,045	1,157	112
Total	443	516	73	280	236	18,395	19,162	767

A few trees are to be found scattered throughout many other parts of the State, but four-fifths of the total area is located at Stanthorpe, as previously stated, 403 out of a total of 516 acres being grown in this district; 208 acres of this area had not come into bearing in 1904, an increase of nearly 80 acres on the figures of 1903. From the 195 acres returned as yielding a crop, 12,870 bushels of fruit were obtained, equal to 66 bushels per acre. This was slightly below the average of the whole State—viz., 68 bushels per acre—and doubtless results from the large proportionate area of young trees which have come into bearing in recent years and yet have not attained full maturity.

OTHER FRUITS.

Table XI., of the Appendix, gives information respecting fruits which are not as yet grown generally or are in areas too small to warrant inclusion in the general tables.

APRICOTS.—There were 47 acres with a yield of 3,225 bushels returned for 1904. The culture of this fruit does not expand as fast as the demand for it warrants.

CHERRIES.—No advance appears to have been made with this fruit; 36 acres were returned, with a yield of 191 bushels.

COCOANUTS.—These are at present entirely returned from various islands in Torres Strait, &c.; 6,858 dozen were gathered from 520 acres, but as the trees are not so much cultivated as planted in detached areas, the acreage quoted is not very reliable. All up the coast within the tropics the islands were some years ago planted at Government expense with this fruit, the primary object being to provide a standby for any victims of wrecks. These have recently come into bearing, and steps are now being taken to lease the right to gather fruit, more from a desire to protect the palms than for the sake of the revenue to be derived.

CAPE GOOSEBERRIES.—This crop self-sows very freely, and appears to spring spontaneously from freshly-burnt scrub land in the coastal districts, notably on the Blackall Range. There were 34 acres under this crop last year, from which 16,174 quarts were obtained. The fruit is principally used for making jam.

PLUMS.—These are grown in small areas in most parts of the State. In 1904, 226 acres yielded 12,286 bushels.

PEACHES.—From 401 acres 27,834 bushels were obtained. The fruit suffered greatly from the fly during the year.

Amongst other fruits were:—Almonds, 2 acres, 8 bushels; custard apples, 24 acres, 1,207 bushels; figs, 8 acres, 370 bushels; lemons, 51 acres, 26,296 dozen; passion fruit, 34 acres, 5,737 bushels; pears, 36 acres, 1,914 bushels; persimmons, 17 acres, 1,094 bushels; quinces, 13 acres, 1,601 bushels; besides small areas under olives, the fruit of which was fed to pigs, a few walnuts and dates, the latter being reported as bearing a small crop.

OTHER VEGETABLES.

Table XI. of the Appendix contains details respecting these crops. A summary of the chief items is given below:—

W a.

	1903.		1904.	
	Acres.	Produce.	Acres.	Produce.
Beans	55	5,335 bushels	72	6,366 bushels
Cabbages	556	212,538 dozen	459	177,461 dozen
Cucumbers	233	91,386 dozen	257	101,139 dozen
Onions	147	10,026 cwt.	55	3,611 cwt.
Peas	75	6,423 bushels	76	6,233 bushels
Tomatoes	343	36,873 bushels	318	34,882 bushels
Turnips	289	2,763 tons	172	1,245 tons
Yams	96	82 tons	87	73 tons

It is to be regretted that more attention is not paid to the production of onions and the money saved that is annually sent out of the State for this necessary vegetable. A considerable portion of the tomato and cucumber crop is sent to southern markets, where these vegetables are readily saleable. Maturing early in the season in advance of the local crops, they are then much in demand there at satisfactory figures.

MISCELLANEOUS CROPS.

Information respecting minor crops not tabulated elsewhere will be found in Table XI. of the Appendix.

BROOM MILLET.—Practically the area devoted to this plant was doubled during 1904, having increased from 123 acres to 243 acres; the yield per acre was also much better, viz., 654 lb. as against 439 lb in 1903. Two cultivators ceased to grow millet in Toowoomba, causing the only material reduction in area recorded. Information respecting the crop is given below:—

X.

Division and District.	BROOM.				Increase or — Decrease.	Increase or — Decrease.	AVERAGE YIELD PER ACRE.	
	1903.		1904.				1903.	1904.
	Acres.	Lb.	Acres.	Lb.	Acres.	Lb.	Lb.	Lb.
<i>Rockingham—</i>								
Herberton ... ..	...	...	15	4,500	15	4,500	...	300
<i>Edgumbe—</i>								
Bowen ... ..	...	...	1	672	1	672	...	672
<i>Burnett and Wide Bay—</i>								
Bundaberg ... ..	...	...	4	3,330	4	3,330	...	833
Gympie	2	1,344	...	...	— 2	— 1,344	672	...
<i>Moreton—</i>								
Beaudesert	7	2,640	15	7,220	8	4,580	377	481
Dugandan	14	5,020	48	31,220	34	26,200	359	650
Gatton	21	2,700	14	9,438	— 7	6,738	129	674
Ipswich	2	400	...	...	— 2	— 400	200	...
Laidley	14	6,772	57	32,364	43	25,592	484	568
Logan	25	12,208	58	52,945	33	40,737	488	913
Nerang ... ..	...	...	11	5,500	11	5,500	...	500
<i>Downs—</i>								
Killarney ... ..	...	...	3	2,240	3	2,240	...	747
Toowoomba	34	22,868	9	6,720	— 25	— 16,148	673	737
Warwick ... ..	...	...	6	2,000	6	2,000	...	333
<i>Maranoa—</i>								
Roma	4	20	...	...	— 4	— 20	5	...
<i>Other Districts—</i>								
Springsure ... ..	...	...	2	800	2	800	...	400
Total	123	53,972	243	158,949	120	104,977	439	654

A material advance in the industry connected with this product took place during last year, our broom manufacturers utilising 123,757 lb., or 47,405 lb. more than in the previous year. Of the quantity so worked up, 88,678 lb. were grown in Queensland, practically half the crop being still in the hands of the farmers awaiting sale. Particulars respecting the consumption of broom millet are as follows:—

X a.

Year.	Total.	Queensland Grown.	Grown Elsewhere.
	Lb.	Lb.	Lb.
1900	107,520	84,000	23,520
1901	139,440	34,720	104,720
1902	172,127	34,828	137,299
1903	76,352	32,564	43,788
1904	123,757	88,678	35,079
Mean of Five Years	123,839	54,958	68,881

OTHER MISCELLANEOUS CROPS.—There are a number of crops which it has been proved can be successfully cultivated in Queensland, both soil and climate being most suitable; but many of them have not yet been produced in sufficient quantities for export as a raw material for manufacture, and as the cultivators are consequently unable to find a market no advance is made in the production.

THE PEANUT is one of the class referred to; this is utilised for the manufacture of an oil scarcely distinguishable from olive oil. Marseilles is the great centre of this industry, but the supply is not equal to the demand. The quantity imported there exceeds 100,000 tons per annum, and their import value is given at about £14 per ton. The average yield in Queensland last year was but little over half a ton per acre, but records show that this return might be more than doubled.

CANARY SEED.—A considerable area of this was planted during 1904—viz., 254 acres, yielding 192,614 lb.

CASSAVA.—Ten acres were planted with this crop, and the yield over the major portion was fairly satisfactory. It is solely used for pig food, after exposure to the sun for a time, to eliminate the poison which in its natural state it contains.

MANGEL WURZEL.—There was a slight increase in the area under this root in 1904—namely, from 164 acres in 1903 to 197 last year, although the yield—1,914 tons—might be improved on.

SISAL HEMP.—This plant yields a return in about three to five years. Of that planted up to the present sufficient has not yet matured to furnish any quantity of fibre to be of commercial importance. This plant gives best results in comparatively inferior soil, and those who have planted on rich lands are likely to meet with disappointment.

HAY CROPS.

Both the detailed tables of agriculture and Table No. XII. of the Appendix show the results under this head. The stocks in hand at the commencement of last year were in many cases sufficiently large to tend to defer further crops being sown in 1904, whilst the embargo placed on the export of this class of produce as a result of quarantine was calculated to prevent expansion of production. Particulars respecting the crop are summarised below:—

Y.

	Area.		Increase or Decrease —	Production.		Increase or Decrease —
	1903.	1904.		1903.	1904.	
	Acres.	Acres.	Acres.	Tons.	Tons.	Tons.
Wheat	6,189	3,137	- 3,052	10,665	3,608	- 7,057
Oats	19,523	9,076	- 10,447	32,910	11,549	- 21,361
Lucerne	49,501	35,009	- 14,492	86,664	62,970	- 23,694
Other	3,180	1,518	- 1,662	5,878	2,535	- 3,343
Total	78,393	48,740	- 29,653	136,117	80,662	- 55,455

Practically little else but oats and lucerne are utilised for hay in Queensland. Areas which in previous years were devoted to hay in 1904 were either grazed or the produce cut green. The loss of the area grazed over accounted for nearly half the reduced area under cultivation for the year.

GREEN FORAGE CROPS.

Full particulars will be found in the Appendix Table No. XIII. There was an increase in the area so utilised of 9,285 acres, largely due to the requirements of the dairy farmer.

ARTIFICIALLY SOWN PASTURE.

Much of this consists of lucerne paddocks, which are utilised either for hay or pasture, according to requirements, the area under "fodder crops" being therefore a much varying quantity. No less than 35,589 acres were returned under this head in 1904, being an increase of 19,950 acres on the figures for the previous year. If all three items for fodder were taken together, the figures for 1903 and 1904 would practically coincide, but as artificial pasture is not included as cultivated land, the fluctuations under this head have a disturbing effect on the extent under crop.

Z.

District.	1903.	1904.	Increase. 1904.	Decrease. 1904.
	Acres.	Acres.	Acres.	Acres.
Allora	2,064	1,047	...	1,017
Beaudesert	381	335	...	46
Clifton* ... ..	...	3,845	3,845	...
Crow's Nest	204	5,303	5,099	...
Dalby	250	888	638	...
Dugandan	77	315	238	...
Esk	488	991	503	...
Gatton	393	2,348	1,955	...
Herberton	1,077	1,406	329	...
Highfields	174	963	789	...
Ipswich	4	480	476	...
Killarney	100	278	178	...
Maroochy	1,499	2,602	1,103	...
Nanango	446	1,305	859	...
Nerang	736	695	...	41
Toowoomba	4,733	8,334	3,601	...
Warwick	1,139	2,685	1,546	...
Woodford	367	766	399	...
All other Districts	1,507	1,003	...	504
Total State	15,639	35,589	19,950	...

* Previously included in Allora.

ENSILAGE.

There was an increase in the quantity made during 1904, as shown below:—

Z a.

District.	1903.	1904.	Increase. 1904.	Decrease. 1904.
	Tons.	Tons.	Tons.	Tons.
Allora ...	80	250	170	...
Barcaldine ...	12	...	...	12
Brisbane ...	...	15	15	...
Cairns ...	20	60	40	...
Clifton* ...	...	13	13	...
Crow's Nest ...	4	28	24	...
Dalby ...	100	...	...	100
Esk ...	13	2	...	11
Gin Gin ...	2	...	...	2
Gladstone ...	...	2	2	...
Gympie ...	150	...	...	150
Goodna ...	25	...	...	25
Harrisville ...	186	...	...	186
Inglewood ...	...	27	27	...
Ipswich ...	10	...	...	10
Laidley ...	...	10	10	...
Marburg ...	20	...	...	20
Maroochy ...	14	...	...	14
Nanango ...	142	...	...	142
Nerang ...	44	...	...	44
Rockhampton ...	...	1,100	1,100	...
Roma ...	...	35	35	...
Springsure ...	20	...	...	20
Toowoomba ...	368	193	...	175
Townsville ...	25	...	...	25
Warwick ...	38	...	...	38
Total ...	1,273	1,735	462	...

* Previously included in Allora.

If it had not been for the quantity made at Rockhampton, the returns would have shown a marked decrease on those of the preceding year. Fourteen districts where ensilage was stacked in 1903 failed to increase their store during 1904. As ensilage is practically an unsaleable article, no serious attention appears to be paid to this method of conserving green fodder.

I am indebted to the Chief Compiler, Mr. Shackel, for assistance in the preparation of this report.

THORNHILL WEEDON, F.S.S.,
Government Statistician.

Government Statistician's Office,
Brisbane, 6th July, 1905.

[Faint, illegible table with multiple columns and rows, possibly a continuation of the ensilage data or a related statistical table.]

APPENDIX.

Table No. I.

RETURN OF THE NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN THE VARIOUS PETTY SESSIONS DISTRICTS OF THE STATE, TOGETHER WITH THE INCREASE AND DECREASE OF CATTLE AND SHEEP ON THE 31ST DECEMBER, 1904.

Petty Sessions District.	Horses.	Cattle.				Sheep.				Pigs.
		1904.	1903.	1904.		1903.	1904.	1904.		
				Increase.	Decrease.			Increase.	Decrease.	
Adavale	2,187	9,894	11,523	1,629	...	224,711	346,039	121,328	...	13
Allora	2,365	11,556	8,302	...	...	55,389	16,584	...	...	3,381
Toowoomba	3,942	...	8,202	18,284	...	...	49,385	87,627	...	3,292
Alpha	13,151	31,926	45,262	...	...	379,066	456,113	...	...	15,203
Aramac	1,935	6,190	5,653	271	...	4,162	30,098	21,709	...	523
Augathella	1,513	1,894	2,702	...	...	128,213	123,986	...	...	33
Ayr	1,194	8,619	8,165	...	454	121,916	151,383	29,467	...	25
Banana	4,327	25,781	27,382	1,601	...	441	307	...	134	1,426
Rockhampton	2,353	16,178	20,231	...	...	11,720	14,752	...	...	129
Barcaldine	20,196	90,621	104,331	17,763	...	10,830	10,012	2,214	...	8,217
Beaudesert	2,686	1,741	5,423	3,682	...	400,010	494,157	94,147	...	321
Biggenden	4,457	44,047	45,853	1,806	...	498	643	145	...	7,282
Blackall	1,608	7,808	6,106	...	1,702	526	603	77	...	1,780
Bollon	2,971	2,424	6,836	4,412	...	346,581	445,567	98,986	...	268
Boulia	2,368	12,334	19,875	7,541	...	257,345	343,108	85,763	...	180
Bowen	5,936	57,837	76,062	18,225	...	110,137	84,188	...	25,949	19
Ravenswood	10,048	69,242	66,345	...	1,471	3,884	4,436	382	...	727
Brisbane	2,664	6,871	8,297	...	...	200	30	...	...	290
Bundaberg	7,819	10,105	11,888	1,783	...	250	322	72	...	3,192
Gladstone	6,124	30,135	19,448	...	...	516	199	...	...	6,372
Burke	10,667	54,134	76,778	11,957	...	2,918	3,594	359	...	2,825
Caboolture	5,993	138,921	108,593	...	30,328	1,138	953	...	185	138
Cairns	1,010	5,301	5,662	361	...	111	136	25	...	1,497
Camooweal	2,667	2,916	3,452	536	...	1,877	280	...	1,597	997
Cape River	2,459	31,930	35,763	3,833	...	12,001	15,000	2,999	...	13
Cardwell	4,693	27,149	30,506	3,357	...	162	20	...	142	232
Charleville	1,518	8,876	5,683	...	3,193	...	...	...	...	116
Charters Towers	3,100	16,034	21,775	5,741	...	167,095	227,267	60,172	...	505
Childers	13,964	71,662	84,258	12,596	...	1,944	1,967	23	...	1,246
Clermont	2,314	3,772	4,552	780	...	109	14	...	95	2,320
Cleveland	5,367	14,882	20,931	6,049	...	222,920	283,780	60,860	...	782
Cloncurry	413	1,294	829	...	465	...	1	...	...	375
Hughenden	8,084	99,887	106,988	...	...	254,156	242,350	...	...	244
Richmond	4,321	120,123	39,186	13,951	...	580,283	274,554	198,828	...	355
Condamine	5,556	...	87,787	...	...	...	516,363	...	...	348
Cook	1,095	8,234	8,823	589	...	10,511	5,739	...	4,772	506
Palmer	2,217	...	6,866	...	...	...	...	...	...	110
Crow's Nest	3,826	29,538	25,724	...	6,937	...	...	...	...	448
Gayndah	1,126	12,321	2,332	...	...	...	...	...	...	39
Gympie	2,627	18,076	16,091	...	...	1,949	546	...	...	4,661
Nanango	4,085	55,303	44,424	...	...	1,267	1,220	...	...	872
Croydon	5,196	37,645	31,931	15,915	...	1,876	118	6,451	...	3,744
Cunnamulla	3,714	...	39,030	...	...	...	2,767	...	...	1,622
Dalby	5,664	46,393	41,856	...	...	1,677	8,569	...	...	4,101
Diamantina	2,900	34,558	24,643	...	9,915	...	...	...	...	113
Douglass	2,697	7,196	6,120	...	1,076	636,131	785,993	149,862	...	194
Dugandan	7,928	17,935	28,419	10,484	...	344,431	439,454	95,023	...	5,875
Eidsvold	1,813	25,266	32,006	6,740	...	423	1,463	1,040	...	...
Emerald	914	548	544	...	4	...	...	...	...	131
Esk	3,372	21,678	24,469	2,791	...	199	285	86	...	5,804
Etheridge	3,501	39,558	42,264	2,706	...	14,234	15,510	1,276	...	410
Eulo	1,031	1,285	2,597	1,312	...	2,946	6,036	3,090	...	454
Gatton	5,469	60,792	61,421	629	...	1,185	1,237	52	...	3,816
Gin Gin	6,866	94,937	106,372	11,435	...	78,524	130,635	52,111	...	234
Goodna	611	3,268	3,769	501	...	1,031	401	...	630	25
Goondiwindi	5,572	26,926	28,788	1,862	...	405	400	...	5	8,680
Harrisville	3,248	24,870	26,211	1,341	...	40	40	...	...	1,971
Herberton	613	1,351	1,621	270	...	153,640	231,092	77,452	...	395
Highfields	1,958	8,813	10,921	2,108	...	201	166	...	35	485
Hungerford	2,377	15,600	17,055	1,455	...	102	84	...	18	4,321
Ingham	8,905	47,943	54,937	6,994	...	2,293	3,545	1,252	...	1,616
Inglewood	2,397	8,405	10,631	2,226	...	91,039	98,795	7,756	...	4,196
Ipswich	541	940	587	...	353	180	151	...	29	11
Isisford	5,889	18,556	22,218	3,662	...	60,416	106,787	46,371	...	2,798
Killarney	1,560	22,106	13,548	...	8,558	379	597	218	...	959
Laidley	4,673	13,993	18,821	4,828	...	316,037	368,944	52,907	...	3,602
Logan	2,750	2,746	4,473	1,727	...	292	1,972	1,680	...	17
Longreach	3,332	3,862	5,137	1,275	...	58	383	325	...	1,576
Mackay	2,031	9,167	12,342	3,175	...	74	104	30	...	6,009
Marburg	3,592	8,658	9,931	1,273	...	786,527	949,597	163,070	...	1,994
Mareeba	5,989	6,735	9,095	2,360	...	11,520	14,195	2,675	...	260
Maroochy	16,790	45,882	50,168	4,286	...	...	...	...	...	2,911
Maryborough	1,702	7,996	8,871	875	...	93	20	...	73	4,844
Mitchell	1,114	1,504	1,490	...	14	95	212	117	...	118
Mount Morgan	1,890	5,216	6,612	1,396	...	330	364	34	...	1,992
Mourilyan	4,862	12,393	14,497	2,104	...	74,099	91,810	17,711	...	2,730
Muttaborra	3,906	28,634	32,467	3,833	...	171	220	49	...	1,242
Nerang	3,954	5,276	6,610	1,334	...	32	68	36	...	565
Norman	1,078	971	1,259	288	...	466,850	806,248	339,398	...	584
Redcliffe	3,285	11,206	13,770	2,564	...	152	248	96	...	71
	2,382	10,404	11,651	1,247	...	246	200	...	46	2,905
	6,522	236,503	210,186	...	26,317	14	11	...	3	257
	1,909	9,164	10,880	1,716	...	...	...	...	...	3,055

Table No. I.—continued.

Petty Sessions District.	Horses.	Cattle.				Sheep.				Pigs.		
		1904.	1903.	1904.	1904.		1903.	1904.	1904.		1904.	
					Increase.	Decrease.			Increase.			Decrease.
Roma	4,729	18,087	27,457	9,370	...	147,411	196,134	48,723	...	2,606		
Rosewood	2,612	15,275	16,680	1,405	...	365	286	...	79	4,632		
St. George	2,454	5,107	10,738	5,631	...	231,830	372,671	140,841	...	371		
St. Lawrence	3,770	23,673	24,587	914	...	398	299	...	99	502		
Somerset	146	651	627	...	24	...	11	...	11	282		
South Brisbane	4,349	5,697	6,957	1,260	...	389	370	...	19	2,729		
Southwood	395	2,866	1,882	...	984	18,559	31,713	13,154	...	62		
Springsure	3,578	19,585	27,983	8,398	...	77,949	131,181	53,232	...	689		
Stanthorpe	2,173	15,194	16,196	1,002	...	51,109	56,762	5,653	...	664		
Surat	1,322	1,763	5,477	3,714	...	147,309	210,971	63,662	...	250		
Tambo	1,755	4,664	5,823	1,159	...	220,253	272,476	52,223	...	60		
Taroom	2,044	20,369	27,905	7,536	...	13,219	20,702	7,483	...	167		
Tenningering	1,559	11,550	12,708	1,158	...	218	115	...	103	340		
Texas	1,147	6,349	7,887	1,538	...	4,360	4,835	475	...	173		
Thargomindah	4,242	22,814	40,968	18,154	...	125,047	123,484	...	1,563	127		
Thornborough	3,457	34,312	37,147	2,835	...	...	...	...	...	161
Tiaro	4,843	27,219	30,487	3,268	...	287	364	77	...	3,299		
Townsville	6,482	15,956	16,357	401	...	664	42	...	622	1,976		
Warwick	6,996	27,705	34,016	6,311	...	114,178	129,965	15,787	...	5,471		
Windorah { Jundah	1,205	...	8,289	...	...	...	163,890	...	...	53
Windorah { Windorah	1,805	12,162	10,682	6,809	...	186,925	70,519	47,484	...	121		
Winton	6,310	18,496	22,121	3,625	...	686,645	839,160	152,515	...	82		
Woodford	2,743	16,368	19,571	3,203	...	250	592	342	...	2,011		
Yeulba	606	3,420	4,688	1,268	...	1,901	2,511	610	...	324		
Total in State in 1904	413,165	...	2,722,340	...	...	...	10,843,470	...	...	185,141
Total in State in 1903	401,984	2,481,717	...	...	...	8,392,044	...	...	...	117,553
Increase in 1904	11,181	...	...	240,623	...	...	...	2,451,426	...	67,588
Decrease in 1904 ... ..	...	...	...	...	...	...	...	...	...	...

Table No. II.

RETURN OF THE NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN THE VARIOUS PASTORAL DISTRICTS OF THE STATE FOR THE YEARS 1903 AND 1904, TOGETHER WITH THE NUMERICAL AND CENTESIMAL INCREASE OR DECREASE IN THE LATTER YEAR.

Pastoral District.	Year.	Horses.	Cattle.	Sheep.	Pigs.	Numerical Increase or Decrease—				Centesimal Increase or Decrease—			
						Horses.	Cattle.	Sheep.	Pigs.	Horses.	Cattle.	Sheep.	Pigs.
Burke	1903	36,191	594,157	838,489	1,153	...	...	...	...	...	...	...	...
	1904	34,176	554,723	1,000,517	1,446	- 2,015	- 39,434	162,028	293	- 5.57	- 6.64	19.32	25.41
Burnett	1903	16,892	158,486	17,922	3,065	...	...	...	...	...	...	...	...
	1904	19,088	174,880	26,026	8,455	2,196	16,394	8,104	5,390	13.00	10.34	45.22	175.86
Cook	1903	31,042	248,525	2,038	3,351	...	...	...	...	...	...	...	...
	1904	31,578	247,205	379	4,737	536	- 1,320	- 1,659	1,386	1.73	- 0.53	- 81.40	41.36
Darling Downs	1903	44,080	166,354	1,194,365	23,571	...	...	...	...	...	...	...	...
	1904	47,172	200,329	1,533,996	41,853	3,092	33,975	339,631	18,282	7.01	20.42	28.44	77.56
Gregory North	1903	14,834	93,785	825,066	142	...	...	...	...	...	...	...	...
	1904	13,754	117,746	947,586	141	- 1,080	23,961	122,520	1	- 7.28	25.55	14.85	- 0.70
Gregory South	1903	6,239	30,662	191,370	153	...	...	...	...	...	...	...	...
	1904	4,985	47,917	146,211	204	- 1,254	16,255	- 45,159	51	- 20.10	53.01	- 23.60	33.33
Leichhardt	1903	31,343	159,543	178,866	2,839	...	...	...	...	...	...	...	...
	1904	28,970	191,762	257,861	7,105	- 2,373	32,219	78,995	4,266	- 7.57	20.19	44.16	150.26
Maranoa	1903	13,818	58,156	859,742	1,953	...	...	...	...	...	...	...	...
	1904	14,585	83,236	1,216,040	4,960	767	25,080	356,298	3,007	5.55	43.13	41.44	153.97
Mitchell	1903	19,927	50,290	2,609,094	634	...	...	...	...	...	...	...	...
	1904	22,652	77,684	3,582,770	1,069	2,725	27,394	973,676	435	13.67	54.47	37.32	68.61
Moreton	1903	59,870	309,234	7,240	51,674	...	...	...	...	...	...	...	...
	1904	62,381	341,336	8,958	74,211	2,511	33,102	1,718	22,537	4.19	10.70	23.73	43.61
North Kennedy	1903	47,820	238,285	7,443	7,673	...	...	...	...	...	...	...	...
	1904	48,651	257,890	6,563	8,762	831	19,605	880	1,089	1.74	8.23	- 11.82	14.19
Port Curtis	1903	21,518	125,924	10,060	6,046	...	...	...	...	...	...	...	...
	1904	23,226	139,964	9,776	6,564	1,708	14,040	284	518	7.94	11.15	- 2.82	8.57
South Kennedy	1903	23,097	81,639	170,380	3,078	...	...	...	...	...	...	...	...
	1904	22,326	90,234	222,223	4,148	- 771	8,595	51,843	1,070	- 3.34	10.53	30.43	34.76
Warrego	1903	11,691	53,321	1,476,884	730	...	...	...	...	...	...	...	...
	1904	12,459	64,143	1,882,725	795	768	10,822	403,841	65	6.57	20.30	27.48	8.90
Wide Bay	1903	23,622	113,356	3,085	11,491	...	...	...	...	...	...	...	...
	1904	27,162	133,291	1,839	20,691	3,540	19,935	- 1,246	9,200	14.99	17.59	- 40.39	80.06

Table No. III.

RETURN OF LIVE STOCK SLAUGHTERED FOR PRESERVATION AS FOOD, OR FREEZING, OR FOR TALLOW, IN THE STATE, DURING THE YEARS 1895-1904, WITH THE QUANTITY AND VALUE OF MEAT, TALLOW, LARD, &c., PRODUCED.

Year.	Number of Establishments.	Average Number of Hands Employed.	NUMBER SLAUGHTERED.						Hogs. +	MEAT PRESERVED OR FROZEN.						Quantity of Tallow Produced.	Quantity of Lard Produced.	Total Value of all Products shown here.		
			Cattle.			Sheep.				Beef.		Mutton.		+ Bacon and Hams.	Pork, Salt and Fresh.					
			For Freezing.	For Preserving.	For Boiling Down.	For Freezing.	For Preserving.	For Boiling Down.		Fresh Preserved.	Salted.	Frozen.	Preserved.							
1895	39	2,848	80,487	104,969	98,374	75,600	385,060	743,257	58,870	50,349,956	9,523,164	326,232	3,064,458	5,088,502	4,941,512	925,025	511,533	21,263	159,093	760,175
1896	35	2,838	76,483	77,719	87,562	100,550	262,151	430,696	67,034	50,245,213	19,014,648	182,586	4,571,086	2,914,902	5,108,726	1,230,034	517,011	12,736	203,972	980,772
1897	38	2,604	111,267	62,342	85,754	70,865	259,536	615,454	76,719	62,764,267	34,931,056	106,499	2,952,290	1,970,959	6,103,485	1,191,345	463,386	13,651	167,743	785,539
1898	46	2,876	112,940	65,966	147,528	61,258	69,006	146,845	85,510	64,676,868	23,209,919	1,972,000	2,355,080	967,363	6,973,007	878,901	1,593,285	13,609	216,194	548,651
1899	47	3,156	117,668	140,815	127,983	119,964	144,345	215,509	101,704	78,173,578	46,031,300	1,192,152	4,966,390	2,616,318	7,147,760	975,302	1,925,193	19,165	222,460	1,101,004
1900	33	2,540	150,057	108,975	21,022	50,719	75,887	25,049	90,608	91,006,191	33,111,290	1,153,285	2,283,758	1,379,785	7,685,446	696,062	759,193	9,657	381,695	1,068,623
1901	26	1,879	140,011	57,447	2,285	64,121	67,692	301	104,017	90,053,829	29,732,204	173,716	3,337,332	2,827,247	7,064,714	662,500	333,014	8,231	405,181	1,729,082
1902	22	1,548	132,166	51,205	2,471	117,729	189,025	2,251	88,416	85,743,229	22,543,999	479,138	5,225,727	*5,374,696	6,512,952	841,673	192,781	5,237	197,990	1,835,665
1903	16	999	108,343	16,149	922	102,007	13,309	110	54,712	66,483,364	9,773,112	73,924	4,906,991	498,416	4,145,900	940,489	100,720	3,661	273,257	1,437,701
1904	17	1,059	51,108	19,066	579	90,828	10,206	...	106,633	36,514,333	10,227,433	400,237	4,598,825	470,645	6,514,852	2,131,647	59,091	4,290	314,489	952,388

Metropolitan 5
Bowen 1
Charters Towers 1
Caboolture 1
Gatton 1
Gladstone 1
Goondra 1
Harrisville 1
Mackay 2
Rockhampton 1
Townsville 1
Warwick 1

* Includes 3,970 lb. salted.

+ Pigs killed by farmers, and pork and bacon made therefrom, are included in this table.

Table No. IV.

RETURN showing the NUMBER of CATTLE, SHEEP, &C., SLAUGHTERED (under the supervision of Inspectors of Slaughter-Houses only) for CONSUMPTION as FOOD in the STATE, together with the AVERAGE DEAD WEIGHT of each ANIMAL and the ESTIMATED QUANTITY CONSUMED PER CAPITA, for FIVE YEARS, ending 31st DECEMBER, 1904 (exclusive of Factories engaged in Slaughtering for Preservation).

YEARS.	*POPULATION.				NUMBER SLAUGHTERED.							AVERAGE DEAD WEIGHT.							CONSUMPTION PER CAPITA.							
	Estimated for the Year.				Cattle.	Sheep.	Calves.	Lambs.	Hogs.	Cattle.	Sheep.	Calves.	Lambs.	Hogs.	Beef.	Mutton.	Veal.	Lamb.	Pork.	Total.	Beef.	Mutton.	Veal.	Lamb.	Pork.	Total.
	lb.	£	Tons.	£	lb.	£	lb.	£	lb.	lb.	£	lb.	£	lb.	£	lb.	£	lb.	£	lb.	lb.	£	lb.	£	lb.	£
1900	477,020	177,394	474,538	17,737	8,032	38,851	579	44	59	30	83	215	44	2	0.51	6.76	268.27									
1901	488,382	161,480	411,100	16,210	11,491	35,556	602	46	62	32	86	199	39	2	0.75	6.26	247.01									
1902	493,117	148,970	399,412	9,919	7,026	33,387	540	35	58	25	77	163	28	1	0.36	5.21	197.57									
1903	497,794	132,237	335,610	4,772	2,630	25,644	577	46	60	34	82	153	31	0.57	4.22	188.97										
1904	503,574	133,368	297,103	6,594	2,551	27,852	655	50	58	33	84	173	29	0.76	4.65	207.58										

* The figures quoted in this column refer to the estimated number of consumers calculated on data in the Statistical Department.

Table No. V.

OTHER PRODUCTS OF MEAT PRESERVING, &C., ESTABLISHMENTS in the STATE—RETURN for TEN YEARS.

Year.	No.	Manure.		Edible Fats.		Hides.		Skins.		Bones.		Horns and Hoofs.		Hair.		Oils, &c.		All Other Products.*	Total Value.
		Tons.	£	lb.	£	Number.	£	Number.	£	Tons.	£	£	£	Gallons.	£				
1895	36	4,505	11,124	560,219	6,599	250,781	161,795	1,170,559	160,545	5,001	1,332	3,905	59,434	1,979	2,661	28,454	2,661	353,609	
1896	35	7,321	13,627	597,000	1,950	239,305	141,559	1,770,482	119,370	2,808	683	2,288	39,220	1,238	2,350	23,782	2,350	285,190	
1897	38	10,738	24,654	673,385	8,455	259,160	161,979	929,330	125,043	3,696	954	3,307	76,539	1,848	2,899	18,478	2,899	330,801	
1898	46	15,072	36,133	1,083,523	14,189	325,933	227,175	275,324	39,736	4,685	991	5,615	72,358	1,871	2,899	27,678	2,899	332,303	
1899	47	17,347	56,446	985,121	13,163	395,929	337,931	524,215	97,016	6,363	1,265	10,819	92,487	2,359	2,681	26,000	2,681	526,928	
1900	27	9,519	31,518	1,362,786	19,792	265,051	285,239	191,445	28,850	3,739	655	12,900	39,089	2,001	2,022	17,590	2,022	345,134	
1901	18	4,937	21,999	1,382,080	21,244	182,708	180,673	187,126	14,847	2,873	522	5,321	34,670	1,820	2,218	16,916	2,218	259,663	
1902	18	3,654	14,274	1,191,572	21,572	178,090	170,874	275,176	26,311	3,824	578	3,649	16,310	860	2,283	18,769	2,283	243,647	
1903	12	2,215	9,973	1,033,491	16,807	130,639	135,518	150,900	21,466	3,660	625	4,667	17,819	797	1,296	10,540	1,296	209,123	
1904	12	1,763	8,667	377,105	5,109	76,677	86,505	124,251	19,023	1,001	159	3,069	28,933	813	753	7,242	753	145,852	

* Not compiled prior to 1900.

Table No. VII.
RETURN showing the GROSS PRODUCE of PRINCIPAL CROPS Raised in the several DISTRICTS and PETTY SESSIONS DISTRICTS of the STATE during the YEAR ended 31st DECEMBER, 1904.

DISTRICTS AND PETTY SESSIONS DISTRICTS.	QUANTITY OF PRODUCE.																					
	GRAIN CROPS.						POTATOES.		Pumpkins and Melons.	Cotton.	SUGAR-CANE.		Arrowroot.	Tobacco (Cured Leaf).	Coffee.	Hay (All Kinds).	VINES.		Bananas.	Pineapples.	Oranges.	
	Wheat.	Oats.	Barley.		Maize.	Eye.	Rice.	English.			Sweet.	Acres.					Sugar-Cane Crushed.	Tons.				Lb.	Grapes Gathered.	Bunches.	Dozens.	Dozens.
<i>Moreton District.</i>																						
Beaudesert	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brisbane	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Caboolture	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cleveland	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Crow's Nest	11,915	400	4,803	704	87,502	39	1,137	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dugandan	176	14	...	184	164,386	341	483	243	4,253	924	464	27	2	...	...	...	...	...	...	...	...	...
Esk	4	...	...	64	70,187	...	4,622	464	4,272	57	...	...	...	...	...	...	...	...	...	...	...	...
Gatton	594	...	...	...	214,500	...	27	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Goodna	45	...	...	40	5,581	...	148	75	1,804	...	...	...	...	...	...	...	...	...	...	...	...	...
Harrisville	...	...	...	...	76,316	...	480	156	1,804	...	...	...	...	...	...	...	...	...	...	...	...	...
Ipswich	...	...	...	18	24,289	...	2,177	456	642	...	...	...	...	...	...	...	...	...	...	...	...	...
Laidley	1,003	...	674	52	195,851	30	...	...	3,776	...	...	...	...	...	...	...	...	...	...	...	...	...
Logan	...	...	...	...	33,345	...	501	631	3,776	59	...	...	...	...	...	...	...	...	...	...	...	...
Marburg	...	...	...	40	66,935	...	197	230	2,601	...	...	...	...	...	...	...	...	...	...	...	...	...
Maroochy	...	...	...	...	23,196	...	88	442	2,601	...	...	...	...	...	...	...	...	...	...	...	...	...
Nerang	...	...	...	...	53,961	...	510	199	1,817	...	...	...	...	...	...	...	...	...	...	...	...	...
Redcliffe	...	...	...	...	32,807	...	552	588	1,215	107	...	...	...	...	...	...	...	...	...	...	...	...
Rosewood	30	...	...	...	39,896	...	248	68	507	202	...	...	...	...	...	...	...	...	...	...	...	...
South Brisbane	...	...	...	60	4,032	...	8	162	29	7	...	...	...	...	...	...	...	...	...	...	...	...
Woodford	...	...	...	...	15,886	...	135	225	54	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Moreton	13,767	414	5,957	1,122	1,210,184	488	12,722	6,141	23,628	...	2,967	3,713	28,191	...	39,669	1,500,124	193,775	374,862	1,510,406	...	...	...
<i>Downs District.</i>																						
Allora	211,336	280	27,948	6,403	43,018	...	129	...	185	...	...	...	...	...	...	...	...	...	...	...	...	...
Clifton	362,430	2,110	109,963	400	51,464	...	11	...	85	...	...	...	...	...	...	...	...	...	...	...	...	...
Coudamine	3,357	16	...	...	478	...	...	2	90	...	...	...	...	...	...	...	...	...	...	...	...	...
Dalby	179,885	280	10,535	1,702	20,810	...	29	7	263	...	...	...	...	...	...	...	...	...	...	...	...	...
Goondiwindi	...	...	...	...	967	...	2	...	29	...	...	...	...	...	...	...	...	...	...	...	...	...
Highfields	68,834	...	13,942	1,612	120,789	...	676	...	557	...	...	...	...	...	...	...	...	...	...	...	...	...
Inglewood	10,919	40	545	3,682	3,760	...	48	2	140	...	...	...	...	...	...	...	...	...	...	...	...	...
Killarney	172,058	676	16,385	...	68,613	...	190	...	133	...	...	...	...	...	...	...	...	...	...	...	...	...
Southwood	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stanthorpe	862	200	...	...	1,275	...	150	...	79	...	...	...	...	...	...	...	...	...	...	...	...	...
Texas	2,081	40	...	80	4,595	...	4	...	50	...	...	...	...	...	...	...	...	...	...	...	...	...
Toowoomba	364,025	6,120	62,290	11,595	111,483	...	291	...	1,441	...	...	...	...	...	...	...	...	...	...	...	...	...
Warwick	401,591	4,890	48,470	8,044	67,728	...	449	...	421	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Downs	1,778,680	14,652	289,577	34,063	494,920	1,171	1,980	11	3,473	...	...	...	...	...	9,631	1,500,124	193,775	374,862	1,510,406	...	...	...
<i>Maranoa District.</i>																						
Bollon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mitchell	44,570	15	...	...	290	...	1	...	20	...	...	...	...	...	...	...	...	...	...	...	...	...
Roma	274,594	...	410	98	4,990	...	42	...	14	...	...	...	...	...	...	...	...	...	...	...	...	...
St. George	1,103	...	...	...	125	...	14	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Surat	5,672	4	400	7	42	...	2	...	13	...	...	...	...	...	...	...	...	...	...	...	...	...
Yeulba	10,941	...	...	...	797	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Maranoa	336,880	19	840	105	6,244	32	62	9	47	...	...	...	...	...	796	345,700	...	...	...	...	...	14,354

Table No. VII.—continued.

DISTRICTS AND PETTY SESSIONS DISTRICTS.	QUANTITY OF PRODUCE.																					
	GRAIN CROPS.						POTATOES.			Pumpkins and Melons.		Cotton.	SUGAR-CANE.		Arrowroot.	Tobacco (Cured Leaf).	Coffee.	Hay (All Kinds).	VINES.			
	Wheat.	Oats.	Barley.		Maize.	Rye.	Rice.	English.	Sweet.	Tons.	Tons.	Lb.	Acres.	Tons.	Tons.	Cwt.	Lb.	Tons.	Lb.	Bunches.	Dozens.	Dozens.
<i>Rockingham District.</i>	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Tons.	Tons.	Lb.	Acres.	Tons.	Tons.	Cwt.	Lb.	Tons.	Lb.	Bunches.	Dozens.	Dozens.	
Cairns	46	276	10	13,440	7,646	141,650	...	...	...	35,549	...	...	267,036	24,420	65,391	
Cardwell	13	497	...	...	...	...	...	...	...	...	...	...	167,620	220	115,421	
Douglas	107	...	...	...	5,462	81,711	...	...	...	...	...	1,125	1,620	42,520	
Herberton	200	11	...	...	...	...	...	...	...	...	...	3,270	448	63,339	
Ingham	74	660	123	...	...	...	...	...	...	...	...	...	1,250	...	4,508	
Marceba	43	50	...	...	...	...	...	...	...	...	...	...	500	...	973	
Mourilyan	65	218	...	...	...	6,070	87,803	...	...	...	...	...	1,287,528	3,090	24,347	
Total Rockingham	241	2,008	145	13,440	28,297	436,388	...	...	...	72,029	421	4,380	1,728,329	29,798	316,499	
<i>Edgecumbe District.</i>
Ayr	57	422	37	...	...	4,242	95,010	...	...	...	...	...	...	150	398	...
Bowen	60	79	...	...	...	2,504	35,709	...	...	...	...	...	...	...	310	140,368
Muckay	168	577	16	...	...	17,622	253,250	...	...	...	...	...	...	3,614	645	43,448
Townsville	697	108	233	...	...	...	...	...	...	...	...	...	...	1,080	240	5,582
Total Edgecumbe	982	1,186	305	...	...	24,368	383,969	...	...	...	...	...	4,844	1,593	189,298	
<i>Port Curtis District.</i>
Gladstone	241	75	149	...	...	...	...	...	...	...	...	...	...	297	1,458	15,117
Mount Morgan	21	6	30	...	...	...	...	...	...	...	...	...	...	...	...	...
Rockhampton	477	1,039	453	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Port Curtis	739	1,120	632	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Burnett and Wide Bay District.</i>
Biggenden	483	235	627	Nil	...	...	...	...	...	...	...	...	...	...	...	...
Bundaberg	143	678	414	...	...	...	...	...	...	...	...	...	...	...	...	...
Childers	52	560	134	8,500	...	...	...	...	...	...	...	...	...	...	...	...
Edsvold	26	17	27	...	...	...	...	...	...	...	...	...	...	...	...	...
Gayndah	19	83	6	...	...	...	...	...	...	...	...	...	...	...	...	...
Gin Gin	180	372	145	...	...	...	...	...	...	...	...	...	...	...	...	...
Gympie	369	222	242	...	...	...	...	...	...	...	...	...	...	...	...	...
Kilkivan	92	27	54	...	...	...	...	...	...	...	...	...	...	...	...	...
Maryborough	314	595	205	...	...	...	...	...	...	...	...	...	...	...	...	...
Nanango	123	44	268	...	...	...	...	...	...	...	...	...	...	...	...	...
Tenninger	6	61	7	...	...	...	...	...	...	...	...	...	...	...	...	...
Tiaro	525	126	149	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Burnett and Wide Bay	16,885	52	72	36	497,583	20	2,332	3,020	2,278	8,500	27,101	464,943	...	...	...	4,704	5,919	254,530	25,196	37,328	482,736	

Table No. X.
AVERAGE PRODUCE PER ACRE OF PRINCIPAL CROPS IN QUEENSLAND—RETURN FOR TEN YEARS.

Year.	GRAIN CROPS.						POTATOES.		*Pumpkins & Melons.	+ Cotton.	SUGAR.		Arrowroot (Tubers).	Tobacco (Cured Leaf).	Coffee.	Hay (All Kinds).	Grapes.	Bananas.	Pineapples.	Oranges.	Mangoes.	Strawberries.	Apples.	* Market Gardens.	* Gardens and Orchards.
	Wheat.	Oats.	Barley.		Maize.	Rye.	Rice.	English.			Sweet.	* Tons of Cane Crushed.													
1895 ...	4.56	11.81	10.76	23.80	20.64	26.88	2.06	5.20	...	545	...	6.65	7.08	\$234	1.78	2,387	3,795	445	\$1,050	\$1,140	528	\$1,054	...	...
1896 ...	16.78	17.10	17.24	26.49	21.59	34.21	2.40	4.57	...	504	...	8.42	8.68	373	1.95	2,780	3,810	381	\$753	\$1,230	762	\$844	...	...
1897 ...	16.86	17.17	24.00	25.55	17.72	29.19	2.26	4.88	...	416	12.30	7.39	7.55	453	1.96	2,564	3,416	387	\$741	\$1,525	1,379	\$505	...	...
1898 ...	13.13	14.93	8.02	21.90	12.96	44.19	2.06	5.43	3.07	50	18.72	13.44	5.31	284	1.99	2,383	8,843	410	\$672	\$1,245	1,111	\$388	...	...
1899 ...	11.70	15.00	12.59	17.79	12.08	29.08	2.11	5.08	3.74	...	14.81	10.83	8.79	470	1.75	1,850	6,257	404	\$611	\$780	2,136	Bushels \$25	...	...
1900 ...	15.06	20.40	15.62	19.20	12.77	25.35	1.81	5.04	3.07	...	11.68	11.02	6.06	361	1.85	2,096	Bunches. 373	452	998	795	3,315	38	...	...
1901 ...	19.40	27.50	16.84	21.96	20.33	25.47	2.25	5.05	3.90	...	15.10	10.20	7.61	352	1.94	2,403	401	353	969	1,037	2,073	44	22	10	
1902 ...	3.28	6.67	6.91	11.49	10.82	28.76	1.12	3.88	2.37	200	10.86	4.94	2.52	361	1.16	1,755	220	237	571	670	196	48	19	9	
1903 ...	17.65	25.18	20.95	14.45	26.98	20.58	2.62	4.39	3.30	750	13.65	13.04	0.80	265	1.74	1,590	169	228	711	1,229	1,758	66	18	10	
1904 ...	14.24	23.54	17.62	21.34	11.45	27.30	1.97	4.70	3.44	861	16.04	9.37	9.09	454	1.65	1,875	296	255	1,575	2,951	1,165	68	17	8	
†	15.28	19.87	17.29	21.84	18.71	34.90	2.21	5.20	3.39	534	14.38	9.89	7.34	370	1.81	2,196	291	395	958	1,275	1,705	56	19	9	

* Not specially returned in earlier years.

† Ungrinned.

‡ Average for twenty years (or since statistics have been collected).

§ On total area.

Table No. XI.
 SHOWING the AREA and PRODUCE Obtained during the YEAR 1904 from CERTAIN OTHER CROPS, details of which are not included in the GENERAL TABLE.

LOCALITY.	OTHER FRUITS.													OTHER VEGETABLES.										OTHER MISCELLANEOUS CROPS.												
	Almonds.	Apples.	Apricots.	Cherries.	Cocoanuts.	Custard Apples.	Figs.	Gooseberries (Cape).	Lemons.	Mangoes.	Passion Fruit.	Pawpaw.	Peaches.	Pears.	Persimmons.	Plums.	Quinces.	Strawberries.	Beans.	Cabbages and Cauliflowers.	Cucumbers.	Onions.	Peas.	Tomatoes.	Turnips.	Yams.	Broom Millet.	Canary Seed.	Cassava, Manioc, or Tapioca.	Cow Pea.	Grass Seed.	Mangel-Wurzel.	Pea Nuts.	Sisal Hemp and Ramie.		
Rockingham	...	5	...	...	4	...	...	11	56	...	...	1	5	...	...	1	...	...	1	23	...	...	...	...	1	1	15	...	...	...	...	...	73	...	...
Edgecumbe	1	1	...	...	81	...	...	...	3	...	...	...	...	...	4	32	58	...	...	...	1	1	1	...	...	...	...	...	8	...	...
Port Curtis	1	31	...	...	2	5	...	...	2	...	...	27	2	2	...	...	...	7	...	...	...	...	...	4	...	...	...
Burnett and Wide Bay	...	4	1	...	...	4	2	2	83	...	...	...	23	...	3	18	...	9	...	37	1	2	1	1	4	...	4	...	...	10	...	2	...	...
Moreton	...	32	1	...	...	19	2	22	103	...	34	7	147	4	12	67	...	148	63	185	187	12	72	1	165	132	203	...	1	...	174	...	...	...
Downs	...	475	44	36	...	...	4	9	...	...	...	202	32	...	2	136	13	4	4	106	3	30	1	28	9	18	...	244	...	...	5	12	...	...
Maranoa	1	...	...	...	...	1	...	...	...	...	5	...	...	2	...	...	7	...	...	5	...	1	3	...	...	10	...	4	...	...	...	...
Other Districts	515	...	...	5	28	...	...	11	...	...	...	...	...	...	55	55	6	6	...	5	2	...	2	...	...	...	...	22	...	...	...
Total Area	2	516	47	36	520	24	8	51	352	34	34	9	401	36	17	226	13	161	72	472	257	55	76	318	172	87	243	254	10	4	41	197	117	13	...	
Rockingham	...	165	...	...	1,675	...	...	3,896	230,165	...	...	...	399	...	...	15	...	...	45	7,419	...	...	...	...	2	3	4,500	...	130	...	...	...	111,216	...	...
Edgecumbe	103	75	...	...	347,452	...	...	...	339	...	...	...	...	...	5	5,933	36,511	...	...	...	15,056	2	672	...	...	...	...	4,000	...	...	...
Port Curtis	599	45,213	...	120	630	...	...	...	17	...	...	...	23,661	670	...	...	...	309	16	...	...	...	30	...	...	...	...	...
Burnett and Wide Bay	...	50	2	...	...	118	151	1,046	101,628	...	...	1,371	...	...	38	502	...	4,861	...	13,479	800	160	210	...	284	177	3,330	...	20	...	...	163	1,800	...	...
Moreton	...	1,374	10	...	...	1,014	41	13,365	20,685	5,737	800	13,684	755	1,000	5,251	...	...	181,165	6,263	66,628	60,211	472	5,995	15,129	969	...	138,657	...	16	...	...	1579	...	...
Downs	...	17,573	3,171	191	...	...	178	4,442	...	...	...	10,418	1,159	...	6,457	1,601	...	...	41,821	2,130	2,604	8	...	3,714	45	...	10,960	...	...	467	102	13,200	...	...
Maranoa	42	...	...	...	...	288	...	...	...	318	...	...	44	...	...	...	500	...	186	...	...	112	22	...	...	...	...	40	...	...	...	...	...
Other Districts	5,080	...	...	2,660	116,419	...	...	675	...	...	...	...	...	...	...	19,135	817	189	...	278	12	70	800	...	...	...	...	43,122	...	...	...
Total Produce	8	19,162	3,225	191	6,858	1,207	370	26,296	861,592	5,737	920	27,834	1,914	1,094	12,286	1,601	187,526	6,366	178,576	101,139	3,611	6,233	34,882	1,245	73	158,949	192,614	150	20	467	1,914	173,338	Nil	Nil

Table No. XII.

RETURN showing the TOTAL EXTENT of LAND CULTIVATED for HAY, together with the YIELD of HAY, and the average yield per ACRE in each of the several PETTY SESSIONS DISTRICTS of the STATE during the YEAR 1904.

PETTY SESSIONS DISTRICTS.	HAY.									
	Wheat.		Oats.		Lucerne.		Other.		Total.	
	Acre.	Tons.	Acre.	Tons.	Acre.	Tons.	Acre.	Tons.	Acre.	Tons.
Allora	34	38	52	62	2,051	1,887	...	...	2,137	1,987
Beaudesert	2	3	194	462	689	2,638	7	12	892	3,115
Brisbane ... ..	...	...	257	460	236	675	17	38	510	1,173
Clifton	45	57	955	958	3,910	3,587	35	28	4,945	4,630
Dalby	192	235	307	261	140	142	121	182	760	820
Dugandan	3	6	57	86	698	1,838	63	117	821	2,047
Gatton	137	206	476	667	3,692	9,762	212	372	4,517	11,007
Gympie	11	10	583	504	240	544	28	47	862	1,105
Harrisville	6	11	234	330	914	1,822	96	156	1,250	2,319
Highfields	130	152	53	57	739	1,073	10	11	932	1,293
Ipswich	5	10	172	246	728	2,415	35	56	940	2,727
Killarney ... ..	...	...	...	...	583	1,186	2	5	585	1,191
Laidley	37	63	94	109	3,381	9,849	58	75	3,570	10,096
Maryborough ... ..	...	...	344	576	109	346	88	150	541	1,072
Nanango	35	29	167	220	294	658	14	20	510	927
Rockhampton	47	24	1,111	562	482	807	206	274	1,846	1,667
Rosewood	12	25	127	311	577	1,399	36	51	752	1,786
South Brisbane ... ..	...	...	405	598	261	927	58	222	724	1,747
Toowoomba	608	832	1,237	1,650	7,662	7,847	83	183	9,590	10,512
Warwick	123	151	319	675	5,629	8,748	29	57	6,100	9,631
All other Districts	1,710	1,756	1,932	2,755	1,994	4,820	320	479	5,956	9,810
Grand Total for { 1904	3,137	3,608	9,076	11,549	35,009	62,970	1,518	2,535	48,740	80,662
{ 1903	6,189	10,665	19,523	32,910	49,501	86,664	3,180	5,878	78,393	136,117
Increase in 1904 ... ..	...	...	...	...	...	...	...	...	...	...
Decrease in 1904	3,052	7,057	10,447	21,361	14,492	23,694	1,662	3,343	29,653	55,455
Average Yield per Acre	1.15		1.27		1.79		1.67		1.65	

Table No. XIII.

RETURN showing the TOTAL EXTENT of LAND CULTIVATED for GREEN CROPS in each of the several PETTY SESSIONS DISTRICTS of the STATE during the YEAR 1904.

PETTY SESSIONS DISTRICTS.	GREEN CROPS.				
	Wheat.	Oats.	Lucerne.	Other.	Total of all Kinds.
	Acre.	Acre.	Acre.	Acre.	Acre.
Allora	149	10	580	1,086	1,825
Brisbane	12	204	285	553	1,054
Dalby	172	33	763	451	1,419
Gatton	212	121	902	1,142	2,377
Harrisville	64	298	821	434	1,617
Ipswich	75	200	458	434	1,167
Marburg	84	240	301	1,855	2,480
Rosewood	83	406	1,132	1,201	2,822
Toowoomba	598	410	6,102	2,187	9,297
Warwick	44	16	1,435	274	1,769
All other Districts	513	1,416	3,245	4,860	10,034
Grand Total for { 1904	2,006	3,354	16,024	14,477	35,861
{ 1903	543	1,897	7,265	16,871	26,576
Increase in 1904	1,463	1,457	8,759	...	9,285
Decrease in 1904 ... ..	...	...	...	2,394	...

Table No. XIV.
AVERAGE YIELD PER ACRE OF CROPS IN EACH DIVISION OF THE STATE FOR THE YEAR 1904.

Division.	GRAIN CROPS.							POTATOES.		Sugar-cane (to Acres Crushed)	Cotton.	Arrow-root (Tuber).	Tobacco (Dried Leaf.)	Coffee.	Pumpkins and Melons.	Hay of all Kinds.	Grapes.	Bananas.	Pine-apples.	Oranges.
	Wheat.	Oats.	Barley, Maltng.	Barley, Other.	Maize.	Rice.	Rye.	English.	Sweet.											
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Lb.	Tons.	Cwt.	Lb.	Tons.	Lb.	Bunches.	Dozen.	Dozen.	
Rockingham	...	...	...	...	31.25	25.89	...	2.04	5.80	15.42	1,120	10.27	...	360	1.88	4,330	353	382	738
Edgecumbe	...	...	...	...	15.00	40.00	...	2.99	4.60	15.76	...	...	...	615	2.70	2,574	255	114	914
Port Curtis	30.00	...	...	...	27.20	...	6.00	2.27	4.32	3.75	500	...	...	187	2.90	1,707	22	174	725
Burnett and Wide Bay	9.71	17.33	2.40	18.00	24.83	...	20.00	2.19	4.31	17.16	773	...	...	672	3.19	1,805	116	274	958
Moreton	15.15	29.57	20.47	22.90	21.30	20.00	11.90	1.91	4.97	14.04	...	9.31	...	742	3.65	1,901	157	251	956	
Downs	16.22	23.56	19.33	17.51	16.91	...	12.20	1.78	1.83	...	600	...	9.09	...	2.87	2,069	...	...	815
Maranoa	8.78	4.75	10.63	11.67	11.76	...	3.20	1.32	2.25	...	...	...	...	...	1.62	1,471	...	...	897
Other Districts	10.72	...	...	...	12.32	50.00	...	1.77	2.04	...	382	1.00	...	...	3.08	2,410	106	170	906
TOTAL AVERAGE YIELD FOR 1904	14.24	23.54	1.27	17.62	21.34	27.30	11.45	1.97	4.70	16.04	861	9.37	9.09	454	3.44	1,875	296	255	908	
" " " 1903	17.05	25.18	22.81	20.35	14.45	26.98	20.58	2.62	4.39	13.65	750	13.04	0.80	265	3.30	1,590	169	228	711	

Appended are Reports from—

The Principal of the Queensland Agricultural College.
 The Manager of the State Farm, Westbrook.
 The Manager of the State Farm, Hermitage.
 The Manager of the State Farm, Biggenden.
 The Manager of the State Farm, Gindie.
 The Manager of the State Nursery, Kamerunga.
 The Chemistry Division.
 The Instructor in Fruit Culture.
 The Dairy Expert.
 The Instructor in Tropical Agriculture.
 The Tobacco Expert.
 The Colonial Botanist.
 The Entomologist and Vegetable Pathologist.
 The Director of the Botanic Gardens and Government Domain.
 The Trustees of the Queensland Museum.
 The Secretary, Meat and Dairy Board.

The Reports required by "*The Sugar Experiment Stations Act of 1900*," and "*The Agricultural Bank Act of 1901*," are in course of preparation, and will be tabled in both Houses at an early date.

I have, &c.,

ERNEST G. E. SCRIVEN,

Under Secretary.

REPORT OF THE PRINCIPAL OF THE QUEENSLAND AGRICULTURAL COLLEGE.

SIR,—I have the honour to submit a *résumé* of the work done, and progress made during the period under review, together with extracts from reports submitted to me by officers who preside over the different branches of the work.

In compiling this Report, an effort has been made to deal very briefly with each branch of the institution. Before doing so, however, I would like to say that it affords me much pleasure to be in a position to truthfully state that, notwithstanding the limited amount of money at my disposal for carrying on the work of the institution, the work done and the progress made have been of a most satisfactory nature.

The main features towards success of this, or similar institutions, prevailed throughout the year—viz., loyalty, peace, and quietness between both officers and students. The conduct of the students enrolled was, with the exception of an occasional display of boyishness on the part of the younger lads, of a most exemplary nature, while those who had a desire to learn made very rapid progress. I have found, in the case of the younger boys, that a good deal of forcing along is necessary to enable them to make reasonable progress. This is brought about by the fact that, owing to their youth, they have no ambition to learn or to show good results at examinations. This leads me to think that far better results would be obtained if the age limit for admittance were raised to seventeen years, in which case there would be little need for compulsory action in getting a lad to acquire a knowledge of the subjects dealt with.

TEACHING STAFF.—During the year two changes have been made in connection with our teaching staff: Mr. Macpherson, the farm foreman, was transferred to the Biggenden State Farm; Mr. Brooks being transferred from Biggenden to succeed him at the College. It is pleasing to be able to say that every member of the staff has put forth his best efforts, both in the interest of the students and the College generally, to bring about good results. In addition to the permanent officers, Mr. John Bailey continued his lectures on "Botany," and I am pleased to state that better results accrued this year than has ever been the case before. The same may be said regarding the teaching of Mr. Veterinary Surgeon Cory, who commands the attention and respect of every member of his classes. We have also received material assistance from Dr. Macdonald, whose lectures on "First Aid" have been much appreciated.

ENROLMENT OF STUDENTS.—The number of students for the term ending 7th June, 1904, was 50; we lost 22 and gained 19 at the beginning of the July-December term, making our enrolment for the term 47. At the end of 1904, we lost 11 and gained 7 students at the beginning of the term just concluded, making our number 43. Of the 26 new students who joined during the period under review, entrance examinations were held in the case of 20, 4 bursars and 1 adult student being exempt. Mr. Pitt, the English and mathematical master, who conducts the entrance examination, reports as follows:—"Many of the students who joined during the year had attained a far higher standard of education than is usually the case with those who join the College, consequently some good results have been gained at the various examinations during the year." I wish to point out that it is much to be regretted that a considerable amount of time is lost by the fact that many students return late to the College each term. Some, indeed, have been two or three weeks late; this means that they lose many lectures which they cannot again read up.

FARM.—In this branch of College work, I regret to say that I have been much handicapped by the want of sufficient labour to enable me to carry on work on lines that would be most creditable to myself and educational to those concerned. It has very often grieved me to see the condition in which a certain portion of the farm was, owing to the want of cultivation. I quite realise the fact that money was scarce, and I had to be content to go on as best I could with the labour available. At the same time, unfavourable comments have often been made by farmers who have visited the place, and reflections have been cast upon the management. The rainfall during the year has not been very favourable to the growth of crops. The following are the details for the year:—

	1904.			Inches.		1905.			Inches.
July	2.12	January ... ..	...	...	...	5.62
August	0.07	February ... ..	...	...	...	1.10
September	1.09	March ... ..	...	...	...	1.71
October	1.95	April ... ..	...	...	...	4.22
November	1.14	May ... ..	...	...	...	2.56
December	1.42	June ... ..	...	...	...	0.26
					Total rainfall ... ..	...	...	...	23.26

In carrying on the work of the farm, every branch connected therewith, both in a practical manner in the fields, technically in the chemical laboratory, and in the lecture-room, thereby enabling us to turn out young men well equipped with practical and scientific knowledge sufficient to allow them to compete with men who are continually on the alert to increase their knowledge in all matters pertaining to agriculture. It so happens that our College soils and climate are favourable to the growth of almost any class of crops, especially those that are now likely to be most profitable to the grower. Such being the case, we are in a position to teach students such branches of farming as will enable them to carry on farm work in any part of the State; whereas, if unfavourably situated, we would be unable to do this. The work of the farm is of a varied nature—the handling, feeding, and working of horses; working and use of up-to-date machinery, including steam pumps, engines, boilers, and all sorts of improved farm implements. Students are also taught the cultivation and preparation of land for the different crops, the season at which to plant, preparation of seeds before planting, method of planting, after cultivation, harvesting, saving, and marketing; fertilisers required for the various soils, and how to use them; the best fodder crops, and how to save them, either in the form of ensilage or otherwise. In the chemical laboratory, the soils on which the crops are grown, and the product therefrom, are dealt with. The nature and condition of same are fully demonstrated, thus making both branches of the work more agreeable. Irrigation is also carried on when the necessity arises.

Maize Crop.—The condition of the weather, more especially in the early part of the season, was unfavourable to maize-growing. The only complete failure, however, was a small area of 5 acres, which perished in its early stages of growth for the want of moisture. Another 15 acres failed at the flowering stage—this was converted into ensilage. The remaining areas will yield a fair return.

Cereal Crops.—A good crop of oats was obtained from the Gatton Paddock. A good crop also (though short in the straw) was grown in the Creek Paddock; both these were converted into hay, the latter being of excellent quality. Several varieties of wheat were grown and cut for hay, all being saved in good condition. The best results were obtained from the Baltic Red.

Panicum.—Sixteen acres were grown in the Creek Paddock, No. 1, but failed through the dry weather. A second sowing, however, produced a heavy yield, and, although attacked by grasshoppers, was saved in fine condition.

Sorghums.—Ten acres were planted with several varieties of sorghums, all of which, notwithstanding the dry weather, made rapid growth. Some of this crop was fed to the animals, and the second growth is very promising.

Cowpea.—The 5-acre plot in the pig paddock was planted with cowpea, producing a heavy crop. After saving sufficient seed for our own use, 90 pigs were turned into the field, which kept them in good condition for six weeks; some of them were converted into bacon at the end of the period abovementioned.

Malting Barley.—This crop does remarkably well here; but, unfortunately, the season was unfavourable for its growth; the earlier part gave promise of good results, but, owing to the prevailing dry weather at the time when coming into ear, the grain was of inferior quality. This crop has not yet been threshed.

Rye.—This crop does well with us, but is usually grown for green fodder and thatching purposes. This year's crop (4 acres) is now in the stack, with the exception of a small quantity used for thatching.

Root Crops.—We have grown a variety of root crops during the year, with the result that my previous opinion has been confirmed by the results obtained here—viz., that the mangold (Long Red) is the most profitable crop to grow, especially in rich soil. I have grown them here, year after year, with a considerable amount of success. Horses, pigs, cows, and sheep do remarkably well on them. This crop is a very heavy yielder, and will keep for a considerable length of time if left in the ground. The field carrot is also an excellent crop to grow, showing high yields and good feeding values; it will not, however, keep well, and must be used up quickly after reaching maturity. The swede turnip is another most valuable crop to grow, and produces a heavier yield than any other crop grown here, but its great fault is that it will not keep beyond a limited period, either in the soil or in the pit.

Rape.—This crop is, I consider, one of our best for winter fodder. On ordinary soil, it will produce very heavy yields, it withstands dry weather, and is much relished by all animals kept on the farm. If carefully cut or fed-off, a second, or even a third, crop may be obtained.

Broom Millets.—The varieties grown are Improved Evergreen, California Golden, and Mammoth Dwarf. The first planting failed through dry weather. The second sowing was practically destroyed by grasshoppers, which stripped the stalks bare of leaves when the brush was coming out.

Cottons.—Eight varieties were planted, but, owing to the fact that the seed was received rather late, the earlier part of the season was lost, and at the time of planting there was but little moisture in the soil, thus causing growth to be retarded. The crop, however, made good headway during the latter part of the season, and a fair yield was obtained from each variety.

Cassava.—The cutting reached us too late in the season for a good crop. A large number of cuttings, however, will be available for planting next year.

Castor Oil.—This plant made most wonderful growth, and produced some very fine seed. At the same time, I am inclined to think that, no matter how careful one may be in its cultivation, it will eventually spread over the cultivation fields, and become a pest.

Grasses and Clovers.—Each year varieties of grasses and clovers have been planted for the purpose of determining their suitability for our soil and climate. From my observation of the habits and characteristics of those already dealt with, I can come to but one conclusion—viz., that Paspalum should be placed in the first place, and Prairie in the second. The Rhodes Grass is now being grown, but limited knowledge of its suitability prevents my saying anything further than that, from what I have seen of it, I am inclined to say that much more will be heard of this grass in the very near future. I would like to say that I have carried out experiments with paspalum for the purpose of destroying nut grass, and, so far, I am exceedingly pleased with the result. I find that wherever a strong plant of paspalum has been established, the nut grass makes no growth. This experiment was commenced eighteen months ago, and each month the paspalum appears to outgrow the nut grass.

Sisal Hemp.—Two acres have been planted, and, although no cultivation was done after planting, the plants, on poor soil, are growing well.

For particulars regarding the area under cultivation for each particular crop, crops harvested, and yield per acre, also crops now in the ground, see heading "Crops Harvested" and "Crops Standing."

EXPERIMENTAL WORK.—It is both necessary and educational that experiments should be carried on here, but, as I have already pointed out in previous reports, it cannot be successfully carried out until the work is placed under the charge of a person whose duty it shall be to remain constantly in the field for the purpose of making observations and keeping records.

Mr. Brooks, the farm foreman, is conducting the work of the farm in a very able manner, and is worthy of much commendation. He (Mr. Brooks) reports favourably on the students, both as regards their conduct and their desire to acquire knowledge.

The following are the details of experiments completed and now being carried out in connection with the farm work:—

EXPERIMENTS IN POTATO-PLANTING.—The following are particulars showing manurial experiments in connection with potato-growing. Each plot contained an area of one-twentieth part of an acre, and was treated with fertilisers as mentioned below. The weather was unfavourable, and, therefore, the best results were not obtained. The seed used was cut, and each set contained, as nearly as possible, two eyes. They were planted in rows 2 feet 6 inches apart, and 15 inches between the sets. Experiments were also carried out with sets, uncut, and with one, two, or three eyes respectively. The following is a detailed report on the experiment:—

Plot.	Manures.	Quantity.		Yield.		
		Lb.	oz.	Tons	qr.	lb.
1	Ammonium sulphate	6	4	...	...	...
	(A) Superphosphate	13	4	...	...	...
	Kainit	10	15	2	1	0
2	Ammonium sulphate	3	2	...	...	...
	(A) Superphosphate	6	8	...	...	...
	Kainit	10	15	1	2	24
3	(A) Superphosphate	13	4	...	...	...
	Kainit	21	14	1	2	21
4	(A) Superphosphate	20	0	1	2	8
5	Kainit	23	0	1	0	27
6	(B) Superphosphate	13	4	...	...	...
	Kainit	21	14	1	2	13
7	(A) Superphosphate	3	5	...	...	...
	Kainit	5	8	1	2	7
8	(A) Superphosphate	13	4	...	...	...
	Potassium sulphate	5	13	1	1	22
9	No manure	...	...	1	2	18

With regard to experiments with sets, the following results were obtained:—

Sets with one eye, unmanured	...	...	...	...	...	0	16
Sets with two eyes, unmanured	...	...	...	...	...	1	10
Sets with three eyes, unmanured	...	...	...	...	...	1	26
Whole potatoes, unmanured	...	...	...	...	...	2	14

MANURIAL EXPERIMENTS WITH ROOT CROPS, PLOT 4, FARM PADDOCK.—This plot, the area of which is 5 acres, was divided into nine $\frac{1}{2}$ -acre plots, with spaces between (accounting for the $\frac{1}{2}$ -acre), and treated with the following manures:—

- Plot 1.— $1\frac{1}{2}$ cwt. superphosphate.
 „ 2.—No manure.
 „ 3.— $1\frac{1}{2}$ cwt. bone phosphate.
 „ 4.— $1\frac{1}{2}$ cwt. kainit.
 „ 5.— $1\frac{1}{2}$ cwt. sulphate of ammonia ($\frac{1}{2}$ cwt. to be applied later).
 „ 6.— $\frac{1}{2}$ cwt. sulph. ammonia, $1\frac{1}{2}$ cwt. superphosphate.
 „ 7.— $\frac{1}{2}$ cwt. sulph. ammonia, 1 cwt. superphosphate, $\frac{1}{2}$ cwt. kainit.
 „ 8.—Same as No. 7, with $\frac{1}{2}$ cwt. S. ammonia applied later.
 „ 9.—10 cwt. lime.

The following root and other crops were planted in rows crossing the manured land at right angles, thus enabling each crop to obtain the benefit of each of the abovementioned manures:—Dwarf Essex Rape; Mangel—Red Globe, Yellow Globe, Long Yellow; Sugar Beet—Vilmorin's Improved, Klein Wanzelbein; Swede Turnips—Sutton's Champion, Imperial Purple Top, Skirving's Purple Top; Turnips—Yellow Aberdeen, Green Top, Yellow, White Pomeranian; Kohl-rabi—Large Purple, Green.

The above crops are not sufficiently advanced to enable a report as to results to be issued.

EXPERIMENTAL GRASSES, ETC., PLOT 20, FARM PADDOCK.—The following were planted in an area of 3 roods, described in particulars of crops as Plot 20, Farm Paddock:—Perennial rye grass, Cocksfoot grass, Perennial red clover, Crimson clover, White Bokhara, Kentucky blue grass, Prairie grass, Alsike clover, Trefoil clover.

Grasses.—*Panicum maximum*, *P. muticum*, *Paspalum galinaria*, *Astrelba pectinata*.

Saltbushes.—*Atriplex semibaccata*, *A. leptocarpa*, *A. halimoides*, *A. nummularia* (Old Man).

CROPS REMOVED 1ST JULY, 1904, TO 30TH JUNE, 1905.

Plot.	Crop.	Area.			Yield.
		A.	R.	P.	
Farm Paddock, Sect. 1	Cape barley	5	0	0	22½ tons green barley
" " 2A	Rape	3	0	15	26 tons
" " 2B	Flax	0	3	25	Crop spoiled by rain
" " 2C	Sorghum	1	0	0	Failed
" " 3A	Potatoes	2	0	0	6 tons 1 cwt. 3 qr.
" " 3B	Wheat	3	0	0	6 tons 5 cwt. hay
" " 4	"	5	0	0	10 tons 10 cwt. hay
" " 5	Maize	5	0	0	105 bushels maize
" " 7A	Turnips	2	2	0	24 tons 12 cwt. turnips
" " 7B	Mangolds	1	1	10	13 tons 7 cwt.
" " 10	Rye	3	0	0	4 tons 2 cwt. straw
" " 12	Cape barley	8	3	17	40½ tons green barley
Creek Paddock, No. 3	Potatoes	22	0	0	25 tons
Calf " Sect. 1	Pumpkins	2	1	22	Failed
" " 2	Oats	2	2	0	11 tons green oats, 2 tons 3 cwt. oaten hay
Sheep " 1	Maize and Pumpkins	8	1	34	Eaten down by cattle
" " 2	Panicum	1	0	0	"
Farm " 5	Maize and Pumpkins	5	0	0	Maize cut for ensilage. Pumpkins failed
" " 6	Mangolds	3	2	0	Failed
" " 9	Wheat	3	2	0	2½ tons wheaten hay
Garden " 2	Malting barley	14	1	35	Failed
" " 3	Potatoes	0	2	0	6 tons 2 qr. potatoes
Creek " No. 1	Malting barley	11	0	0	Stacked for grain
" " "	Wheat	3	0	0	4 tons 4 cwt. hay
" " "	Oats	10	0	0	7 tons 10 cwt. hay
Calf " Sect. 2	Maize and Pumpkins	4	0	8	Spoiled by hot wind
Gatton " 2	Oats	15	2	14	25 tons 3 cwt. hay
Bull Paddock	Cape barley	5	2	0	6 tons hay
"	Maize and Pumpkins	12	0	0	Cut for ensilage
Farm Paddock, Sect. 8	Maize	5	0	0	"
" " 10	"	2	0	0	Failed
Creek Paddock, No. 1	Panicum	14	3	0	35 tons hay
Farm " Sect. 10	Maize	5	0	0	89 bushels maize
Total		195	3	20	

CROPS STANDING, 30TH JUNE, 1905—FARM Paddock.

Section.	Crop.	Area.		
		A.	R.	P.
Plot 1	(a) Castor-oil beans	0	2	17
" 2	(b) Maize	4	1	23
" 3	Maize	5	0	0
" 3	(a) Cassava	0	0	19
" 3	(b) Cotton	1	0	37
" 3	(c) Cowpea	0	1	27
" 3	(d) Nepal barley	0	1	23
" 3	(e) Potatoes	0	2	1
" 3	(f) Rape	2	1	13
" 4	Sundry root crops (manurial experiments)	5	0	0
" 5	Fallow	5	0	0
" 6	(a) Fallow	1	1	36
" 6	(b) Broom millet	0	3	6
" 6	(c) Amber cane	1	1	6
" 6	(d) Barley	1	1	32
" 7	(a) Barley	1	3	5
" 7	(b) Mangolds	1	2	5
" 7	(c) Rape	1	2	30
" 8	Cape barley	5	0	0
" 9	Maize	5	0	0
" 10	Fallow	5	0	0
" 11	(a) Lucerne	15	0	0
" 11	(b) Paspalum	0	1	30
" 12	Fallow	3	0	30
" 13	Malting barley	7	2	6
" 14	Belatourka wheat	7	0	37
" 15	Oats	2	0	0
" 16	Belatourka wheat	8	3	28
" 16	Manitoba wheat	4	0	0
" 17	Allora Spring wheat	4	0	0
" 17	Baltic red	4	0	0
" 18	Mangolds and sugar beet	3	1	38
" 19	Carrots	1	2	27
" 20	Experimental grasses, &c.	0	3	0
" 21	Rye	3	0	0
Total area		115	0	36

Bull Paddock.				A.	R.	P.	Creek Paddock, No. 3.				A.	R.	P.																		
Plot.							Plot.																								
1.	Paspalum	...	...	...	16	3	15	Fallow	...	...	...	30	1	6																	
2.	Maize	...	...	...	5	2	26	Calf Paddock.																							
3.	Oats	...	...	...	8	1	37	1.	Pumpkins	...	...	4	3	22																	
4.	Fallow (partly planted with paspalum)	...	...	...	4	0	14	2.	Cow pea	...	...	4	0	8																	
Total				...	35	0	12	Total				...	8	3	30																
Garden Paddock.				Creek Paddock, No. 1.				Sheep Paddock.				Gatton Paddock.																			
1.	Fallow	...	...	...	22	3	18	1.	Oats	...	...	...	18	0	8	1.	Amber cane and sorghums (partly cut)	11	0	0	Lucerne...	...	...	28	1	14					
2.	Cape barley	...	...	...	1	3	25	2.	Lucerne	...	...	...	20	2	18	2.	Broom millet	...	...	0	2	31	Cultivation on Hill.								
3.	Paspalum	...	...	...	2	0	31	Total				...	38	2	26	3.	Fallow	...	...	3	3	7	Orchard...	...	...	2	2	10			
4.	Fallow	...	...	...	1	1	23	Total				...	38	2	26	Total				...	5	2	10	Vines	...	...	1	0	0		
5.	Vegetables	...	...	...	6	1	31	Total				...	38	2	26	Total				...	5	2	10	Sisal hemp	...	...	2	0	0		
6.	Orchard	...	...	...	3	2	1	Total				...	38	2	26	Total				...	5	2	10	Total				...	5	2	10
7.	Vineyard	...	...	...	0	2	17	Total				...	38	2	26	Total				...	5	2	10	Total				...	5	2	10
Total				...	38	3	26	Total				...	38	2	26	Total				...	5	2	10	Total				...	5	2	10
Total				...	38	3	26	Total				...	38	2	26	Total				...	5	2	10	Total				...	5	2	10

SUMMARY OF CROPS, 30TH JUNE, 1905.

	A.	R.	P.		A.	R.	P.			
Lucerne	93	1	32	Nepaul Barley	0	1	23			
Wheat	28	0	25	Rape	4	3	31			
Oats	28	2	5	Sundry Root Crops (manurial experiments)	5	0	0			
Barley	17	2	28	Broom Millet	1	1	37			
Sorghums and Amber Cane (part cut)	12	1	6	Mangolds	5	0	3			
Paspalum Grass	23	2	10	Carrots	1	2	27			
Maize	20	0	9	Experimental Grasses, &c.	0	3	0			
Cowpea	4	1	35	Vegetables	6	1	31			
Rye	3	0	0	Orchard	6	0	11			
Pumpkins	4	3	22	Vines	1	2	17			
Castor-oil Bean	0	2	17	Fallow	73	0	0			
Cassava	0	0	19	Sisal Hemp	2	0	0			
Cotton	1	0	37	Total area under cultivation				346	3	26
Potatoes	0	2	1	Total area under cultivation				346	3	26

DAIRY WORK.—The interest taken by students and the progress made by students in this branch of College work has been fully maintained. Indeed, the interest is not confined within the bounds of the institution but is felt throughout the State of Queensland, a fact which is fully demonstrated by the numerous letters received and dealt with during the year. In the factory, all branches of dairy work are dealt with, including the manufacture of butter and cheese, the treatment and handling of milk, milk and cream testing, the working of machinery, including refrigerator, cream separators, steam engines, &c. The teaching has not been confined to the regular students, but a number of farmers have also received benefit therefrom; some of these have come for a short period to enable them to acquire a knowledge which will aid them in conducting their own dairy work. The returns received from this branch of farming have been an incentive to induce many students to devote special attention to the work, with the result that many are now on their own dairy farms, conducting their work on most successful lines. Young men who graduate through this institution are made fully alive to the fact that the dairying industry has asserted itself as the best dividend-paying branch of farming. That the work of the College has been successful in this respect is apparent from the number of ex-students who have become dairy farmers. There are a large number of these settled throughout the State, and it is gratifying to learn that, for their industry and methods adopted, they receive commendation from the farmers amongst whom they are settled. Many other ex-students, who, unfortunately, do not possess sufficient capital to start dairy farming, are engaged in managing butter and cheese factories, and are doing so in a creditable manner. The teachings in the factory aim at imparting a sound knowledge of the treatment of milk, butter-fat, and acid determinations, also the grading and ripening of cream. The churn and Babcock results are checked by chemical analysis.

The following are the particulars of some chemical analyses in connection with this work:—

ANALYSIS OF "COLOSTRUM MILK" FROM COW MONA.

Day after Calving.		Sp. Gr. 15.5° C.	Water.	Total Solids.	Fat.	Proteids.
			Per cent.	Per cent.	Per cent.	Per cent.
FIRST	{ Morning	1.0459	85.62	14.38	2.23	6.03
	{ Evening	1.0405	85.06	14.94	3.94	6.72
SECOND	{ Morning	1.0441	84.62	15.38	3.41	5.88
	{ Evening	1.0400	84.42	15.58	4.60	5.58
THIRD	{ Morning	1.0393	85.09	14.91	3.97	5.05
	{ Evening	1.0390	84.40	15.60	4.84	5.05
FOURTH	{ Morning	1.0388	85.38	14.62	3.99	5.05
	{ Evening	1.0340	85.20	14.80	5.20	4.23
FIFTH	{ Morning	1.0385	86.27	13.73	3.18	4.21
	{ Evening	1.0329	83.57	16.43	6.51	4.23

From the above analyses it may be observed that the milk from a cow that has newly calved does not reach its normal condition for a period of at least five days after calving. The very high total of solids and fat on the fifth day may be explained by the fact that on this particular day the milking took place about six hours after the morning milking, owing to the cow's removal to the Brisbane Exhibition; otherwise the analyses show very plainly the change of colostrum to normal milk, the change being particularly noticeable in the lowering of the specific gravity and in the regular decrease of the proteids.

ANALYSES OF SEPARATED MILK.

BREED.	WHOLE MILK.		SEPARATED MILK.	
	Percentage Fat.	Percentage Fat.	Total Solids.	Sp. G. 15° C.
Ayrshire	3.6	.265	9.12	1.0350
	3.8	.262	9.08	1.0347
Holstein	3.4	.193	9.19	1.0356
	3.5	.183	9.15	1.0352
Jersey	4.2	.155	8.30	1.0356
	4.1	.183	9.00	1.0332
Shorthorn	3.6	.181	9.18	1.0355
	3.7	.183	9.17	1.0353

The milk from the different breeds was placed in separate cans and separated each day, and a sample was handed over to the chemist who carried out the analysis.

The analyses show that breeds whose milk contains fat globules of the smallest size yield more fat in the separated milk. Opinions differ very much in connection with this matter, and for this reason I caused the analyses to be made.

DAIRY HERD.—The College herd has well maintained its reputation, not only in our own milking-yard, but also at the National Association Exhibition at Bowen Park, Brisbane, where about eighteen first and second prizes, together with two championships, were gained. During the year, a valuable addition was made to our herd by the importation from Great Britain and New South Wales of some very fine stock. From the former, Ayrshires and Shorthorns were imported, one male and one female of each breed. These animals will have a great influence in improving and maintaining the standard of our herd. I consider the Ayrshire bull to be the finest animal of his breed in Australia. The other animals are all of high quality; they appear to be very healthy, and have adapted themselves well to the Queensland climate and conditions. The Ayrshire heifer has given birth to a strong male calf. I consider that the importation of these cattle will materially assist in building up the Queensland herds. We have already a greater demand for the service of the bulls than we can comply with. Seven Shorthorns were also imported from New South Wales—one highly-bred bull, "Bobs," and six heifers, all from noted milking strains. The demand for our young bulls, of all breeds, is far greater than we can supply. During the year we sold some crossbred and grade stock, by auction, at Toowoomba; these, although out of condition, realised very satisfactory prices. The following are the particulars of the cattle disposed of during the year, and also the value of the dairy produce manufactured and milk sold:—

	£	s.	d.
14 Ayrshire bulls	140	19	0
7 Ayrshire heifers	51	10	0
3 Jersey bulls	31	0	0
3 Shorthorn bulls	21	0	0
3 Grade Holstein bulls	15	5	0
2 Grade Guernsey bulls	10	0	0
14 Grade heifers	72	17	6
17 Grade cows	128	12	6
—			
63 head, realising	£471	4	0

Twenty-three cows, the property of farmers, were served by College bulls, the total receipts of this account being £6.

	£	s.	d.	£	s.	d.
Cash sales of milk	12	12	0			
" " butter (7,923 lb.)	308	4	8			
" " cheese (1,439½ lb.)	28	8	3			
" " potted cheese (51¼ doz. jars)	15	7	6			
				364	12	5
Supplied to dining-hall, milk	85	3	4			
" " butter (3,893 lb.)	147	14	3			
" " cheese (996 lb.)	21	0	9			
				253	18	4
				£618	10	9

SUMMARY.

Sales of stock	471	4	0
Service of bulls	6	0	0
Cash sales of dairy produce	364	12	5
Supplied to dining-hall	253	18	4
Total	£1,095	14	9

BUTTER AND CHEESE MANUFACTURED.—The following quantities of butter and cheese were made from the respective quantities of milk:—

27,223 gallons yielded 11,836 lb. commercial butter.
2,749 gallons yielded 2,985 lb. cheese.

The dairy plant, especially the refrigerator, is not large enough to do the work that is demanded of it.

Mr. McGrath, who is in charge of this branch of the work, is heavily tasked in the performance of the duties allotted to him, especially so from the fact that his work is of such a scattered nature; his work is constant and the hours long.

MILK AND BUTTER RETURNS.

Name of Cow.	Breed.	Time in Milk.	Lb. Milk.	Lb. Com. Butter.
Rosebud	Ayrshire	12 months ...	8,517	370
Blink	Ditto	11 " ...	7,087	295
Leesome	Ditto	14 " ...	9,884	420 (slipped calf)
Linnet	Ditto	10 " ...	6,657	275
Renown	Ditto	12 " ...	5,391	224
Lavinia	Ditto	11 " ...	7,354	322
Louisa	Shorthorn	12 " ...	7,954	332
Rose	Ditto	9½ " ...	5,788	252
Queenie	Ditto	10 " ...	5,204	218
Kit	Ditto	10½ " ...	6,321	274
Lady Rose	Guernsey	10 " ...	3,189	163
Carrie	Jersey	10 " ...	5,581	272
Jersey Belle	Ditto	9 " ...	4,401	233
Magpie	Holstein-Shorthorn	10 " ...	6,192	259
Mona	Ditto	11 " ...	7,143	289
Night	Holstein-Devon ...	10 " ...	6,002	254
Fancy	South Coast	9½ " ...	6,351	264
Grace	Ditto	10 " ...	5,914	226
Nancy	Ayrshire-Shorthorn	9½ " ...	5,036	221
Haze	Ditto	10½ " ...	4,780	195
Blank	Jersey-Ayrshire ...	10 " ...	4,960	208

FEEDING ANIMALS.—I am in a position to say that the example given by the College in regard to the feeding of dairy stock is now making itself felt, inasmuch as the much-prized root crop—mangolds—has now found its way into the fields of many of our dairymen. Methods are also being adopted for conserving winter fodder, and growing green crops for winter feed. It is by example and persuasion only that our people have been induced to adopt winter feeding and the rugging of their cows during the cold weather. The green crops found to be most profitable are Cape barley, wheat, and rape, all of which produce heavy yields of milk. Our students are taught the best methods of feeding stock, and the foods required for a well-balanced ration. They also learn the lines to follow in breeding to enable them to build up a good dairy herd. The following are results in connection with calf-feeding experiments, which were conducted for the purpose of determining the cost of rearing calves on artificial foods:—

The calves selected for the experiments were a good thriving lot, that took their food freely. They comprised Grade Holsteins, Shorthorns, and Ayrshire-Shorthorns, divided so that each class was represented in the two groups. The calves were all weighed at the commencement of the experiment, and again each Saturday, one hour after feeding. They had access to water, and were supplied with rock salt. The paddock in which they were grazed was well grassed with couch grass.

Tabular record of weekly weights of calves fed on cod liver oil:—

No. of Calf.	Weight at Commencement.	WEIGHT IN POUNDS AT END OF—						Total Gain at end of 6th Week.
		1st Week.	2nd Week.	3rd Week.	4th Week.	5th Week.	6th Week.	
1	Lb. 113	Lb. 122	Lb. 129	Lb. 140	Lb. 153	Lb. 161	Lb. 172	Lb. 59
2	164	168	179	198	210	218	242	78
3	113	133	145	155	170	184	190	77
4	248	271	285	308	326	339	352	104
Totals ...	638	694	738	801	859	905	956	318

According to the above table, the average daily increase of each calf was 1.88 lb. The quantity of cod liver oil to be fed to each calf was measured, and it was added to the skimmed milk just previous to the animal being fed; each calf was fed separately. The daily ration for each calf was 2 oz. of oil and 3 gallons of skimmed milk. As the cod liver oil rises quickly to the surface, the milk and oil should be well stirred when the calf commences to take its food, so as to distribute the oil. It is not advisable to "pool" the milk and oil for a number of calves, the better plan being to add the allowance of oil to the milk intended for each animal. It was noticeable at the commencement of the experiment that the calves exhibited a dislike for the oil, but after the first day they took it readily. For the first two days the oil food acted as a laxative, but after this normal conditions prevailed throughout the period covered by the experiment.

Tabular record of weekly weights of calves fed on mixed ration:—

No. of Calf.	Weight at Commencement.	WEIGHT IN POUNDS AT END OF—						Total Gain at end of 6th Week.
		1st Week.	2nd Week.	3rd Week.	4th Week.	5th Week.	6th Week.	
1	Lb. 220	Lb. 235	Lb. 246	Lb. 261	Lb. 277	Lb. 290	Lb. 304	Lb. 84
2	185	193	201	216	237	242	254	69
3	90	92	110	120	131	138	145	55
4	153	160	176	189	202	214	224	71
Totals ...	648	680	733	786	847	884	927	279

The average daily increase of each calf was 1.66 lb.

The mixed daily ration for each calf was made up as follows:—

Pollard	10 oz.	Molasses	2 oz.
Linseed meal	3 oz.	Skimmed milk	3 gallons.

STOCK ON HAND, 30TH JUNE, 1905.

	Ayrshires.	Jerseys.	Shorthorns.	Holsteins.	South Coast.	Guernseys.
Stud bulls	2	2	2	1	...	1
Young bulls	7	4	8	...	...	...
Stud cows	34	18	21	2	2	2
Heifers	24	7	19	2	...	...
Total	67	31	40	5	2	3

Mixed.

Grade cows and heifers	75
Steers	28
Crossbred bulls	3
Crossbred bull calves (unbranded)	4
Total	110

The following has been the natural increase for the year:—

Ayrshires, males	5
„ females	10
Jerseys, males	2
„ females	2
Shorthorns, males	7
„ females	6
Grades, males	18
„ females	24
Total	74

PIG-RAISING.—A pronounced interest has been taken, both by students and farmers, in this branch of farming. The demand for our purebred pigs, all breeds, is 50 per cent. greater than we can supply. Although our stock had for years maintained their good qualities, we had reached a time when the introduction of new blood was necessary. I am pleased to say that this has been done by the importation of pigs from Great Britain. The animals imported, especially the Yorkshires, are excellent examples of their breeds. One Middle Yorkshire boar and two sows were imported, also two Berkshire boars and one sow. The two Middle Yorkshire sows have each produced a litter, for the pigs in which there is a great demand. Since the first importation, mentioned above, two large Yorkshire sows and one boar have been landed from England, and are now in quarantine. The following are the particulars of pigs disposed of during the year for breeding purposes:—

	£	s.	d.
Berkshires, boars, 45	94	10	0
„ sows, 43	46	12	0
Yorkshires, boars, 28	60	15	0
„ sows, 27	34	12	0
Tamworths, boars, 3	6	6	0
„ sows, 8	8	8	0
Culls, sold for killing	55	2	0
	£306	5	0
Bacon, manufactured and sold	11	7	7
Service of boars, 50 sows at 5s.	12	10	0
Total	£330	2	7

HORTICULTURE.—The horticulturist, Mr. Jas. Carew, states that, notwithstanding the unfavourable season, he has been able to show very satisfactory results. During the year a large variety of vegetables were grown, and disposed of to Dunwich, Leper Station, College dining-hall, and private houses. It was necessary during the dry weather to resort to irrigation, which produced good results. Insect life was troublesome during the greater portion of the year, the best spray being found to be a mixture of resin, caustic soda, and fish oil. The following vegetables were grown:—

	Varieties.		Varieties.
Cabbage	12	Rock Melons	5
Tomatoes	3	Turnips	20
Swedes	9	Borecole	1
Carrots	7	Leeks	3
Radishes	7	Onions	3
Potatoes	36	Pumpkins	10
Marrows	7	Squashes	5
Melons	7	Cucumbers	5

Experiments were made with fertilisers; these, however, failed to show any better results than the vegetables grown without manures. Experiments were also made with Rhodes grass, varieties of cotton, and saltbush, the results in each case being satisfactory, but, the experiments not being yet completed, a definite report cannot now be furnished. The greater part of the garden has been subsoiled, and 70 tons of farmyard manure, together with $\frac{1}{2}$ ton of lime, have been applied to different areas. Beneficial results are expected in each case. Students worked 2,421 hours in the garden; horses were employed for 2,480 hours.

Orchard.—The season for fruit was very good, but the return, owing to the fruit fly, was unsatisfactory. The greater part of the peaches had to be used up when in a green state, otherwise the whole of the crop would have been destroyed. The yield from the plum trees was small, but the fruit was of good quality. We had a splendid crop of figs, but the rain, during their earlier stages of ripening, did a great deal of damage. The flying foxes were troublesome, and devoured a considerable amount of fruit. Apricots, apples, and pears produced small yields of good quality fruit, all of which was used up at the College dining-hall. The summer and winter prunings were carried out with the assistance of the students. All bad and decayed fruits were destroyed. The methods of preparing and applying the different sprays were fully demonstrated to the students.

Vineyard.—The table grapes, especially the Royal Ascot and Black Hamburg, yielded a very good crop. The hot winds of January, however, did a great deal of harm, the heavy rains which followed causing the grapes to go off quickly. There was no return from the wine varieties grown on the hill. During the year the vines were washed with sulphuric acid mixture, and with Bordeaux mixture. The vines were thinned and trained during the summer. Experiments were made in "topping" versus "untopping" shoots, but no difference was noticeable, either in regard to the quantity or quality. Ringbarking the shoots just below the berries was also tried, with satisfactory results; the grapes were found to ripen earlier, and to produce larger berries; the treatment, moreover, does not interfere with the vigour of the vine, as pruning cuts off all the portions operated upon; care must, however, be exercised in performing the work, otherwise the flow of sap will be checked. The hours worked in the vineyard, were—students, 2,663; horses, 1,014. The ornamental grounds also received the usual attention, the supply of labour being insufficient to keep them in the condition in which we would like to see them. Mr. Carew reports favourably on the conduct of the students under his charge, also regarding the progress made by them.

SHEEP-BREEDING.—On an average, 200 sheep are kept here, partly for educational purposes, and partly to determine the breeds that are best adapted for the district. I regret to say that during the year we have been very unfortunate with our small flock, owing to the fact that the mongrel dogs kept by our neighbours for the purpose of chasing hares, have on several occasions effected an entrance into our paddocks and yards (which were considered dog-proof), and killed a large number, including a Shropshire ram. It is also to be regretted that other people who have invested largely in sheep for the purpose of fattening them on their lucerne fields, have also lost considerably by the same class of dog. In connection with our breeding here, we have found the Romney Marsh and Shropshire rams, crossed with the merino ewes, to produce the best results. The Lincoln ram crossed with the Romney Marsh-merino ewes also produced good, strong, healthy lambs, well suited for the country on the coastal side of the Main Range. I have found no footrot or disease of any kind amongst the sheep kept on the farm. I have hitherto been unable to carry out experiments in feeding on lucerne, owing to the fact that our paddocks are not subdivided. I am inclined to think that lamb-raising, in connection with other branches of farming, will in the near future assume large proportions in many districts on the eastern side of the coastal ranges. I therefore strongly recommend that more attention be given to the matter at this institution, especially in determining the breeds that are likely to be most profitable and best adapted to the conditions under which they are to be raised. In the way of instruction, I have been able to teach nothing further than the treatment of sheep, age, quality of crossbred wool, and shearing. I consider that lessons in wool-classing would be of considerable benefit to the young men who graduate through this institution. I also think that we might make arrangements to enable advanced students to attend wool, and also sheep, sales in Brisbane.

POULTRY AND BEES.—We have now in our yards 350 head of poultry, made up as follows:—125 stock birds, 55 hens, 100 pullets, and 70 cockerels. Seventy-five birds and 115 settings of eggs have been sold for breeding purposes, and 612 dozen eggs and 82 fowls have been disposed of to dining-hall and private houses. Two hundred chickens were hatched during the year, and we have an increase of 30 birds over our last year's stock. The 70 cockerels and 100 pullets are now ready for sale. Full particulars as to sales are given below.

The bees have not done quite so well as last year, owing to the fact that so many of the trees on the College land have been ringbarked. Still, they have given a fair return, the yield from the 28 hives being about 80 lb. each.

LAYING COMPETITION.—A great deal of interest was taken by the public in our first laying competition, which commenced on the 1st of July, 1904. There were fifteen competing pens, exclusive of one of our own, which was non-competitive. July being considered an unsuitable time for commencing, it was decided, with the consent of the competitors, to limit the duration of the competition to nine months, thus closing it on 31st March, and allowing the new one to commence on 1st April. The first prize was won by Mr. E. T. Griffiths, Waratah, New South Wales, whose White Leghorns laid 938 eggs in the nine months. Mr. S. Roberts, of Coochin, took second place, also with White Leghorns, 914 eggs. The Black Orpingtons entered by Mr. Jas. Stewart, of Berowra, New South Wales, laid 868 eggs, and gained third prize. The College non-competitive pen of White Leghorns laid 915 eggs. The net profit on the sixteen pens amounted to £18 18s. 3d. for the nine months. The competition now in progress commenced 1st April last, with 29 entries. Up to 30th June, 3,689 eggs have been laid. These have realised £16 9s. 8d., and the cost of feed being £6 15s. 1d., a profit of £9 14s. 7d. has accrued up to the present date. The hens are now laying well, and I anticipate that the present competition will be a great success.

The following are particulars in connection with sales of poultry, eggs, and honey:—

SALES OF POULTRY AND EGGS, 1904-5.

	£	s.	d.	£	s.	d.
Black Orpingtons—						
2 cockerels	2	1	0			
6 hens	4	10	0			
14 settings	7	0	0			
				13	11	0
Buff Orpingtons—						
6 cockerels	3	3	6			
1 pullet	0	10	0			
21½ settings	10	15	0			
				14	8	6
S.L. Wyandottes—						
5 cockerels	5	18	0			
8 pullets	5	3	6			
24½ settings	12	1	8			
				23	3	2
White Wyandottes—						
5 cockerels	3	4	0			
9 pullets	6	2	0			
12 settings	6	0	0			
				15	6	0
White Leghorns—						
6 cockerels	3	14	6			
7 pullets	4	11	0			
11 settings	5	10	0			
				13	15	6

SALES OF POULTRY AND EGGS, 1904-5—*continued.*

Brown Leghorns—								
3 cockerels	...	...	...	...	...	2	17	0
2 pullets	...	...	...	...	...	1	10	0
9 settings	...	...	...	...	...	4	10	0
								8 17 0
Plymouth Rocks—								
4 cockerels	...	...	...	...	...	3	5	0
1 pullet	...	...	...	...	...	0	15	0
7 settings	...	...	...	...	...	3	10	0
								7 10 0
Dorkings—								
1 cockerel	...	...	...	...	...	0	12	6
3 pullets	...	...	...	...	...	1	12	6
6 $\frac{1}{2}$ settings	...	...	...	...	...	3	5	0
								5 10 0
Spanish—								
2 pullets	...	...	...	...	...			1 0 0
Langshans—								
1 cockerel	...	...	...	...	...			0 5 0
Minorcas—								
4 settings	...	...	...	...	...			2 0 0
O.E. Game—								
$\frac{1}{3}$ setting	...	...	...	...	...			0 3 4
Turkeys—								
2 Gobblers	...	...	...	...	...	2	0	0
1 hen...	...	...	...	...	...	0	10	0
6 $\frac{1}{6}$ settings	...	...	...	...	...	4	12	6
								7 2 6
Total sales of pure-bred poultry and eggs						...	...	112 12 0
Cash sales, 78 $\frac{1}{2}$ dozen table eggs						2	5	6
" 5 table birds						0	6	9
								2 12 3
Total cash sales						...	...	115 4 5
Supplied dining-hall, 533 dozen eggs						16	7	6
" " 77 fowls						6	12	0
								22 19 6
Total returns from poultry						...	...	138 3 11
RETURNS FROM APIARY.								
Cash sales of honey, 36 lb. at 3d.						...	...	0 9 0
Supplied to dining-hall, 1,860 lb. at 3d.						...	...	23 5 0
" " (comb honey), 25 lb. at 4d.						...	...	0 8 4
Total returns from Apiary						...	...	£24 2 4

CHEMISTRY.—The teaching in connection with this branch of College work has been confined, as nearly as possible, to imparting knowledge that will in the near future be beneficial to those embarking in agricultural pursuits. Mr. Gurney, who is in charge of the chemical laboratory here, has endeavoured to cater for the needs of students who intend carrying on the various branches of agriculture, and has done satisfactory work in this respect. He commands the respect of the young men assigned to his classes, and therefore good results have accrued from his teachings. Apart from the usual class work, a good deal of analytical work has been done, viz.:—

Analysis of Manitoba wheat	...	...	...	...	...	1	sample
" Milk	...	...	...	...	...	1	sample
" Cream	...	...	...	...	...	1	sample
" Prickly pear exterminator	...	...	...	...	...	1	sample
" Soils	...	...	...	...	...	2	samples
" Butter	...	...	...	...	...	4	samples

Messrs. Cory and Bailey report that exceptionally good work has been done in their classes, and, with few exceptions, all students were anxious to make good progress.

CARPENTRY WORK.—Much interest has been taken in this department, and young men have been found most anxious to acquire a knowledge of handling tools. Apart from the usual work of keeping buildings, gates, &c., in good repair, a number of new fowl-houses, a pig dip, and 60 chains of new fencing were erected.

BLACKSMITHING.—The work in this department has been confined to engine-driving, pumping, horse-shoeing, and keeping the farm implements in good order. Many of the senior students are quite competent to shoe horses.

CORRESPONDENCE.—During the year our letter-books show that 2,584 typewritten folios were copied. Most of the letters were in connection with the furnishing of information on agriculture, cattle breeding and feeding, also regarding dairying matters generally. A great deal of time is occupied in attending to correspondence of the above nature.

VISITORS.—During the twelve months 1,843 visitors, mostly persons in search of information, visited the College. All of these were unanimous in expressing their appreciation of the institution and the work carried on.

In concluding this report, it affords me much pleasure to be able to state that the past year has been one of good progress in every branch of College work. The exhibit of farm and dairy produce at the National Association's Exhibition in Brisbane was exceptionally good; so much so that it was considered worthy of being sent to Albury (New South Wales) show, where it was highly spoken of. Our dairy cattle at the Brisbane Exhibition were awarded prizes to the value of about £30. Although good work has been done, there still remains a good deal more to be accomplished, especially in connection with horse and sheep

breeding. We have here land available to carry on both of the above industries. These, if carried out on the proper lines, would not only be a source of revenue, but would also assist considerably in the improvement of the classes of stock abovementioned. Our draught sire, "Black Watch," which was disposed of last year, has left some valuable progeny in the district. Some young stallions by him, from inferior mares, have been sold at prices reaching as high as 100 guineas. Many of his stock, also, are working in the district, and are considered to be excellent animals. I consider that it would be a grave error to discontinue horse-breeding at this institution, because so many people visit the place for the purpose of obtaining knowledge on all industries that are likely to be beneficial and profitable to themselves. After many years of experience and careful observation I have come to the conclusion that there are but two classes of horses that will produce the animals that we require—viz., the active draught stallion, with good head, long rein, a thick low-set breast, with strong flat bone; this class of horse, mated with selected mares, would produce a class of horse suitable for our own use or for export. The hackney, coacher, or buggy horse can be produced from the thoroughbred sire; any departure from this course must eventually result in failure. I have watched this matter very carefully, and have found that many horse-breeders endeavoured to breed horses by introducing the coacher and trotting stallion, the result in every case being failure. Much could be written on this subject, but I do not consider that it should be embodied in this report.

My many thanks are due to yourself and the several officers of your Department for much valuable assistance in conducting the affairs of this institution.

JOHN MAHON, Principal.

REPORT OF THE MANAGER OF THE STATE FARM, WESTBROOK.

SIR,—I have the honour to submit the following report of the previous twelve months' operations. As my monthly reports have given more minute details, I have been as concise as possible.

WINTER CEREALS.—Although this is a branch not experimented with on this farm, it is necessary to state that we have a portion of stoney, thin land, which is not suitable for summer cropping, but is more adapted for the culture of wheat and oats for hay or grass. Five acres of this land produced 25 bags of wheat; 4 acres adjoining produced 5 tons of prime oaten hay; and 1 acre of rye, 4 bags of grain.

MAIZE.—In my last annual report under this heading, it is stated that a spring and summer variety was to be grown, the object being that the early sowing would be past the flowering stage before the later variety came into bloom, thus avoiding one being hybridised by the other. Having this in view, Hawkesbury Champion maize was planted on the 12th September, and Star Teeming was planted on 12th November, 18th December, and 16th January. The first variety did very well, the rain coming at the right time. So, also, did the November planting of Star Teeming; but after that planting the others failed to cob.

SORGHUMS, MILLETS, &c.—The following varieties grew well up to the flowering stage, but in consequence of dry weather following, the crop of seed was under the average:—Kafir Corn, Early Amber Cane, Planter's Friend, Saccharatum, Red Millet, French White Millet, and Japanese.

Three varieties of broom millet, sown on the 12th September, did much better. Three rows (10 chains long each) of the following were sown:—Californian Golden, yielded at the rate of 9 cwt. 3 qr. to the acre; Improved Evergreen, 9 cwt. 3 qr. 10 lb., and Mammoth Dwarf, 9 cwt. 0 qr. 21 lb.

POTATOES.—The result of the following and previous trials goes far to prove the unsuitability of this farm for growing potatoes on a large scale:—

Variety.	No. of Sets.	Yield per Plant.	Variety.	No. of Sets.	Yield per Plant.
Suffolk Champion	12	18½ lb.	Avoca	70	41¼ lb.
Schoolmaster	4	2½ lb.	Robin Adair	6	7¼ lb.
Red Russet	5	2½ lb.	Beauty of Hebron	8	9½ lb.
Carman	7	2 lb.	Vicar	11	6¼ lb.
White Rough	7	2½ lb.	Flourball	8	4¾ lb.
La Brittany	7	4 lb.	Bruce	5	5 lb.
Acme	6	10¼ lb.	Compton's Surprise	8	8¾ lb.
Adirondac	7	6½ lb.	Reading Giant	30 (large)	20¾ lb.
Manhattan	13 (whole)	14¾ lb.	Reading Giant	75 (small)	43½ lb.
Manhattan	19 (cut)	24 lb.	Early Rose	57	66¾ lb.

The following tubers were received from W. Taylor, Esq., Toowoomba:—

Supreme	1	28 oz.	Seedling	1	14 oz.
Nonsuch	1	8 oz.	Flourball	1	6 oz.
Satisfaction	1	16 oz.	Abundance	1	4 oz.
Windsor Castle	1	18 oz.	Reliance	1	8 oz.
Ideal	1	10 oz.	Epicure	1	20 oz.
Ninetyfold	1	20 oz.	Centuary	1	24 oz.

All the above were again planted in February. The only varieties doing any good were the following:—Avoca, Suffolk Champion, Robin Adair, Acme, Satisfaction, Windsor Castle, and Manhattan. Six varieties of sweet potatoes, although planted late, were very successful. We also had a good crop of Jerusalem artichokes.

PULSE.—One acre of Claycoloured cowpeas, and 1 acre of Yorkshire Hero garden peas were grown, with favourable results considering the season. Trial sowings of the following beans were made in September and December, the early sowing giving much the best returns:—Burpees Butterwax, Perfection (the best of the new dwarfs introduced this year), Stringless Longpod, Canadian Wonder, Old Homestead, Horticultural (the two latter are excellent new runners), tall and dwarf Lima.

LUCERNE.—Two light cuttings were taken off a 3-acre block which was sown last year. Another 3-acre block has recently been sown down, with oats as a protection crop.

MANGEL WURZEL.—Mammoth Long Pod was the variety grown, and withstood all weathers, as this valuable root always does. Half an acre produced 9 tons of fine roots.

PUMPKINS, of which six varieties were on trial, were not such a satisfactory crop this year as last; much trouble was experienced with lady-bugs, and several successional sowings had to be made. Crown, IXL, and Silver Nugget were the best. Sixteen varieties of squashes, marrows, and melons bore much better crops.

RAPE AND JERSEY KALE.—Half an acre each of these sheep fodders was grown side by side, to compare their yield. The first cutting was made during July, the approximate weight of each being 6 tons and 6½ tons per acre. In the absence of rain, no more cuttings followed.

CASTOR OIL.—Half an acre of this crop was sown in drills 3 feet apart. The October rains washed a large proportion of the seed away, and the land had to be resown. The plants grew well, and bore a plentiful crop of beans; but, owing to the difficulty of harvesting, a large quantity was lost.

TOMATOES.—Six varieties were planted on a ¼-acre of dry gravelly land, heavily manured with stable yard dung. The crop was a good one, and was sold in cases at satisfactory prices.

ONIONS.—The varieties under trial were:—Flat Tripoli, Brown Globe, Brown Spanish, Silver King, and Extra Early Yellow Globe. With the exception of the first, all gave good results, one ¼ acre producing 10 cwt. of sound bulbs.

MISCELLANEOUS SUMMER CROPS.—Sunflower suffered from drought, and did not yield up to expectations. Eight varieties of cotton under trial were a failure. The asparagus beds had received a heavy manuring, and made luxuriant growth up to January, since then very little new growth has taken place. Present appearances, however, indicate a good crop of shoots next spring, when the value of this luscious esculent will be tested in the open market. Rhubarb is represented by four varieties, viz.:—Victoria, Stott's Monarch, Hogan Shillelah, and Topp's Winter. Capsicums, chillies, egg-plant, horse radish, liquorice, herbs, globe artichokes, and ground-nuts were also satisfactorily grown as summer crops.

WINTER CROPS.—At the present time there are 6 acres under the following vegetables, &c., and considering the light rainfall since January (6½ inches) they present an exceedingly healthy appearance. The names of varieties of each subject are here set down in the order of maturing:—

CABBAGE, &c. (2 acres).—Little Pixie, Quick Cash, Hurst's First and Best, Succession, Autumn King, Drumhead Savoy, and Red Cabbage.

CAULIFLOWER.—Gilt Edge, White Queen, and Veitch's Autumn Giant. Sales of the above commenced on 1st June in wholesale lots realising from 2s. to 6s. per dozen.

BORECOLE OR KALE.—Drumhead, A1, Old Scotch, Extra Curled, and Variegated Garnishing.

BRUSSELS SPROUTS.—Exhibition and Matchless.

RAPE, JERSEY KALE, and THOUSAND-HEADED KALE occupy an acre plot, half of which has been treated with a complete fertiliser.

ROOTS (1 acre).—Beetroot: Perfection, Crimson Globe, Lilly White, Sea Kale Beet, Silver Kale Beet, and Giant. Mangel: Mammoth Long Red and Vilmorin's Sugar. Swedes: Improved Purple Top and Laing's Garden. White Turnips: Kashmyr, Nepaul, Red American, White Stone, Orange Jelly, and White Pomeranian. Kohl-rabi: Purple and Green.

ONIONS (½ acre).—White Spanish, Silver King, Extra Early Yellow Globe, Yellow Danvers, Brown Globe, and Brown Spanish. Various fertilisers are being used on this plot.

CARROT.—Early Gem, Short Horn, Inimitable, Intermediate, and Altringham.

PEAS.—One acre of Yorkshire Hero was sown in May. An experimental plot has also been sown with the following peas, which have been inoculated with nitrogen culture (No. 219), viz.:—Yorkshire Hero, Stratagem, and Blue Field Pea; and the same varieties sown alongside, untreated. The land was previously occupied by cabbage.

OTHER CROPS include lettuce, endive, eschalots, garlic, tree and potato onions, celery, inga, and serradella. A trial plantation of strawberries (10 varieties) has also been laid out for experimental purposes.

ORCHARD.—The fruit fly was again a very serious pest, and up to the present there seem to be no effectual means of coping with it. The only satisfactory way of keeping the pest in check is by extreme cleanliness—i.e., by destroying all windfalls and infested fruit. The fly made its appearance in November, which was earlier than in the previous years; we then had a respite for a week or two, and marketed some excellent apricots and peaches. In January we were again afflicted, and a large proportion of the crop had to be cased up at an immature stage. The following month, however, clean, good peaches and pears were marketed. An excellent exhibit was staged at the Toowoomba summer show, which received high encomiums. Hailstorms in October also contributed to the loss of half the whole crop. The orchard was sprayed in spring with sulphur, lime, and salt mixture, and individual trees with tobacco extract, as insect and fungoid preventives. The following are some of the varieties which, after several years' trial, have proved themselves of the highest value, and can be confidently recommended:—

PEACHES.—Globe, Lady Palmerston, Foster, Red May, Alexander, Mary's Choice, Late Crawford, Robt. Stewart, and Wheatlands.

APRICOTS.—Oullin's Early, Montgamot, St. Ambrose, Hemskirk, Moorpark, Blenheim, Alsace, and Royal.

PLUMS.—Burbank, Kelsey, Wickson, Chabot, October Purple, Diamond, Angelina Bendette, and Evan's Early.

PEARS.—William bon Chretien (Bartlett), Clapp Favourite, Beurre Clairgeau, Winter Nelis, Monsulard, and Marie Louise D'Uele.

FIGS.—White Adriatic, Col de Signora Nero, Violette Grosse, Brown Turkey, and Genoa.

OLIVES.—Rubra, Oblonga, Uvaria, Collumbello, Picholine St. Chamois, and Macrocarpa.

DWARF TREES.—The following experiments in "dwarfing" have been initiated. The stocks worked upon were small rootlings received from Victoria. Owing to the lateness of the season when planted, and the dry spring, most of the grafts dried out:—

1. Prince Englebert plum, worked direct on blackthorn. Most dwarf form of plum.
2. Bartlett pear, worked on Chinese sand pear.
3. Marie Louise pear, on Beurre de Amanlis pear as an intermediate, on Anger's quince-rooted stock.
4. London Pippin apple, on English Paradise, on Northern Spy rooted stock.
5. Broompark pear, worked direct on Anger's quince-rooted stock.
6. Gravenstein apple, on French Paradise as intermediate, on Northern Spy rooted stock.
7. Magetin apple, on English Paradise, on N. Spy rooted stock.

The following six apples are grafted on Northern Spy established yearling stocks, with Paradise as intermediate. They have all done well—viz., Gravenstein, Nickajack, Ben Davis, Mr. Gladstone, and Jonothon.

In following out a system of dwarfing, however, the above subjects are not desirable to operate on. Apples, plums, and most pears do not require any curtailment in their natural growth in our climate beyond what can be attained by judicious pruning. It is with peaches and apricots that a system of dwarfing may be applied with advantage, where the use of netting is incumbent to avoid the depredations of the fly. In furtherance of this idea, I am using seedling peaches as free stocks, upon which are worked several varieties of the dwarfest plums, upon which again will be worked the varieties of peach or apricot it is decided to grow. I have at present several peaches worked on these stocks, using Diamond plum as the intermediate. This experiment must necessarily take up a number of years, but I am in hopes we shall be able to produce a moderate-sized peach and apricot tree carrying a full crop of perfect fruit, and which can be covered with netting at a small expense.

VINEYARD.—Hailstorms greatly damaged the vines in the early part of the season, together with heavy rains in October, and after caused a considerable development of black spot amongst many of our finest table grapes. The crop on the whole was below the average, although many varieties bore well. The whole vineyard was dusted with sulphur three times, part of it was twice sprayed with Bordeaux mixture, and the more delicate varieties were swabbed with sulphuric acid wash. The names of some of the varieties which have done best this year are here given—viz., Mataro, Aramon, Black Hermitage, Malvasia, Pedro Ximenes, Sercial, Clairette Rose, Merlot, Gamay, Cuisant, Dolcetto, Mondeuse, Malbec, Ouelade, Semilon, Marsanne, Mrs. Price, Muscat Hambro, Black Hambro, Royal Ascot, Goethe, Wilder, Dr. Lindley, Lenoir, Chasselas Negropont, Chasselas, Violet, S. Sauveur, Madeline Rose, Precoce de Malingre, Connoise, Frean, Trebbiano, Ferdinand de Lesseps, Riesling, and Gros Colman. About 22,000 cuttings were distributed in July, 1904.

GRAFTING.—As some of our finest grapes are very subject to spot in this district, experiments are being carried out with the object of ascertaining how far any particular stock used will prove efficacious in checking this disease of the vine; and also to determine the degree of affinity the stock bears to the scion. All grafts, with the exception of those on the Rupestris Martin stocks, have made good unions, and have grown vigorously. So far, the experiment is encouraging, as very little spot has shown itself on these vines, more especially as the scions were taken from diseased plants, and have never been treated in any way since they were worked in August, 1904. However, further observations will be required before decisive results can be arrived at. The following are the varieties operated with:—

No. Worked.	Name of Scion.	Name of Xbred, Phylloxera proof, Hybrid Stock.
1 and 2	Henab Turki	Riparia x Rupestris 101 ¹⁴
3 to 8	Muscat of Alexandria	" " "
9 to 15	Snow's Muscat	" " "
1, 2, and 3	Datier de Beyrouit	Riparia x Rupestris 3,309
1 and 2	Henab Turki	Aramon x Rupestris
3 to 8	M. of Alexandria	" "
9 to 15	Snow's Muscat	" "
1, 2, and 3	Datier de Beyrouit	Mouvedu x Rupestris
1 and 2	Henab Turki	Rupestris Martin
3 to 8	M. of Alexandria	" "
9 to 15	Snow's Muscat	" "
1	Datier de Beyrouit	Rupestris x Chasselas 4,401
1 and 2	Henab Turki	Auxerrois x Rupestris
3 to 8	M. of Alex.	" "
9 to 14	Snow's Muscat	" "

C. ROSS, Manager.

REPORT OF THE MANAGER OF THE STATE FARM, HERMITAGE.

SIR,—I have the honour to submit the Annual Report of this farm for the year ending 30th June, 1905. My duties began on the 1st January, 1905.

WHEAT.—The past season has been a favourable one as far as absence of rust was concerned, but the want of rain during a critical period in September had the effect of checking development, and reduced the yields, particularly of late-sown varieties. The process of permanently fixing new types of wheat has in the past occasioned a good deal of careful selection, and to follow out this system with the attendant and gradual elimination of undesirable and rust-labile varieties, it was determined to test a number of the most promising under field conditions.

In conjunction with the experiments on the farm, a seed-wheat distribution scheme was adopted last season, with a view to determine the adaptability of Hermitage wheats to various districts throughout the State, and the results obtained have been highly satisfactory, although in many instances the wheats were sown too late in the season, and under adverse conditions.

Under the heading "Seed Wheat Distribution" will be found tabulated results from the various districts, together with the growers' opinions.

With a view to the propagation of selected varieties of rust and drought resisting wheats, the farm was measured and divided off into 1-acre blocks, with a few exceptions, leaving ample roadways between each block to allow of keeping varieties distinct and to facilitate the use of machines in harvesting. Some fifty odd approved varieties were drilled in, and in some few cases portions of the crops were cut for hay. Appended is a summary:—

Name of Variety.	Area.	When sown.	Yield per Acre.	Weight per Bushel.	Remarks.
Budd's Early	13 acres	June 17 and 18	27 ²³ / ₁₀₀	66	Fertiliser experiments.
Hermitage No. 2	12 "	" 14	21 ¹ / ₁₀	64	Selected for re-sowing, 1905.
Hermitage No. 3	1 "	May 10	22 ¹³ / ₁₀₀	64	ditto
Moulds	1 "	June 14	32 ⁹ / ₁₀₀	66	ditto
Baroota Wonder	1 "	May 9	22 ⁵ / ₁₀₀	63	ditto
Bobs	1 "	" 9	28 ¹¹ / ₁₀₀	64	ditto
Red Fife (Manitoba)	1 "	June 10	4 ¹ / ₁₀	62	ditto
Carmichael	1 "	" 6	25 ¹ / ₁₀₀	67 ¹ / ₂	ditto
John Brown	822 x 11 links	" 14	24 ¹ / ₁₀	60	ditto
Cumberland	505 x 23 "	" 14	19 ¹ / ₁₀	60	ditto
Schneider	438 x 23 "	" 14	15 ⁷ / ₁₀₀	60	Selected for re-sowing, 1905.
Plover	710 x 14 "	" 14	8 ¹ / ₁₀	61	ditto

Name of Variety.	Area.	When Sown.	Yield per Acre.	Weight per Bushel.	Remarks.
Petatz Surprise	1 acre	May 9	Bushels. ...	lb. 64	Cut for hay, weedy.
Gluyas	1 "	" 9 ... ..	...	64	ditto
Federation	1 "	" 9 ... ..	...	63	ditto
A Sport from 86 D 2	380 x 12 links	June 14	16 $\frac{4}{5}$	63	Selected for re-sowing, 1905.
Crossbred No. 3	1 acre	May 10	25 $\frac{2}{10}$	65	
Ditto 6	1 "	" 10	24 $\frac{1}{15}$	65	
Ditto 7	1 "	" 10	20 $\frac{1}{5}$	64	
Ditto 10	10 chains x 62 links	" 11	28 $\frac{1}{15}$	66	
Ditto 11	10 " 20 "	" 11	22 $\frac{3}{4}$	64	
Ditto 12	10 " 62 "	" 11	25 $\frac{2}{5}$	66 $\frac{1}{2}$	ditto
Ditto 20	10 " 63 "	" 11	20 $\frac{1}{4}$	65	
Ditto 21	10 " 23 "	" 11	26 $\frac{9}{20}$	65	
Ditto 22	10 " 67 "	" 11	21 $\frac{3}{30}$	64	
Ditto 23	10 " 14 "	" 11	14 $\frac{13}{5}$	66 $\frac{1}{2}$	
Ditto 24	10 " 13 "	" 11	49 $\frac{7}{20}$	67	ditto
Ditto 25	30 " 240 "	" 12	31 $\frac{1}{5}$	67	ditto
Ditto 26	1 acre	" 12	29 $\frac{1}{10}$	67	ditto
Ditto 27	1 "	" 12	28 $\frac{7}{20}$	63	
Ditto 28	1 "	" 12	26 $\frac{3}{5}$	67	ditto
Ditto 29	1 "	" 12	22 $\frac{1}{5}$	66	
Ditto 30	1 "	" 12	16 $\frac{7}{12}$	67	
Ditto 32	1 "	" 12	22 $\frac{1}{30}$	66 $\frac{1}{2}$	
Ditto 33	1 "	" 13	24 $\frac{7}{10}$	68	ditto
Ditto 34	1 "	" 13	26 $\frac{1}{15}$	67	ditto
Ditto 36	1 "	June 10	28 $\frac{5}{12}$	62	ditto
Ditto 37	1 "	" 10	31 $\frac{9}{20}$	60	ditto
Ditto 50	1 "	" 6	29 $\frac{7}{10}$	64	ditto
Ditto 53	1 "	" 6	28 $\frac{1}{5}$	66	ditto
Ditto 91	1 "	" 6	23 $\frac{1}{30}$	62 $\frac{1}{2}$	ditto
Ditto 103	1 "	" 6	15 $\frac{13}{15}$	61	
Ditto 120	1 "	" 10	25 $\frac{3}{4}$	66	
Ditto 121	1 "	" 6	25 $\frac{2}{4}$	64 $\frac{1}{2}$	ditto
Ditto 122	1 "	" 6	21 $\frac{7}{15}$	62	
Ditto 131	1 "	" 6	22 $\frac{1}{12}$	60	
Ditto 136	1 "	" 7	19 $\frac{3}{5}$	62	
Ditto 166	1 "	" 7	22 $\frac{7}{20}$	62	
Ditto 168	1 "	" 7	19 $\frac{11}{20}$	63	
Ditto 170	1 "	" 10	26 $\frac{8}{15}$	65	
Ditto 173	1 "	" 7	24 $\frac{4}{18}$	61	ditto
Ditto 175	1 "	" 11	27 $\frac{3}{10}$	65	ditto
Ditto 177	1 "	" 7	21 $\frac{1}{15}$	62	
Ditto 181	1 "	" 7	26 $\frac{2}{15}$	64	ditto
Ditto 182	1 "	" 8	23 $\frac{3}{12}$	60	
Ditto 186	1 "	" 8	19 $\frac{2}{3}$	61	
Ditto 190	1 "	" 8	24 $\frac{4}{15}$	68	ditto
Ditto 343	1 "	" 8	27 $\frac{3}{4}$	62	ditto
Ditto 345	1 "	" 8 ... ..	...	...	Cut for hay.
Ditto 346	1 "	" 11	19 $\frac{1}{2}$	66	
Ditto 347	1 "	" 8	31 $\frac{19}{10}$	63	Selected for re-sowing, 1905.
Ditto 348	1 "	" 8	28 $\frac{14}{15}$	66	ditto
Ditto 349	1 "	" 11	33 $\frac{11}{15}$	66 $\frac{1}{2}$	ditto
Ditto 353	1 "	" 9	16 $\frac{1}{4}$	63	ditto
Ditto 354	1 "	" 9	26 $\frac{3}{2}$	67	ditto
Ditto 355	1 "	" 11	20 $\frac{14}{15}$	63	
Ditto 450	1 "	" 9	23 $\frac{2}{5}$	65	ditto
Ditto 504	1 "	" 11	27 $\frac{11}{10}$	65	ditto

In order to test several of our best wheats on soil representative of a large area of wheat-growing land in the Warwick district, and as a change from the heavier soil of the farm, some 10 acres of land were rented from Mr. A. Morrice, of Canning Downs. Eight selected varieties were drilled in on 1-acre blocks, at the rate of $\frac{3}{4}$ bushel to the acre. Results:—

Variety.	Area.	When Sown.	Yield per Acre.	Weight per Bushel.	Remarks.
Heritage No. 3	1 acre	June 3	Bushels. 23 $\frac{19}{20}$	lb. 65	Mice caused a serious loss in the yield of these wheats. In an earlier report (October, 1904) an estimated shortage of yield of 15 per cent. was forecasted, and owing to various reasons this was ultimately borne out.
Crossbred No. 50	" "	" "	29 $\frac{7}{10}$	64	
Ditto 53	" "	" "	22 $\frac{59}{80}$	66	
Ditto 91	" "	" "	23 $\frac{1}{30}$	62 $\frac{1}{2}$	
Ditto 173	" "	" "	23 $\frac{11}{15}$	61	
Ditto 182	" "	" "	23 $\frac{1}{4}$	60	
Ditto 166	" "	" "	22 $\frac{7}{20}$	62	
Ditto 168	" "	" "	19 $\frac{11}{20}$	63	

SEED WHEAT DISTRIBUTION, 1904.—In most cases the distribution was arranged through existing agricultural societies and farmers' associations, and the members participating were supplied with clean, graded seed, on the understanding that double the quantity supplied should be returned from the resulting crop.

The following institutions interested themselves in the experiments, and individual members who are farming on different classes of soils were particularly selected in order that the wheats should receive as wide a test as possible:—Amby Farmers' Association, Hodgson Farmers' Association, Western Pastoral and Agricultural Association, Wallumbilla Farmers' Association, Northern Downs Pastoral and Agricultural

Association; Pittsworth Pastoral, Agricultural, and Horticultural Association; Central Downs Agricultural and Horticultural Association, and Eastern Downs Horticultural and Agricultural Association. The farmers were asked to carry out the following instructions:—

1. To pickle the seed in order to prevent bunt.
2. To protect the crop from attacks of animals likely to cause damage.
3. To keep a record of the rainfall and any abnormal weather conditions.
4. To keep seasonable notes of time of sowing, coming into ear, and ripening.
5. To observe and note the appearance and effect of rust.
6. To advise the Department of date of harvesting, and to keep a record of the yield.
7. To return double the quantity of pure seed of each variety from the resulting crop.

It is gratifying to note the keen interest displayed by many of our public-spirited agriculturists in assisting the Department with its work, although in a few cases some difficulty was experienced in getting the records to hand.

In the following tabulated returns will be found some condensed remarks on the wheats by the growers themselves:—

Name and Address.	Variety of Wheat.	Amount.	Area Sown.			When Sown.	Harvested.	Yield Per Acre.	Remarks of Growers.
		Bushels.	A.	R.	P.			Bushels.	
WARWICK DISTRICT.									
A. W. Free, Hermitage	Hermitage No. 2	1½	2	3	0	14 June	12 Nov.	16	Suffered considerably from dry weather when coming into ear, and developed uneven as land was only ploughed once. Withstood rust very well.
G. Alexander, Danderoo	Hermitage No. 2	1	2	0	0	23 "	20 "	5½	Planted too late for good results and suffered greatly from dry weather. A very good wheat for the district. Rust-resistant.
W. D. Lamb, Yangan...	Hermitage No. 2	1	1	1	16	2 "	14 "	26	Very clean straw; free from rust. Did not germinate too well. Well worth trying again.
	Battlefield ...	0½	0	2	28	2 "	23 "	26½	Slight trace of rust; grain slightly pinched. Requires sowing early. A very good wheat, and worth further trial.
C. H. Staff, Junabee ...	Hermitage No. 2	1	1	1	34	6 "	12 "	24	An even crop; free from rust. Good grain but slightly pinched; came into ear during dry spell.
	Bobs ...	1	1	1	18	6 "	12 "	24	Advanced rapidly after coming into ear. Slow in maturing, but strong growth. No rust. Both good milling wheats.
A. Tulloch, Swan Creek	Hermitage No. 2	1	1	1	29	14 June	21 Nov.	32	Very bright and clean straw free from rust. Splendid grain well filled. A very suitable wheat for the district.
	Battlefield ...	0½	0	2	37	14 "	21 "	22	Straw very clean and bright, free from rust. Ears large and well filled. A very good wheat.
ALLORA DISTRICT.									
W. Deacon, Allora ...	Hermitage No. 2	1½	2	0	0	15 June	11 Nov.	19	Did fairly well considering dry weather after planting. Slight trace of rust on flag.
A. Rickert, Allora ...	Hermitage No. 2	1	1	0	0	1 "	16 "	30	A good wheat for the district. Am planting a larger area next season.
H. F. Wright, Goomburra	Hermitage No. 2	1	1	1	17	30 "	12 "	30	Did very well, but suffered from a hail storm, and badly eaten by hares. A suitable wheat for district. No rust.
	Battlefield ...	0½	0	2	35	30 "	12 "	27	Did very well considering dry weather. Suffered from hail storms and hares. I like this wheat the best.
J. Smith, G'engallen ...	Hermitage No. 2	1	0	3	0	1 "	6 "	32	A very good wheat. Stood up well. Perfectly free from rust. Stood the dry weather splendidly. Sowing next season.
	Yandilla ...	1	0	3	0	20 "	20 "	20	A very fine clean strawed wheat. Perfectly free from rust. Withstood the dry weather well. Sown rather late.
	Battlefield ...	1	0	2	32	1 July	20 "	16	An even crop. Sown too late, but did very well considering dry spell.
PITTSWORTH DISTRICT.									
A. E. Stumm, Pittsworth	Hermitage No. 2	3	4	0	0	15 June	4 Dec.	22	Ripened rather unevenly on account of dry spell. Very slight trace of rust.
	Battlefield ...	0½	0	2	0	22 "	4 "	30	Stripped on green side. Fairly free from rust. Ripens rather late.
F. C. Golder, Pittsworth	Hermitage No. 2	1½	1	2	0	4 "	4 Nov.	26	Suffered from dry weather. Slight trace of rust, but good sound grain. Straw short, stiff, and erect.
	Battlefield ...	0½	0	3	0	4 "	14 "	20	Slight trace of rust. First-class grain.
J. Rownfeldt, Pittsworth	Hermitage No. 2	1½	2	1	0	15 "	18 "	28	Very suitable for the district.
	Yandilla ...	1½	2	1	0	15 "	10 Dec.	28	Am re-sowing both wheats next season. Both suffered from dry spell.
C. Knust, Pittsworth ...	Hermitage No. 2	1	1	0	21	9 "	7 Nov.	27	Suffered from dry weather, but turned out above expectations.
	Bobs ...	1	1	0	0	6 "	18 "	19	Greatly damaged by a severe hail-storm just before harvesting.

Name and Address.	Variety of Wheat.	Amount.	Area Sown.			When Sown.	Harvested.	Yield Per Acre.	Remarks of Growers.
			Bushels.	A.	R.					P.
ROMA DISTRICT.									
D. Brown, Roma	Hermitage No. 1	1	2	0	35	14 June	26 Nov.	6	No sign of rust or smut. Nice firm heads. Does not shell too easily.
	Bobs	1	2	1	0	14 "	19 "	9	
J. Kennedy, Roma	Hermitage No. 1	1	3	0	0	24 May	25 "	18½	No sign of rust or smut. Fine heads and straw.
	Bobs	1	2	2	0	13 June	30 "	19½	Free from rust. Rain prevented covering, but it grew on top of land.
WALLUMBILLA DISTRICT.									
P. Rochat, Wallumbilla	Hermitage No. 1	1	1	0	0	22 June	20 Nov.	4	Came up very patchy owing to ravages of mice. Straw bright and clean. No rust. Am very pleased with the wheat.
G. Williamson, Wallumbilla	Hermitage No. 1	0¾	2	0	0	21 "	12 Dec.	17	
W. Morgan, Wallumbilla	Hermitage No. 1	1	2	0	0	20 "	4 "	12	Perfectly free from rust and considering the late sowing did very well. A suitable wheat for the district.
E. Conroy, Wallumbilla	Hermitage No. 1	2	6	2	0	26 "	12 "	8	
T. Watts, Wallumbilla	Hermitage No. 1	1	1	1	32	30 "	14 "	(No record)	Free from rust, but damaged by a hailstorm before stripping.
T. Hembrow, Wallumbilla	Hermitage No. 1	1	1	2	0	24 "	24 Nov.	22	Sown too late in dry weather. No rust to speak of.
J. Swan, Wallumbilla	Hermitage No. 1	1	1	0	0	30 "	14 Dec.	3	Land not ploughed. Put in with a disc harrow. A nice clean wheat perfectly free from rust; one of the best for district.
J. Mogridge, Wallumbilla	Hermitage No. 1	2	3	2	0	25 "	12 "	7	Straw clean and perfectly free from rust. Suffered from dry spell when maturing.
H. Stanley, Wallumbilla	Hermitage No. 1	1	2	0	0	24 "	(No records)	7	Perfectly free from rust, damaged by parrots. A good wheat for late sowing. Wheat grown beside, rotten with rust.
HODGSON DISTRICT.									
J. G. Brumpton, Hodgson	Hermitage No. 1	1½	3	2	0	9 June	9 Nov.	14½	Entirely free from rust, but greatly thinned by "wire-worms."
J. Hewitt, Hodgson	Hermitage No. 1	1½	1	3	0	15 "	26 "	14	
B. Rayner, Hodgson	Hermitage No. 1	1	1	1	20	28 "	25 "	14½	A first-class wheat, very clean and bright, not a spot of rust or smut; did remarkably well considering the dry season.
	Battlefield	0½	0	2	20	28 "	25 "	16	A very good wheat of clean straw and plump grain, perfectly free from rust. Did not get a fair chance; sown in dry weather.
J. Aisthorpe, Hodgson	Hermitage No. 1	1½	3	1	0	7 "	9 "	12	Slight trace of rust. A very good wheat if given a fair chance.
M. Byrn, Hodgson	Hermitage No. 1	1½	4	1	0	8 "	15 "	14	Cultivation poor. A few specks of rust at one end of paddock.
G. Johnson, Hodgson	Hermitage No. 1	1½	2	2	0	16 "	18 "	20¾	No rust whatever. Sown broadcast on poorly cultivated land.
F. Johnson, Hodgson	Hermitage No. 1	1½	3	0	0	16 "	17 "	11½	A very hardy wheat as regards weather. Perfectly free from rust.
P. Hoskin, Brinsop	Hermitage No. 1	1	1	3	22	23 May	14 "	18½	Perfectly free from rust. A very good wheat to strip. Sown beside Wards Prolific, which was very rusty.
	Battlefield	0½	1	2	12	23 "	12 "	16½	A nice even crop of good grain, free from rust.
AMBY DISTRICT.									
J. Bishop, Amby	Hermitage No. 2	1	1	2	20	25 June	23 Nov.	6½	No sign of rust. Came out with a big lead on any other variety. Hard wheat to thresh. Withstands gales and storms very well.
	Battlefield	0½	0	3	20	25 "	23 "	9½	
W. Brumpton, Amby	Bobs	1½	3	0	0	21 "	...	...	Free from rust, but suffered from dry weather. Both wheats are an acquisition to the district.
W. J. Sullivan, Amby	Hermitage No. 2	1	2	0	0	21 "	13 "	3	Sowing more next season.
C. Beitz, Amby	Hermitage No. 2	0½	1	0	0	28 "	16 "	8	Owing to the very dry weather this crop was a failure.
T. Goodin, Amby	Hermitage No. 2	1	1	2	0	23 "	16 "	5	Free from rust. Like the grain very much, and will try it again next season. Suffered from drought.
DALBY DISTRICT.									
A. Mathieson, Dalby	Hermitage No. 2	1½	1	1	24	16 July	(No records)	...	Free from rust, but greatly damaged by grasshoppers and dry weather.
Hickson Bros., Dalby	Hermitage No. 2	2	...	...	...	(No records)	...	...	A very clean grain. No sign of rust. Over half the crop was eaten out by grubs. Suffered from want of rain.
J. Condon, Dalby	Hermitage No. 2	1½	...	...	...	(No records)	...	...	Free from rust. Did not stool well owing to dry weather. Trying it again next season.
W. Grant, Bowenville	Hermitage No. 2	1½	2	0	0	30 June	3 Dec.	12	Free from rust. Suffered from dry weather and late planting. A very good wheat.

OTHER WHEATS, 1905.—In addition to the larger quantities of wheats sown this season, some small drills of the following have been planted to increase their bulk for future sowing on larger areas:—Hard Medeah, Morocco, Corn, Russian Ulka, Velvet Don, Black Don, Belatourka, Kubanka, Sapphire, Blount's Lambrigg, Sorrell, Indian Early, Indian Head, Muzzafur Nagar (an Indian), Tarragon (a new variety), and some thirty-six new crossbred varieties (Farrer's).

A number of the above are being grown with a view to the cross-fertilisation of some of the most promising varieties at time of flowering.

SEASON, 1905.—A selection has been made from the wheats grown last season, and the varieties showing most promise have been picked out and sown again on 1-acre blocks. All seed cleaned and graded. Pickled with a solution of formalin (1 lb. to 40 gallons water).

EXPERIMENTS WITH FERTILISERS.—A continuation of the experiments with fertilisers was carried out on the New Hermitage. Variety of wheat sown, Budd's Early. Drilled in with fertilisers on $\frac{1}{2}$ -acre blocks, at the rate of $\frac{3}{4}$ bushel to the acre. Seed previously pickled with bluestone. Sown 17th and 18th June. Tests in duplicate. Yields for 1904 and 1905:—

Block and Section.	Fertilisers per Half-acre.		Yield per Acre, 1904.		Yield per Acre, 1905.	
	With Seed.	As Top-dressing.	Straw.	Grain Bushels.	Straw.	Grain Bushels.
1 A	No Manure ... ..	...	T. C. Q. L. 2 0 0 22	28 $\frac{10}{60}$	T. C. Q. L. 2 16 2 0	28 $\frac{22}{60}$
1 B	Ditto ... ..	...	1 18 0 12	26 $\frac{22}{60}$	2 3 0 16	26 $\frac{22}{60}$
2 A	12 lb. Sulph. of Ammonia ...	23 lb. Sulph. of Ammonia ...	2 2 1 26	26 $\frac{44}{60}$	2 12 0 0	25 $\frac{26}{60}$
2 B	21 lb. Sulph. of Potash Ditto	ditto	2 1 3 26	26 $\frac{42}{60}$	2 7 1 4	24 $\frac{50}{60}$
3 A	127 $\frac{1}{2}$ lb. Superphosphate No. 1 21 lb. Sulph. of Potash	...	2 6 0 18	27 $\frac{58}{60}$	2 13 2 8	27 $\frac{20}{60}$
3 B	Ditto ... ..	...	1 15 2 10	27 $\frac{10}{60}$	2 13 3 12	34 $\frac{5}{60}$
4 A	127 $\frac{1}{2}$ lb. Superphosphate ...	23 lb. Sulph. of Ammonia ...	2 5 1 26	28 $\frac{42}{60}$	2 10 0 0	27 $\frac{48}{60}$
4 B	12 lb. Sulph. of Ammonia Ditto	ditto	1 14 1 4	28	2 14 0 24	34
5 A	127 $\frac{1}{2}$ lb. Superphosphate 12 lb. Sulph. of Ammonia ...	ditto	2 1 0 2	26 $\frac{58}{60}$	2 15 2 0	29 $\frac{8}{60}$
5 C	21 lb. Sulph. of Potash Ditto	ditto	1 10 0 0	25 $\frac{4}{60}$	2 3 0 0	28 $\frac{36}{60}$
6 A	63 $\frac{1}{2}$ lb. Superphosphate 6 lb. Sulph. of Ammonia ...	11 $\frac{1}{2}$ lb. Sulph. of Ammonia ...	2 1 2 22	29 $\frac{22}{60}$	2 7 2 0	27 $\frac{18}{60}$
6 C	10 lb. Sulph. of Potash Ditto	ditto	1 10 1 0	25 $\frac{40}{60}$	2 3 2 0	28 $\frac{36}{60}$
7 A	127 $\frac{1}{2}$ lb. Superphosphate 21 Sulph. of Potash	23 lb. Nitrate of Soda ...	1 18 3 22	27 $\frac{10}{60}$	2 7 2 8	24 $\frac{50}{60}$
7 C	23 lb. Nitrate of Soda Ditto	ditto	1 15 0 16	24 $\frac{40}{60}$	2 3 2 0	28 $\frac{53}{60}$
8 A	150 lb. Thomas' Phosphate 21 lb. Sulph. of Potash	ditto	2 0 1 14	27 $\frac{20}{60}$	2 2 2 0	20 $\frac{36}{60}$
8 C	23 lb. Nitrate of Soda Ditto	ditto	1 13 0 24	28 $\frac{32}{60}$	1 19 0 16	26 $\frac{24}{60}$
9 B	102 lb. Meatworks Manure ...	17 $\frac{1}{2}$ lb. Nitrate of Soda ...	1 18 0 6	25 $\frac{54}{60}$	1 12 2 16	28 $\frac{6}{60}$
9 C	21 lb. Sulph. of Potash Ditto	ditto	1 13 1 0	26 $\frac{52}{60}$	2 3 0 0	26 $\frac{54}{60}$
10 B	127 $\frac{1}{2}$ lb. Superphosphate 21 lb. Sulph. of Potash ... ..	...	1 12 2 6	26 $\frac{2}{60}$	2 10 4 0	20 $\frac{54}{60}$
10 C	56 lb. Dried Blood Ditto ... ..	...	1 17 2 16	28 $\frac{56}{60}$	2 6 2 24	30 $\frac{36}{60}$
11 B	150 lb. Thomas' Phosphate 84 lb. Kainit	23 lb. Sulph. of Ammonia ...	1 4 1 12	27 $\frac{36}{60}$	2 3 0 24	28 $\frac{10}{60}$
11 C	12 lb. Sulph. of Ammonia Ditto ... ..	...	1 9 1 26	24 $\frac{2}{60}$	2 9 0 24	31 $\frac{2}{60}$
12 B	75 lb. Thomas' Phosphate 42 lb. Kainit	11 $\frac{1}{2}$ lb. Sulph. of Ammonia ...	2 0 4 2	25 $\frac{18}{60}$	2 11 2 0	28 $\frac{20}{60}$
12 C	6 lb. Sulph. of Ammonia Ditto ... ..	...	1 10 2 16	26 $\frac{42}{60}$	2 0 2 0	29 $\frac{44}{60}$

The above blocks have again been planted with Budd's Early wheat, similarly to last season, but without the addition of more fertilisers, except in the case of the twelve duplicate blocks, which have received a dressing of lime at the rate of 1 ton to the acre.

Three extra $\frac{1}{2}$ -acre blocks have been added to the above, and two were manured with 4 cwt. bat guano (one left unmanured for comparison).

BARLEY.—The undermentioned barleys represent the increase of selected malting strains grown from seed obtained originally from New South Wales. They were drilled in on new ground on the New Hermitage. Results:—

Name of Variety.	When Sown.	Harvested.	Yield per Acre.	Weight per Bushel.
Chilian Chevalier	June 17	November 7	Bushels. 30·4	Lb. 55
Kinver's Chevalier	"	"	34 1	54
Hallet's Chevalier	"	"	42 0	55
Invincible	"	"	49·0	53
Golden Grain	"	"	42·9	56
Carter's Malting	"	"	53·1	55
Webb's New Golden Giant	"	"	43·1	56

Small plots of the following barleys, representing types in favour on the English market, were sown in order to provide seed for laying down larger areas this season (1905):—Imp. Chilian Chevalier, Californian Brewing, English Chevalier, Oderbruck, Hungarian Chevalier, Danubian, Saale, Tripoli, and Ouchac.

RYE.—A crop of Thousandfold rye was drilled in to provide seed and straw for thatching purposes. Area sown, 3 acres approximate, 9th June, 1904. Yield, $23\frac{3}{5}$ bushels per acre. Grain fair, but rather uneven. Straw good.

OATS.—Four small plots of selected oats were sown for seed purposes, and have been put in on larger areas this season. They comprise:—Algerian, 4 feet to 4 feet 6 inches high, early, fine straw, good for hay. Skinless, 4 feet to 4 feet 6 inches high, early, fine straw, good for hay. Red-rust Proof, 4 feet to 4 feet 6 inches high, early, fine straw, good for hay. White Tartarian, side bearing, 5 feet to 5 feet 6 inches high, good for chaff.

CANARY SEED.—Three acres of this valuable crop were drilled in at the rate of 20 lb. to the acre. Sown 15th June. Yield, $12\frac{2}{5}$ bushels per acre. Weight of seed per bushel, 55 lb.

MAIZE.—Experiments were initiated during the spring of 1904 with a view to comparing the check row and continuous drill planting of maize. The variety chosen for the trials was Kansas Sunflower maize, on account of its good character and high nutritive value, but owing to the very dry weather at a critical period in the development of the crop, the results were valueless.

Ten blocks, each 1 acre, were treated as follows:—

Block 1	Sown check row system	2 kernels to the hill	5 lb. seed per acre.
" 2	ditto	3 ditto	6 lb. ditto.
" 3	ditto	4 ditto	9 lb. ditto.
" 4	ditto	Cultivated once	8 lb. ditto.
" 5	ditto	Cultivated twice	8 lb. ditto.
" 6	ditto	Cultivated three times	8 lb. ditto.
" 7	ditto	Cultivated four times	8 lb. ditto.
" 8	Drilled in in furrow ... ..	...	7 lb. ditto.
" 9	Drilled in without furrow ... ..	...	7 lb. ditto.
" 10	Drilled in in furrow	Subsoiled 14 inch deep	7 lb. ditto.

These plots were sown on the 29th October, and were covered with a scuffler and harrowed crossways on 3rd November. A repetition of this experiment will be carried out during the coming spring.

MILLET.—A plot of three varieties of millets was drilled in on 4th November, but owing to the depredations of the grasshoppers in February last, no reliable results could be secured as to yield of grain or brush. Varieties sown were:—Golden Californian, Imported Evergreen, and Mammoth Dwarf broom millet. A few plants of Giant Hungarian millet did remarkably well, attaining 8 feet high.

LUCERNE.—The whole of No. 4 paddock was laid down with lucerne in April last, in order to provide ample fodder for sheep which are to be introduced on the farm next spring.

The seed was drilled in at the rate of 13 lb. to the acre, on 17th to 25th April. Germinated six days after, and is now doing well, and making rapid headway, owing to the favourable season.

This paddock is to be subdivided and installed with a water supply and shelter-shed, to afford every comfort and convenience to the animals whilst fattening.

INOCULATION EXPERIMENTS.—A series of seed inoculation experiments with nitrogen-fixing bacteria was commenced in April, and all indications point to a satisfactory investigation of the merits of these cultures as applied to our soil. The only point which might have an influence on the results of these trials is the undoubted adaptability of the black Downs soil to the growth of plants of the order *Leguminosæ*, without the aid of any artificial treatment.

Six acres of lucerne were planted after being treated with the culture 13 lb. seed to the acre, drilled in. Alongside of this inoculated plot, untreated lucerne was planted, for comparing growth and results from time to time.

An acre of inoculated red clover was also planted, 13 lb. seed per acre, on 1st May, and beside it a plot untreated for comparison.

Small blocks of Yorkshire Hero, Stratagem, and field pea were also treated with culture, and planted alongside untreated plots for comparison. At time of writing no marked differences are to be observed, as the plants have not yet matured sufficiently.

COTTON.—Ten varieties of cotton, viz.:—Seabrook Sea Island, Jones' Improved, Jones', Russell's Big Boll, Peterkin, Lewis' Culpepper, Tool, Griffin, and King's Early Imported were planted in small quantity. Half-pounds of seed, sown in drills 4 feet apart, 2 seeds every 2 feet in drill.

Owing to the adverse weather, the crop did not come to anything.

ROTATION PLOT.—An area has been allotted to a five-course rotation. Budd's Early wheat was grown as a start in the rotation; sown July last, harvested November. Champion Purple-top swede has been put in as the second crop; sown 23rd April last.

GRASSES.—Small plots of indigenous and exotic grasses were planted in June, 1904, in order to test their adaptability to our climate and soil. Roots of twelve selected varieties were obtained from the State Botanist, and put in in short drills. No attempt was made to modify climatic conditions by watering or irrigation, nor was any cultivation applied which might tend to stimulate the natural growth of the plants.

In a few cases a plant here and there died out, but on the whole the grasses did remarkably well.

An extension of these plots has been resorted to this year, and the resultant observations should be of interest to farmers now that the dairying industry has gained such a firm footing on the Downs.

In April last an additional thirteen varieties of native grasses were added to the collection, and in May last a further addition of twenty-three varieties were secured in the Roma district. These species comprise some of the best of our dry belt grasses, and are reputed good drought-resisters. Following are the grasses under observation:—

1. *Anthistiria avenaceæ*.—Tall oat grass; for pasture or ensiling.
2. *Andropogon erianthoides*.—Satin-top grass; a good pasture grass.
3. *Andropogon sericeus*.—A blue grass; a good pasture grass.
4. *Agropyrum scabrum*.—Wheat grass; a dwarf species, good for hay.
5. *Danthonia semiannularis*.—Oat grass of New Zealand; wallaby grass of New South Wales.
6. *Dichelachne crinita*.—Long-haired plume grass; for pasture.
7. *Panicum decompositum*.—Australian millet; a valuable forage grass.
8. *Panicum disaricatissimum*.—Umbrella or spider grass; for pasture.
9. *Panicum trachyrrhachis*.—Coolibar grass; for pasture or hay.
10. *Pollinia fulva*.—Brown-top or sugar grass; rich forage.
11. *Stipa aristiglumis*.—Spear grass; a good grazing grass.
12. *Melinis minutiflora*.—Brazilian stink grass (introduced). Died out.
13. *Chrysopogon parviflorus*.—Scented golden-beard; much succulent herbage.
14. *Panicum gracile*.—Slender panick grass; poor seed-bearer.
15. *Pappophorum nigricans*.—Black heads; a good drought-resister.
16. *Andropogon intermedius*.—A blue grass; for pasture and hay.
17. *Chloris truncata*.—Star or windmill grass; succulent herbage.
18. *Eriochloa punctata*.—Early spring grass; a good seed-bearer.
19. *Sporobolus Lindleyi*.—"Yak-ka-berry"; an aboriginal food grass.
20. *Chloris divaricata*.—Star grass; good fodder plant.
21. *Chloris ventricosa*.—Blue star grass; pasture and hay grass.
22. *Anthistiria ciliata*.—Kangaroo grass; good pasture grass.
23. *Eragrostis Brownii*.—A love grass; a succulent fodder.
24. *Astrelba pectinata*.—Curly Mitchell grass; good pasture grass.
25. *Panicum leucophæum*.—A most prolific grass.
26. *Sporobolus indicus*.—Parramatta grass; a hardy fodder grass.

A plot consisting of about 11,000 roots of *Paspalum dilatatum* has been established, and although very slow in developing, it is now going ahead, and promises to mature rapidly during the coming spring. *Paspalum dilatatum* is often very hard to propagate, owing to various reasons, but when once thoroughly established it makes good headway, and yields an abundance of rich succulent herbage, valuable for dairying purposes.

ROOTS AND VEGETABLES.—Small sowings were made of the following:—Yellow Globe Mangel, Long Red Mangel, Purple-top Swede, Green-top Swede, Long Blood-red Beet, Sugar Beet, Crimson Globe Beet, Hollow-crown Parsnip, and several varieties of Carrots; also, Cabbages, Cauliflowers, Borecole, Brussels Sprouts, Broccoli, &c. Most of the above were used as pig and cattle food.

ORCHARD.—A curtailment of the orchard was given effect to last spring, when half the existing trees were grubbed out. It was considered inadvisable to carry on with the larger area, on account of this orchard being in many respects similar to the one at Westbrook.

The past fruit season could not be called a successful one, owing to the ravages made on the fruit by the fruit fly. The later stone fruits suffered considerably, as also did the apples, pears, and figs.

The running of poultry through the orchard during the coming season should help to mitigate the depredations of this pest, and all other precautions will be taken in order to cope with the nuisance.

The eradication of prickly pear in the district will minimise the pest, as numbers of the fly may be observed living on this plant when the orchards are bare and when the pear is in fruit.

The usual pruning and spraying was given effect to.

ASPARAGUS.—The bed of asparagus in the orchard made good vigorous growth, and the shoots were in demand in the local market last spring.

PUMPKINS, ETC.—An assorted lot of table and fodder pumpkins were grown during the season and used as pig-feed. Other members of the *Cucurbitaceæ* were also grown in small quantity, and formed an exhibit at the late Warwick show.

SEASON, 1905.—In addition to the experiments carried out on the farm this season, an extension was made in the Maranoa district of Queensland. A selection of some thirty odd varieties of the most promising Hermitage wheats has been made and sent for trial to Mount Abundance, Mitchell, and Yeulba, to form a part of the Departmental experiments there.

It is expected that the change will afford some interesting comparisons and data.

Some small quantities of wheats, barleys, &c., from this farm were planted by several State schools, through the medium of teachers who are taking an interest in this work. Typewritten forms are sent for filling in all particulars and observations on the growth and characteristics of the plants.

Some applicants for small lots of wheats have been supplied with seed in order to test their adaptability in various parts of the State.

The following new imported seeds have been sown this season:—

- Ivanov rye, from Russia.
- Belgak oats, from Russia.
- Sixty-day oats, from Russia.
- Black Don wheat, from Kansas, United States of America.
- Velvet Don wheat, from Kansas, United States of America.
- Rubanka wheat, from Kansas, United States of America.

LIVE STOCK—Pigs.—Middle Yorkshires and Berkshires were introduced on the farm early last summer, to form the nucleus of a stud for breeding animals available for sale to farmers and others interested in pig-raising.

The boars are available for service at a nominal fee.

These purebred stud pigs were purchased in England and Scotland by the Department, the Yorkshires coming from the famous Holywell Manor stud, in Huntingdon, and the Berkshires from Lord Carnarvon's stud near Glasgow, in Scotland.

The necessary accommodation has been partly carried out in the erection of two extra yards and a temporary shelter shed, but it is intended to erect some permanent styes later on.

Turkeys.—Six hens and one gobbler were obtained in December last, when some twenty odd young birds have been reared, the gobblers being for sale to farmers, &c.

Fowls.—Buff Orpingtons are to be reared on the farm, with a view to the export market type of bird. For this reason a cockerel and five pure hens have been secured.

Sheep.—Arrangements are being made for sheep-breeding in conjunction with the growing of crops on the farm. Plans for the subdivision of an area of lucerne, the laying on of a water supply, and the necessary accommodation of the sheep, have been submitted.

Cows.—Several milch cows are kept for the maintenance of the young pigs in milk.

IMPROVEMENTS.—In addition to the erection of the two pig-yards, a shed for housing the threshing plant and other machinery was constructed this year, and two skillions are to be added to this in the near future.

SHOWS.—Representative exhibits of farm produce were shown at Brisbane and Warwick shows this year.

Appended is a summary of the rainfall for the twelve months ending 30th June, 1905:—

Month—1904.	No. of Inches.	Month—1905.	No. of Inches.
July	0.82	January	1.56
August	0.13	February	2.45
September	2.24	March	7.14
October	2.34	April	2.00
November	2.53	May	1.88
December	3.98	June	0.67

ALEX. MARTIN.

REPORT OF THE MANAGER, STATE FARM, BIGGENDEN.

SIR,—The first quarter of the year was exceptionally cold and dry; the rainfall for the three months ending 30th September being only .58 inch. In spite of this, very passable crops of mangel, turnips, and carrots were growing on the farm when I took charge in October. Kohl-rabi was, however, almost a failure, while rape absolutely failed. Wheat, oats, and barley were also growing, but the crops were very light, the best of the wheats, Indian Fife, only giving 7 bushels per acre.

We got our first fall of rain on the 16th October, and advantage was taken of this to get as much under crop as possible. Unfortunately, the first rain was followed by a month of dry scorching weather, and during this dry spell an insect attacked the roots of the young maize and millets, doing considerable damage. Experiments were tried to cope with this pest, the most successful being an application to the soil near the roots, of Little's sheep dip, ordinary dipping strength (1 to 100), and about 70 gallons per acre. Lime also seemed to have a deterring effect, but not in so marked a degree. Golden Nugget maize was not attacked so severely as other varieties, while sorghums were quite immune. On the 25th November we again got good rain, when this pest disappeared. From then up to the present the season has been very favourable. During February and March a plague of grasshoppers passed over the district, and their ravages considerably reduced the yield of maize and cowpea seed.

The present winter has been a very mild one so far, though we had one severe frost on the 15th June that cut down everything at all susceptible, with the exception of sugar-cane, which, strange to say, was uninjured.

DECIDUOUS ORCHARD.—Most of the trees had some blossoms, but, with the exception of figs, none of them set fruit. The fig crop was good, but difficult to dispose of, only 202 lb. of the crop being sold. To turn this fruit into jam or other preserve would, I think, be the most satisfactory way to harvest it.

CITRUS ORCHARD.—Sevilles and olives showed no sign of bearing. Mandarins, sweet oranges, lemons, and limes showed fair blossom, but did not set half a case of fruit amongst them. Beans for green manuring were planted between the trees in October. They greatly assist in the work of keeping the orchard clean, besides adding to the fertility of the soil.

VINEYARD.—The crop of grapes was a good one, and a market was got for most of the table varieties. Some of the wine grapes were unsaleable at any price. Heavy rain in the latter part of January destroyed a quantity of the grapes; 1,925 lb. of grapes were sold for £21 2s. 10d., and cuttings to the value of £4 12s. 7d. distributed. Orders for cuttings for the coming season are coming freely to hand. Of the many varieties we have, the following are worthy of special notice:—Madeline (the earliest), Fe. de Lesseps (the earliest of good flavour), Mrs. Pince or Muscat Hamburg (the best flavoured), Wantage (prolific, handsome, very hardy), Mourillion (prolific and handsome, ripens after all others are finished). These varieties will give a succession all through the season, and with the exception of the De Lesseps, are all hardy good bearers.

SUGAR-CANE.—This is grown for fodder only, and is a most valuable standby, especially when the spring is hard or backward.

CASSAVA.—Two varieties, "bitter" and "sweet," were grown. The yield of roots from each variety was practically the same—viz., 15 tons per acre on an eighteen months old crop. The sweet, however, is much easier harvested, is more relished by stock, and, according to results obtained from samples forwarded to the agricultural chemist, contains less hydrocyanic acid. I fed both varieties to the pigs on the farm, but always boiled with about twice its weight of sweet potatoes or other feed.

COTTON.—Fourteen varieties of pruned cotton were grown, but, unfortunately, just before the bolls opened they were attacked by a Lecanium scale. In order to destroy this, I cut all the bushes down, and sprayed the stumps with resin and soda wash. This was effective, so far as the scale was concerned, and the bushes again put out good growth, and formed good bolls, but too late in the season for them to open properly. Samples of these cottons were sent to the Department for examination, and one of them was pronounced to be of special value. This one will be planted again, to see if it will retain its good qualities.

Eight varieties of cotton seed were received from the Department in November, but I was unable to get them planted until 7th December. This threw the crop too late, and though, as stated, the bolls formed up well, they did not open properly, thus no record of actual yield could be kept. The Lewis Prize variety seemed the most prolific, and its erect habit of growth is a valuable characteristic. Samples of these cottons will be forwarded to the Department, in order to get expert opinion as to their relative quality. Four varieties of Egyptian cotton seed were also sent to the farm, but too late in the season to plant. They will, however, be planted next spring.

MAIZE.—Fourteen varieties were planted, the seed being on the farm when I took charge. Strips of sorghum were planted between the varieties to prevent, as far as possible, cross fertilisation. None of the varieties, however, came sufficiently true to name to make the comparative yields of any value. The insect previously mentioned also killed out a lot of the plants. A later planting was made of Yellow Dent early in December. This promised well, but it was tasselling when the grasshoppers were at their worst, so that there were a great many empty cobs. The average yield on all maize was 25 bushels per acre. I have selected Hickory King and Golden Nugget as being the two varieties most suitable to our conditions, and will plant only these two in future, and endeavour to work towards an improvement in sample and yield.

SORGHUMS.—Thirteen varieties were planted—viz., White and Red Kafir, Guinea and Egyptian corns, Brown Dhurra, Teosinte, Folger's Early, Amber Cane, Coleman, Collier, Early Orange, Planter's Friend, and Saccharatum. Samples of all these, with yields per acre, were forwarded to the agricultural chemist, and their feeding value will be better ascertained when his report is available. Brown Dhurra, Egyptian Guinea, and White Kafir corns I found to be of little use as green fodders. Brown Dhurra gave 25 bushels of seed in three months, but the other varieties did not seem of any practical value. Red Kafir corn gave 23 tons of green fodder, and in five months 33 bushels of seed per acre. Stock relished the stalks, even after the seed had ripened and been removed.

BROOM MILLET.—Californian Golden, Improved Evergreen, and Mammoth Dwarf varieties were planted. The two firstnamed grew a splendid brush, and promised well, but just when ready for cutting, almost continuous rain set in, and when I did get them cut the rain came on again, destroying absolutely what had been damaged before. The Mammoth Dwarf was not a success, the fibre being too short.

MILLETS.—Pearl, Yellow, and Hungarian millets, *Panicum italicum*, and *Setaria germanica*, were planted early in October and cut early in January. Pearl millet gave 15 tons to the acre of green stuff, but it did not seem of much value as a fodder, either green or dry. Hungarian millet gave 1 ton 7 cwt., and *Panicum italicum* 1 ton 16 cwt. of hay per acre. *Setaria germanica* gave only a handful of stuff of no seeming value. Yellow millet grew only about 1 foot high; it had a nice crop of seed, rather larger than panicum, but very difficult to harvest, owing to the ease with which it shed.

GREEN MANURES.—Eight varieties each of cowpeas and green manure beans were planted during the later half of October. These were:—Cowpeas: Black, White, Purple, Clay, Skewbald, Piebald, Blackeye, and White's Perennial. Blackeye was the earliest to ripen, but the vine is too small for green manure purposes; the pod, however, makes a good vegetable at a time when vegetables are scarce. Black, Purple, Piebald, and White's Perennial gave the heaviest yields of green stuff—13 tons per acre each. White's Perennial makes the best hay or chaff.

Beans: Narica, Velvet, Black, Green, and Mottled Mauritius, Poor Man's Tonga, and Small Mauritius. Narica holds pride of place for bulk of green stuff. The late date at which it seeds renders the seed crop risky, as the pods, if not filled, burn up with the first touch of frost. The vine, however, withstands frost better than any of the others, and when made into hay and chaffed makes excellent fodder.

VEGETABLES, with the exception of French beans, have done very well. I endeavoured to have something in this line always fit for consumption.

RAPE has done remarkably well. I am now cutting and feeding some planted on the 14th of March, which is giving 20 tons to the acre of green feed.

CAPE BARLEY, planted on the 6th of March, is hardly ready for cutting, and is somewhat rusted.

CARROTS.—A first planting on the 6th March did not come up well, and will only make about half a crop. Second planting, on 19th April, came up well, and are making vigorous growth. Long Red, Altringham, Red Surrey, and White Belgium varieties were used.

SWEDE TURNIPS were sown on 16th and 25th of February. The later planting did the best, and are now almost ready for lifting.

KOHL-RABI.—Green and Purple, planted 6th March, doing well.

THOUSAND-HEAD KALE.—Plantings on 6th March and 12th April. Germinated very unevenly, but are now doing well.

MANGEL.—Long Red and Long Yellow, Red Globe, and Yellow Globe. Plantings were made on 30th January, 6th March, 20th March, 12th April. The first planting has done very well; the other three are now doing well, but they hung a lot at first. The last planted was put in with kainit and superphosphate, and bids well to overtake those planted before it.

BUCKWHEAT.—Silver-hulled and Japanese were planted; neither did much good.

PEAS.—Field and garden were planted at various dates after the 14th March, and are all doing well.

VETCHES.—Planted by themselves and with wheat on the 15th March and 29th April. Both doing well. First planting nearly ready to cut.

GRASSES.—Of the grasses previously planted Paspalum, Russell River Grass, Giant Couch, Guinea Grass, Rib Grass, and Rough and Smooth Meadow Grass had held their own. Paspalum requires no remarks from me except to say it does well here, requiring only to be well eaten down. Russell River Grass (*Paspalum palmyra*) is entirely unsuitable, as it parches up in either drought or frost. Giant Couch gives a great body of feed greatly relished by the stock, but parches up with the first frost. Rib Grass seems well worthy of a further trial. So far, it has not been hurt by the frost, and seems to stand dry weather well. It remains

to be seen, however, how it will stand grazing in dry weather. I have planted this season squares of Mitchell, Rye, Cocksfoot, Flinders, Rhodes, Blue, and Prairie grasses; also *Philaris commutata* and *Agrostis alba*. About 1 acre in No. 4 grass paddock was broken up and sown with Paspalum and cocksfoot, one-third of it being also sown with canary seed, one-third with oats, and the remaining third with grasses only. Plots have also been planted with Sheep's Burnett and Sanfoin.

LINSEED.—Planted on the 6th March. Has done very well, and shows good length of fibre, and gives promise of a good crop of seed.

WHEAT.—The three varieties that were planted last year have again been tried—viz., Indian Fife, Farrer's R., and Farrer's 84 By. Indian Fife, having done best last year, has been used more largely than the others. Owing to the dry winter, last year's yields were very poor, Indian Fife giving only 7 bushels per acre.

BARLEY.—Small areas of Chevalier, Chilian, Windproof, and Hallet's were planted.

Bacteria-treated PEAS were received from the Department and planted. Check areas were also planted alongside. No difference can yet be noted between the garden varieties, but in the field peas that from the treated seed looks much the best.

MANURES.—Experimental plots were laid out in one of the corn fields, but, owing to the ravages of the grasshoppers, the results were of no value. Superphosphate and kainit (3 and 5 cwt. of each to the acre) were used on a section of the mangel field; results are not yet observable. A crop of green manure, either cowpea or bean, was ploughed down in all fields before planting with wheat or oats. In one field a section was fallowed through the summer, and the rest of it sown with cowpea or beans. A portion of the cowpea was harvested, the remainder and all the beans being ploughed down. Wheat and oats are now growing on this, and should furnish some interesting comparisons at harvest time.

SWEET POTATOES.—Rosella Spanish Giant, Yellow Spanish, and White Maltese were planted in October. A few of these have been lifted for exhibition purposes, and, so far, the White Maltese is in front, both for quality and quantity.

STOCK.—The boar pig "Burnett Chief" was sold to a local farmer, and his place filled by a young imported boar. Nine pigs of our own breeding were sold, and there are five more four months old. Fifty-six sows visited the boars. The imported bull "Croft Jane Primus" arrived here in December, and is doing well. Eighteen cows have been sent him for service.

Exhibits of products grown on the farm were made at the Biggenden, Maryborough, Bundaberg, Isis, and Gympie exhibitions during the first quarter of the year, and again at Isis and Bundaberg during the last month.

VISITORS are frequent at the farm, and seem to find both pleasure and profit in a walk through the crops. More particularly is this the case with new settlers or those about to settle in the district.

LUCERNE.—One acre of this was sown on the 17th April, it is now well up, and promises well.

POULTRY.—During the later half of the year a gobbler and five turkey hens, and a cockerel with five White Wyandotte hens, were sent to the farm.

An outline of work proposed for the coming year was submitted to you on the 15th February.

It is hoped that some pure Ayrshire cows and a really good Berkshire sow will be added to the farm stock.

D. MACPHERSON, Manager.

REPORT OF THE MANAGER, STATE FARM, GINDIE.

SIR,—In submitting my Annual Report, I have to again state that the wheat crop was a partial failure, owing to the dry weather that prevailed during the months of June, July, August, and September. During this interval the rainfall was 66 points; but, notwithstanding the dry time, the portions planted early in May yielded a good crop of hay, most of which was quite 3 feet long, and showing good heads. Had we been favoured with an inch of rain in July or August, there is no doubt there would have been a good crop of grain on this portion, and it would also have helped the later sown areas. Some of these were planted dry, and did not receive any rain until October, when it was too late to be of service. In October, parts of the late sown portions were cut, where it averaged from a foot to eighteen inches high. At this time the mice fairly took possession, and one would have to see to believe the damage they did. In a few days they chopped the crop up to such an extent that the ground was literally covered with chaff. As soon as the hay that had been cut had been carted in, the horses and a few head of cattle were turned into the field to clean up what the mice had left. The $7\frac{1}{2}$ acres of Algerian oats sown in April did well up till August, after which it ceased growing, and was cut for hay, and yielded about half a fair crop. The 2.33 acres of oats sown on the Sandridge did not do very well. The heads of grain were good, but the straw was so short that it was very difficult to handle. Three-acre plots of Red Fife, Hermitage No. 1, Hermitage No. 2, Bobs, and Battlefield were drilled in side by side, to test which would be the most drought-resisting. The land was just sufficiently moist to bring the seed through. All these varieties stood the dry spell with which they had to contend, and appeared about equal for the first two months. After this time Bobs took the lead, and showed a marked superiority, and remained green for a month after the other varieties had withered. Had it not been for the plague of mice a light crop of hay would have been secured from the 3 acres sown with Bobs.

In October five varieties of tobacco were sown, but I did not succeed in getting any plants. Some cheesecloth was obtained to shade the seed bed. The bed was watered and got in nice condition, and resown, and though some nice showers fell, I still did not succeed in obtaining plants.

A few rows of cotton (Russell's Big Boll), a small area of castor oil beans, five varieties of maize, and three varieties of broom corn and sorghum were also sown. A part of the cotton seed failed to germinate, but what came up did very well, as far as growth was concerned; many of the plants were fairly loaded down with bolls, but the boll worms played sad havoc with it. A small quantity of nice quality of cotton was obtained, but the greater part of it was more or less damaged by these insects. The castor oil did not make much growth, as the weather was comparatively dry, and very hot. The maize, broom corn, and millet suffered from the same cause. Three varieties of broom corn were sown—namely, Improved Evergreen, Californian Golden, and Mammoth Dwarf. The two former were growing some fine brush when the grasshoppers attacked it, but the Dwarf Mammoth did not do nearly so well. The brush was very short, and the

aphids were much more severe on this than on the other varieties. In December, further sowings were made of castor oil beans, nine varieties of cotton, $\frac{1}{2}$ acre of cowpeas, and one variety of maize. All these seeds came up nicely, but the excessive heat at the end of December was too much for the cotton.

In January a further planting of $\frac{1}{2}$ acre of cowpeas was made, also $1\frac{1}{2}$ acres of Hawkesbury Champion maize. All these crops were coming on nicely when we were, unfortunately, visited with a plague of grasshoppers, which fairly swept the place clean, with the exception of a few rows of young castor oil plants and the cowpeas. They were very severe on one plot of castor oil that was in full bearing. They not only ate the leaves off this, but also ate the bark off most of the plants. I saved the fruit trees by sewing chaff bags together and enveloped the trees with them. They were also very severe on the grass in the sheep paddock, but, fortunately, we were favoured with a little rain in March, and a splendid fall in April, which caused a fine growth of grass. Had it been otherwise, the prospect for the winter would have been a serious one. I was surprised, and also much gratified, that this pest did not interfere with the cowpeas. The heat in the earlier stage of its growth checked the vines somewhat, but they yielded a very fine crop of grain. The seed was sown in drills, 3 feet apart, and 18 inches apart in the rows. Though there was not a heavy crop of vine, as I have stated, still the plants were interlocked on the greater part of the plot. The vines could have been used for pig and cow feed for four months. The hardiness and the high feed value of the cowpea is well known, and I think it is a matter for regret that more attention is not paid to its growth, especially by those engaged in the pig and dairy industry. In April, 4 acres of Cape barley, 6 acres of malting barley, 6 acres of Algerian oats were sown. This seed was left over from last season, otherwise Cape barley would have been sown instead of the malting. The object was to provide green feed for the ewes and lambs should they require it, and for this purpose I prefer the Cape barley. Should the sheep not require the feed, it is probable that the barley will be converted into ensilage, and the oats into hay. After this seed was sown no further preparation for further sowings was made, as it was understood that it was not intended to plant wheat this season, but on the arrival of seed wheat in May a start was made to put it in. In the interval the weeds had got too big a start to allow the drill to be used. This necessitated the reploughing of the land. This was done, and the seed sown as soon as possible. After sowing, the land received two harrowings and was rolled. 4.2 acres of Marshall's No. 3 and 21.1 of Budd's Early were put in in this manner; but as the land was getting dry, and there was every appearance of it remaining so for the present, I did not think it advisable to continue this work, and it is probable that no more wheat will be sown this season.

On 30th May sowings were made of the following peas:—Stratagem, Yorkshire Hero, and field peas. A portion of each of these varieties had been fertilised with nitrogen, and a portion unfertilised. The rows were 30 feet long and 3 feet apart. Five rows of each of the fertilised seed were planted with five rows of the unfertilised beside them. All the seed came up fairly well. There was no difference in the time of the appearance of the plants, but the plants from the fertilised seed had a healthier appearance than the others. This is more marked in the field peas than in the others. This experiment will be watched with interest, and the result carefully noted. At present we are engaged in putting up a stack of bush hay, and an effort will be made to secure a further quantity of this splendid grass should other necessary work allow it. Part of this hay was cut with the mower, and part with the binder. The latter is far the best machine for this work. In raking after the mower a lot of dead grass and other rubbish is pulled together, and as there is no separating it from the hay, it has to go into the stack, though it is useless. With the binder this is avoided. The hay is also handled in less than half the time that it would take to cock and cart loose hay, and, in my opinion, the hay is of better quality, as in the event of the weather being hot, it does not get dried to death as would be the case if handled loose. The cost of twine is between 2s. 6d. and 3s. per ton of hay, but this is compensated for twice over in the quantity and quality of the hay handled in comparison with that cut by the mower.

A few samples of the grasses of this district have been secured, and will be forwarded to your Department for analysis. The land from which this hay was cut averaged about 27 cwt. per acre. There are thousands of acres in this district with nothing to prevent machinery from being worked on it, yet there does not appear to be any effort made to secure the grass which is growing on it. It is a matter for regret that this should be so, especially as the country is only just recovering from the late drought.

A few of my neighbours have started dairying in a small way during the year, and as far as I can hear they are quite satisfied with the results of their labours. The cream is forwarded to Rockhampton, and is of first quality, which speaks well for our natural grasses.

The milking Shorthorn bull Richmond Lad, which arrived here on 25th May, should be of much service to the settlers in assisting them to improve their dairy herds. There is also a pure Ayrshire, and as the service of these animals can be secured at a trifling cost, it is hoped that those interested will take advantage of it.

In December 300 merino ewes were purchased. During December and January there was an increase of 75 lambs. Wool to the value of £39 7s. 8d. was clipped from the ewes since then. The object in purchasing the ewes was principally to find out if this district was suitable for the profitable breeding of sheep suitable for export. As a means to this end six Shropshire rams were obtained, three of which were Tasmanian bred, and three bred in Warwick. On the 26th of January the ewes were divided, and part of them put with the Queensland rams and the balance with the others. The object of this was to see if either of them had any advantage over the other, but this cannot be settled at present. I had hoped that this could have been arranged so that the lambing would have been over by the end of the present month, which would have given me an opportunity of reporting more fully on this subject, but the want of a paddock prevented this. As a small paddock has been netted in, and water obtained in the sheep paddock, this matter can be better arranged in future.

The cattle have done well during the year. They are in splendid condition, and at present there is sufficient feed for three times the number. A few nice-looking cows with young calves have been broken in. This will be continued as opportunity offers, as it will add to the value of the cows should they be disposed of, and will also quieten the young stock. I regret to say that both the increase and revenue from the cattle is much below what it ought and would have been had the proper means been taken in the past to increase the herd, but the purchase of Richmond Lad has put this matter to rights, for the present at least.

Up to the present, I have had poor success with the fowls. Two of the hens that were obtained from the College died, and a large proportion of the eggs obtained from the remaining three were unfertile. This was not confined to the farm fowls only, as others complained of the poor hatchings obtained. I was not any more successful with the two settings of eggs that were received, as I only obtained two chickens, but it was not the fault of the eggs in this instance, as there were nine fertile in each setting. The weather was very hot when these eggs were in the incubator, and, as the temperature of the room in which it stands varied from 50 degrees in the morning to 95 degrees in the evening, it was not an easy matter to keep the machine at an even temperature. On several occasions when I returned home in the evening the temperature in the incubator was far too high. I hope to be more fortunate in working the incubator during the coming spring.

The turkeys have done very well. So far only two gobblers have been sold. The number on hand is twelve—five hens and seven gobblers. Six of the latter are very fine birds. During the year two died, one got crippled, and was killed.

The permanent improvements carried out during the year consists of the netting in of a paddock of 37 acres for the rams, the sinking of a well in the sheep paddock; three other wells have been deepened (the water supply in two of them was increased sufficiently for present requirements, but no result was obtained for the labour expended on the third). We were fortunate in obtaining water at a comparatively shallow depth in the sheep paddock—namely, 38 feet. It was sunk to 42 feet, but could not be carried any lower without the use of a pump. At present there is sufficient to water all the stock that the paddock will carry. This well was put down by the farm men, and cost 9s. 6d. per foot. This is far below the usual cost of this kind of work.

The sheepyard has been divided into five, and a short race put in. This will enable us to draft without handling them.

About 70 tons of hay has been put together during the year, the greater part of which is on hand. It consists of oaten, wheaten, and natural grasses. This was cut when the grass was at its best, and most of it is of fine quality. I consider this hay a very valuable asset. If sold at present market value it would realise a fair amount, but if kept till it is required on the farm it is hard to say what the value would be. If the incoming year is a favourable one, I will make an effort to save 100 tons, and I hope to see other endeavours to make some provision for a dry spell.

At present date the oats and barley sown in May are looking splendid, and would yield a large amount of green feed for either cows or sheep. The wheat sown early by the Daniels Brothers is in the same condition, and requires feeding-off. Later I may put sheep on the farm crops, but cannot do so at present, as the ewes that are about to lamb are too fat as it is.

Number of cattle returned 30th June, 1903-4	...	...	...	...	...	...	...	...	Head.	111
Increase during year	...	...	...	...	...	...	...	...	...	49
1 Bull, received in May	...	...	...	...	...	...	...	...	...	1
										<u>161</u>
									Head.	
Sold during year	...	...	...	...	...	...	...	...	16	
Died, 1 cow, 2 calves	...	...	...	...	...	...	...	...	3	
										<u>19</u>
Present number on hand	...	...	...	...	...	...	...	...	...	142

Particulars of Cattle Sold.

10 head Steers, at £5 15s.	...	...	...	...	...	...	...	...	£	s.	d.
2 Cows, at £5	...	...	...	...	...	...	...	...	10	0	0
1 Cow, at £4	...	...	...	...	...	...	...	...	4	0	0
3 Calves, at £3 3s.	...	...	...	...	...	...	...	...	9	9	0
									<u>£80</u>	<u>19</u>	<u>0</u>

Sheep.

Merino ewes purchased in December	...	...	...	...	...	...	...	...	Head.	300
Increase	...	...	...	...	...	...	...	...	...	75
										<u>375</u>	
Died during year	...	...	...	...	...	...	...	...	...	6
										<u>369</u>	
									£	s.	d.
Net return for wool on 294 ewes	34	7	8

They had nine months' wool on when shorn. By the end of July they will have lambed to the Shropshire rams. These few sheep bid fair to be a profitable investment, and I recommend the purchase of an additional 200. This would give me about 500 breeders, and would enable me to supply local buyers small lots at regular intervals.

Area Under Crop.

Cape Barley	Acres.	4
Malting Barley	...	...	...	...	...	...	...	...	...	6
Oats	...	...	...	...	...	...	...	...	...	6
Wheat	...	...	...	...	...	...	...	...	...	25
Fruit Trees	...	...	...	...	...	...	...	...	...	3
										<u>44</u>	

Total Revenue for the Farm for the Year.

Sales—										£	s.	d.
Cattle	...	...	...	...	...	...	...	...	...	80	19	0
2 Bags Turnips	...	...	...	...	...	...	...	...	...	0	7	2
2 Gobblers	...	...	...	...	...	...	...	...	...	1	10	0
Wool	...	...	...	...	...	...	...	...	...	34	0	8
										<u>£116</u>	<u>16</u>	<u>10</u>
Exchange on cheque	...	...	...	...	...	...	...	...	...	0	0	6
										<u>£116</u>	<u>16</u>	<u>4</u>

ANNUAL RAINFALL AT GINDIE STATE FARM, FROM JUNE, 1904, TO JUNE, 1905.

Date.	Rainfall.	No. of Wet Days.	Date.	Rainfall.	No. of Wet Days.	
	Inches.			Inches.		
1904—			1905—			
-- July	Nil	Nil	2 February	0.060	1	
27 August	0.210	1	2 March	0.780	4	
27 September	0.020	1	3 "	0.490		
11 October	0.650	6	12 "	0.230		
12 "	0.450		3.090	30 "		0.240
13 "	0.020			3 April	0.050	8
15 "	0.080		4 "	2.950		
20 "	1.800		5 "	0.480		
21 "	0.090		11 "	1.670		
23 November	0.230	22 "	1.200			
26 "	0.380	23 "	0.500			
27 "	0.390	26 "	0.050			
29 "	0.200	27 "	0.540			
30 "	0.350	1 May	0.020	3		
13 December	0.150	2 "	0.310			
17 "	0.470	27 "	0.080			
18 "	0.900	2 020	4	22 June	0.110	1
20 "	0.500			Total ...	23.550	
1905—						
11 January	0.100	7				
12 "	0.050					
13 "	0.470					
14 "	0.910		7.070			
15 "	1.550					
16 "	3.460					
17 "	0.530					

ROBERT JARROTT.

REPORT OF THE MANAGER, STATE NURSERY, KAMERUNGA.

SIR,—I have the honour to submit my Report for the Kamerunga State Nursery, Cairns, for season 1904-5.

The first part of the season was very dry. For the month of July to November, 1904, inclusive, only .634 of an inch was averaged, which fell in such small amounts as to do little or no good. During December, 1904, and January, 1905, regular monsoon rains were experienced, totalling over 40½ inches for the two months. The total for the year was nearly 10 inches less than for the previous season, and having been less evenly distributed, the season as a whole was not so favourable for tropical plant growth.

The mean temperature was 74.34 Fahr., as against 75.0 Fahr. for last year, and the range from 66.81 Fahr. to 79.71 Fahr. The lowest minimum attained was 45.5 Fahr. in July of last year, and the maximum 99 Fahr., in January, 1905.

The applications for plants, seed, &c., varies considerably with the nature of the season. Applications for information and advice have increased, and distributions of seed have this year decreased, while that of plants has materially increased, other items remaining about the same.

The totals of the distributions have been as follows:—Plants, 6,388; seed, 78 lb. 9 oz.; cuttings, 1,281; bulbs and rhizomes, 1 cwt. 10 lb. 14 oz.; grass roots, 2,925; suckers, 740; sisal hemp plants and bulbils, 20,000; sundries, 204 lb.; tamarinds; 97 cases mangoes; 155 items Albury show; 43 items (about 200 lb. weight) exhibit for Imperial Institution (per Agent-General), London; and 4 frames mounted fibre for Cairns State School.

The correspondence has, as usual, included communications with and from similar institutions, as well as private applicants, in all parts of the tropical world.

Trophies from the nursery were sent to two shows during the season—Port Douglas, in July, 1904; and Cairns, in August of the same year, which were much appreciated.

The number of visitors to the institution has been larger than ever heretofore, and no inconsiderable portion of the overseer's, as well as the manager's, time is taken up in showing visitors round. The visitors' list includes many of the principal Federal as well as State Ministers, officers of this and other departments, and distinguished private visitors from all parts of the Commonwealth.

The general expenditure on the nursery has been slightly in advance of last year, owing to its being found that general repairs to buildings, painting, &c., could not be put off any longer, and the expenses of what should have been spread over at least three seasons falling all within the one financial year. A considerable portion of this work of general repairs to buildings having to be carried out with the resident labour, coupled with the fact of the season having been generally unfavourable, it was not found possible to undertake as extensive field operations and experiments as usual.

The prevalence of dengue fever has also acted as a heavy handicap in this direction.

The engine and boiler have worked well. The engine was under water during temporary floods in the river, due to the heavy rainfall of December and January. The boiler, an upright steam one, burning coal and coke, was inspected by the local inspector of boilers and tested, passing the tests fairly well in spite of its being old. The overseer, Mr. J. G. Malcolm, although he had been in charge of this work for several years, had not quite a sufficient term to his credit to entitle him to a certificate without examination. He was accordingly called upon to present himself for examination, which he did, and passing creditably, obtained a certificate of competency for that work as required by the Act, early in the season.

Fairly representative exhibits of the agricultural products of North Queensland were got together and despatched during the year for the Albury Show (155 items) in August, 1904, and for the Imperial Institution per Agent-General for Queensland, London (43 items, totalling about 200 lb. in weight), in April, 1905. An experiment was also conducted, under the suggestion of the Agricultural Adviser, in packing and sending down mangoes in cases to the Southern markets; 97 cases were thus sent, under several different methods of packing, including cases with paper shavings, hay, each fruit wrapped separately, and no packing at all; all fruit was, however, graded. The experiment as a whole was not a financial success, the returns showing a loss of a few pence on each case. The general indications were that as much air as possible is required for this fruit, and that, therefore, very little or no packing medium is advisable or necessary, and that wiping the gum from the fruit and grading is well repaid. The better the quality of the mango, however, the more

susceptible it would, unfortunately, seem to be to damage in transit. This would possibly account in some measure for the fact of the poor quality of mangoes so generally found in the cities of the southern States.

The permanent improvements to buildings carried out during the year consist of the addition of two rooms to the overseer's house; the extension of the southern veranda of the manager's house; the rebuilding, and, incidentally, changing the position of the bathroom; the removing and rebuilding in a better situation of the labourer's humpy in the paddock adjoining the nursery; and addition of a men's bathroom.

General repairs have included repairs to office and house steps, flooring, veranda posts and rails, lower wall-boards of germinating house, &c., and the application of white ant mixture to the piles of office and house. Painting has, so far, covered the germinating house (three coats), and overseer's kitchen (two coats), which had not been painted before; and the new work and repairs to the manager's house. There remains still a considerable amount of painting to be done as the weather and exigencies of the field operations may permit of the employment of the hands at this work.

The building of the room for the coffee-curing operations necessitated the removal of the potting-shed and tables from under the office to a lean-to at the back of the stables.

Correspondence with other countries has resulted in the exchange of various plants and seed, of economic value to the State, for seeds and plants of indigenous plants and trees, or of such already obtained from other sources. Among some of the most important of these dealt with this season may be mentioned the following:—

- Liriodendron tulipifera* (Californian Tulip-tree). 3rd August, 1905.
- Sweetenia mahogany* (Mahogany). Germinated 25th November, 1904. (Plants available.)
- Sesbania tomentosa* (White Locust). From California, U.S.A. Germinated 8th January, 1905.
- Papaver somniferum* (Opium Poppy). From California, U.S.A. Germinated 8th January, 1905.
- Carya oliviformis* (Pecan Nut). From California, U.S.A. Germinated 26th January, 1905.
- Prunus ilicifolia*. From California, U.S.A. Germinated 26th January, 1905.
- Solanum melongena* (Egg Plant). From California, U.S.A. Germinated 27th January, 1905.
- Tomatoes. Two varieties. From California, U.S.A. Germinated 27th January, 1905.
- Hibiscus esculentus* (Okra). From California, U.S.A. Germinated 27th January, 1905.
- Araucaria Bidwillii* (Bunya Pine). Queensland. Germinated 28th February, 1905.
- Funtumia elastica* (Rubber). From Central Africa. Failed to germinate.
- Tectona grandis* (Teak). Queensland. Germinated 22nd April, 1905.
- Ceiba sp.* (Kapok). From California, U.S.A. Germinated 4th May, 1905.
- Veitchia Joannis* (Ivory Palm). From New Herbrides. Germinated 16th February, 1905.
- Sesamum indica* (Gingelly). Queensland. Germinated 18th January, 1905.
- Giant Russian Sunflower. From California, U.S.A. Germinated 16th January, 1905.

CITRUS FRUIT TREES.—The orchard in Field 3, Section II., has made fair but somewhat slow growth. The scarlet mandarin still shows best growth, but the variegated lemons and Tahiti limes are coming on well. One plant of Garey's Mediterranean sweet orange has been added. Manure is required to bring these trees on more rapidly. No budding on to new stock was possible this season, owing to the backward state of the trees from which it was expected buds would be obtainable.

THE BANANA FAMILY.—In Field 3, Section II., have shown no special growth. Suckers of various varieties of table bananas are available in limited quantities.

TROPICAL FRUITS.—The breadfruit trees bore a good crop this season, and jakfruit, vi-apples, custard apples, and paw-paw, including the new long variety (a specially luscious and fine flavoured variety for table purposes), bore well. The longan, a luscious Chinese fruit of the same family, and nearly allied to the litchii, bore the heaviest crop of any. The mango crop was also good, and while experimental shipments were made of some of the fruit, as elsewhere mentioned, a quantity was rendered useless by fruit fly (except as pig food), and had to be carted away and buried. A fair crop of tamarinds was obtained from the few trees here, which are again bearing well this season. Last season's crop was disposed of at 10s. per cwt. in the husk.

RUBBERS.—These have continued to do well, though not showing exceptional growth. The Para rubbers (*Hevea brasiliensis*) have shown an average increase of 3 feet in height and 3 inches in girth on the figures quoted in last annual report. The Central American rubber (*Castilloa elastica*) tree measured last year shows an increase during the season of about 3 feet in height and 4 inches in circumference $2\frac{1}{2}$ feet from the ground, being now 2 feet 3 inches in circumference, and about 21 feet high. These trees require two more years' growth to be ready to tap; the Para rubbers requiring four years longer. Of the Assam rubbers (*Ficus elastica*), the demand for plants has been heavy, consequently a considerable number of young plants are being raised by the "goatee" method, and by cuttings. The demand for rubber plants and seed generally has been much greater during this season than ever previously, evidencing a greater interest in the planting of these valuable trees in the district and country. The other and less valuable varieties of rubber at this nursery are doing well, and seeds and plants are available. Seed of a variety not at this nursery (*Funtumia elastica*) was obtained from Central Africa during the season, but, unfortunately, the seed was found to have lost its vitality. Some fifty plants each of *Castilloa* and *Ficus elastica*, and seventy-five of Para, of last season's raising, are still available, and this season's plants will be ready for distribution in a few months' time. Fresh seed of *Castilloa* rubber will be available by December next, and, being of short vitality, applicants should apply promptly.

FIBRES.—Of the fibres grown at the nursery and detailed in last year's report, only the sisal has been applied for to any appreciable extent, and some 20,000 bulbils and plants of this have been distributed. Applications were so numerous that the limited supply was quickly exhausted. It is anticipated about a similar quantity will be available this season. Of the other fibres worthy of attention may be mentioned Mauritius hemp (*Fouquieria gigantea*) and Manila hemp (*Musa textilis*) as especially suitable for the North, and the latter especially for low-lying or even swampy lands.

TOBACCO.—Especially experiments were conducted with cigar leaf tobaccos this season, under the advice of the Instructor in Tobacco Culture. Some thirteen plants of six different varieties were planted out in a portion of Field 3, Section I., three plants of each variety being treated with different manures—viz., 1st set: $\frac{1}{2}$ lb. dried goat manure; 2nd set: $\frac{1}{2}$ lb. dried cattle manure; 3rd set: $\frac{1}{2}$ lb. dried fowl manure; 4th set: $\frac{1}{2}$ lb. dried horse manure, per plant; one row being left for comparison without manure. The plants were put out on the 6th March from seed set on the 24th January. From measurements taken on 28th June, the varieties averaged as follows:—

- Fly River; average height, 2 feet $10\frac{3}{4}$ inches; average size of leaf, 18 inches by 9 inches.
- Neville's Sumatra; height, 3 feet $3\frac{1}{2}$ inches; average size of leaf, 20 inches by 12 inches.
- Reno de Sumatra; height, 3 feet $2\frac{1}{2}$ inches; average size of leaf, 25 inches by 13 inches.
- Large Washington; height, 2 feet $9\frac{1}{4}$ inches; average size of leaf, 31 inches by 15 inches.
- Vuelta de Abajo; height, 3 feet 4 inches; average size of leaf, 24 inches by 11 inches.
- Zimmer Spanish; height, 3 feet; average size of leaf, 26 inches by 14 inches.

Very little difference was discernible in the plants from the different manures used, although there was a noticeable difference as a whole between the manured plants and those without manure.

The whole plot grew very well; the majority of the plants maturing by the middle of July, were cut, and hung in the office veranda to cure. The Large Washington was perhaps the first to show signs of ripeness, and the Fly River the last, being some ten days to a fortnight later. It is expected that the effect of the manuring will be shown to a greater degree in the quality of the cured leaf than in the size of the plant, and the opinions of the Instructor in Tobacco Culture and the States Tobacco Company's expert are awaited with interest.

COTTON.—The cotton experiment plot was pruned down somewhat heavily in August, 1904. All the Sea Island varieties stood the pruning well, but many of the Upland would not respond, in spite of the general tendency of all cottons in this climate and locality to become perennial in habit. The varieties doing best are—Caravonica, McLean, Kidney, Matafifi, Russell's Big Boll, Christopher, Truit's Big Boll, and Lewis' Prize. Of these the lastmentioned shows best growth, and would seem the hardiest and heaviest bearing. Seed of all varieties is available in limited quantities only.

COFFEE.—The trees at the nursery are bearing a fair crop this season again after the heavy crop of last year. The trees under the shade of the *Erythrina* are noticeably better than those in the open.

COCOA.—Some young trees in the cocoa block were lost in the dry spell of the early part of the season. In the nursery itself one tree is bearing especially well again. This plant is essentially tropical in its habit, and yet the greater number of applications for plants, and information concerning it, have been received from the Central and Southern districts, where it is not likely to thrive so well. The Northern River districts would prove almost ideal localities for cocoa, which would probably do well on the Johnstone, Mulgrave, Russell, Daintree, Bloomfield, &c., and is well worthy of the attention of the settlers in these places. Some 100 of last season's plants, well grown and sturdy, are still available, and a few seed, and more seedlings, will be available by about November.

KOLA.—These trees have continued to grow well, but the crop was not a heavy one. Seed was set, and some 200 plants or so are available. This valuable tree, like the foregoing, is eminently suited for the rich alluvial lands and hot moist climates of the Northern rivers of Queensland, and would repay the attention of settlers as a valuable auxiliary product.

RICE.—Three varieties were planted out in the 12 feet by 12 feet experiment beds in Field 2, Section I. Kayashu rice, which did fairly well last year, germinated well, but died off again without seeding this season. Honolulu and White Java rice did well, and would seem more adapted to the climate and soils here.

VANILLA (*V. planifolia*).—All the plants are growing well. The $\frac{1}{4}$ -acre experiment block is doing especially well, and the growth of vines is good, strong, and healthy. Most of them flowered well during the year, and a large number of blossoms were hand-pollinated. The dry season, followed by the heavy rains in December and January, were detrimental, however; but, nevertheless, a fair crop of beans will be harvested. The beans take a comparatively long time to ripen, and are only now being harvested. The vines require hardwood battens for training on, as the scrub saplings at present in use are found to rot very quickly, and break with the weight of the vines.

SILK-COTTON TREE (*Ceiba pentandra*).—Seed has been obtained of this useful tree from various sources during the season, and a number of plants raised, which are available for distribution. The tree grows readily in the Northern climate, attaining a height of 70 to 100 feet. Besides being a handsome tree, it bears prolifically pods 4 to 6 inches in length, from the contents of which the "Kapok" of commerce is obtained. As a valuable subsidiary product requiring little or no attention, and but little treatment after harvesting to render the product marketable, and in view of the large and increasing market in the Commonwealth for the commodity, it is worthy of attention.

SPICES.—The *Piper nigrum* plant in the cocoa block is now doing fairly well, and a portion has been layered for reproduction. Cloves: The three plants obtained last year were, unfortunately, killed-off by over-watering by the hand deputed to attend the germinating-house during the manager's and overseer's absence at the Port Douglas show. Cinnamon: This continues to grow well, and young plants are available. Allspice: Also doing well; plants available. Anise: These plants blossomed for the first time, but set no seed. Camphor Laurel: Of the seed set only a few plants are as yet showing. The plant at the nursery is expected to seed next season. Cardamoms: The one plant that attained maturity from the pinch of seed received from Samoa, blossomed and bore for the first time this season. The racemes were short and the pods small, but the parent plant seems strong and healthy. Great care is being taken of this, and the seeds being set as they ripen, and it is hoped that a number of seedlings will be obtained and its propagation now assured. Tonquin Bean: A number of seed of this scented bean, that is used in the manufacture of the higher qualities of snuff, was set, and one or two plants obtained. Plants of *Schinus molle* (Peruvian mastic); *Croton tiglium* (croton oil); *Erythroxylon coca* (cocaine); *Piper cubeba* (cubeb); *Garcinia cochinchinensis* and *gambogia* (gamboge mangostein, also an edible fruit); &c., &c., are also available.

ROOT CROPS.—Jamaica ginger in Field 3, Section I., has done well this season. Yams, in Field 2, Section III., have not done so well, heavy rain in the spring giving them a check from which they did not recover well. Turmeric, Bermuda and Queensland arrowroots, three varieties of ground or pea-nuts, earth almonds (*Cyperus esculentus*), the Bambara ground bean (*Voandzia subterrennea*), did fairly well. The sweet potato crop (five varieties) was not a good one for tubers, but cuttings and tops are available for distribution. Cassava (two varieties) did very well, as usual, and plenty of cuttings are available.

Of vegetables, okra (two varieties), snake or Paraguay bean, choko, egg-plant, &c., did well, and seed are available.

FODDERS AND GRASSES.—Of the twenty-five plots of 12 feet by 12 feet in Field 2, Section I., Nos. 1 to 10 were occupied with indigenous grasses, &c.

No. 11.—Japan Clover, set 6th June, 1905, no signs of germination yet; Bokhara Clover, set 6th June, 1905, now coming up.

No. 12.—*Paspalum virgata*, set 6th June, 1905, now coming up; *Danthomia pencilata*, 6th June, 1905, now coming up.

No. 13.—*Chloris virgata*, set 1st June, 1905, now coming up.

No. 14.—*Piptatherum paradoxicum*, set 5th June, 1905, no signs as yet; *Piptatherum Thomasii*, set 5th June, 1905, coming up.

No. 15.—White Java Rice. Seeding.

No. 16.—Scarlet Clover, set 7th June, 1905, coming up; Alsike Clover, set 7th June, 1905, coming up.

No. 17.—Red Clover, set 7th June, 1905, coming up; White Clover, set 7th June, 1905, coming up.

- No. 18.—Tree Lucerne, set 8th June, 1905, coming up; Am. Red-top Grass, set 8th June, 1905, no signs.
- No. 19.—Turkestan Alfalfa, set 8th June, 1905, coming up; Downs Blue Bush, set 8th June, 1905, no signs.
- No. 20.—*Atriplex nummularia*, set 8th June, 1905, no signs; *Atriplex sp.*, set 8th June, 1905, no signs.
- No. 21.—Kentucky Blue Grass (plants), growing well; Texas Blue Grass (plants), growing well; Giant Lyne, set 1st June, 1905, no signs; Timothy Grass, set 1st June, 1905, coming up.
- Nos. 22 to 25.—Rice, Chufa, indigenous fodders, &c.

MANURIAL PLANTS—*Cowpeas*.—Set 23rd February, 1905, in Field 1, Section II. White's Perennial, Speckled, and Cream. These varieties are the best suited to the climate, and produce a large quantity of green stuff per acre. Eleven other varieties were also sown in Field 3, Section III., later in the season. Seed of all varieties is available, but only in limited quantities.

Beans.—Six rows each Black and Mottled, and ten rows Green, Mauritius beans, five rows Small Madagascar, and six rows Narico bean, were set in Field 1, Section II., on 22nd February, 1905. One row of White Sword bean, in Field 2, Section II., and one row Pigeon pea, one row Climbing Lima, three rows Tonga, one row Poor Man's, and three rows of Velvet beans, in Field 2, Section III. Of these the Narico is the quickest to cover the ground, but the Mauritius and Velvet beans give the most green stuff. Seeds of all are available, but in limited quantities. Numerous applications for quantities sufficient to sow areas of from 5 to 50 acres have been received, but the area under cultivation at this nursery does not admit of the production of large quantities, and all that the nursery can undertake is to supply applicants with enough seed to themselves raise their own seed from.

CEREALS.—Two varieties of American pop-corn were tried, but proved unsuccessful. Several varieties of maize received from California were sent to a farmer at Atherton, but he reported that they had been received too late in the season to attain any successful results. Millets and sorghums suitable for green fodders, hay, or ensilage in the North, were grown in Fields 1 and 3, Sections I. and II., in small quantities. The following were the best, all doing fairly well:—Giant Honduras and Brown Saccharatum sorghums; Teosinte; Pencillaria; Bullrush, Japanese, and Jap-White millets; African Eleusine or Raggi. These, if allowed to seed, prove good poultry food.

FORESTRY SEEDLING BEDS.—Some 500 odd plants of cedar raised from seed obtained last year were sent up to Atherton and planted out in the Reserve, and were reported on as being better than the chance seedlings generally obtained for that purpose. No seed was obtained this season; 53 lb. of seed of Bunya pine was received from the Forestry Branch, Lands Department, and set in beds on the 21st March, 1905. A few are already showing above ground, and about 100 are available. The teak trees in the nursery are doing particularly well, being 7 feet in height, with fine large leaves. One lb. of seed was received from Rockhampton Botanic Gardens, and has been successfully germinated; a few plants are available. A supply of seed of the mahogany timber tree was obtained from Queen's Park, Townsville, and set 25th November, 1904, and some 200 plants raised, which are strong and healthy. Plants of the doomba-tree (*Grevillia robusta*), cypress pine, jâk, and algaroba bean, are also available in some quantity, and would be worth while experimenting with in forestry reserves.

ORNAMENTAL AND SHADE TREES.—Suitable for Arbour days, and planting in school grounds, parks, esplanades, streets, public grounds, &c., available for distribution:—

- | | |
|--|--|
| <i>Ficus Benjaminica</i> (Weeping Fig). | <i>Nephellium longanum</i> (Longan). |
| <i>Ficus Cunninghamii</i> (Cairns Fig). | <i>Casalpinia coriaria</i> (Divi-divi). |
| <i>Ficus elastica</i> (Assam Fig). | <i>Calophyllum inophyllum</i> (Doomba-tree). |
| <i>Sterculia tricosiphon</i> (Broad-leaved Bottle-tree). | Striped Bamboo. |
| <i>Jacaranda mimosifolia</i> (Jacaranda). | <i>Araucaria Bidwillii</i> (Bunya Pine). |
| <i>Terminalia catappa</i> (Fijian Almond). | <i>Artocarpus integrifolia</i> (Jâk Tree). |
| <i>Mangifera indica</i> (Mango, varieties). | <i>Tamarindus indica</i> (Tamarind). |
| <i>Schinus molle</i> (Pepper-tree). | <i>Grevillia robusta</i> (Southern Silky Oak). |
| <i>Poinciana regia</i> (Flame-tree). | <i>Spatheda campanulata</i> (Tulip-tree). |
| <i>Albizia stipulata</i> (Rain-tree). | <i>Cassia fistula</i> (Indian Laburnam). |
| <i>Albizia odoratissima</i> (Scented Rain-tree). | <i>Cassia siberiensis</i> . |
| Palms, several varieties. | <i>Cassia grandiflora</i> (Golden Shower). |

Articles have been submitted for publication in the *Agricultural Journal*, as follows:—"Cedar-planting at Atherton," December, 1904; "The Kola Nut (*Sterculia acuminata*)," February, 1905; "Of Interest to Coffee-growers of North Queensland," February, 1905; "The Kola Nut, II.," April, 1905; "Nature-teaching in State Schools."

SCHEDULE A.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS TAKEN AT KAMERUNGA STATE NURSERY, CAIRNS. [Readings at 9:20 a.m., local time.]

Thermometer Readings,	1904.						1905.						Totals and Averages.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mch.	Apr.	May.	June.	
Mean maximum ...	76.70	77.45	82.55	84.5	87.06	88.27	87.19	88.33	86.20	84.23	81.45	76.61	Mean average maximum, 83.38.
Extreme maximum ...	80.0	82.5	86.0	88.0	91.0	91.0	99.0	94.0	89.0	89.0	87.0	86.0	Extreme average maximum, 99.0
On date ...	25th.	30th.	25th.	23rd.	20th.	8th.	5th.	2nd.	4th.	8th.	4th.	24th.	On 5th January, 1905.
Mean minimum ...	56.93	58.38	61.43	66.08	67.33	69.93	72.24	70.5	65.03	67.96	64.43	53.48	Mean average minimum, 65.31.
Extreme minimum ...	45.5	50.5	54.0	61.0	62.0	64.0	69.0	66.0	64.0	64.0	54.0	55.0	Extreme average minimum, 45.5
On date ...	13th.	22nd.	16th.	26th.	18th.	26th	11th.	28th.	1st.	25th.	15th.	16th.	On 13th July, 1904.
Mean temperature ...	66.81	67.91	71.99	75.30	77.20	79.10	79.71	74.42	75.62	76.10	72.94	70.05	Mean average temperature, 74.34.
Rainfall ...	.420	1.050	.270	1.000	.430	11.620	29.080	7.560	4.380	8.885	5.630	2.590	Total rainfall, 72.915. ditto 1903-4, 82.220.
Wet days ...	4	11	5	14	5	13	20	10	16	18	13	19	Total wet days, 148. ditto 1903-4, 141.

HOWARD NEWPORT, Manager.

REPORT OF THE AGRICULTURAL CHEMIST.

SIR,—I have the honour to submit herewith the Report relating to the work performed by myself and under my direction at the departmental agricultural laboratory, for the year ending 30th June, 1905.

For the first half of the year, on the special request of Dr. Maxwell to the Hon. Secretary for Agriculture, my services were temporarily transferred to the Bureau of Central Sugar Mills, to fill the position of Supervising Chemist, of which work a separate report has already been furnished. This diversion of my duties caused, naturally, a serious interruption in the continuity of my work, and it is chiefly due to the ability and energy of Mr. Frank Smith, B.Sc., who was appointed my assistant in September, that such a large amount of analytical work was carried out during the year.

The work itself was largely a continuation and extension of the investigations of previous years, and the following is a short summary of all the analytical work performed:—

	Samples.		Samples.
Soils	13	Essential Oils	1
Water	3	Sweet Potato Vines	3
Dipping Fluids	49	Sugar-cane	76
Milk and Cream	14	Wheats and Ashes	21
Butters	67	Green Fodder... ..	8
Salt	4	Green Manures	7
Rennet	1	Tobacco	4
Mangrove Bark	3	Cheese	12
Arrowroot	4	Canned Pines	13
Cassava	6		
Banana Pulp	1	Total	324
Wood and Wood Ashes	14		

There still remains in stock the following work:—

Wheats	29 samples
Barley	9 "
Oats	3 "
Various seeds	6 "
Green fodders and Legumes	24 "
Soils	7 "
Total	78 "

WHEATS.—In last year's report the analyses of the seed wheats obtained from South Australia were given, and in this report the results of these wheats grown at two of our State farms are given.

At *Westbrook State Farm* the wheats were all more or less affected by rust; the crops also suffered by unprecedented rainfall during the growing months, and an average crop of only 15·6 bushels per acre was obtained.

The results at *Biggenden State Farm*, a district new to wheat culture, were much better in getting an average yield of 27·4 bushels per acre. On this farm, besides South Australian seed, some Queensland seed wheats were sown (all broadcasted, at the rate of a little under one bushel per acre), which are given in separate tables.

A closer study of the results of these experiments is very interesting, particularly by comparing the average analysis of the crop with the average analysis of the corresponding seed. We notice that the crop at Westbrook was not only a poor one with regard to yield, but the food value of the wheats was very much decreased, although the amounts of valuable mineral plant foods, as phosphoric acid and potash, taken from the soil are practically the same as for the much heavier crop at Biggenden. This point is of great importance, as it shows that the farmer not only has a heavy direct loss by getting a small crop of poor quality, but his land is just as much exhausted as if he would have obtained a heavy crop of double the yield. The difference between the analyses of the wheats grown at Biggenden and the analyses of the original seed is only trifling; we must notice, however, a falling-off in the important nutritious compound Lecithin, and again we find a considerable increase of the Silica in the wheat ash.

Average of Analyses.	Per cent. Proteids.	Lecithin.	Phosphoric Acid.	Potash.	Silica Ash.	Crop (Bushels per Acre).
Of Biggenden Crop—						
From Queensland seed	15·17	·300	·59	·38	2·98	29·8
From South Australian seed	15·02	·251	·55	·38	4·98	24·9
Of original South Australian seed	15·12	·452	·47	·38	2·15	?
Of Westbrook Crop from South Australian seed	11·35	·358	1·03	·54	...	15·6
Of original South Australian seed	14·36	·511	·46	·38	...	?

The analyses of the wheats were carried out in exactly the same manner as described in last year's report, and the results are thus strictly comparable. The result of the analyses is given in the following tables:—

ANALYSES OF WHEATS GROWN AT BIGGENDEN STATE FARM FROM QUEENSLAND SEED.

Season 1903.	Farrer's 85 A 1 B 1.	Yandilla Improv. Indian.	Farrer's R.	Indian Fife.	Farrer's R., 84 B Y.	Yandilla.	—
Moisture	11·50	10·46	11·45	11·16	12·44	10·72	In per cent. of dry substance.
Nitrogen	2·777	2·659	2·552	2·359	2·806	2·814	
=Proteids (Nx5,7)	15·83	15·15	14·55	13·44	15·99	16·04	
Starch	78·8	79·4	75·8	78·5	67·1	66·3	
Crude Fat	2·48	2·13	2·18	2·05	2·75	2·14	
Lecithin	·288	·268	·474	·260	·274	·235	
Pure Ash	1·399	1·445	1·366	1·475	1·460	1·381	
Containing Phosphoric Acid (P ₂ O ₅)	·595	·624	·601	·545	·615	·562	
„ Potash (K ₂ O)	·375	·409	·359	·398	·386	·347	
Watery Extract; cold water—							
Total Extract	11·42	12·30	12·32	13·24	19·10	14·96	
Nitrogen	·538	·493	·514	·457	·687	·565	
=Sol. Proteids	1·09	3·08	3·22	2·86	4·29	3·53	
Sol. Ash	·97	1·07	1·14	1·19	1·23	1·14	

ANALYSES OF WHEATS GROWN AT BIGGENDEN STATE FARM FROM QUEENSLAND SEED—*continued.*

Season, 1903.	Farrer's 85 A 1 B L.	Yandilla Improv. Indian.	Farrer's R.	Indian Fife.	Farrer's R., 84 B y.	Yandilla.	—
Pure Ash—Colour	Grey	Grey	Grey	White-grey	Grey	Dark-grey	Analyses of pure ashes.
Silica (SiO ₂)	2.20	4.04	1.91	5.95	1.71	2.06	
Chlorine (Cl) ... ..	.97	.68	.84	.49	.80	.91
Sulphuric Acid (SO ₃)	1.01	1.19	1.45	1.73	1.10	.90	
Phosphoric Acid (P ₂ O ₅)	42.52	43.18	44.00	36.92	42.12	40.71	
Iron (Fe ₂ O ₃) ... ..	.91	.49	2.36	1.25	.92	1.21
Lime (CaO)	10.98	14.97	10.30	7.75	7.81	8.42	
Magnesia (MgO)	8.79	5.72	6.74	14.28	15.00	15.11	
Potash (K ₂ O)	26.80	28.32	26.28	26.96	26.42	25.12	
Soda (Na ₂ O)	4.36	1.38	6.16	4.52	3.12	5.12	
Manganese (MnO)	1.17	1.18	.85	.87	.70	.50	
Crop—Bushels per Acre	33	24½	31	33	33	24	

ANALYSES OF WHEATS GROWN AT BIGGENDEN STATE FARM FROM SOUTH AUSTRALIAN SEED.

Season, 1903.	Silver King.	Gluyas.	Petatz Surprise.	Carmichael.	Baroota Wonder.	Early Para.	Hamblyn's Prolific.	—
Moisture	11.02	11.22	11.32	10.96	10.92	11.01	11.89	In per cent. of dry substance.
Nitrogen	2.651	2.705	2.890	2.352	2.588	2.770	2.488	
= Proteids (Nx5 ₇)	15.11	15.41	16.47	13.41	14.75	15.79	14.17	
Starch	73.6	66.8	68.8	79.1	68.5	66.9	69.4	
Crude Fat	1.91	1.95	1.85	2.06	2.13	1.99	2.27	
Lecithin ... ..	.164	.187	.203	.197	.194	.277	.536
Pure Ash	1.407	1.378	1.436	1.255	1.365	1.390	1.392	
Containing Phosphoric Acid (P ₂ O ₅)	.563	.578	.561	.498	.543	.550	.555	
Potash (K ₂ O) ... ..	.344	.358	.428	.355	.393	.397	.411
Watery Extract; cold water—								
Total Extract	14.00	12.03	11.25	17.14	12.35	12.06	11.64	
Nitrogen ... ..	.307	.576	.600	.504	.582	.622	.577
= Sol. Proteids	1.92	3.60	3.75	3.15	3.64	3.89	3.29	
Sol. Ash	1.23	1.24	1.16	.88	1.13	1.26	1.29	
Pure Ash—Colour	Grey	Grey	Grey	Wh'tegrey	d. grey	wh. grey	grey	Analyses of pure ashes.
Silica (SiO ₂)	8.32	6.26	2.71	4.30	4.91	3.02	5.22	
Chlorine (Cl)	1.61	.55	.97	.79	.83	1.17	1.13	
Sulphuric Acid (SO ₃)	1.82	.59	1.01	1.81	.89	.94	2.26	
Phosphoric Acid (P ₂ O ₅)	40.00	41.92	39.04	39.70	39.78	39.56	39.85	
Iron (Fe ₂ O ₃)	2.71	2.12	2.06	1.72	.85	1.56	1.12	
Lime (CaO)	13.15	3.93	6.59	14.05	4.75	6.05	7.84	
Magnesia (MgO)	5.59	12.55	12.42	5.11	15.30	13.69	7.36	
Manganese (MnO) ... ..	.76	.55	.80	1.23	.69	.53	1.36
Potash (K ₂ O)	24.46	26.00	29.78	28.28	28.80	28.56	29.53	
Soda (Na ₂ O)	1.56	6.17	5.42	3.60	3.78	4.72	3.96	
Crop—Bushels per Acre	24½	23¾	24	22½	17	21½	21	

ANALYSES OF WHEATS GROWN AT WESTBROOK STATE FARM FROM SOUTH AUSTRALIAN SEED.

Season, 1903.	Marshall's No. 1.	Gluyas.	Petatz Surprise.	Smart's Early.	Allora Spring.	Warwick.	Australian Wonder.	Federation.	—
Moisture	11.68	12.06	11.51	12.03	12.08	11.69	12.38	12.16	In per cent. of dry substance.
Nitrogen	1.926	2.221	2.120	2.101	1.855	1.982	1.965	1.754	
= Proteids (Nx5)	10.98	12.66	12.08	11.97	10.58	11.30	11.20	10.00	
Starch	70.5	71.4	70.0	74.7	73.7	72.1	73.6	74.8	
Crude Fat	1.81	1.69	2.15	1.78	1.93	1.99	1.75	1.91	
Lecithin ... ..	.222	.454	.199	.495	.421	.164	.431	.482
Pure Ash	2.141	2.080	2.110	1.896	2.110	1.917	2.260	2.041	
Containing Phosphoric Acid (P ₂ O ₅)	1.044	.936	1.119	.899	1.057	1.035	1.196	.946	
Potash (K ₂ O) ... ..	.552	.518	.610	.455	.592	.460	.547	.556
Watery Extract (cold)—									
Total Extract	12.81	13.94	13.28	12.61	11.49	13.25	14.72	16.06	
Nitrogen ... ..	.508	.572	.633	.597	.456	.563	.595	.474
= Sol. Proteids	2.89	3.26	3.61	3.40	2.60	3.21	3.39	2.70	
Sol. Ash	1.80	1.84	1.87	1.64	1.80	1.72	2.02	1.74	
Pure Ash—Colour	d. grey	d. grey	d. grey	d. grey	d. grey	black	d. grey	grey	Analyses of pure ashes.
Silica (SiO ₂) ... ..	...	3.47	...	3.32	...	...	...	...
Chlorine (Cl) ... ..	...	.29	...	.17	...	...	...	...
Sulphuric Acid (SO ₃) ... ..	...	.34	...	.13	...	...	...	...
Phosphoric Acid (P ₂ O ₅)	48.75	44.99	53.03	47.40	50.13	54.00	52.97	46.36	
Iron (Fe ₂ O ₃) ... ..	...	.31	...	.34	...	...	...	...
Lime (CaO) ... ..	...	4.29	...	5.07	...	...	...	...
Magnesia (MgO) ... ..	...	12.30	...	12.61	...	...	...	...
Manganese (MnO) ... ..	...	.57	...	.46	...	...	...	...
Potash (K ₂ O)	25.77	24.90	28.88	24.00	28.03	24.01	24.19	27.24	
Soda (Na ₂ O) ... ..	...	8.27	...	7.31	...	...	...	...
Crop—Bushels per Acre	19.4	15.0	17.7	11.0	18.0	15.0	11.4	17.6	

The constituents of foodstuffs containing phosphorus, as Lecithin and the more recently discovered chemical compounds of oxymethylene diphosphoric acid, have hitherto not had the attention they deserve, although they are of the utmost importance in nutrition, as they are the principal source of the phosphorus found in the human and animal body. When studying the analyses of our wheats, we must notice the notable difference in the amount of Lecithin present, and we find that Allora Spring, for instance, which contained the highest amount in the original seed, comes out well again in the sample grown at Biggenden. By a further study of these wheats it will be our aim to find out if the high amount of Lecithin is confined to the bran and pollard, or if also the flour contains a larger share. It is also of interest to note that the amount of phosphoric acid found in the ash is by no means a guide to judge the amount of Lecithin extracted with the crude fat of the wheat.

Quite recently the Department imported an experimental mill, from Messrs. Henry Simon, Ltd., Manchester and Sydney, which we hope will be erected and working in the course of a few weeks, when practical milling tests of the wheats collected last season will be undertaken, and can be compared with our ordinary analytical investigation.

Hitherto in the manufacture of flour good appearance and colour were the chief aims of the miller, and the nutritious value of the flour itself was frequently overlooked. The production of a highly nutritious flour, rich in proteids and phosphorus compounds, must be considered a national duty, as the bodily well-being and the mental growth of our children depend largely on the food they consume, of which bread forms such an important part.

FODDER CROPS.—The investigation on the composition of fodder crops was continued, and samples of various sorghums, grown successfully at the Sugar Experiment Station in Mackay, were obtained and analysed. As already shown in last year's report, partial analyses of the sorghums showed that the higher cultivated American varieties contain less poison in their earlier stages of growth, and are consequently not quite so dangerous as the common varieties: this property, with the very much better yield per acre, should recommend the better varieties for more general cultivation to our farmers.

I cannot omit to draw attention to a peculiarity in the composition of the sorghums, given in full in the table below, with regard to starch and soluble carbohydrates. We find that three of the varieties—Folger's Early, Coleman, and Planter's Friend—are particularly rich in starch, and the same varieties, when prepared for analysis, were noticed to be affected with some sort of rust.

Very interesting is also an analysis of an indigenous paspalum variety, the well-known Russell River Grass, *Paspalum galmarra*, which compares favourably in its composition with any of the sorghum varieties and also with the favourite, *Paspalum dilatatum*, and the well-recognised value of this Russell River Grass as a fodder for stock, growing luxuriantly in the Northern parts of this State, is well borne out by analysis.

ANALYSES OF FODDER CROPS GROWN AT SUGAR EXPERIMENT STATION, MACKAY—SEASON 1903-1904.

Sorghum Varieties.	Folger's Early.		Collier.		Early Orange.		Giant Honduras.		Coleman.		Common Sorghum.		Planter's Friend.		Russell River Grass, <i>Paspalum galmarra</i> .	
	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.
Moisture per cent.	72.31	—	71.68	—	75.00	—	67.25	—	70.52	—	79.84	—	72.00	—	70.00	—
Dry Substance "	27.69	100.00	28.32	100.00	25.00	100.00	32.75	100.00	29.48	100.00	20.16	100.00	28.00	100.00	30.00	100.00
Total Nitrogen "	.379	1.368	.251	.887	.210	.842	.300	.917	.404	1.372	.253	1.255	.418	1.493	.317	1.057
= Proteids [Nx6] "	2.27	8.20	1.51	5.32	1.26	5.05	1.80	5.50	2.42	8.22	1.52	7.53	2.51	8.96	1.90	6.34
Starch "	8.32	30.04	4.95	17.48	4.17	16.68	4.74	14.47	7.98	27.08	3.36	16.67	8.13	29.03	5.80	19.33
Sol. Carbohydrates "	3.41	12.31	1.43	5.06	1.20	4.80	2.91	8.88	1.49	5.05	1.78	8.81	1.31	4.67	.84	2.78
Crude Fat "	.80	2.89	.86	3.04	.43	1.72	.65	1.98	.91	3.08	.42	2.08	.84	3.00	1.41	4.69
Ash "	2.15	7.78	2.07	7.33	2.64	10.55	2.31	7.06	2.07	7.02	1.78	8.82	2.03	7.25	2.73	9.10
Soluble in Hot and Cold Water—																
Total Extract per cent.	5.70	20.60	4.31	15.21	4.22	16.85	5.55	16.95	4.05	13.72	4.85	24.07	3.52	12.56	4.05	13.48
Sol. Ash "	.95	3.44	.80	2.84	1.26	5.01	1.05	3.21	.84	2.85	.83	4.10	.84	2.99	1.27	4.22
Nitrogen "	.058	.209	.038	.134	.097	.389	.138	.420	.069	.234	.089	.442	.062	.220	.106	.358
= Sol. Proteids "	.35	1.25	.23	.80	.58	2.33	.83	2.52	.41	1.40	.53	2.64	.37	1.32	.64	2.14
No. of Crops in 12 months ...	4		3		3		2		3		3		3			
Crop, tons per acre	55.5		51.4		50.6		50.5		48.6		42.5		40.1			
Do., lb. per acre	124,320		115,136		113,344		13,120		108,864		95,200		89,824			
Dry Substance "	34,425		32,605		28,336		37,045		32,091		19,191		25,150			
Nitrogen "	471		289		238		339		440		241		375			
Ash "	2,673		2,383		2,992		2,613		2,253		1,694		1,823			

GRASSES.—A further thorough investigation of grasses, both indigenous and introduced varieties, is of the greatest importance. At the Experiment Farm at Biggenden, and at Hermitage, a large number of grasses are grown side by side, further samples will be obtained and analysed at different periods of their growth, more particularly also after severe winters, long spells of dry weather, &c., so as to be able to ascertain which are the most suitable and valuable varieties for our local conditions.

SWEET POTATO VINES.—I must draw attention to the important discovery of a poisonous glucoside in the green vines of the Sweet Potato (*Ipomoea catata*), which at certain times of the year is largely used as a stock and pig food, and which early this year caused a heavy mortality in some of our piggeries. [*Agricultural Journal*, June, 1905, Vol. XV., p. 912.] Further investigation will have to be made to find out if the danger is limited to certain periods of its growth (similar to the sorghums), or to certain seasons and climatic conditions.

GREEN MANURE CROPS.—Leguminous crops grown at the Biggenden State Farm, which Farm supplied the largest amount of material for analysis, thanks to its energetic late manager, were analysed, and the results showing their respective values as green crops are given in the following table.

We find that the Black Mauritius Beans, which yielded the heaviest crop, contain also the highest amount of nitrogen—260 lb. per acre—corresponding to a manuring with 1,300 lb. of ammonium sulphate, costing about £7 per acre.

ANALYSES OF GREEN MANURE CROPS GROWN AT BIGGENDEN STATE FARM, SEASON 1903.

Legumes.	Black Mauritius Bean.		Mottled Mauritius Bean.		Small Mauritius Bean.		Velvet Bean.		Green Mauritius Bean.		Red Sword Bean.		White's Perennial Cow Pea.	
	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.	Green.	Dry.
Moisture ... per cent.	75.98	...	74.91	...	72.98	...	74.85	...	77.61	...	74.00	...	76.63	...
Dry substance ..	24.02	100.00	25.09	100.00	27.02	100.00	25.15	100.00	22.39	100.00	26.00	100.00	23.37	100.00
Total nitrogen ..	.774	3.226	.732	2.918	.868	3.215	.649	2.579	.635	2.837	.698	2.685	.585	2.500
= Proteids [N x 6] ..	4.65	19.35	4.39	17.51	5.21	19.29	3.90	15.50	3.81	17.02	4.18	16.09	3.51	15.00
Starch ..	1.20	5.00	1.13	4.50	2.66	9.85	3.18	12.66	1.42	6.36	3.21	12.32	1.23	5.25
Sol. carbohydrates ..	1.46	6.06	1.67	6.67	1.44	5.36	.53	2.14	1.42	6.36	2.55	9.81	2.52	10.79
Crude fat ...	.68	2.83	.67	2.69	.79	2.93	.76	3.03	.55	2.48	.20	.75	.73	3.13
Ash ...	2.71	11.28	2.43	9.69	3.24	11.98	2.78	11.05	2.08	9.32	2.60	10.00	2.62	11.20
Soluble in cold and hot water—														
Total extract .. per cent.	5.42	22.57	5.10	20.34	7.68	28.41	5.62	22.28	4.46	19.95	8.40	32.32	7.01	30.00
Sol. ash ...	1.24	5.18	.97	3.87	1.65	6.13	1.07	4.24	.91	4.07	1.66	6.40	1.93	8.23
Nitrogen ...	.276	1.147	.212	.848	.301	1.114	.326	1.297	.224	1.00	.329	1.264	.322	1.376
= Sol. proteids ..	1.65	6.88	1.27	5.08	1.80	6.68	1.96	7.79	1.34	6.00	1.97	7.58	1.93	8.25
Crop ... tons per acre.	15.0		12.2		12.0		12.0		11.9		...		14.0	
.. lb. per acre.	33,590		27,328		26,880		26,880		26,620		...		31,360	
Dry substance ..	8,068		6,857		7,263		6,760		5,960		...		7,329	
Nitrogen ...	260		200		233		174		169		...		183	
Ash ...	910		664		871		747		554		...		822	

The great value of green manure crops is thus clearly demonstrated to our farmers.

PINEAPPLE DISEASE.—No further analytical work was carried out in connection with this investigation. As the results of last year's work clearly indicated the exhaustive nature of a pineapple crop, a series of manurial experiments, arranged by the Instructor in Fruit Culture and myself, were started in various localities, embracing a great variety of soils and conditions.

PINEAPPLE CANNING.—With a view to encourage the local canning industry, in order to dispose of the surplus pineapple crop, the Department of Agriculture imported some leading brands of canned pineapples from Singapore, for analysis and general comparison with our locally-canned fruit. The investigation was interesting, and the results are given in full in the table below.

CANNED PINEAPPLES, IMPORTED AND LOCAL MANUFACTURE.

	Weight in Oz.			Analysis of Juice in per Cent.							Size of Tins.			Remarks: Size and Description of Slices, Flavour, etc.	
	Fruit.	Juice.	Total Net.	Sucrose.	Glucose.	Total Sugar.	Acid as Malic Acid.	Salt.	Preservat.	Lbs.	Height.	Diameter.			
Pineapples canned at Singapore, at least one year old.	Cubes in Syrup	26½	8½	35	5.06	10.11	15.17	.355	.0409	nil	2½	5	4	Chunks measuring from 1 in. x 1 in. x ¼ in. to 1½ in. x ¾ in. x ¾ in., well peeled, firm, good yellow colour and good flavour. Tins well packed.	
	Cubes in No. 2 Syrup	11½	8½	20	4.31	22.12	26.43	.368	...	...	1½	2	4½	Chunks 1 in. x ¾ in. x ¾ in. and 1 in. x 1 in. x ¾ in., irregular size, good flavour, but too sweet; not so well packed.
	Straight-cut Slices in Syrup	16½	5¾	22½	4.36	7.35	11.71	.254	...	...	1¾	4¾	3¾	Straight-cut slices, ½ in. thick, well peeled and cored, pale colour and insipid. Tin very full.
	Spiral-cut Slices in Syrup	26	16	42	7.46	13.88	21.34	.214	...	...	3	5½	4½	Spiral-cut slices, ¾ in. thick, cored, good colour, and very good flavour and firm.
	Whole Pines in Syrup	21½	5½	27	2.70	13.02	15.72	.462	...	...	2	4½	3¾	Whole pine, straight cut and eyes left in, cored, fair colour and flavour.
	Chunks in Syrup	...	...	...	4.88	12.37	17.25	.355	.0491	...	3	...	...	Irregular sized chunks, of good flavour and colour, and firm.
	Spiral-cut Slices in own Juice	20½	13¾	34½	3.15	9.68	12.83	.268	...	...	2½	5	4	Spiral-cut slices, ¾ in. to 1 in. thick, pale colour and poor flavour, but well packed.
	Fresh Pineapples from Brisbane	8.42	3.29	11.71	.897	.1146	Fresh juice from pineapple.
	Fresh Pineapples from Pinalba	7.17	4.71	11.88	.897	.1146	Same juice heated for 20 minutes to boiling heat.
	Local canning	Sample: B., chunks, large, two years old	15	9	24	3.42	14.36	17.78	.656	2	4½	4	Large chunks, well peeled, but not cored; good colour and flavour, but tin not full.
Sample: S. B., chunks, fresh		12	7½	19½	10.66	5.63	16.29	.763	...	...	1½	2½	4¾	Chunks ¾ in. x ¾ in. x 2 in., of irregular size, good colour and flavour, but flabby.
Sample: S. B., slices, straight-cut, fresh		15½	13½	29	15.22	3.78	19.00	.562	...	...	2	4½	4	Straight-cut slices, ¾ in. to 1 in. thick, of pale colour and poor flavour; also flabby.
Sample: R. T., slices, straight-cut, fresh		21½	12½	34	14.25	13.15	27.40	.478	...	...	2½	4½	4½	Straight-cut slices, ¾ in. to 1 in. thick, irregular cut, of varying colour, soft and flabby and too sweet, and having no distinct flavour.

The pineapples canned at Singapore, although at least one year old, appeared when opened quite fresh and firm, the tins also were bright and clean inside, showing no signs of corrosion. The make-up showed a great variety in the mode of preparation, size of tins, shape of slices, also in flavour and strength of syrup. Particularly noticeable is the method of packing, as all the tins, with the exception of cubes No. 2, were as full as they possibly could be, the fruit showing no shrinkage, the tins holding consequently more fruit and correspondingly less syrup than the general average of our local tins.

The appearance of the fruit in the tins leads me to believe that the fruit was partially cooked before being packed into the tins.

In the wholesale manufacture of canned pineapples a partial cooking of the fruit before packing into tins is well worth considering for a trial by our local manufacturers, as by adopting this manner of working a more uniform quality of fruit and syrup could be obtained, and only a very short heating of the filled tin itself would be necessary to sterilise the contents before soldering up. The acidity of the Singapore fruit is also considerably lower than that of our own products, and particularly the 1½ lb. tin of sample S—B— had a too decided acid flavour. The analyses of the juices also show that the inversion of the cane sugar (sucrose), which predominates in the fresh fruit, into glucose, proceeds only gradually, and appears to be going on the whole time in the tins. This is clearly shown by comparing the locally-canned fruit sample B—, two years old, with any of the other freshly prepared samples. This result is corroborated by the heating of the fresh pineapple juice for twenty minutes to boiling heat, which resulted only in a very slight inversion of the sugar.

The proportion of the sucrose and glucose, without altering the total amount of sugars in the juice, will be a criterion of the length of time tins of canned pineapples have been kept in stock.

An addition of sugar to the pineapple juice for canning seems always advisable, as with an amount of total sugars between 18 and 20 per cent. (or a density of about 20 degrees Brix.) in the finished syrup, the flavour of the pineapple becomes most pronounced. The amount of sugar to be added depends entirely on the sweetness of the fresh fruit, which in average amounts to about 12 per cent. of total sugars, and rarely reaches more than 15 per cent.

ARROWROOT.—The production of arrowroot is an industry capable of considerable expansion in this State to the profits of growers and manufacturers. In order to get some idea of the commercial value of various products, a series of analyses were made. In Great Britain the arrowroot of commerce is generally understood to be the product of *Maranta arundinaceæ*, which is largely cultivated in the West Indies. The starch made from *Canna edulis*, which plant yields in this State much heavier crops than Maranta, is sold under the name of Tous-le-mois, and also as Queensland arrowroot. Some years back the Agent-General procured a collection of samples of commercial arrowroots, of which I analysed two, and particularly striking is the enormous difference of over 100 per cent. in their price, although the analyses show practically no difference, and there seems only a slight difference in the appearance. It would be of great interest to learn what properties guide the merchants in the fixing of the market value. The Agent-General reported at that time the following prices of the samples obtained:—

	Market Value.		Retail Value.	
	Per lb.		Per lb.	
	s.	d.	s.	d.
Bermuda arrowroot	2	2	2	6½
Bermuda (Kina) arrowroot	—	—	1	1
Natal arrowroot	0	6¼	0	9½
St. Vincent arrowroot	0	2¾	0	6½
St. Vincent arrowroot	0	1¼	0	3½

Quite recently a current price list of Messrs. Cross and Blackwell quotes—

Arrowroot, 1 lb. tins at 5s. 6d. per dozen,
Tous-le-mois, 1 lb. tins, at 8s. per dozen,

giving the product of *Canna edulis* the higher market value, which is of some importance to our growers.

The commercial value of these arrowroots must be based on their starch contents, and we find from examination of the results given in the table practically no difference between the products of Maranta and Canna.

The Tous-le-mois arrowroot prepared at the Kamerunga State Nursery is of much better appearance and whiter colour, the flour having an almost silky gloss; the starch grains are very much larger than Maranta starch:—

ANALYSES OF ARROWROOTS

Prepared from	<i>Maranta arundinaceæ.</i>				<i>Canna edulis.</i>	
	Bermuda, W.I.		Kamerunga, Queensland.			
	2s. 6½d. lb.	1s. 1d. lb.				
At						
Price in London ..						
Moisture, per cent. ...	13.50	15.86	15.01	14.28	17.36	16.36
Starch, per cent. ...	82.84	82.61	76.22	78.80	81.52	82.00
Ash, per cent. ...	.124	.172	.308	.380	.142	.38
Proteids, per cent. ...	.052	.087	.153	.098	.078	.070
Fibre, by diff., per cent. ...	4.09	1.28	8.31	6.42	.90	1.19

DAIRYING INDUSTRY.—A considerable amount of analytical work was carried out for the Dairy Expert, and more particularly in connection with the export of butter. A complete table of the analyses of export butters is given below. It must be understood, however, that the samples were taken with a view of checking the quality of the butter, particularly with regard to the amount of water left in the butter, and an average of the amount of water found by analysis would not give a fair idea of the average percentage of water in our export butter. Among the samples of butter taken we find—with water between 9 and 10 per cent., 1 sample; 10 and 11 per cent., 8 samples; 11 and 12 per cent., 17 samples; 12 and 13 per cent., 10 samples; 13 and 14 per cent., 13 samples; 14 and 15 per cent., 10 samples; 15 and 16 per cent., 4 samples; over 16 per cent., 2 samples.

ANALYSES OF EXPORT BUTTERS, DECEMBER, 1904, TO FEBRUARY, 1905.

Brand.	Water.	Fat.	Curd.	Salt.	Ash.	Boric Acid.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
O.K., salted ...	13.83	82.22	1.14	2.48	2.54	Trace
O.K., unsalted ...	15.25	83.66	1.06	Nil	.12	.26
Boonah ...	14.62	83.75	.60	1.07	1.13	Nil
Logan and Albert ...	11.63	86.35	1.07	1.25	1.33	0.9
O.K., unsalted No. 2 ...	15.96	82.81	.82	.17	.26	.28
Warwick ...	12.31	85.31	.93	1.49	1.55	.09
Darling Downs ...	11.79	86.31	.99	2.07	...	Trace
Tiaro ...	10.35	85.99	1.04	3.17	...	"
Beaudesert ...	11.23	86.29	1.03	1.70	...	"
Boonah ...	10.20	86.13	.88	2.98	...	"
Lowood ...	12.07	84.66	1.60	1.84	...	"
Stanley ...	10.97	85.03	1.31	3.02	...	"
O.K. ...	14.33	81.98	.82	2.53	2.65	.13
Linning ...	10.96	86.00	.91	1.57	1.73	.16
Tent Hill ...	14.04	83.43	.93	1.26	1.34	Nil
Marburg ...	11.67	84.49	.98	2.30	2.38	Trace
Maleny ...	13.81	83.34	.95	1.35	1.44	"
South Brisbane ...	16.23	80.53	1.52	1.50	1.56	"
Maryborough ...	13.93	83.04	.94	2.63	2.75	"
Moreton ...	13.92	83.70	1.17	1.30	1.41	.10
South Brisbane, 1st ...	17.33	80.00	.99	1.50	1.60	.04
Lowood ...	12.09	84.70	.68	2.10	2.23	.19
Tiaro ...	9.67	87.02	.64	2.80	2.85	Trace
Beaudesert ...	11.63	85.48	.63	2.29	2.35	Nil
Bundaberg ...	12.72	84.33	.98	1.92	1.97	Trace
Samsonvale ...	12.00	85.09	.71	1.99	2.05	"
Golden Nugget ...	11.32	85.79	1.01	1.80	1.88	.12
Silverwood, 1st ...	11.52	86.19	.95	2.18	2.28	.15
" 2nd ...	12.62	84.58	.96	1.97	2.08	.10
Bremer ...	11.90	85.54	.87	1.81	1.91	.12
South Brisbane ...	14.31	85.54	.87	1.81	1.91	.12
O.K. ...	15.42	81.33	.89	2.31	2.44	.13

ANALYSES OF EXPORT BUTTERS—MARCH, 1905, TO JUNE, 1905.

Brand.	Water.	Fat.	Curd.	Salt.	Ash.	Boric Acid.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Linning ...	10.92	86.98	1.11	1.05	1.14	.09
Warwick ...	11.69	84.94	.96	1.85	1.96	.10
Booval, "Laurel" ...	13.09	85.94	.62	1.43	1.48	Nil
Silverwood, Toowoomba ...	11.51	85.09	.75	2.28	2.41	.14
Bremer, Ipswich ...	12.08	85.07	.80	2.04	2.11	Trace
Beaudesert ...	10.58	86.15	.75	2.45	2.54	"
Fassifern ...	11.28	84.84	.52	3.30	3.40	.08
Tiaro ...	10.71	85.14	.80	3.17	3.34	.18
Pommer, Ipswich ...	14.54	82.17	.75	.98	2.05	.08
Thistle, Booval ...	12.92	84.72	.71	1.56	1.60	Trace
Maryborough ...	11.79	84.63	.83	2.65	2.70	"
Linning ...	12.86	84.38	1.06	1.46	1.56	.13
Bundaberg ...	11.66	84.96	.97	2.53	2.65	.15
Pioneer ...	10.40	87.20	.71	1.51	1.63	.24
Silverwood I. for curd standard	11.47	85.19	.90	2.22	} water clear	
" II. "	11.30	85.50	.90	2.16		
" III. "	11.00	85.77	.97	2.15		
Maryborough I. "	14.08	83.81	.79	1.30	} water very milky	
" II. "	14.02	83.85	.78	1.29		
" III. "	13.68	84.11	.88	1.26		
Moreton I. "	14.12	84.33	.78	.60	} water very milky	
" II. "	13.40	84.50	.77	.54		
" III. "	13.84	84.71	.79	.53		
Samson Vale ...	11.77	85.27	.79	1.73	1.79	Nil
Bundaberg ...	13.56	83.17	1.15	2.20	2.29	.09
Moreton ...	14.55	83.87	.85	.69	.78	.10
O.K. ...	15.66	80.93	.96	2.54	2.63	.08
Rockhampton ...	13.79	84.06	.79	1.40	1.45	Nil
Gracemere ...	14.94	81.87	1.10	2.09	2.16	Nil
Rockhampton Co-op. Dairy ...	12.85	85.13	.88	1.00	1.13	.21
Q.M.E. & A. ...	13.60	84.00	.63	1.71	1.82	.15
" ...	13.26	—	—	—	—	—
" ...	12.64	—	—	—	—	—

Of some interest are the complete analyses of two fairly representative samples of our export butters, from two different localities, with a complete examination of their butter-fats, and comparing them with the English average butters:—

Sample.	D 58.		F 22.		Average English Butter.		
	Duplicate Analyses.	Average.	Duplicate Analyses.	Average.			
ANALYSES OF EXPORT BUTTERS.							
Moisture per cent.	12.54	12.57	12.56	9.93	10.00	9.97	11.54
Fat "	84.09	84.48	84.28	86.87	86.83	86.85	86.85
Curd "	.96	1.01	.99	.72	.65	.69	.59
Salt "	1.68	1.68	1.68	2.31	2.45	2.38	1.02
Ash "	1.87	1.87	1.87	2.53	2.64	2.59	...
ANALYSIS OF BUTTER FAT.							
Palmitin and Stearin per cent.	...	...	50.3	...	...	50.3	55.6
Olein ... .. "	...	...	42.6	...	...	42.9	36.0
Butyric, Caproin, etc. ... .. "	...	...	7.1	...	...	6.8	8.4
Free Acid ... .. "	...	...	.15	...	...	.14	...
Acid Value No. ... .. "	...	...	.97	...	...	.94	.5
Saponific Value No. ... .. "	...	...	230.5	...	...	225.8	227
Reichert-Meissl Value No. ... .. "	...	...	27.0	...	...	26.8	28
Hehner Value No. ... .. "	...	...	88.1	...	...	88.5	87.5
Iodine Value ... .. "	...	...	36.7	...	...	37.0	30
Specific Gravity $\frac{100^{\circ}}{100}$ F. ... .. "	...	...	.9118	...	...	.9112	.911 to .913
Zeiss Refractom at 36° C. ... .. "	...	...	46.0	...	...	46.3	46.4
ACIDITY OF BUTTER: FREE ACID IN PER CENT. OF BUTYRIC ACID.							
Fresh frozen from centre ... .. "	...	...	.54	...	...	.41	...
After 24 hours from top ... .. "	...	...	.44	...	...	.39	...
After 48 hours from top ... .. "	...	...	.45	...	...	.37	...
After 48 hours from centre ... .. "	...	...	.45	...	...	.33	...
After 96 hours from top ... .. "	...	...	.49	...	...	.40	...
After 96 hours from centre ... .. "	...	...	.46	...	...	.38	...

We find our butters characterised by high iodine absorption value, and consequently a higher percentage of oleic acid, and a slightly greater liquidity of the butter-fat; higher Hehner value of the insoluble fatty acids, and consequently a slightly smaller percentage of soluble fatty acids (butyric, caproic acids, &c.); a slightly higher acid value or percentage of free fatty acids.

The acidity of the butters was also determined at different intervals; after coming from the freezing chamber and being left at ordinary room temperature, we found that practically no change took place during the first four days.

The analytical work in connection with the dairy industry is capable of considerable expansion, and in connection with the administration of the Dairy Act alone an increase of analytical work is anticipated.

It is also the intention of the Department to make bacteriological examinations and investigations of dairy products a branch of the work of our laboratory, which will necessitate increased accommodation and larger staff. Of special benefit to the dairying industry would be this work, if employed in the manufacture of *pure cultures*, on commercial lines, as starters in the different branches of this important industry, on similar lines as practised in other countries.

DIPPING FLUIDS.—A very large number of analyses of the fluids used in our cattle dips were carried out, as the owners of these dips availed themselves largely of the advantage of having the strength of their dips tested for a small nominal fee. This testing of the dipping fluid twice a year is an absolute necessity, as it ensures the users of the dips that the liquid contains sufficient arsenic in solution to destroy the ticks, and again is not too strong so as to injure the cattle. Long experience of this Department has proved that even dipping, repeated at regular intervals from three to four weeks, has not the slightest injurious effect on the cattle, if the dip is of the Government standard strength, containing 8 lb. of arsenic per 400 gallons of the fluid, and if the cattle are not over-driven or maltreated.

The analyses carried out last year showed variation in the composition from $2\frac{3}{4}$ to $12\frac{1}{2}$ lb. of arsenic per 400 gallons, which distinctly shows the necessity of the analytical tests.

Experiments were made if saltwater, as sea water or other brackish water, could be used for the making up of the solution. These experiments have clearly proved that the opinion always expressed by myself was quite correct, and that salt or brackish water cannot be used. Even if the quantity of caustic soda is considerably increased, most of the arsenic is precipitated in a totally insoluble form.

Furthermore, I must state that no simple way of testing the strength of the dipping fluid exists, and that only a chemical analysis is a sure criterion with regard to the strength.

J. C. BRÜNNICH, Agricultural Chemist.

REPORT OF THE INSTRUCTOR IN FRUIT CULTURE.

Sir,—During the year I have visited the greater portion of the fruit-growing districts of the State, and have given general advice and instruction, both practically in the orchard and by means of lectures and articles. My work has not, however, been confined solely to fruit, as I have given a considerable amount of attention to agricultural matters generally, and have given a large amount of advice respecting same. I have attended a number of agricultural shows in the capacity of judge, have paid two trips to the Northern and Central coastal districts, one to the Central West, and one to the Southern West.

In addition to my work of instruction, I supervised the packing of a portion of a shipment of citrus fruits sent to England by the Queensland Citrus-growers' Association. The shipment, I am sorry to say, was not a success, but for this I was in no way responsible, as I stated in the report I submitted to you at the time. Fruit was sent that, had I had the power, I would have stopped, but was unable to do so. The carrying and keeping quality of the fruit last season was also poor, and the ship by which the fruit was sent was an exceedingly long time on the voyage. Altogether the conditions under which the shipment was sent were conducive to failure, and though the failure was no doubt a blow to the industry at the time, I

am of opinion that it will eventually turn out to be a blessing in disguise, in that it will teach our growers what to send and what not to send, and how to send it. It will show our growers the necessity for more combined action when making future shipments. As I have stated in previous annual reports, I am satisfied that it is only by a system of active commercial co-operation on sound business lines that we can hope to establish and maintain a profitable export trade, whether same be in the form of fresh or preserved fruit.

This question of co-operation is one that I have kept prominently before the fruit-growers of the State throughout the year, as I feel that the industry has now reached a state when local production in nearly all lines has overtaken local consumption, and it is therefore necessary to find fresh outlets for our produce if paying returns are to be obtained and the industry is to progress on satisfactory lines. I am so satisfied with the importance of this question that I read a paper dealing with it at the recent Agricultural Conference at Cairns, in which I pointed out that fruit-growers must extend and develop their presently existing markets as well as endeavour to secure new markets, and that this can not be done individually, but by collective action. Such collective action should take the form of an active commercial co-operation of fruit-growers having at their head men of proved business capacity, who will run the business on sound business lines. Such an organisation of fruit-growers would be able to develop and extend our present markets by establishing a better and cheaper method of distribution, so that fruit would be brought within the reach of many who are at present unable to obtain it; and it would also be able to open up oversea markets as well as to deal with the utilisation of surplus fruit by canning or otherwise preserving same. Many of our progressive fruit-growers realise that the present condition of the industry is somewhat unsatisfactory, and are in favour of united action. The work that has already been carried out by the Queensland Citrus-growers' Association, and by other smaller associations throughout the State, has had a decided influence in bringing about this feeling, and I trust that the scope of the work now being undertaken will be largely extended, so as to deal with every branch of the fruit-growing industry that has to do with distribution and utilisation.

The year as a whole has been a fairly good one for fruit-growers, though there have been failures of certain crops, such as the main strawberry crop, on account of the dryness of the spring, and a light crop of table grapes on the coast, for probably the same reason. The mango crop was one of the heaviest on record all over the State, and great difficulty was found in obtaining a market for even a portion of the crop. Such inferior fruit has been and is still being sent to the southern States that there is practically no market for this fruit outside Queensland, so that when we have a heavy crop, as was the case this year, there is more than we can consume. The growing of nothing but the best varieties, and the use of suitable cases for packing same, should enable us to open up a good market for this really fine fruit in the south, as I am certain that once our southern neighbours know what a good mango is, instead of basing their judgment on the rubbish that they have had hitherto, there will be a steady and increasing demand for it. Cases in which to pack the fruit were specially imported from Victoria, but, unfortunately, arrived rather late in the season. These cases differed from those ordinarily in use in that each fruit is carried in a partition by itself, thus preventing bruising and injury to the fruit by the weight of supercumbent fruit, as well as giving thorough ventilation, thereby enabling the fruit to be carried in much better order and to keep longer.

Citrus fruits are much better this present season than for some years past, and it is questionable if better fruit have ever been produced in Australia than those now being marketed. Prices are by no means good; still those sent to the southern States have left a fair margin of profit to the growers, particularly for oranges and good Empress mandarins, though Scarlet mandarins are not easy to dispose of.

Table grapes, though only a light crop, have been of good quality, and this has been particularly the case with those growers in the Roma, Stanthorpe, Burnett, and Central districts. The vines at Roma have made a wonderful recovery from the drought, and the growth at some of the younger vineyards has been phenomenal. There is a great improvement in the quality of grapes now being grown in this State to that of a few years since; many of the inferior varieties of American grapes being replaced by high-class European ones. In order to assist grape-growers to get their fruit to more distant markets, a quantity of crates and baskets, as used in the American trade, were imported from Tacoma, U.S.A., and a number were distributed to growers in different parts of the State for trial, with the result that they have given general satisfaction, and a number of growers will use similar cases for marketing their next crop. The use of these grape crates will enable growers to get their early fruit on to the southern markets before the local fruit is ready, and also permit of its being sent to our more northern markets in excellent condition, thus greatly extending our present markets.

The cultivation of pineapples is extending in the North Coast, Wide Bay, Burnett, Bowen, and Cairns districts, and the quality in these districts has generally been good. In the older pineapple-growing districts near Brisbane, many of the plantations do not look too well, and, in order to see if their condition can be improved, a number of manurial experiments are now being carried out by Mr. Brännich and myself, the results of which will be published in due course. There is an increased demand for this fruit for canning, and were this business gone in for extensively and in the most up-to-date manner, I see no reason why we cannot compete successfully with our canned pines on the world's markets. In order to determine in what respects the Singapore canned pines excelled our locally canned pines, sample tins of each brand were obtained from Singapore, and carefully examined by Mr. Brännich and myself, and, as far as I can judge, our pines are superior in flavour to the pines canned in Singapore, but our get-up and packing is inferior to theirs; and this is a matter which we can easily rectify. The crystallising of pineapples has been commenced, and an excellent article has been turned out, which should meet with a ready sale, both in the Commonwealth and in oversea markets. The local production is very superior to the sample we obtained from Singapore.

In banana-culture there is little change from last year, except that in the North there is a tendency to decrease the output on account of the losses that were experienced in shipping during a part of the season; but, given better accommodation on shipboard, the industry will soon recover. The experimental covering of banana bunches with a cheap netting as a protection from fruit fly, has been a success, and a larger trial will be made this coming spring in the Geraldton district. This covering of the bunches will permit of the fruit being allowed to remain longer on the plant, and thus become better filled than at present, when it is usually gathered in a very undeveloped condition, which causes it to compare unfavourably with the Fiji-grown fruit in the southern markets.

During the year there has again been a large increase in the number of trees planted, and, judging from the large number of southern-grown trees now being introduced into the State, there is no appearance of any decrease in the present planting as compared with that of past years. The extension of planting is largely of citrus fruits in the coast districts, and of deciduous fruits in the Stanthorpe district, though a number of trees are being set out, mostly in comparatively small numbers, in many other parts of the State. The condition of our existing orchards is improving year by year, growers finding that unless an orchard is attended to and kept free from pests it won't pay. This applies more or less throughout the State, though some of the orchards in the North have been somewhat neglected, owing to the fact that growers have devoted all their energy to the production of sugar-cane, and have given little or no attention to their

orchards. Some, however, have given more care to their trees than in the past, and have gone in for systematic pruning and spraying, with distinctly beneficial results. In the more southern fruit-growing districts, many orchards, both citrus and deciduous, are being well looked after; the quality of the fruit produced is of especial merit, and it is conspicuous for its freedom from pests, particularly scale insects of all kinds. This is instanced by the quality of the fruit exhibited at such shows as Maryborough, Woombye, Wellington Point, and Stanthorpe, as well as at the district societies' competition at the National Show in Brisbane—quality that is improving year by year, and is unsurpassed in Australia.

There is a decided improvement in the handling and packing of fruit, and this, combined with active co-operation in its disposal and utilisation, should soon place the industry on a thoroughly sound basis.

In the utilisation of our fruits there is great room for improvement and extension, and our factories, whether same be run on co-operative lines or by private enterprise, should practically confine their attention to the fruits that are particularly adapted to this State, as by doing so they can secure the market of Australia for these particular lines. It is useless to try and compete with the southern States in the manufacture of jams, &c., made from southern-grown fruit, as our competitors can easily beat us in these lines, as having the fruit at their doors can utilise same whilst fresh, and therefore beat us in the quality of the product. We have the same advantages over our southern competitors with respect to our particular fruits, therefore we should stick to the utilisation of our own fruits, and put up same in such a manner that it will secure a ready sale.

A. H. BENSON, Instructor in Fruit Culture.

REPORT OF THE DAIRY EXPERT.

SIR,—I have the honour to submit my first Annual Report to the Department of Agriculture.

I joined the Department in March, 1904, and at once proceeded to make myself acquainted with the conditions of the country for dairying, and at the same time give addresses on subjects of practical value to those engaged in the industry. The then proposed Dairy Produce Act was freely discussed at all the meetings, and although much opposition was shown at the outset of my tour to such an enactment becoming an accomplished fact, this was gradually but surely replaced by a more enlightened view of the value of legislation to place the dairying industry of Queensland on a more reliable and profitable foundation. Queensland enjoys the honour of being the first State in the Commonwealth of Australia to bring the dairying industry under the influence of an Act of Parliament, and it is to be hoped that the other States will be encouraged to make a similar effort to improve their position as producers and exporters of dairy produce.

It is certain that Australia will never be equal to the demand placed upon her by the requirements of foreign markets until a radical change is effected in the sanitary conditions of dairies, and approved methods are adopted in the production of milk, cream, butter, and cheese. It is no longer a question of distance that prevents Queensland and the Australian States from attaining a higher position in the export of dairy produce to the central markets of the world, but it is the quality of the output before it leaves the shores of the Commonwealth. The Dairy Produce Act of Queensland has already proved a benefit to the industry, and, contrary to opinions expressed before it became law, the dairy farmers of Queensland now welcome the measure, recognising how necessary it was to safeguard their interests as producers, by improving the quality of export produce, and strengthening the confidence of oversea connections in the reliability of factory brands. It is justly claimed that until this is accomplished the low price of our butters compared with Denmark and New Zealand will show little improvement. Each year will add to the number of foreign competitors in the markets, in which they are strenuously endeavouring to develop a profitable connection and establish a thoroughly reliable reputation. That Queensland should have led the way in dairying legislation may be attributed to the fact that the State is peculiarly adapted for this branch of agriculture, and bids fair to surpass the sister States of Australia in the extent of its exports. The millions of acres of country suitable for the milch cow, the richness of the soil, and the suitability of climate to ensure an uninterrupted export of butter and cheese throughout the twelve months of the year make Queensland one of the most attractive dairying countries in the world. The development of the industry during the past two years has far surpassed the expectations of its most sanguine supporters. Further evidence of the adaptability of Queensland for dairying is to be found in the great recuperative properties of the soil, and which have been strikingly illustrated since the break-up of the drought.

FODDER CONSERVATION.—The possibilities of a recurrence of drought, to the irreparable injury of the industry in the less favourable districts of the State, should not daunt thousands of families from settling in Queensland and successfully following the pursuit of dairying. The misfortunes of the past were not wholly attributable to the dry years, but to neglect to conserve food for the milking stock. On many farms water is to be found within a few feet of the surface soil, and only in a few cases have attempts been made to utilise it for irrigation and other valuable agricultural purposes—*i.e.*, irrigation of the soil in the growing of lucerne, cultivation of fodder, and other crops. The conservation of food for stock is a matter the Queensland dairy farmer is obviously neglecting. The painful experiences of the past should make this subject one of paramount importance in the development of the industry.

CULTIVATION OF GRASSES.—The cultivation of grasses and forage plants throughout the dairying districts of the State should also receive closer attention, as the herbage consumed by the cow plays an important part in the flavour and keeping properties of butter and cheese. Practical and scientific investigations which I have conducted in the State prove that Queensland butter is easily injured on exposure to warm temperatures, owing to it containing a low percentage of the harder fats. The development of certain flavours in the produce arises from the inferior herbage. The cow's food is badly balanced, so to speak, there being an excess of watery or immature substances, which have a material effect on the solidity of butter.

EDUCATION.—Instruction in the science and practice of dairying has not received the attention this branch of the industry demands. In the initial stage of a rapidly-developing dairying industry all matters having an educational bearing on its success should be carefully fostered. Neglect at this stage invariably leads to misfortune, the rectifying of which entails much expenditure of money; and it takes years to retrieve the good name that would otherwise have been won. But although the facilities for educating the Queensland student on dairying are not equal to those at the command of the Dane, or on the same level with Victoria, the Dairy Produce Act will reach the practical man at its outset, and remedy evils which would otherwise cost the industry both wealth and reputation.

The education of an industry should claim the youth, and in a country like Queensland the subject of dairying should be included in the curriculum of every State and private school. Were the young instilled with the fundamental principles of practical dairying, the knowledge acquired would stand them in good stead in the work of the farm, and lay the foundation of a more successful career in agriculture. Experience in addressing the children attending public schools has proved to me the great value such a course of instruction would have on the future of the dairying industry.

MILKING STOCK.—Improvements in dairy herds have taken place during the past year, which is largely attributed to the introduction of fresh blood of superior quality. It is noteworthy throughout all the dairying districts that farmers realise the importance of laying a better foundation in their herds by the selection of bulls of reputed lineage, and cows showing the characteristics of profitable milkers and equally valuable for breeding purposes. The small animal of delicate constitution is quickly being replaced by the larger and more heavily fleshed cow, but care will have to be taken not to develop too much body at the expense of the true features of the milk cow. In the purchase of expensive dairy stock from the adjoining States very serious errors have been made by dairymen and others in neglecting to obtain a certificate from a qualified veterinary surgeon showing that the tuberculin test had been applied with negative results, and the health of the animals otherwise satisfactory. The spread of tubercular disease amongst stud cattle is a matter too important to be overlooked, and every effort should be made to reduce the number of affected animals. A healthy and vigorous constitution is looked for in the dairymen's stock, and this can only be realised by giving strict attention in the direction mentioned, and by care in breeding and feeding.

SCIENTIFIC WORK.—The value of scientific research to dairying cannot be over-estimated. Unfortunately, it has not the support of people it deserves, hence for the want of encouragement from outside sources it is difficult to establish the work as a necessary adjunct to successful dairying. In Queensland there is a great field of labour awaiting the dairy chemist and bacteriologist, and the profits to the industry that would accrue from their services would show that dairying has suffered heavily through the absence of scientific investigations. A State without a properly equipped chemical and bacteriological laboratory for dairy work is heavily handicapped in its efforts to accomplish work of lasting benefit to the industry. Taints in milk, cream, butter, and cheese are of daily occurrence in Queensland, and although ordinary examinations are useful, the strong arm of science must in the majority of instances be applied to if the cause of a defect is to be looked for and speedily removed.

EXPERIMENTS.—Experiments in dairying are an absolute necessity, and nothing should be permitted to interfere with its progress. The following have been carried out during the year. The application of cultures in cheese-making; cultivation of moulds from butter and cheese, and their reproduction in butter; action of temperatures on the keeping properties of butter; the action of temperatures on plant flavours in butter; experiments to determine shrinkage in cheese; coating tests, &c. An exhaustive experiment is at present in progress to test the suitability of Queensland pine for butter boxes. Practical examinations and chemical analyses of butter and cheese have been made throughout the year, reports of which have appeared in publications issued by the Department.

The appointment of inspectors to enforce the provisions of the Dairy Produce Act has resulted in a noticeable improvement in the sanitary condition of dairies, and the erection of up-to-date buildings by milk and cream suppliers throughout the State marks an epoch in the history of the industry. Encouraging reports have been received from factory managers on the better quality of milk and cream supplies, and although there is still great room for improvement, it is gratifying to know that an advance in the right direction has already been made. Dairymen must be congratulated on their speedy response to the Department's order to apply linewash to dairy buildings, thereby complying with the demands of the Act.

White and cleanly walls now replace the dark and dirty-looking appearance hitherto presented. Other improvements are being gradually carried out, and only incidental cases of reluctance on the part of dairymen to comply with the instructions of inspectors are met with.

MILK SUPPLY.—The milk supply of cities, towns, and villages is a subject of very great importance, and should receive strict attention by municipal bodies and responsible authorities. The health of infants is dependent upon the nourishing properties and purity of milk, and in their interests alone the supervision should be most efficiently carried out. There are also the hospitals, where large supplies of milk are daily received for consumption by the patients, and no stone should be left unturned to protect those institutions against the possibility of a contaminated milk supply, or to allow any interference with the quality of the product. It would be a step in the right direction if municipal bodies had the necessary accommodation and apparatus to conduct testing of milk on practical lines for the benefit of the milk-supplier and general public who may desire to avail themselves of its usefulness. A nominal fee could be levied to pay for the testing and expenses incurred. Such a course, if conducted on sound principles, would give much better results than the miserable practice of obtaining samples of milk for analysis as carried out in Brisbane and other cities. While inspectors act as detectives and policemen, and fail to enforce the law, adulteration of milk will be more generally practised. Brisbane would do well to copy the example set by the Rockhampton Municipality, where an effort is being made to protect milk consumers by a more legitimate means.

LECTURES.—Since the 10th April, 1904, I have delivered public lectures on dairying at the following centres:—Boonah, Lowood, Rosewood, Laidley, Gatton, Helidon, Meringandan, Crow's Nest, Toowoomba, Oakey, Pittsworth, Clifton, Allora, Warwick, Yangan (2), Boonah, Beaudesert, Goombungee, Ramsay, Southbrook, Greenmount, Tannymorel, Harrisville, Killarney, and Samford.

In the Central division thirteen additional public lectures were given.

In touring the State I addressed twelve schools on elementary dairying. I have also given practical demonstrations in Cheddar-cheese making at the undermentioned factories:—Glencairn, Southbrook, Goombungee, Pittsworth, Ramsay, and Yangan.

PUBLICATIONS.—A large portion of my work has been omitted from this report, as the subjects have already been dealt with in bulletins issued by the Department, and by contributions to the departmental *Journal* and Press. To the *Journal* I have supplied the following articles:—"How to Keep Milk Sweet and Cool"; "Causes of Variation in the Butter-fat Percentages and Weight of Milk and Cream"; the latter appearing in two issues. I have also written a separate treatise on the following subjects:—"The Cheddar-cheese Industry—Its Science and Practice"; "Instruction to Dairymen"; and "Instruction to Butter-makers."

BUTTER GRADING.—Queensland has been the first State in the Commonwealth to make the grading of butter compulsory. That grading is of the highest value to the industry must be accepted by every intelligent person. Some have taken objection to grading for reasons of a trivial character, while others have waged a fierce war against it on the lines of interference with private enterprise. Those who understand how grading is carried out will recognise the protection it gives to the industry generally, and no one will enjoy its great benefits more than the dairy farmer. Without a strict classification of butter for export, an industry cannot possibly prosper, and Australia is suffering heavily to-day in the world's markets through the absence of a universal application of the system. It is a well established fact that choice butter at the steamer's side will retain its good flavour for months if the temperature of the cool chambers is kept sufficiently low. Why, then, should grading be feared in the instance of a choice product?

But it is the low-grade quality that some Australian exporters wish to be left untouched—the very substance that has been doing permanent injury to the reputation of the Commonwealth as a reliable butter-producing country. Possessed of the knowledge that low-grade butter will not lose its bad flavours in cool

storage nor improve by age, it is surely safe to stamp it in accordance with its quality. There is also the educational side of grading, which is of priceless value to the butter-maker, who receives a certificate detailing the quality of his shipments, and pointing out existing errors, and how to prevent their recurrence.

BUTTER GRADED.—The two grading inspectors have had their time fully occupied attending to five export depôts where the work is being carried out. Since the 10th of April the following have been examined and stamped according to quality:—

Boxes of Butter.	Approved for Export, No. 1.	Approved for Export.	Not Approved.
	<i>Butter.</i>		
Boxes of 56 lb.	39,945	1,550	659
Boxes of pats (50 to 52 lb. in each)	3,180	...	...
Boxes of tinned butter (100 1-lb. tins in each)	205	...	...
Boxes containing 60 2-lb. tins	8	...	...
Box containing 1 56-lb. tin	14	...	...
	<i>Cheese.</i>		
	21,958 lb.	...	...

In considering the above, it must be remembered that compulsory grading in Queensland only applies to butter and cheese for export beyond the Commonwealth, otherwise the number of boxes would be greatly increased. I must also point out that large quantities of butter of second quality had been withdrawn from grading at the request of agents, and sold locally. This being the case, the proportion bearing the stamp "Approved for Export" is less than it would otherwise have been. Many weaknesses in the export of butter have been brought to notice by the grading inspectors, chief amongst which is the mixing of qualities under the one brand. That this practice has been damaging to the industry is shown from the following extract from a letter recently received from a home buyer of Queensland butter, in reply to inquiries made regarding the chief defects complained of in the British markets:—

"To the second query we would reply that we think the chief defects in the early part of the season were the irregularity in quality of boxes coming under the same brands, also a tendency to staleness in flavour."

The grading inspectors have been most painstaking in their responsible duties, and they are to be congratulated on the good work done at the butter-grading stores.

G. S. THOMSON, Dairy Expert.

INSTRUCTOR IN TROPICAL AGRICULTURE, CAIRNS.

SIR,—I have the honour to submit my Report for the year 1904-5. During the year the title of my appointment has been changed to one more in keeping with the duties performed—from that of Instructor in Coffee Culture to Instructor in Tropical Agriculture—and the scope of my work has been somewhat increased, it being found that as the Northern portion of the State becomes, slowly, more settled, not merely is work of the officer resident in the North steadily increasing and becoming more exacting, but that tropical industries other than coffee are demanding attention.

A certain amount of touring is necessary for inspection, advice, information, and demonstration in these other industries, which could not rightly be included with coffee cultural work. This season the touring work has not been increased to any extent, but, not only for such industries as I have hinted at, whether they be main or auxiliary, but also in view of the fact of the impossibility of the instructors in fruit culture, tobacco culture, &c., visiting the North except at comparatively long intervals, this touring is advisable and necessary for the agricultural advancement of the district, and very much needed.

COFFEE.—The coffee crops in the North generally, although good, and very much better than in previous seasons, have not been as good as last year. This is due partly to the fact of the season not being so favourable during blossoming time, and partly as the natural sequence to a good season.

During the year one or two growers have dropped out, giving up their small plantations, which is to be regretted for their own sakes, since they have struggled through the bad weather and difficult times, and the conditions, the circumstances, and the prices, are now favourable and are improving. On the other hand, in a few instances the areas have been slightly increased, and more growers—since the Government has stepped in and offered facilities for curing and sale—have expressed their intention of extending their coffee plots. The erection by the Department of hulling, separating, and grading machinery at the State nursery, and the curing and placing on the market, if so desired, of the crops of growers is, and will be, a great incentive to the culture of coffee, as well as a great boon to the smaller growers. It is only to be regretted that this curing plant could not have been available two or three years ago, when the greatest pinch was felt—crops were smaller, and prices lower.

At present, prices are on the increase, and a distinct demand in excess of supply exists—a very favourable feature—and, consequently, the difficulty of disposing of crops is not so great. Also, a number of growers—whom assistance a year or two back would have enabled to hold on, and by now have turned failure into success—have gone, and some who have held on have obtained a sale for their product to private customers: and, moreover, the shorter crop with the increased demand has meant the absorption of some considerable portion of the output locally, and by local manufacturers, who are able to quote for the crops cash prices at the nearest railway station, if not on the estates.

This, while an excellent inducement to extension of the industry, will mean that the privileges and facilities of realisation offered by the Department will not be availed of to any great extent this first season. Even the matter of improvement of prices for coffee properly graded and packed, as compared to ungraded, will show to a greater extent, naturally, in the second and subsequent seasons than in the first, and the moral support accorded the industry by the mere fact of the existence of such works and machinery, as evidencing the interest and pledging the support of the Government, is an advantage that while very real is nevertheless not one that can be shown on paper or immediately demonstrated by statistics.

The coffee crops this season, especially in the North, are later even than last year, so that in many instances at the time of writing this report, the harvesting is only partially completed. It is too early in the season, therefore, to give any figures as to the amount, quality, or condition of coffee sent in to the curing works for treatment, &c. So far, coffee has been received from four growers, but considerably more will be sent in shortly.

The building of the room for this coffee-curing work, under the office at the State Nursery, Kamerunga, the planning and arranging of the machines, and the erection of the engine (a 2½-horsepower oil engine), the huller (a large Smout's, with fan for removing the parchment and silver skin, polishing and winnowing the coffee), the Peaberry separator (John Gordon, London, for removing the round or pea berries in two sizes), and the grading machine (also Gordon's, for grading the coffee into three sizes), and the necessary connecting shafting, pulleys, belting, &c., have added considerably to the work this season.

The curing of crops, hulling, separating, grading, bagging, marking, and despatching, will take up a considerable amount of time also.

THE DISEASES IN PLANTS ACT.—The inspection work at the wharves has been somewhat lighter this year, a less number of bananas having passed for inspection. This was due to several reasons—early in the season, owing perhaps to the dry weather, not many were offering; later a considerable quantity, in fact, a heavy crop, was available, but the shipments were not even normal, owing to the low prices ruling, due to the large quantities of southern (mostly Tasmanian) fruit on the markets at the time.

Garden inspection has been carried out systematically and well. This work is a very necessary adjunct to the wharf inspection, as fruit fly and other pests are more troublesome in this district than in many others. On account of the mixed varieties of fruit grown and the indifferent attention paid to fruit culture and orchards in general.

This year a considerable extension of the area under bananas in the vicinity of Cairns has taken place; only slightly in the direction of the Russell and Mulgrave, but amounting to nearly 300 acres in the Jungara district. Fruit from these gardens will be coming in early in the season, but are being kept back as much as possible till the markets improve.

The amount of inspection work in connection with imported fruits, &c., was about the same as, and perhaps slightly in excess of, last year. This work occupies some considerable time, and necessitates the attendance of the inspector on the wharves on the arrival of every boat, large or small, and at almost any time of the day.

I am of opinion, therefore, that the small fees charged for the inspection of export fruit might reasonably be charged for the inspection of incoming fruit or plants, &c., unless a certificate of a State inspector, which would indicate that such fees had already been paid, can be shown.

It would also be advisable, if possible, that the inspectors have authority to prohibit the importation of fruit or general agricultural produce landed in a condition totally and obviously unfit for human consumption, even though none of the pests or diseases specified in the Diseases in Plants Act may be apparent.

I would again reiterate the suggestion of the advisability of inspecting and charging for fruit consigned to Queensland ports—for uniformity, to prevent the shipment to home ports of fruit condemned as unfit for export to other States, and in view of the fact that the small inspection fees would not be felt by the shippers. This is shown by the fact that this season come to light, of one or two agents making a practice of charging the growers the inspection fees on such consignments, although these are not charged them by the Government.

With regard to the eradication of noxious weeds, pests, and diseases, &c., this work has been gradually pushed on as far as possible without being rigorously enforced. A number of landowners have cut down and destroyed old and abandoned fruit trees, and exterminated wild guava on their lands. Some of the public bodies also have given this important matter attention, but a great deal remains to be done, even in keeping such pests in check, before general improvement can be looked for, or extermination talked of, and it remains for the more enlightened public bodies to lead the way.

Mr. F. C. Connolly, the Diseases in Plants Inspector, has done good and steady work during the season.

In the course of the year I have reported at length on the advisability of the whole of the Northern diseases in plants work being under one head, in order that the work may be systematic, a due check be exercised on the work of the smaller ports, uniformity of returns, accounts, and reports, irregularities be promptly looked into, and the work of the different ports regulated, as well as the leave, &c., of the various inspectors, instead of as at present, when work is slack by reason of the temporary falling-off of exports in one port, in another locality there being insufficient inspection owing to temporary increase, or one inspector enabled to take leave twice in one year while another cannot get even a short holiday once in several years for want of a relieving officer. The interchange of information regarding markets between the North and the South would be of reciprocal advantage, but especially advantageous to the North, by, on occasions, saving loss to shippers to an unfavourable market, possibly glutted with fruit from other centres, and by indicating temporary markets and outlets for excess fruit. The output could be very largely increased from the present areas under cultivation if only the markets could be indicated.

FORESTRY WORK.—This season again my services were requisitioned by the Lands Department, to undertake the planting up of more cedar seedlings in the reserve at East Barron, near Atherton. Last season 1,735 cedar plants were put out, at a total cost of £32 12s. 8d., equal to about 4d. per plant; 103 Bunya Bunya pine plants, and 105 Carob bean-tree plants were also put out; of these about 20 per cent. of the former are growing fairly well, but the rest, and all the Carob plants, failed to survive the transplanting. Not enough teak plants were found to be available at the State Nursery to make an experimental planting of; a few were, however, planted out in the grounds of private settlers at Tolga, Atherton, Carrington, and Herberton. These are all doing very well. This season some 2,583 plants of cedar, and 100 plants of mahogany, have been put out in the same reserve, at a total cost of some £33 17s., excluding the cost (£1 10s.) of a secondhand but serviceable prismatic compass. This works out at 3.02 pence per plant, a cheaper rate than has hitherto been attained. Last year's, as well as previous seasons', planting of cedar have grown very well, some making splendid growth, and being now 6 feet to 8 feet high. Others are from 2 feet to 4 feet in height. Of the whole plantings, about 5 per cent. missed or failed to strike. Mr. W. Stovell, who carried out the previous plantings, started this season's work also, but left to take up a permanent appointment, giving place to Mr. A. Maddock.

The Honourable the Minister for Lands visited the reserve during the season, but, owing to limited time, was only able to inspect a few of the earlier plantings. An article describing the work was written and published in the *Agricultural Journal* in December, 1904.

TOBACCO CULTURE.—The visit of the Instructor in Tobacco Culture to the North created an interest in the matter of the cultivation of cigar tobaccos, for which the Northern climate and soils, it would seem, are especially suited. A few farmers undertook to make experimental plots, some expressing their intention to cultivate tobacco, but very little was brought to maturity. The interest created during the visit of the expert himself is apt to wane, unfortunately, and visits at lesser intervals are necessary to keep up the interest sufficiently long to complete at least one season and crop, which would prove the feasibility and payability of the culture of the product. More frequent visits of the experts and instructors, were it possible, to the North, are necessary in the interests of the settlers themselves, to overcome their natural

apathy, conservatism, and fear of loss through inexperience (or the absence of conveniently obtained expert advice) in attempting what are to them new industries. In several of the instances mentioned want of success was experienced in germinating the seed, due mainly to want of knowledge, apparently, but it is anticipated more will be grown in the coming season.

An experiment was conducted at the State Nursery, under the advice of the Tobacco Expert, which was described in detail in the report of that institution, and which went to show that with due care in the earlier stages successful cultivation of the plant is almost assured.

COTTON.—Several small areas, varying from 2 to 20 acres, have been planted this season. The best of these are near Atherton. Unfortunately, when the crop began to ripen, wet weather was experienced, to the detriment of the cotton, but less loss will be sustained than was at first thought. A cotton gin has been supplied by the Department, and erected at Kamerunga for the treatment of the crops of the district. The season in the North for cotton, as for many other staples, is later than in the South, so that while the season is nearly over in the vicinity of Brisbane, and the cotton mill contemplating closing up again, the crops here are only being harvested, and no cotton as yet has been sent in for treatment.

It is hoped that unusual weather this first season will not discourage intending growers, and that it will be borne in mind that the perennial cottons generally bear not only a heavier crop in the second and subsequent years, but often bear earlier in the season.

FIBRE-PLANTING.—A few small areas of sisal hemp have been planted this year, and larger areas have been talked of, but, so far as I am aware, not yet attempted. With promise of extension of the culture of this product in the North, the erection of a small decorticator at Kamerunga might also be worthy of consideration.

POULTRY-RAISING, ETC.—The visits of Mr. Fern have given a great stimulus to this industry, which has been very generally taken up. Although large poultry yards are still few, the very great improvement in the varieties of breeds and qualities in almost every small yard is very noticeable.

Dairying is also continuing to receive more practical attention from settlers and farmers, the butter factory recently erected at Cairns providing an outlet for small quantities of cream from the outlying selections, &c. Grass and water have been plentiful during the season, and ticks, though by no means disappeared, seem to have lost their deadliness, or the stock is becoming immune, with the result that selectors' herds are gradually increasing again. Some attention is being given to half-bred Angora goats, and several good flocks and imported Angora bucks are to be found in the North. Greater attention to stock has created a demand for fodders and pasture grasses; *Paspalum dilatatum* has been planted up considerably, and while below the range, opinions are somewhat divided still, above the range and on the tableland it has been an unqualified success. There is a steady and not inconsiderable local demand for dried fodders, in the form of the various hays and chaffs, the majority of which is imported from the South, and it is inscrutable why the local farmers and settlers do not make a greater effort to supply it.

FRUIT CULTURE.—The cultivation of citrus fruit is still not receiving the attention it warrants. The best citrus fruit in the North is grown at Port Douglas, but very fine qualities of mandarins and oranges, &c., could be grown in many other parts were the orchards accorded ordinary attention. More detailed work in the direction of inspection of orchards for pests and diseases, and advice and demonstration of spraying, washing, collecting of fallen fruit affected by fruit fly, &c., as well as advice regarding culture, pruning, grafting and budding, gathering, curing, grading, packing, and marketing of the fruit, is much needed. In this direction the remarks made earlier respecting the visits of the instructor apply equally forcibly. The services of the Diseases in Plants Inspector are employed in this direction, as far as is possible, in connection with his garden inspection work, but, owing to his being single-handed, and tied by the wharf inspection duties, his efforts are restricted to a very limited area.

Efforts are made to supply advice and information (always under the advice of the various instructors themselves, so that no overlapping of work or contradictory advice may be given), in the absence of the experts, to settlers and growers, but it will be seen that the work is itself so great that the time it is possible to devote to it can be but a fraction of what is really required in the interests of the Northern districts.

The Agricultural Conference, being held in Cairns this season, my presence was desired, and a paper was read on "Auxiliary Tropical Products," and illustrated by a few samples of seed, fruit, fibres, &c. Small and informal lectures are given from time to time, to persons interested in certain agricultural products, during tours to the different localities.

Several object lessons on various tropical economic subjects were given at the State school, Cairns, during this year, and arrangements are now being made for classes, from time to time, to come out to Kamerunga, from this and other State schools in the vicinity, for lectures and object lessons at the nursery itself.

Personal applicants for advice and information occupy a considerable amount of time, and applications for exhaustive cultural information on widely differing subjects, by letter, are steadily on the increase season by season.

Articles are also written, as time will permit, for publication in the *Agricultural Journal*, but pressure of work will not admit of the attention to this phase that might be desired and advantageous.

The duties of the office, as will be seen from this report, have increased to such an extent, especially now that the rumping of the machinery for treating coffee and cotton, &c., has been also added, that the employment of an assistant has become imperative. Even after the actual coffee and cotton harvesting season is over, there remains so much routine clerical work that if an office assistant is not granted a considerable amount of the work will have, perforce, to be left undone, or at least not receive the attention necessary in the interests of tropical agriculture in Northern Queensland.

HOWARD NEWPORT, Instructor in Tropical Agriculture.

REPORT OF THE TOBACCO EXPERT.

Sir,—I have the honour herewith to submit my Annual Report upon the tobacco-growing industry of Queensland for the past year.

The crop of 1903 and 1904 proved fully 25 per cent. larger than was anticipated when my last report was made, it having reached fully 425 tons, all of which, except some 25 tons, has been sold at prices ranging from 4½d. to 8d. per lb., or an average of something near 6½d. per lb. all round, or about £60 per ton. The yield was about one half-ton per acre, hence the return to growers of about £30 per acre average was very satisfactory.

Of the unsold, some is very inferior, and must fetch a low price, if sold at all; but the greater bulk of it is a serviceable tobacco, and will doubtless be disposed of at satisfactory prices later on.

The crop of 1904 and 1905 is probably a record one for the Texas and Inglewood districts, both for quality and quantity—the total yield will be something near 500 tons; it is mostly from improved varieties of seed, of the very best sorts.

The weather for transplanting was favourable early in the season, and much of the crop was then planted, and matured early, and consequently has cured well, with much that is bright and light-brown, well suited for wrappers, and thus will displace a goodly amount of American.

The year has been exceptionally favourable for the tobacco crop; barely a trace of blue mould, which wrought such havoc last year, has appeared, owing to fine weather; the stem grub and cut worm, that usually give so much trouble at transplanting time, were scarcely in evidence at all, owing, I think, to the great amount of young and succulent vegetation growing at this time.

The harvested crop is decidedly the most valuable one secured to the growers since my stay in Queensland, and I believe it will improve the reputation of our product with the manufacturer and the consumer, and this improvement has, in my opinion, come to stay, and to improve, as our growers are now realising that careful handling, and planting only the best varieties are necessary if they are to continue to have a market for their crops.

The manufacturers are insisting upon this, and they are right in doing so, and its good results are being shown.

At the State Experimental Tobacco Farm we have grown between 15 and 16 acres, and have taken a second crop off about 4 acres, and the yield will be between 8 and 10 tons. Five varieties were planted, given below in the order of their merit:—

Lacks.—An early variety, hardy, thrifty grower, very small stem and fibre, yields well, and cures well and easily, adapts itself well to varying soils. One-half the crop of this variety. The second crop taken from this.

Yellow Pryor.—Fairly early, large and rapid grower, fair yield, not too coarse, cures easily, and of good colour, and, when soils are light, very bright. Am inclined to believe this will become a favourite and valuable tobacco to the growers, and will give satisfaction to the manufacturers. Only one half-acre of this was grown.

Hester.—Fair size and yield, ripens early and uniformly on the stalk from top to bottom, inclined to cure irregularly, should be primed high and topped high. One-sixth of the crop was Hester.

Kentucky Yellow.—Same as Hester. One-sixth of this.

Blue Pryor.—Large and thrifty grower, big yield, inclined to cure dark and to be a little coarse on heavy soils, fairly early. One-sixth of crop.

Am having analysis made of tobacco grown at the State farm and at other places, at various stages of manipulation, with the view of comparing results of different methods of curing and handling, hoping thus to be able to discover and eliminate some of the objectionable features of our local tobaccos.

R. S. NEVILL.

REPORT OF THE COLONIAL BOTANIST.

SIR,—I have the honour to submit the following brief summary report of the work appertaining to the office of the Colonial Botanist for the year 1904-5.

Applications for information, especially during the last half, were unusually numerous, proving that the interest taken in plant life has by no means lessened, and that the information given still has the respect and esteem of the many persons engaged in the various phases of plant life. Owing to the introduction of "Nature Study" into the curriculum of the State schools, much information has been sought by those engaged in teaching the subject of botany.

I deeply regret that for several years past I have not been allowed funds for additional herbarium cases, and also museum cases, in which to display fruits, gums, resins, and similar articles, information on which is daily sought by artisans and others who make use of such in their various callings and professions, and particularly by students who are under training for various professions, and also by their teachers.

I must again draw attention to the great need there is for continuing the work of adding to the wood collection. Surely after gathering together samples of over 600 kinds of our woods, out of the 1,000 known to belong to Queensland, I might be intrusted to continue the work. I may here state that this collection of our woods is unique, for although duplicates of them have been regularly sent to England for exhibition, they have not been kept in their entirety there. I am not asking that the kinds lost in England be made good, for if the authorities there do not know how to take care of a good thing when it is entrusted to them, they have no right to expect the State to make good the loss. I think, however, that a small sum should be allowed yearly to carry on the collecting and preparing of examples of the remaining 400 odd.

Owing to the sum of £10 only being allowed for the purchase of books for the library, only a few periodicals could be obtained, but additions have been made by gifts from foreign and other institutions. Books are of the greatest importance to a botanist; indeed, he can no more work without them than a ploughman can plough without a plough. The herbarium has been steadily added to by specimens sent in for determination, among which a number proved to be new to the State's flora, and some new to science. Of these latter were two previously unknown species of "Pitcher plants," which brings the number of Queensland species of *Nepenthes* up to ten. Were it not for the large number of lovers of plant life among my Queensland correspondents, little would be known of these new plants, except from foreign visitors to the State, who collect while on their travels for European botanists. These private collectors who send me specimens, often travel many miles to obtain them, and their good work, although a labour of love at the time, will long be known and appreciated. All additions, as opportunity occurs, are published in the *Queensland Agricultural Journal*, so mention of them need not be made here. By reference to these notices it will be seen that a few shoots bearing some nearly ripe fruit of the pine, referred to in my last report, have reached me, and I have been able to place it in its proper genus.

Many of my foreign correspondents are anxious to obtain for cultivation, our indigenous plants, especially those of an economic character. This is most gratifying to me, for I have advocated such being done in this State for over thirty years, without effect. Now there is some chance of these plants being so greatly improved that in a few years Queenslanders will be found purchasing the offspring of their own indigenous plants, at high prices. I have time after time published accounts of these plants, but have found it difficult, for want of funds, to obtain seeds or plants of some of the most desirable, but those I have obtained have given satisfaction, and more are desired. Much might be accomplished in the way of making known our indigenous vegetation were Government officers, stationed in distant and little known districts, asked, whenever opportunity offered, to collect and forward botanical specimens of the plants about them to

the Colonial Botanist, from whom they would receive in return the names and also any other information which would prove of interest to them, and those proving new or fresh to the State would be duly published. This difficulty of obtaining seeds and specimens would have been overcome had the Botanist been allowed a collector similar to other States and countries. Here, however, nearly all collecting has been done by private persons, either at my solicitation or from their love of plants, and I feel proud of the free help that I have received; indeed, one need only look over my publications to see how generally a love of plants is distributed among Queenslanders. There has been a constant call for copies of my smaller publications, and the issue of a number of them has become exhausted. I still have copies in stock of the third edition of the "Queensland Woods," the second edition of the "Companion for the Queensland Student of Plant Life and Botany Abridged," and the smaller pamphlet on some Queensland grasses. I have in course of preparation a work which should prove useful on the "Weeds of the State," including those of the garden, field, and pasture. A work of this kind would require to have an illustration of each plant (about 300). The figures would be small, therefore not costly. Such a work would not only be useful to cultivators of the soil, but also to divisional boards, schoolmasters, &c., who are constantly applying for the information it would contain. Through the kindness of Mr. F. E. Clotten in supplying funds for the purpose, I have had a general index printed for the "Queensland Flora," which now makes that work complete. In November last I paid a visit to the neighbourhood of Wilson's Peak, to report to the Minister for Lands on the timber trees growing on a portion of the road between Killarney and Boonah. In April my assistant visited the Darling Downs to collect native grasses for growing at the Hermitage State Farm. He also visited the Agricultural College weekly, to conduct the botany classes there.

As I have before noticed in these reports, the additional fungus blights which have attacked the vegetation during the year, I may remark that the horse-radish plants in some gardens near Brisbane have had the leaves greatly injured by the blight *Cercospora armoraciae*, Sacc., and that the leaves of rose bushes have been greatly disfigured by the rose blight *Septoria rosae*, Desm. One of the Banksias (*B. integrifolia*, var. *paludosa*) has also been attacked with the blight *Sphaerella Banksiae*, Cke. and Mass.

F. MANSON BAILEY, Colonial Botanist.

REPORT OF THE ENTOMOLOGIST AND VEGETABLE PATHOLOGIST.

I have the honour, with reference to the work of the office for the year ending 30th June, 1905, to report as follows:—

VISITORS.

These have been even more numerous than in past years, the outcome, doubtless, of the more enlightened interest in agricultural and horticultural pursuits that is from day to day being evinced, and of an opinion, apparently shared by those that are engaged in these primary industries, that one may be qualified to tender more pertinent and practical counsel with riper experience.

The important questions submitted by such personal applicants are too numerous and diverse to be specified. They—many of them, however—suggest that the problem that has to be met is not that connected with the mere growth of a staple crop, but such as relates to the prevention or overcoming of injurious insect attack or disease that, notwithstanding other conditions may favour it, renders this growth of little or no avail.

CORRESPONDENCE AND REPORTS.

Those that have dealt with the majority of the ordinary matters relating to entomology and plant pathology, mentioned in previous annual reports, need not again be enlarged upon. The following more special topics that have formed matters for literary treatment may, however, be specified.

ECONOMIC ENTOMOLOGY.

Fruit Fly Maggot (*Tephritis Tryoni*).—Instances of cherries being attacked by this notorious fruit pest in the Stanthorpe district during November were reported on. A peculiar affection of passion fruit, moreover, usually ascribed to quite a different cause, has been found to have been occasioned by the same insect also, and to constitute, in fact, evidence of spontaneous recovery from its onslaught. No instance of pineapples exhibiting fruit fly attack were brought under notice during the year, or, indeed, has ever yet been remarked by this office. A statement that is made in view of the fact that an officer connected with the Department of Agriculture of New Zealand (Captain T. Broun) has reported having reared the insect from fruit of this kind, derived in the course of ordinary importation from Queensland; and that, moreover, the insect submitted by the New Zealand authorities as having thus originated, proved undoubtedly to be an example of our local insect. In explanation of this opposite experience, it must be pointed out that, in the case of fruit fly infestation, the inspection of large consignments of pineapples, on their arrival at a distant destination, affords an especially favourable opportunity for a discovery of this nature, should it be practicable.

An inquiry ordered by the Department for the purpose of estimating the outcome of some experiments conducted by an orchardist at Sunnybank, with a view to testing the deterrent action of a special composition against fruit fly attack on oranges, disclosed the fact that apparent results had been realised favourable to its efficacy in this respect. It was, however, subsequently reported to this office by the experimenter referred to (— Mayne), that on further tests being made this deterrent action, that at first appeared to attend its employment, was not found to be secured with any degree of constancy. This is mentioned because considerable publicity was given to the apparent satisfactory outcome of the experiment alluded to, even beyond the limits of this State, with corresponding extended encouragement of hopes in combating the pest that could not be realised; and, moreover, since it serves as evidence of the futility of basing conclusions on experiments regarding the action of substances for coping with injurious insects, and so of formulating practical operations dictated thereby, when such experiments have not been devised with a full knowledge of the conditions that they should be made to comply with, and that can alone be derived from a special understanding of the subject.

Inasmuch as it frequently happens that maggot-infested fruit that subsequently proves unsaleable possesses little to detract from the quality, on which its marketable value is dependent, when gathered, owing to the very low stage that the insects occurring in it may then have arrived at—that of the egg, or very earliest, in many instances—and the consequent non-supervention of the secondary changes that they in due course give rise to, it has been concluded that it would serve a useful purpose were its insect freight promptly destroyed at this early period, whilst at the same time an efficacious insecticidal process, as far as this fruit was concerned, would be secured. Accordingly, the Department ordered—it is understood at the instance of Mr. Inspector D. Jones—that experiments should be conducted to test the efficacy in this respect of low temperature, sustained for some time, on living maggots already contained in fruit that was being subjected to it. In reporting in some detail the outcome of these, it was shown (1) that, with the temperature ordinarily realised in cold storage of fruit the maggots were generally merely rendered dormant—not dead; but that if they had attained some size, and their injuries had initiated fermentative changes, they were asphyxiated

though being unable, in consequence of this state, to move from the scene where these changes were taking place; (2) that, with the temperature approaching the freezing point (35 degrees Fahr.) for fourteen days, and apparently on occasion reaching this, both maggots and eggs (present in one instance) succumbed; although in this case, too, the same cause of death as had operated in the previous experiments was in evidence in many cases, the dead maggots having acquired a dark-brown or black colour, and their alimentary canal being packed with *Saccharomyces* cells.

Public attention having been directed to the possibility of holding, by means of a natural enemy, this serious fruit-depredator in check, through accounts published of a special enterprise undertaken by Western Australia to discover, transport thereto, and establish therein, a parasite or parasites for the subjugation of a related insect that had already become naturalised there, a report was furnished in December dealing with this aspect of the question also, in which amongst other particulars furnished were narrated the results so far attained by the State referred to, as well as the discoveries of this office in the matter of a fruit fly parasite (*Opius op.*, Fam. Braconidæ) made already some years since.

CITRACEOUS PLANTS.—In the course of a visit to the Woombye district, it was learnt with regret that one of the worst scale insects of citraceous plants, the Mussel Scale—*Mytilaspis fulva* (synonym *M. citricola*)—originally introduced from Florida and from the Mediterranean region independently, had become established in several of the gardens there, and evidently in the first instance through the agency of nursery stock; and thus was confirmed, evidence of its occurrence there, afforded by the receipt in Brisbane, in two instances, especially commented upon by this office, of consignments of fruit subject to its presence. But, it was especially deplorable to remark that, whereas a single orange-grower there was using every endeavour to cope with the existence of this pest, having already provided himself with the most approved appliances to this end, others regarded its presence with complete indifference, whilst, meanwhile, their scale-infested trees served as centres for its further dissemination. Such incidents may be repeated, as long as the provisions of the Diseases in Plants Act are not enforced—in deference to unenlightened public opinion—either in their application to local agencies for plant distribution, or to negligent orchardists.

MANGO.—Another scale insect, that is extending wider and wider afield, and primarily, too, through the agency of young plants, is the White Mango Scale Insect (*Chionaspis dilatata*), originally brought here from India and Ceylon. Fortunately, however, the injury that it occasions is insignificant compared with that for which the foregoing insect is responsible, in the case of its host plants.

GRAPE VINE.—In September the occurrence of a small dark bronzy-brown coloured beetle (*Scerodonta*) was reported as doing considerable damage to grape vines in the Myrtle town district, as it had previously done in other coastal districts, and this incident led to the preparation of a detailed report, circulated in the district, through its parliamentary member, dealing fully with its habits and the methods to be adopted in overcoming its presence.

COTTON.—The renewed attention bestowed of late on the cultivation of cotton, as the outcome of the special advocacy of its growth by this Department, has led—as is apparent from the correspondence of this office—to the discovery of the fact that the plant (and its product) is liable to insect attack, to a greater or less extent, in almost every district where it is grown, its depredators being furnished by members of our native insect fauna, with the exception only of a single introduced species. Two instances afforded by Biggenden and Pialba of its being victimised to some extent by the scale insect *Lecanium nigrum*, Nietner, have been brought under notice: a stem- and boll-borer, the caterpillar of a small moth, *Dichocrocis punctiferalis*, Guenee (Fam. Pyralidæ), has been reported as being at times quite harmful at Dunmore, Biggenden, Pialba, Ipswich, Goodna, Brisbane, and elsewhere; a second boll-borer (*Earias fabia*, Stoll.) has formed an object of complaint and inquiry on the part of growers on the Darling Downs and elsewhere west of the Dividing Range—e.g., Emerald, in the Central district; a cotton-stainer—a species of *Dysdercus*, *D. sidae*....., related to the American insect bearing this popular name—has been sent from Charleville, Ipswich, Pialba, and elsewhere; a second species of cotton-stainer (*Dysdercus cingulatus*, Fab. aff.) has been submitted from the Murray River, and remarked as occurring there in thousands on the bolls when these are ripening, and so staining the fibre; a much smaller hemipterous insect—the false Chinch Bug (*Oxycarenus Frenchii*) has similarly been reported as damaging the fibre of the opening bolls at Ipswich and Charleville; the large Banksian Shield Bug (*Tectacoris Banksii*, Fabr.) has been stated to injure the plant at the Murray River and elsewhere. A small red-coloured ant has been credited with possessing the habit of gnawing the seed of the cotton already harvested at Mitchell; grasshoppers are stated as having defoliated the plants at Charleville and in more eastern localities of the State. A cricket (*Gryllidæ*) submitted by a Pialba correspondent, is not considered to be addicted to injuring cotton, merely being in the habit of frequenting the opening boll as a place for safe concealment during the hours of daylight; finally, complaint has emanated from the Gayndah road of “an insect that gets into the flowers and causes them to drop off,” a statement still to be confirmed by the production of specimens of the insect concerned in this peculiar description of injury.

In this connection it may be remarked as a matter of congratulation, that the large quantity of cotton seed obtained from the United States of America and distributed by it, and for whose condition in the matter of freedom from both injurious insect this office was held responsible, has not proved in a single instance as having served as the agent for the introduction into Australia of any cotton pest or cotton malady whatsoever.

SUGAR-CANE.—The principal depredator, yielded by the insect tribe that has proved prejudicial to the growth of sugar-cane, has probably been the larva (or larvæ) of Scarabæid beetles—popularly designated “grubs.” This, according to public report, has been especially virulent in the Cairns district, inflicting damage there estimated at thousands of pounds. The incident has not been brought under the notice of this office through any official channel. Moreover, inasmuch as previously opportunity has not occurred for devoting more than a week to the investigation of the habits of the Cairns depredator, and the conditions influencing its destructive work, it is not possible to meet the serious state of things referred to otherwise than by procedures having a more or less conjectural basis, instead of being founded on “the solid ground of nature,” and accordingly by such as are wholly unsatisfactory. The thorough investigation that was given to a similar occurrence affecting the canefields of the Mackay district in 1895, followed as it was by such material results (*vide* Annual Report of Entomologist 1898-9, Practical Results, p. 38), might suggest that a similar issue might, although not necessarily, be the outcome of exhaustive inquiry in the Cairns district also.

Unusual visitations of grasshoppers to the canefields were reported as being met with at Mackay in November, and in the Isis and Bundaberg districts in February and March of the present year. In each case the insect occurring in such conspicuous numbers proved to be a perfectly distinct species from that so prevalent at Childers, Gin Gin, and the surrounding districts in 1903, being a kind technically designated *Cyrtacanthacris plagiata*, Walker, and one hitherto remarked as being always present in small numbers in the canefields of the State; although by no means confined as regards diet to sugar-cane, or, indeed, to members of the grass tribe generally, as was the grasshopper that figured in this earlier visitation.

Notification of the Mackay occurrence was at once responded to by the despatch to the Pioneer River Farmers' Association of a lengthy memorandum dealing with the general subject of grasshopper destruction, framed on the assumption that the insect then occurring there was identical with the cane-depredator of 1903.

The grasshopper visitation of Bundaberg, on the other hand, served as the occasion of personal inquiry in March, occupying several days, that comprised experiments directed towards the discovery of an effective poison available for use under plantation conditions, and which led to positive results that were rendered immediately available to the public through the agency of the local Press. At the same time, the use of the so-called locust fungus as a grasshopper destroyer was essayed; and, moreover, extensive operations in driving the winged insects from the canefields were, as suggested, carried out by the plantation proprietors. Insomuch, however, as the insects had for the most part already arrived at the winged stage of development when their depredations were brought under notice, the outcome of these investigations was of less practical importance than would otherwise have been attained. The attention of the office was also directed to instances of the attacks of cut worms and of wire worms (*Elateridæ*) on young sugar-cane. With regard to the latter case it may be mentioned, as a matter of significance, that the insects appeared in a field that had received a heavy crop of "green manure," and whose soil was accordingly rich in organic matter.

The period embraced in this report has also been marked by grasshopper depredations, experienced by crops (especially maize) generally, as well as by pasturage, in widely distributed localities, complaints having been received and attended to, that have emanated from the Burke electorate, Rockhampton, Bundaberg, Pialba, Rosewood Estate, Degilbo, Brisbane, Darling Downs, Charleville, &c. In some instances these, indeed, have had reference to fruit trees that not only were defoliated, but almost destroyed by them.

WHEAT.—An instance of rather serious injury to young wheat, occasioned by aphides, was brought under notice as occurring at Eumundi, North Coast Railway. It, however, may be mentioned that no cases of insect attack yielded by the principal wheat-growing areas were submitted. Weevil attack on stored grain is, however, becoming increasingly prevalent.

MAIZE.—Serious damage to young maize, due to the attacks of the false Chinch Bug (*Oxycarenus Frenchii*), a small hemipterous insect included in the family *Lygæidæ* that is widely distributed in Australia, was reported from the Killarney district.

A special form of Earwig (*Labidura sp.*, Fam. *Forficulidæ*) was again brought under notice as occurring at Biggenden. This was stated to consume both the "germ" of the grain when the latter was planted, and the roots of the young plants if further development had taken place prior to attack.

VEGETABLES—Sweet Potato.—The notorious depredator of this crop, the Weevil (*Clytus formicarius*, Bohm.), is becoming gradually disseminated, principally by human agency, throughout the State, to the serious injury of this valuable crop. Hitherto the Rockhampton district has been regarded as one in which this injurious insect had not permanently become established, only a single instance of its occurrence there having been discovered on special inquiry a few years since, instituted by this office and prosecuted by the inspector under the Diseases in Plants Act stationed there, and that it was possible to dispose of by the exercise of the powers with which *ex officio* he was endowed. In March, however, an instance of its occurrence at Capella was reported, and steps were at once taken to ascertain the history of its occurrence there, but without avail. Again, in April, grossly weevil-infested sweet potatoes were forwarded by the Curator of the Rockhampton Botanical Gardens as having emanated from the Alton Downs district (12 miles from Rockhampton), and immediately he was furnished with full references to what had been written on the life history of the insect and the methods of coping with its distribution and occurrence, and the opportunity was embraced to make the following emphatic pronouncement:—"I would point out the extreme urgency of prosecuting measures advocated therein [in my writings on the subject of sweet potato weevil.—H. T.], and that have been found adequate in other countries, for exterminating the insect before it gets far afield, and so jeopardises the existence of the commercially successful growth of a crop that should figure largely in the agricultural resources of the Rockhampton district. . . . Only drastic methods of procedure—as distinguished from temporising ones—in coping with it will prove of any avail; but, when once the insect is locally stamped out, this Department has pledged itself to assist, the farmer interested, in reinstating in his ground sweet potatoes that are free from its presence. Moreover, whatever methods are pursued, these must be equally and simultaneously undertaken by all those who are called upon to attack the enemy of the plant alluded to." It was also pointed out that sweet potato weevil constituted a "disease" within the meaning of "The Diseases in Plants Act of 1896."

Cabbage, Turnips, &c.—The wide dissemination of cabbage-destroying insects, methods for the destruction of which were freely sought, were shown by the receipt of applications from Yeulba and Ravenswood for directions as to the course to be pursued in coping with both *Aphis brassicæ* and the leaf-eating caterpillar *Plutella cruciferarum*.

Tomato.—The fruit worm (*Heliothis armiger*, Hübner) has been especially prevalent, and conspicuous owing to the extent of its depredations. In two instances, yielded by the Nundah and Zillmere district, the attacks, a root-destroying beetle of subterranean habits (*Isodon puncticollis*, Macl., Fam. *Scarabæidæ*), were complained of. In both it was found that the plants victimised were, strange to relate, simultaneously affected by the fatal bacterial disease to which this plant is subject, caused by *Bacillus solani*. The connection between these two occurrences is for the present a matter of conjecture only, and need not therefore be dwelt upon.

Bean Tribe.—The notorious bean plant maggot (*Agromyza phaseoli*, Coq.) has not only been brought frequently under notice of the office as committing serious depredations in the Moreton district, but has also formed the subject of complaint owing to its habit of victimising French, Lima, Madagascar, as well as other related plants, at Townsville.

Cucurbitacæ.—The *Aphis* (*Aphis gossypii*, Glover?), always more or less prevalent on pumpkin and melon plants here, was reported as seriously damaging cucumbers, "crowding on the leaves and flower buds, causing plants, on account of their injuries, to produce 'cripples' instead of large and symmetrical fruit," and was brought under notice of the office as being prevalent both at Zillmere and Wellington Point.

Strawberries.—A new enemy of the strawberry plant, as far as relates to Queensland, was afforded by the occurrence of cut worms in the Eudlo district. The specimens received, owing to injury in transit, could not, unfortunately, be reared to maturity, but presented the features of a caterpillar of a species of *Agrotis*.

SHADE ANN ORNAMENTAL TREES, ETC.—The part played by ornamental and otherwise useful plants in insect propagation as conveyors of destructive insects was repeatedly brought under the notice of the office during the year. As instances may be mentioned the occurrence of Red Scale Insect (*Aspidiotus coccineus*, Gen.), and Greedy Scale insect (*Aspidiotus rapax*, Comst.), on camphor laurel, of Black Soft Scale insect (*Lecanium oleæ*, Bern.), on plane-tree, and of Red Scale insect, Circular Black Scale insect (*Aspidiotus ficus*, Ashm.), and a Soft Scale insect (*Lecanium sp.*), on carob-tree.

MISCELLANEOUS INJURIOUS INSECTS, ETC.—Leaf-eating beetles (*Diphucephala Barnardi*, Macl.) were submitted from Sunnybank, in view of the fact that related insects are elsewhere injurious to fruit trees, &c. Leaf-cutting bees (*Megachile* sp.) were brought under notice by a Burnett district correspondent. Aphid attacking carnations was submitted by a Brisbane resident. A plant-sucking insect (*Melampsalta Oldfieldi*) was brought under notice by a Cleveland resident. Mites (? *Cheyletus* sp.) infesting books were received from Brisbane. House-frequenting insects—the moth (*Spirodonia spectans*, Guén.), and the beetle (*Harpalus pulcher*) formed the object of inquiry on the part of a Gin Gin applicant.

TIMBER-DESTROYING INSECTS.—A report was prepared on the identity of the various "White Ants" found destroying timber and wooden structures in the Brisbane district. From a popular point of view, there is but one kind of Termite concerned, spoken of generally as "the white ant." However, this term embraces the undermentioned species, the members of each of which possess in some respects distinct habits that require to be taken cognisance of by those who have occasion to fight against them. They are—(1) *Termes lacteus*, Frogg.; (2) *Eutermes fumipennis*, Walk.; (3) *Rhinotermes* (? *intermedius*, Brauer); (4) *Calotermes* sp.; and (5) *Calotermes irregularis*. At Townsville, again, we meet with an undescribed species of *Hodotermes*, a large and conspicuous insect.

In this section of the report it may be mentioned that a peculiar form of injury exhibited by the paper wrappers of tea tins submitted by a Charters Towers correspondent was traced to white ant attack.

Another timber-destroying insect reported on—one affecting our "hardwoods" amongst other kinds of timber—was a species of *Xylopertha* (Fam. Bostrychidae). The interest residing in the discovery that this was being victimised by an hymenopterous parasite and by a clerid beetle, was somewhat minimised when it was further found that the former was itself held in check by another insect, an hyperparasite.

The borer of soft wood timbers used in house structures, a species of *Anobium*, is becoming increasingly prevalent in the Brisbane district, and it is regretted that the exigencies of the work of the office preclude practical attention to the serious problem that its destructive presence constitutes.

STOCK PARASITES.—(1) Cattle Tick [*Rhipicephalus (Boophilus) annulatus*, Say., var. *australis*, Fuller.] On several occasions ticks, derived from cattle, horses, and other animals, and exhibiting different stages of growth, have been submitted for identification, and for pronouncement of their age as parasites, by officers of the Stock Branch of the Department; and inasmuch as important procedures may be dependent in some cases on absolute correctness in this matter, the critical examination to which these objects have been subject has been of the most thorough nature before the issue has been made of authoritative decision touching the questions raised. At the same time it may be remarked that the Entomologist is in no way identified with the action pursued in Queensland in solving the various problems connected with the unfortunate occurrence of cattle ticks therein, these never having been submitted for his consideration.

(2) Dog Tick (*Rhipicephalus sanguineus*, Koch). This parasite of dogs, cats, cattle, sheep, and other mammals was identified as a tick met with on cows, and on the first-named animal, in the vicinity of Brisbane. Under the former circumstance, relating to its occurrence, it was regarded as the cattle tick *par excellence*. However, it is quite distinct from it, and, moreover, not known as an intermediary host of the hæmaglobinuria parasite, in which respect also it differs from it. Its wide dissemination has been attributed to dogs, to which it is especially partial.

(3) Goat Ticks. Knowing that in South Africa a serious disease in goats had been shown to be dependent for its dissemination on a special tick, and having learnt that complaints of the pernicious action on the same animals of ticks had been given expression to in Queensland, an effort has been made to secure, for the purposes of identification and such other action as this might suggest, specimens derived from the latter source; but although efforts to this end have been pursued, in both the Tiaro and Cairns districts, they have proved resultless.

(4) "Flying Tick." An insect, supposed to be a species of tick, possessed with the flying habit, was transmitted by the stock inspector stationed at Charters Towers as having been received from Clump Point. This proved to be a species of *Ornithomyia*, a bird parasite, as its name suggests, belonging to the dipterous order of insects, and therefore not a tick properly so-called.

(5) Pseudo-larval Ticks (*Holaspis* sp., Gamasidae), stable flies, harbouring small acari that might be readily taken for young ticks, and that indeed were submitted with the suggestion that they were of some such nature, were received from Lutwyche. These proved to be examples of gamasid mites, and members of the genus *Holaspis*, that in their nymph state had attached themselves to the insects referred to, a procedure wont to be exercised by them, and effecting their wider dissemination than would otherwise ensue.

Horse Bot (*Gastrophilus nasalis*, Lin., synonym *G. salutaris*, ...). In 1900 attention in New South Wales was called to the occurrence of the Horse Bot—described as *Gastrophilus equi*—in the Wagga Wagga, Bombah districts, as well as in those abutting on the southern border of that State. In December, 1903, it was already prevalent in the Upper Richmond, a circumstance that suggested to a correspondent of the Department the expediency of staying its further progress north, if practicable, since it was already giving much trouble in this last-mentioned New South Wales locality. Alluding to the means by which this stock pest became disseminated, it was stated that this office was apprehensive of its already being prevalent along our border. Meanwhile testimony was received of this actually being the case from Mr. A. J. T. Brown, as was stated in a report made to you on 30th January. The difficulty of preventing the further northern extension of the *Gastrophilus* fly will appear from a consideration of the means whereby its distribution is secured, and which, to quote the January report, are as follows:—(1) In the first place, it may arrive in the egg-condition, glued to the hair of the animal that the insect affects. (2) Then the bots (maggots) may be introduced in the stomachs and intestines of horses, wherein they may occur for a lengthy period (nearly twelve months), closely adherent, and without any external symptoms denotive of their presence being manifested, and even were it otherwise their dislodgment and voidance could not be brought about through the administration of any known specific whatsoever, save only in the event of their being in a condition, by reason of the development to which they had attained, to spontaneously effect their exit. (3) Again, the perfect insect or Bot Fly might attend and follow on the wing horses over long distances, and so pass into this State with travelling animals that for the time being might themselves be free from both their eggs and larvæ. Thus have these bots been introduced to New Zealand, to Fiji (in mules from America), to Victoria, New South Wales, and Western Australia."

Unclassified.—Numerous matters not included in the preceding summaries were also made objects of report. Amongst these may be mentioned: (1) A memoir, illustrated by photographs and drawings, dealing with the occurrence of lead-boring insects in Queensland, their identification, their habits, and the character of their injuries as workers in metal, the whole comprising eighteen closely-written folios. This was furnished for the information of Mr. John Hesketh, Electrical Engineer for the State of Queensland, and dealt with material provided by him. Moreover, extracts from it formed in the main a paper that he was privileged to read before the Electrical Congress of St. Louis, U.S.A., 1894, entitled, "A New Danger to Lead-covered Aerial Cables," and which, as it has been announced, was received with considerable interest. (2) Reports

on minor subjects, submitted by the Commissioner of Public Health, including one dealing with the so-called Jigger Flea (*Sarcopsylla penetrans*), its reputed occurrence in North Queensland, the geographical range of its occurrence, the sources whence it may be derived, and the methods whereby its introduction may be effected. (3) On recent discoveries of parasites of homopterous insects in Queensland, distributed according to the classes of insects to which they are referable. (4) On certain parasites of homopterous insects submitted by Mr. F. P. Dodd. (5) On the origin and significance of certain migratory butterflies (Pieridæ).

APICULTURE.—Insomuch as apiculture is included in the domain of applied entomology, it is a matter for congratulation that an organisation, named the "Queensland Beekeepers' Association" has, under the happiest auspices, been formed in the State for giving systematic attention to every matter of interest connected with it, as well as for promoting a high standard of efficiency in those identified with the apicultural art. Already it has sought information from this office, on more than one occasion, in connection with the few provinces of knowledge coming within its scope that it is competent to advise on, amongst others being that which concerns the identification of indigenous Apidæ.

INSECTIVOROUS BIRDS—*Bird Collection*.—The collection of the insectivorous birds of the Moreton district that the Entomologist has been authorised to secure as opportunity arose, and which is comprised in some 150 glass cases, exhibiting habit, characteristic plumage, sexual distinctions, season modifications, as well as changes due to age, of the bird species that it comprised, was staged at the Annual Exhibition of the National Association of Queensland, held in Brisbane in August, 1903, with indication in each instance of the popular and scientific designation of the different birds that it comprised, and of their position individually in the ornithological system; the diet that each partook of being at the same time specified in general terms. This series, that reflected the energy and skill of Mr. T. Batcheler, collector and taxidermist, was viewed by visitors to the exhibition with evident interest, and both the collection and the motive that underlay its display were without exception favourably commented on by the public Press.

During the period embraced in this report the collection referred to has been supplemented by the addition of representatives of a few birds from amongst those that it lacked. At the same time an effort has been made to ascertain the actual dietary of our birds, by the most searching of all methods—*i.e.*, that which consists in the analysis of the contents of their stomachs, a research from which much valuable information should be derived. This tedious inquiry has not as yet proceeded to any great length, although considerable material bearing on it has been accumulated. As indicating the value of it, it may be stated that when some time since the insectivorous habits of the quail tribes were being publicly questioned, it was practicable to produce, as pertinent positive evidence, the stomach content of an example of one kind (*Turnix pyrrhothorax*), that comprised vestiges of nineteen small grasshoppers, a beetle, and a beetle larva, amongst numerous seeds of weeds of several kinds, as well as of native grasses, that constituted its other components. A report on the food of certain specified birds was submitted.

When the question of securing additional legislation to that embodied in the Native Birds Preservation Acts, for the protection of the useful members of our avifauna, consisting in the imposition of a gun tax, was under the consideration of Parliament, it having been invited to consider a special Act that had been introduced to this end by the Government, the attitude of the Entomologist towards the proposal was solicited, and his views thus secured were approvingly cited on the occasion alluded to.

Birds additional to our fauna, introduced or proposed to be so.—A report was furnished on the question of introducing two Central and South American insectivorous birds—*Pitangus sulphuratus* and *Crotophaga ani* (the Savannah Bird)—into Queensland, for coping with injurious insects of sugar-cane plantations, repeating in this respect the action that has been already taken by the French authorities of the Antilles, and the conclusion embodied in this was, that neither of them possessed special merits that would warrant the procedure under consideration.

In a paper read at Toowoomba Agricultural Conference, held under the auspices of the Department in 1892, the writer was privileged to enlarge on the immense damage that had been experienced in Australia and New Zealand through the introduction of birds, presumably useful, from outside sources, supporting the statements made by reference to the pernicious habits that had been displayed by kinds that had been introduced, as well as to those of ones whose introduction had been advocated. In this connection, moreover, an emphatic note of warning was sounded with regard to the possibility for harm presented by the occurrence of sparrows at Toowoomba as well as elsewhere in the State. To what extent this was, however, heeded, as well as how just was the apprehension given utterance to, will appear from the fact that the Drayton and Toowoomba Agricultural and Horticultural Society in October, 1904, adopted the following resolution:—"That the Department be asked to take immediate steps to exterminate the pest of sparrows, on the ground that if this be not proceeded with at once, not only will an incalculable amount of damage be done in connection with crops, but a greater expense will be incurred in eradicating it." [If the work referred to as urgent be deferred.—H. T.]

A statement has already gained some currency that European blackbirds have been recently liberated—an incident that suggests that there is still need of legislation, in the spirit of a resolution adopted at the Toowoomba conference alluded to, having for its object the provision of means for the prevention of the introduction of harmful birds into the State, against which at present there appears to be no safeguard. The resolution thus referred to was as follows:—"That this conference do warmly approve of the action of the Department of Agriculture in including the subject of insectivorous birds within the scope of its activities, and is, moreover, of opinion that it should take the necessary steps to ensure that no harmful animal or bird whatever be brought into this State, and same only with the consent and approval of the Secretary for Agriculture for the time being, no animal or bird on the ground of its alleged insectivorous habits."

NATURE STUDY [Department of Public Instruction].—The important innovation in the curriculum of the primary schools, consisting in the inclusion therein of what is designated "Nature Study," has been the occasion of the submission of insects and of objects related to these by a large number of inquirers from amongst those engaged in giving effect to it. These have been received from teachers residing in all parts of the State. In one instance, indeed, a school inspector consulted the office, and was furnished, in satisfaction of his special request, with an extended communication relating to the Mud Daubers or hymenopterous fabrications of mud nests (species of *Pelopæus*, *Eumenes*, *Abispa*, *Rhynchium*, &c.) This new demand on the services of the Entomologist promises to augment, and is worthy of the fullest consideration.

As the outcome of the same requirement on the part of the officers of the Department of Public Instruction alluded to, requisition was sometime since received from the Brisbane Technical College for a short series of lectures on "Insects and Insect Life," to form part of a course dealing with "Nature Study" that it has already inaugurated for the behoof of local teachers. The application to the Department for permission to be accorded for the delivery of these was immediately granted; but this has been postponed by the college directorate from which it emanated, to a date not yet announced.

COLLECTIONS.—The collection of local insects has received numerous small periodical increments, for the most part provided by purchase. It is maintained in a state of good preservation, although the situation of the offices devoted to the Entomologist's work are not such as are calculated to secure this: it being especially

conducive to moist conditions. Unfortunately, the want of cabinets for its systematic disposition is very marked, for the obligation to keep expenditure within the smallest limits has been recognised, and accordingly provision for those expensive but essential requisites in an official entomologist's equipment has not been solicited. One of the earliest requisitions subsequent to the creation of the post in connection with the Department now alluded to, was for cases in which to make public display of the numerous injurious and beneficial insects, and of their life histories. This requirement is still to be met, and will be further urged as directed to a most important public need. Unfortunately, the multifarious and exacting duties of the office have precluded special investigations in the science of systematic entomology—except such as have been suggested by practical problems—which to some extent are essential to its work.

II.—VEGETABLE PATHOLOGY.

In addition to inquiries relating to the more ordinary plant diseases that were met with pertinent advice, and that, moreover, need not be further alluded to, others concerning more special subjects may be briefly treated of, in connection with a reference to the particular plants whose condition had given occasion for them.

CITRACEOUS PLANTS.—A bark disease, due to the invasion of a fungus parasite, *Ascochyta* sp., has been remarked as affecting young trees in the Chinchilla district, "ringbarking" them, and so destroying them, unless timely attention be given to its presence. In the same district a leaf blight of minor significance, caused by a species of *Macrosporium*, has also been met with in connection with lemon-trees. Both of these were probably temporarily established through the agency of nursery stock. A further bark disease of the orange-plant has been brought under notice as occurring in the Russell River district. In this case the affection was of a physiological nature, and the fungus—a species of *Corticium*—so conspicuously present, had no part in originating it. What appeared to be a serious disease of the orange, met with locally, near Brisbane, and to affect the fruit in a marked degree, was, notwithstanding the skin blemishes supported the growth of a special fungus belonging to the genus *Colletotrichum*, finally referred to the adoption of the fumigation process with hydrocyanic acid gas under unfavourable conditions for its use.

Note.—With reference to a disease of undetermined origin, referred to in the Melbourne Press as affecting oranges received from Maryborough, and described as a skin-disease manifesting itself in the first instance in the development of small spots, that extend until the whole surface is implicated, and the fruit becomes soft and pulpy, and so undergoes rapid destruction, it may be stated that no such fruit affection has been otherwise brought to the notice of this office, much less does it correspond to either of the distinct kinds of fruit rots already known as effecting the destruction of citraceous fruit in Queensland.

A severe form of damage experienced by mandarin-trees in the Jimboomba district of South Queensland, and which took the form of extensive decortication, was found, on critical examination of an injured plant, to be caused by the Flying Opossum *Pseudochirus taquanoides*.

What was regarded as a novel disease in the Palmwoods locality proved to be an instance of gross attack by a useful fungus *Microcera* sp., of White Scale insects (*Chionaspis citri*, Const.), that already thickly infested the trees, producing a peculiar pinkish specked appearance on all the parts on which these insects occurred.

GRAPE VINE.—Instances of grape vines seriously affected by Root Gall, due to invasion of nematode worms (*Heterodera radicola*), were met with as occurring near Brisbane. This serious disease, victimising as it does so many plants, and being one that is accidentally transportable from place to place with special facility by their agency, will probably give great trouble to horticulturists in the future, vignerons amongst their number.

Anthracnose or Black Spot, due to *Glaeosporium ampelophagum*, has been the object of considerable inquiry, notwithstanding the preventive treatment, on lines laid down by the Vegetable Pathologist in 1889, when its nature was for the first time made known in Australia, has been widely resorted to. In several cases it has been traced (a conclusion independently arrived at by our able Instructure in Fruit Culture, A. H. Benson) to the use in establishing vineyards of cuttings derived from previously anthracnose-affected plants, an experience that, in the interests of viticulture, has led, after conference with the writer, to an urgent recommendation that the Department itself should—temporarily at least—suspend the issue of vine cuttings from any plantations under its control in which anthracnose disease may have been recently prevalent.

A peculiar yellow spotting of the foliage remarked at Toowoomba has been shown to be produced by the ordinary *Oidium* of the vine.

An instance of partial defoliation exhibited by grape vines near Brisbane during dry weather was discovered to be due to attacks of the parasitic fungus *Cercospora viticola*, and therefore controlable.

SUGAR-CANE.—Although not submitted until some days subsequent to the expiration of 30th June, a lengthy illustrated memoir, entitled: "Top-rot of the Sugar-cane: an Inquiry into the Nature and Origin of a Disease affecting Sugar-cane in the Herbert River and other Districts of Queensland," is properly referable to the work of the year terminating on this date. This document was an amplification of a preliminary report tendered in May, 1903, of which an account was given in the *Sugar Journal* of the month following (*vid. Op. Cit.*, Vol. XII., p. 242).

MAIZE.—An instance of spontaneous fermentation of grain was found to be caused by a species of *Saccharomyces*, that was attended by an example of the saprophyte *Aspergillus flavescens*. Its condition had arisen through it having been stored under damp condition, and this, moreover, had given rise to a question regarding the possible danger to horses resulting from its use as horse feed.

BANANA.—An instance of Root Gall Disease (caused by the nematode *Heterodera radicola*) was afforded by a Brookfield occurrence. It is becoming widely prevalent in our cultivations devoted to the growth of this plant. In this case the grower had unwittingly distributed it in his plantation by establishing therein root gall affected seedling tomato plants, that owed their diseased condition to the fact that they had been grown in a small box of soil of specially selected quality, albeit infested with the microscopic larvæ of the parasite.

STRAWBERRY.—Leaf mildew (caused by *Sporotheca humuli*, conidial stage), continued success as a preventive in the use of Potassium Sulphide ($\frac{1}{4}$ to $\frac{1}{2}$ oz. per gallon) solution, when applied thoroughly and early, has been reported. Not only have tardy applications accounted for failure in this respect, but also the use of stale solutions, as well as of those derived from samples of the chemical named, in which this has already partly decomposed through exposure.

A root disease that has been named by this office Black Root, and that is caused, at least in many instances, by a parasitic fungus named *Botrytis cinerea*, has been reported as occurring, both on the Blackall Range and in the vicinity of Brisbane. It has also been detected as affecting nursery stock (strawberry plants), emanating from Victoria, and is doubtless distributed through its agency, although the facultative parasite named is one of somewhat general occurrence apart from strawberry plantations.

TOMATO.—In two instances of fatal disease caused by the "microbe" *Bacillus solanacearum*, and afforded by Brisbane occurrence, it has been remarked that the parts beneath the ground have been seriously injured also by a beetle, *Isodon puncticollis*; but whether this fact has been an indication that the latter insect is especially attracted by failing plants, or itself serves to communicate it by the exercise of its gnawing habit from plant to plant, or, again, whether both happen, has not been ascertained.

COTTON.—A bacterial disease, a form of gummosis—or at least a malady that has been provisionally regarded as being one of such a nature—has been detected as occurring at Biggenden. So far, it has proved to be restricted to one variety of the Sea Island type, and to be more or less perennial in plants affected.

TOBACCO.—Blue Mould (caused by *Peronospora hyoseyami*). Fortunately this serious malady, that especially victimises young seedling plants, although not exclusively so, has been little pronounced during the year under review. However, in order that a satisfactory system of preventive treatment might be arrived at—and that is still a desideratum—an elaborate series of experiments was devised, with full regard to details, for the purpose of simultaneously discovering the influence of controllable conditions on its presence and virulence, as well as an effective fungicide that would serve as a means for obviating both. Inasmuch, however, that the provision connected with the scheme, that required that the work involved should be carried out under the instructions and explicit direction of its propounder, could not be complied with, the latter was promptly withdrawn, to escape the responsibility of probable failure in arriving at conclusive results in a necessarily costly procedure.

CUCURBITACEOUS PLANTS.—A report was furnished on nature and mode of prevention of the common mildew disease of pumpkin and other cucurbitaceous plants, and occasioned by the parasite *Erysiphe cichoracearum* (conidial stage).

A disease affecting the cucumber plants that may be known as Leaf Blight, and caused by a parasite named *Pernospora cubensis*, was found, during October, 1904, to be both locally prevalent, and to be very harmful when occurring, in both the North Pine and Cleveland districts, whilst statements received pointed to its occurrence in intermediate districts. An instance of its prevalence was locally investigated. Unfortunately, its presence was brought under notice of the office in all cases at too late a period in its development to admit of resort to the special preventive treatment that has been indicated, and which will probably prove efficacious if availed for sufficiently early.

MANGOLD WURZELS.—An instance of spontaneous decay of roots of these plants, preceded by failure in both rootlets and leaves—in the latter case owing to insect attack—was brought under notice by a Biggenden correspondent.

FRUIT—in Storage.—The origin and progress of a decayed condition exhibited by certain Tasmanian apples subsequent to their receipt in Brisbane was dealt with.

The occasion of the arrival in Queensland of fruit of various kinds, including the more delicate soft varieties, from the distant port of San Francisco, in a sound condition, suggested the expediency of ascertaining the full circumstances connected with its transport therefrom, in the anticipation that valuable information would thus be secured, that would assist in devising methods for shipping similar products from local sources to markets equally remote as are those of Queensland from California, a procedure hitherto hindered by the supervention of pathological changes, but which fruit from the latter region had thus not experienced. This, as you are aware, was urged on your consideration.

Locust Fungus.—Representations having been made to the Department of success arrived at in destroying grasshoppers in Victoria by means of so-called Locust Fungus, a memorandum relating to the ineffectual action that had followed its employment in Queensland for a similar purpose, and at the same time embodying the views of this office on the subject generally of its employment, was submitted, and this, it is understood, was rendered to the Department of Agriculture of the State referred to, for its information.

HARMFUL PROCEDURE BASED ON DEFECTIVE KNOWLEDGE.—The following memorandum, suggested by a special inquiry, tendered in November, 1904, may be fittingly reproduced by reason of the importance of the matter with which it deals:—

"The attention of the agricultural public has been again and again called of late years to several important offices that certain bacteria may perform in connection with the development and maintenance of soil-fertility. Special reference in this connection has been made, moreover, to the fixation of atmospheric nitrogen by leguminous plants, with which organisms of this nature are associated in symbiotic relation, and in which they occasion, by their presence and increase, root galls or root tubercles. Also to the practicability of this latter fact being availed of, through the use of such root tubercle-bearing Leguminosæ, and, indeed, of the bacteria found inherent in them, for the indirect or direct enrichment of soils defective in nutrients, so far as nitrogenous principles are concerned.

"It must, however, be pointed out that whilst benefit may undoubtedly follow, in so far as the purposes of agriculture are concerned, the application of the special discovery alluded to, serious harm may on the other hand accrue by ignoring certain of the limitations that pertain to it. Thus it is conditional to success that the plants to be utilised as eventual contributors to the soil of this fixed nitrogen be leguminous ones (e.g., beans, peas, cowpeas, vetches, lucerne, lupine, &c.), and that the root-tubercles found in connection with them, and which accompany this special endowment in fixed nitrogen, be bacteria-containing and bacteria-produced ones; or, again, that the bacteria applied directly to the soil are nitrogen-assimilating, as are those that have occasioned these abnormal growths.

"Neglect to conform to this requirement may lead, as is above suggested, not only to failure in achieving useful results, but to conclusions the very opposite of these. Thus amongst plants of the order Leguminosæ may be met with root galls other than those that are due to the activities of non-pathogenic bacteria, and that on the other hand are caused by disease-producing agents. Moreover, such galls or tubercles may occur generally in connection with the roots of almost all plants. Now, these special root developments (swellings, tuberosities, pimples, tubercles, galls, &c.), when not caused by bacteria, are occasioned by Slime Fungi (Mycosporium), Nematode Worms, or even insects. And these organisms associated with them not only may occur in very large numbers, but may also be endowed with the faculty of persisting for considerable periods, or even mature in soils in which they occur or to which they have been introduced, whence as opportunity occurs they may invade plants that have hitherto enjoyed freedom from their presence. Moreover, these non-bacterial root or rootlet enlargements are symptomatic of the presence of and determine plant maladies of a very aggravated type, and that may affect crops of more than one description.

"As an instance of this, this office has recently had to report on a case in which a local resident was deliberately using the tubercular outgrowths of the roots of swede turnips, caused by the parasite *Plasmodiophora brassicae*, and that accompanies a disease in cruciferous plants known as 'Finger and Toes' or 'Club Root,' and under the persuasion that they were identical in kind to the root tubercles of Leguminosæ, and accordingly rich in atmospheric nitrogen, for application to land in which turnips were

being grown, as yet in a healthy condition. And it might easily happen that one 'with a taste for experiment' might apply, similarly, the tubers and tubercles caused by nematode worms on the roots of one plant or another, and so determine the occurrence, in connection with the soil, of a formidable disease that affects not only the plants mentioned, but many others met with in the garden, field, or plantation, and one, moreover, that when once established therein will exist with more or less persistency."

UNIVERSITY EXTENSION LECTURES

A proposal on behalf of the University Extension Council for a short series of lectures under its auspices on special biology, and that were to have been delivered in Brisbane, could not be given effect to owing to a decision arrived at by the University of Sydney authorities, that was duly communicated. These, who had already approved of the Vegetable Pathologist as an University Extension Lecturer, expressed their inability to do so with regard to the syllabus submitted covering the matters defined as those to be treated of in the proposed course. This syllabus was as follows:—

Parasitic relationship between higher and lower plants—

- (1) Morphological and physiological features of the parasites.
- (2) Structures of host plants in their relation to the same.
- (3) Origin and development of parasitic habit—Saprophytes, Facultative Parasites, Obligatory Parasites, Commensals (Symbiosis).
- (4) Types of parasites (a) Bacteria; (2) Organisms of Rust Diseases; (3) Organisms of Mildew Diseases; (4) Organisms of Smut Diseases. In their relation, in each case, to specific economic plants.

Under the circumstances, the position alluded to not being one that had been aspired unto, the attempt to fill it by the proposed lecturer, already fully occupied by important public duties, was not further prosecuted.

DISEASES IN PLANTS ACT, 1896.

The prevention of the introduction of injurious insects as well as of plant diseases into a country is usually regarded as a function of its official entomologist, who to this end is charged with the control of the measures of inspection and disinfection that are carried out. Here this work is otherwise provided for, and hence it does not come within the scope of this Report to review the working of the above Act during the period that it covers.

As Entomologist and Vegetable Pathologist, advice has been tendered on several occasions on which it has been solicited regarding questions that have arisen in the course of its administration.

Again, the local inspectors have for the most part sought counsel in the office from time to time, in cases in which they have hesitated in actions of special responsibility until expert opinion has been secured.

Duties connected with the post of inspector under the Diseases in Plants Act have been occasionally discharged, usually in cases of emergency only.

IMPORTS.—It has been especially represented that the responsibility of inspecting and otherwise dealing with plants derived from foreign countries should be placed on this office, insomuch as it is only in it that a knowledge exists of the injurious insects and plant diseases occurring in these, and of the means whereby their introduction may be brought about and so counteracted. Moreover, the method of disinfection—that of fumigation with hydrocyanic acid gas—on which the Department relies (and, indeed, any other procedure of this nature) is not adequate to render all plants originally insect-infested admissible for safe entry into the State, without regard to the character and mode of occurrence of the insects standing in this relation; and these, moreover, without a knowledge of their habits, may even escape the closest scrutiny. In the case of the presence of disease proper in connection with them, it is indeed inoperative.

In a few instances plants, and products of plants, derived from foreign sources, have been referred to this office for inspection and subsequent treatment.

These have afforded the following instances of destructive insects associated with such importations when received here:—

- (1) A small consignment of Manihot (Cassava) cuttings, derived from South America, harboured on arrival specimens, in all stages, of a destructive beetle borer, a member of the family Cryptorhynchidæ. The exclusion of this pest was especially fortunate, in view of the prospective importance of cassava-growing to the tropical portions of the State.
- (2) In August a small consignment of fruit trees, comprising apple and pear, arrived from Germany. This harboured the Mussel Scale Insect of these plants (*Mytilaspis pomorum*), one of their worst enemies.
- (3) In December a parcel of sugar-cane was received here from Demerara. This was extensively injured by a moth borer not occurring in Queensland, a living chrysalis of this—a species of *Ditroca*—being detected.
- (4) On it being brought under the notice of this office that the Department was about to import in bulk cotton seed of several varieties from the United States of America, and also that the Mexican Government had stated that it had been informed "that representatives of American houses were endeavouring to put on the markets of the district of Laguna cotton seed from Texas, infected with the cotton seed weevil," and that, indeed, several car loads of infected Texas seed had reached Laguna in this way (*vide* "Cotton Manufacturer," 17th March, 1904), the necessity for extraordinary precautions being taken accordingly with regard to the seed referred to as about to land was urged, and thus the responsibility of securing the conduct of these was placed on the present officer.

Fortunately, no trace of the Boll Weevil (*Anthonomus grandis*) was discovered in connection with the consignment, nor, indeed, any specimens whatever of a cotton plant injurious insect. However, numerous beetles, for the most part of small size, were detected, and which either feed on the cotton seed itself or some other seeds that may accompany it as foreign matter. This will appear from the following list of species, examples of which were secured:—*Leomophilus pusillus*, Creutz (Cucujidæ); *Cantharta advena*, Walt. (Cucujidæ); *Alphitobius piccus*, Ol. (Tenebrionidæ); *Alphitobius diaperina*, Panz (Do.); *Tribolium ferrugineum*, . . (Do.); *Cryptophagus cellaris*, Scot. (Cryptophagidæ); *Corticaria* sp., . . (Lathrididæ); and *Gibbium scotius*, Kuzel (Anobiidæ).

POTATOES.—Scab Disease, Root-gall Disease, and Potato Murrain: The action of New South Wales in declaring, by Regulation under its Vegetation Diseases Act, these maladies of potatoes as diseases within its scope, and the consequent exclusion from that State of such consignments of these vegetables as might be affected by their presence—insomuch as it was contemplated as likely to cause a special determination of potatoes so conditioned to Queensland ports, and so serve to effect the further dissemination here of two plant diseases, each endowed with the singular property of becoming permanently associated with the soil

when once established in any locality, and in the case of one (*i.e.*, gall-worm disease) fraught, moreover, with the dangerous characteristic due to its habit of victimising not alone the plant mentioned but also those constituting our principal staple crops—was the occasion of a strong recommendation being made that, with respect to potatoes and these diseases, the procedure below alluded to, as complied with in connection with exportations, should be enforced against those constituting importations—that is, these too should be accompanied by certificates testifying to their freedom therefrom.

The recent reported outbreak of Potato Murrain (*Phytophthora infestans*) in New Zealand (whereunto it has doubtless become introduced from some outside source), with corresponding limitation of the oversea markets into which this important agricultural product previously entered that this has involved, should suggest that the embargo created with respect to potato importations from countries in which this serious malady is endemic, at the suggestion of this office, and that has for some time past been enforced in Queensland, although for a while constituting a unique procedure, has not been without ample justification.

EXPORTS.—During the year large consignments of potatoes have been made to the Philippine Islands, and to the East generally, comparatively new markets for this class of Queensland's agricultural products; and, in compliance with special requests received, these have been inspected by this office, in order that it might officially certify as to their condition. These requests have alone been acted upon when the potatoes that these consignments comprised have met a special requirement, consisting in the absence of Moth Borer, Gall Worm, Bacterial Brown Rot, Scab, and other diseases. And it is satisfactory to learn that, not only have the certificates issued been respected, but the standard of excellence in the products to which they have related, and to which they have borne witness, has resulted in profitable trade.

GENERAL TECHNICAL INSTRUCTION.

In dealing with the sections of Economic Entomology and Plant Pathology, allusion has already been made to the efforts of the office in providing formal instruction in these branches of Biology, separately considered. It may, however, be also added, as relating to its general scope of work that, on being approached by the late Board of Technical Instruction, it suggested for inclusion in its Syllabus, and in relation to technical teaching covering these provinces of scientific inquiry, the enumeration and disposition of subjects previously followed by the writer in his course as lecturer at the Queensland Agricultural College. This suggestion being approved of, it was honoured by inclusion in the Board's latest revised Syllabus—that of 1905—and may fittingly be here introduced, for purposes of reference, and as embodying views arrived at in the course of actual scholastic duties:—

PLANT PATHOLOGY AND ECONOMIC ENTOMOLOGY.

Note.—The three courses as detailed, comprising respectively distinct subject matter, may be taken separately and independently. Courses No. 1 and No. 2 have reference to what should be the necessary qualification for an Inspector under "The Diseases in Plants Act of 1896" (Queensland). These, together with Course No. 3, should embrace the necessary scholarship, in the subjects covered by them, of a graduate of a Technical (Agricultural) College. Course No. 2 should cover in part the requirements of a primary school teacher on whom devolves the duty of imparting a knowledge of what is connoted by Nature Study (Object Lessons).

Plant Pathology.—Course No. 1.

Preparatory Subjects.—Botany (structural and physiological, including use of microscope); Chemistry (elementary); Horticulture.

Stage I.

(a.) Changes due to environment, including—

- (1) Soil conditions, physical and chemical;
- (2) Atmospheric conditions, physical and chemical.

(b) Fungi (including Bacteria) related to plant growth: Form, structure, and life history of typical species.

(c) Fungus-parasitism—

- (1) Origin, saprophytes, facultative-parasites, obligatory-parasites, commensals;
- (2) The relations between hosts and parasites, structural and chemical;
- (3) Wounds and insect injuries in relation to fungus-parasitism.

Stage II.

(d.) The principal economic plants of the State, and the fungus parasites associated therewith separately considered, with reference to the characteristic form, growth, and action of the latter.

(e.) The prevention and treatment of plant diseases separately considered, including plant hygiene; fungicides (including the principles underlying their composition and action); the means for applying or securing the same.

Note.—Students will be required to display a practical acquaintance with all of the subjects dealt with in each of the foregoing divisions (a.) to (e.).

Books.—Smith (Worthington G.), "Diseases of Field and Garden Crops" (Macmillan and Co.); Cobb (N. A.), "Diseases of Plants" (New South Wales Department of Agriculture); Benson (A. H.), "The Destruction of Fruit Pests" (2nd edition) (Queensland Department of Agriculture), part only.

Reference.—Tubef (Dr. K. F. von) and Smith (W. G.), Diseases of Plants Induced by Cryptogamic Parasites (Longmans and Co.); Reports of Official Vegetable Pathologists of Victoria, New South Wales, and Queensland; "The Diseases in Plants Act of 1896" and Regulations thereunder.

Economic Entomology.—Course No. 2.

Preparatory Subjects.—General Natural History or Natural Object Lessons Course. Drawing (elementary).

Stage I.

Definition of the term "Insect." Collection, preparation, and preservation of illustrative forms of insect life.

(a.) The classes of injuries, mechanical and chemical, due to insect attack, as manifested in the different organs and tissue-systems of plants.

(b.) Useful or friendly insects; the character of their services.

(c.) The orders of insects, considered individually and in their inter-relations. Form, structure, and life-history (including transformations) of typical forms of both the principal harmful and the principal useful species embraced in each.

(d.) Insects in relation to plant-fertilisation and seed-development.

Stage II.

(e.) The principal economic plants of the State and their insect enemies; the latter considered in detail.

(f.) The injurious insects within the scope of "*The Diseases in Plants Act of 1896*"; detail consideration.

(g.) Man. Insect enemies; including mode of attack and nature of injury.

(h.) Stock. Insect enemies; including mode of attack and nature of injury. (*Ticks* to be regarded as insects in this connection.)

(i.) Stored and Manufactured Products, including wood and wooden structures. Insect enemies; including mode of attack and nature of injury.

(j.) Insecticides (dry, liquid, and gaseous). Nature and composition. Mode of action. Application, both general and special.

(k.) "*The Diseases in Plants Act of 1896*" and Regulations thereunder.

Note.—Students will be required to display a practical acquaintance with the subjects dealt with in each of the foregoing stages (a.) to (k.)

Books.—French (C.), "*Destructive Insects of Victoria*," Parts I.-III. (Department of Agriculture, Victoria).

References.—Sharp (D.), "*Insects*," Vols. I. and II.; "*The Cambridge Natural History*," Macmillan and Co.; Reports and Papers of the Official Entomologists of Victoria, New South Wales, and Queensland.

Apiculture.—Course No. 3.

1. The general and special external features of—(1) the principal economic species of *Apis*; (2) the common hive or honey bee; and (3) its races.

2. The bee-colony and the features of the classes of individuals that it comprises.

3. The home of the bee colony: its form and composition, considered as bee-products, with consideration of the bee-organs used in their preparation, such products to include nectar or honey, propolis, bee-poison, water, silk, wax, combs.

4. The development of the brood, the worker, the drone.

5. Apiary establishment—selection of stocks; quieting, handling, and controlling bees; moving bees; choice of site.

6. The principal types of bee-hives, and the principles of their construction.

7. Instruments used in apiculture and their uses.

8. Honey, desirable and undesirable qualities; testing and judging.

9. Bee-pasturage; cultivation of honey plants; influence on honey of special plants; plant-fertilisation.

10. Transferring bees.

11. Securing surplus honey; extraction; comb honey; putting on sections.

12. Wax-production; comb-building.

13. Increase of colonies; natural swarming; artificial increase (dividing, nucleus system, &c.); prevention of swarming.

14. Queen rearing and distribution.

15. Diseases and enemies of bees.

16. The general management of the apiary and bee calendar.

17. Marketing honey and wax.

Text-books.—"The Bee-keepers' Guide; or, Manual of the Apiary," A. J. Cook; "Bees and Bee-keeping, Scientific and Practical" (2 vols.), Cheshire. (G. U. Upcott, London).

With reference, further, to the important subject of public enlightenment with regard to matters falling within the domain of the work of the office, it may be added that the project of using the existing organisations constituted by the different agricultural and horticultural associations has not been lost sight of. Thus it has been suggested to the executive officers of more than one of them that an interesting feature in their monthly meetings might be provided, and one, moreover, directly touching their interests, were their individual members induced to bring forward species of such pests and diseases as they might recently have encountered on one or more of the crop plants the object of their special enterprise, with a view of their being brought under the notice of this Department, in order to secure an official statement regarding the matters of significance connected with them, and the methods officially approved for their subjugation, which pronouncement likewise might be made similarly available to the members present. It is interesting to learn that this proposition, which appears to have reference to an urgent requirement for information, has been readily acquiesced in by more than one of the societies alluded to.

CONCLUSION.

This Report, although possibly suggestive of the important and varied interests with which the office is concerned, might nevertheless serve as indicating the inadequate attention bestowed on many of the matters that it embraces. This reflects an unavoidable state of things, that arises from the fact that the entire work of the office devolves on a single individual, and one that is probably without parallel in any part of the world that approaches Queensland, in comprising, not only a vast extent of territory, but—as the outcome of this—a territory in which the enterprise of its inhabitants identified with the promotion of primary industries of a rural nature is concerned with such diverse and important products. The fact of that individual being the originator of much of the knowledge that the office has dispensed has alone rendered possible even what has been accomplished with such imperfection.

HENRY TRYON, Entomologist and Vegetable Pathologist.

14th August, 1905.

REPORT OF THE DIRECTOR OF THE BOTANIC GARDENS, BRISBANE.

SIR,—I have the honour to submit my sixteenth Annual Report. During the past year the cost of the Botanic Gardens to the State has been £1,500 less than its annual cost sixteen years ago, before my first report was presented to you. Until a few years ago the State gardens were supported in a way which, though almost incredibly inadequate compared with expenditure on similar areas in the sister States, still enabled me to maintain them in a very beautiful and instructive condition, and to present one of the most effective advertisements of its varied vegetable resources, grand climate, and horticultural and agricultural possibilities which this State could possibly have; but I regret that recently it has been thought that this is a direction in which drastic economy can well be exercised.

About eight years ago the water supply was cut off, except on payment by meter. No fund was provided to meet this payment, and with yearly decreasing funds the water supply has practically ceased. No skill and no labour can compensate for the loss of a water supply. The whole seventy-seven years of labour and expense involved in the creation of the gardens are being utterly wasted by the inability to secure for the people's gardens a mere fraction of the water which, I am assured, runs to waste annually.

When a third of the year had elapsed, I was informed that it would be necessary to reduce the staff by something like half. In order to inflict as little hardship as possible on the men—some of whom have been faithful servants of the State for many years—it was decided to place them on half time. Of course such an arrangement could only work in a very unsatisfactory manner. The work of a gardener is such that he must take an interest in it, and work at it consecutively in order to achieve good results. The matter has to some extent adjusted itself by some of the best men refusing to work under such conditions, and obtaining work elsewhere. The numerical strength of the staff is now one-third of what it was when I took charge sixteen years ago, and it is barely possible to keep the gardens clean with the assistance given. About the month of February even this is impossible. When the order was received to reduce the staff, it was thought best, with the sanction of the Minister, that the lower portion of the gardens should be practically abandoned, in order to keep the rest in fair order. I do not think that anyone fully realised what a garden will become like if left alone for only a short time, but this certainly furnished a striking object lesson in that direction, and elicited much unfavourable comment. It was eventually decided that all the labour should be spread over the whole place, with a view to keeping it as well as the depleted staff would admit of. It was slow starvation spread over a larger area.

During the year I had the assistance, if it can be called such, of five unemployed. Unfortunately, these were not five regular men, but the number was made up of hundreds of different men, each working a few hours. They received an equivalent which, expressed in money, amounted to 14s. 3d. for forty-eight hours' work, on the average. They had no idea of the work, even assuming that they were able and willing. The net loss to the gardens by their presence was equivalent to £16 on the year's work. When the attendance is less than an average of six men I should prefer them to stay away, as they do not compensate for the time lost in superintending them. The principle, originally initiated by my advice, of finding work for these men has been extended by the Government, and the area of operations enlarged to embrace prickly pear extermination. This leaves only a few casuals from time to time for work in the gardens, amounting, as before stated, to an average of five for the year.

A large mass of general repairs has accumulated during the past few years, and now requires the attention of the Works Department in order to place the establishment in working order. The condition of the asphalt paths necessitates much extra labour in order to make them presentable. Weeds grow through them, and have to be laboriously picked out. The bush-houses also sadly need attention.

I may say that the net cost of these gardens to the State last year was £25 per acre. This is far cheaper than the rate at which any other garden of any pretensions, public or private, in Australasia, has been maintained. Increased funds from some source, governmental or municipal, is urgently necessary, in addition to a good water supply. It is really worthy of serious consideration whether it would not be wiser for the State to abandon the gardens altogether than to have the name of keeping them in the present starved condition.

I suggested when the staff was reduced that it would be well to abandon altogether the idea of keeping birds and animals here. There are seven large animals, four emus, nine large birds, and eighty smaller birds. They require a good deal of attention, which is given them by the man who acts as janitor, picks up papers, opens and closes gates, and acts as night watchman.

I have never known the gardens to be visited by such crowds of people, children especially, as during the past year. The road by the river has become practically a public road, in consequence of the gates being left open all day, and vehicles freely enter. It is quite impossible to keep this road or the bordering grass in order owing to this fact.

During the year a good deal of my attention has been devoted to the important matter of the timber and forest problems of this State. My work in this direction is, however, before you in another form.

PHILIP MAC MAHON, Director.

REPORT OF THE TRUSTEES OF THE QUEENSLAND MUSEUM.

SIR,—We, the Board of Trustees of the Queensland Museum, beg leave to submit our Annual Report for the year 1904.

We have regularly held monthly meetings for the transaction of business, and our supervision has not been confined to those occasions.

VISITORS.—The number of visitors for the year was 60,730; the average cost per head a little over 3½d. We claim that no small percentage of those who came for mere recreation went away the wiser for the amusement they enjoyed. The behaviour of visitors was on the whole very good; it would have been unexceptionable but for the misconduct of youths who gain admittance to the building on Sunday afternoon and cause trouble.

DONATIONS.—During the year we acknowledged receipt of 344 contributions. Of these only few comparatively were additions to the Museum collections, still fewer of marked interest. The great majority were publications sent to us by scientific bodies, on the understanding, implied or expressed, that a return in kind would be made, and the mutual benefit of sender and receiver be realised. Unfortunately, we have, so far, had no money to spare for printing, and have been unable to meet our correspondents' expectations. Since the year 1882 the Museum has received over 12,500 donations.

LIBRARY.—Except for periodical literature of a scientific nature, and that to a very limited extent, the library has not been increased by purchase. Its main source of increase has been the unsatisfied exchanges before mentioned, an increase which we regret to find diminishing. We hope, however, during the coming financial year to print No. 6 of the "Annals of the Museum," of which the matter is in readiness. Apart from the interests of the library, there is another motive which leads us to consider the advisability of printing. If we accept information from abroad, we are expected to send abroad whatever new information our resources enable us to acquire, for it is to a great extent upon the intercommunication of knowledge that the advancement of science depends. The library now contains 11,000 books and pamphlets; many of those in frequent use are sadly in want of renewed binding. The card catalogue, subject and author, have been kept in a state of efficiency.

STAFF.—The area of the museum hall and galleries is 3,417 square yards; the number of cases occupying this space is 261, apart from wall cases and wall exhibits. The three officers who, together with the Director, constitute our staff, find it difficult to maintain that perfect cleanliness of floor and case on which we necessarily insist, as these officers have also to wait in turn on the door, and, what is of essential

importance, preserve, in a difficult climate, the perishable and larger portion of the collections on exhibit and in reserve. It is proposed to make such alterations in this respect as will allow the attendants more time for their especial work. At the close of the year we were indirectly made aware that the services of the Director would, at the end of three months, be dispensed with. This officer, who has single-handed to perform the duties of a clerk, secretary, librarian, and general manager, who is required to deal with all scientific questions cropping up from the contents of the Museum, and from inquiries outside it, and who undertakes the safety and use of the standards of weight and measure on behalf of the Treasury Department, is not incapacitated by age from the performance of these multifarious services, and, we trust, will eventually be allowed to again render them.

COLLECTIONS AND EXCHANGES.—We have not by these means been able to procure any additions to our exhibits. We greatly desire to have the means of sending a collector to various parts of the State, especially to the western and north-western districts, not merely on account of the number of natural products which he could obtain, and of which we are deficient, but because it was, in former years, found that the interest excited in country districts by the visits of a collector was a potent incitement to private contributions. As to exchanges, these require time for preparation, which a limited staff can ill afford.

ACCOMMODATION.—We have again to represent our need of additional room. It will be remembered that when we removed from William street we were, without reservation, allowed to believe that we should have the whole of the present building for our uses, and we planned our arrangements accordingly. When we were disappointed as to the part now used as a concert room, we were at a loss to find accommodation for a large number of those exhibits which are not of local origin; we were compelled partly to crowd these together, with very unsatisfactory results, partly to put them away out of sight. Were the concert hall at our disposal, we should be able, according to our original plan, not merely to find space to exhibit everything in a proper manner, but to provide a lecture room for public instruction. To utilise the concert hall for the purposes referred to above would require a considerable increase in the Museum vote, but we hope the subject will receive consideration at an early date. At present there is no insurance over the building or its contents, nor have we been able to continue the services of a night watchman.

STANDARD WEIGHTS AND MEASURES.—These instruments have received constant attention, and are ready for use whenever, under legal conditions, appeal is made to them.

COPYRIGHT ACT.—Twenty-five certificates have been issued.

A. NORTON, Chairman.

REPORT OF THE MEAT AND DAIRY PRODUCE ENCOURAGEMENT BOARD.

SIR,—I have the honour to submit a Report on the operations of the Meat and Dairy Produce Encouragement Board for the year ending 30th June, 1905.

ADVANCES AND REPAYMENTS.

During the year the board did not make any further advances to either meat or dairy companies, but gave conditional approval to an advance not exceeding £1,250 for the erection of a butter factory at Gladstone, and this factory, which is now in course of erection, should be ready to commence operations during the coming butter season. A further sum of £50 was also approved to the Ayr Co-operative Dairy Company, for the purpose of the addition of an ice-making plant, which the board ruled was a necessary portion of the outfit of a complete butter factory, and thus entitled the company installing such a plant to an advance of 50 per cent. of its cost. The Rockhampton factory mentioned in my last report has now been established, but the company did not avail themselves of the advance approved by the board, and have erected the factory without Government assistance. Messrs. Archer Bros. postponed the erection of their proposed factory at Gracemere, for which they had a conditional approval of an advance from the Central Dairy Fund.

The total amount of advances remaining on the books on the 30th June, 1905, was—

MEAT FUND.				£	s.	d.	£	s.	d.
Southern District	...	...	...	20,113	18	4			
Central District	...	...	...	20,859	12	7			
Northern District	...	...	...	21,136	18	10			
Carpentaria District	...	...	...	2,658	9	0			
							64,768	18	9
DAIRY FUND.				£	s.	d.			
Southern District	...	...	...	4,249	2	10			
Central District	...	...	...	1,000	0	0			
Northern District	...	...	...	1,581	0	0			
Carpentaria District	...	...	...			
							6,830	2	10
Total				£71,599	1	7			

The amount repaid by borrowers in accordance with the Act during the year was—

MEAT FUND.				Interest.		Redemption.		Total.		
	...	...	...	£	s.	d.	£	s.	d.
Southern District	...	...	...	897	11	6	2,575	8	4
Central District	...	...	...	636	8	0	2,208	14	2
Northern District	...	...	...	697	3	7	2,292	12	11
Carpentaria District	...	...	...	116	0	0	241	11	0
				£2,347	3	1	£7,318	6	5	
								£9,665	9	6
DAIRY FUND.				Interest.		Redemption.		Total.		
	...	...	...	£	s.	d.	£	s.	d.
Southern District	...	...	...	211	12	9	712	0	3
Central District	...	...	...				
Northern District	...	...	...				
Carpentaria District	...	...	...				
				£211	12	9	£712	0	3	
								£923	13	0

The board was, fortunately, able to recover the full sum advanced, with interest, on three steam creamery plants during the year—viz., Milora, Lord John Swamp, and Ramsay Creameries. Messrs. Daly Bros. also wiped out their debt to the board on their cheese factory at Quinalow, near Jondaryan, and in all but two cases in the Dairy Fund interest and redemption has been paid to date, whilst the small sum outstanding will, provided the coming season proves satisfactory, be paid.

During the year the board decided to terminate the sublease of the Mackay Butter Factory, and possession was taken of this security on the 1st December last, and the board have succeeded in disposing of the factory to a co-operative company, consisting of the principal dairymen in the district, the new company's operations, so far, giving sign of successful results being obtained, thus adding a new industry, on a commercial basis, to the district, which is eminently suited for dairying. The Trelawney condensed milk factory had also to be taken possession of, owing to the failure of the late proprietor, and the board has been fortunate in arranging a transfer of the security to the Cressbrook Dairying Company, whose brand of milk deservedly commands such ready sale on the open market.

The meat companies have continued to meet their payments, with the exceptions mentioned in my last report. However, the Broadsound Company, who paid the sum of £194 6s. 8d. during the year, which sum was credited to arrears of redemption, has, it is understood, undertaken to meet its outstanding debt at an early date. The board has not yet been able to find a purchaser for the Mackay works, due largely to the high price of cattle and the shortness of supply. The caretaker, under the supervision of the surveyor, has now placed these works in first-class order, and it is hoped that some suitable offer may be obtained for the works during the coming year.

All the securities have been inspected by the surveyor during the year, and the companies have been notified, where necessary, of maintenance and repairs required to keep the securities in order. Most of the companies recognise these inspections as in their interest, and readily comply with the board's demands.

REFUNDS TO CERTIFICATE HOLDERS.

A sum of £33,764 13s. 8d. was paid to certificate holders from the Meat Fund during the year under review, the total amount refunded to the end of the year to certificate holders being £64,540 17s. 6d., as will be seen by the following statement:—

Dividend.	Southern.	Central.	Northern.	Carpentaria.	Expenses.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. July, 1902	5,890 3 5	5,467 19 11	8,552 2 9	...	247 17 6	20,158 3 7
2. September, 1903 ...	5,690 16 11	3,472 3 8	2,704 16 6	...	83 17 11	11,951 15 0
3. August, 1904... ..	3,720 6 0	3,388 15 3	2,600 6 5	475 17 4	99 1 3	10,284 6 3
4. February, 1905 ...	10,559 4 9	9,807 7 9	...	2,210 16 10	62 5 0	22,639 14 4
Totals	25,860 11 1	22,136 6 7	13,857 5 8	2,686 14 2	493 1 8	65,033 19 2

As outlined in my last report, legislative action was taken which enabled the board to distribute the amounts standing to the credit of the Southern, Central, and Carpentaria districts Meat Funds, which had not been utilised for advances, the rates payable from this source being 6s. in the £ in the case of the Southern and Central district funds, and 10s. in the £ in the Carpentaria district fund.

Out of the credit balances of the Meat Fund, as on the 30th June, a further refundment has been approved to certificate holders from the Meat Fund, at the following rates, viz.:—

- Southern District fund, at 3s. in the £.
- Central District fund, at 4s. in the £.
- Northern District fund, at 2s. in the £.
- Carpentaria District fund, at 3s. in the £.

These payments are now being made.

I have not included a statement of receipts and expenditure from the inception of the funds this year, as such statement appears with the Auditor-General's report each year.

VOTE FOR LOANS IN AID OF CO-OPERATIVE AGRICULTURAL PRODUCTION.

No fresh advances were made from this source during the year under review, although several companies who had previously made inquiries, and had received advice from the board, erected butter factories, largely on the lines advocated by the surveyor when advising on such matters. It is gratifying to note that with one exception all companies who received advances from this vote have met their payments of interest and redemption, and maintained their factories in first-class order and repair, generally adding considerably to the value of the board's security out of the profits earned. Two companies—viz., the Queensland Farmers' Co-operative Company and the Dalby Farmers' Flour Milling Company—repaid the advances made to them, with interest, during the year, and their securities have been released.

As I have now severed my connection with the board, due to my transfer to another office, I desire to place on record my appreciation of the invariable kindness and courteous help accorded to me by each and every member of the board during my tenure of office as secretary, extending from April, 1894, to the 30th of June last.

W. CHAS. GREEN, Secretary.