1906.

QUEENSLAND.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE AND STOCK

FOR

THE YEAR 1905-1906.

PRESENTED TO BOTH HOUSES OF PARLIAMENT BY COMMAND.

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Department of Agriculture and Stock,
1905-1906

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REPORT OF THE DEPARTMENT OF AGRICULTURE AND STOCK FOR THE YEAR 1905-1906.

Presented to both Houses of Parliament by Command.

TO THE HONOURABLE THE SECRETARY FOR AGRICULTURE.

Department of Agriculture and Stock,
Brisbane, 1st August, 1906.

SIR,—I have the honour to submit to you the Report of this Department for the year ending the 30th June, 1906.

The Department was organised to help farmers and pastoralists in crop and stock raising, to stimulate production to meet the needs of the home market, and, in a secondary degree, to aid in finding markets outside of Queensland; and it may be said that, during the period included in this report, the Department has been in closer touch with the varied agricultural and pastoral industries than during any previous period in its history.

The new lines of work that have been undertaken, notwithstanding some increased help, have imposed more duties upon a staff that was already short of its proper number, but, nevertheless, claims of the public have been met without delay.

The changes affecting the policy of the Department that may be recorded are connected with the transfer of matters relating to the central sugar-mills.

Though this transfer dates from April, 1904, it was not until the 1st July, 1905, that the final arrangements were made, which included the transfer of Mr. W. C. Green to the Treasury Department. This change involved his resignation of the secretaryship of the Meat and Dairy Board, a position held in conjunction with his duties in connection with the sugar-mills. As the work of the Meat and Dairy Board did not appear to require the whole time of an officer, it was decided, with the sanction of the board, that the duties should be undertaken as part of the general work of the office, and, after a year's experience, it may be reported that the scheme has worked well.

The expansion of the work of the Agricultural Chemist, notably by increased duties under the Dairy Act and the Fertilisers Act, necessitated enlarged laboratory room, and accommodation has been provided in the building lately occupied by the Government Analyst. Before 1905, the analytical work was done by Mr. Brünnich alone; now there are four assistants.

In the early part of the year a work upon the commercial timbers of Queensland, with special reference to those most suitable for railway sleepers and bridge work, compiled by Mr. Mac Mahon, then Director of the Botanic Gardens, was issued for the information of those with whom Queensland might do business. The heads of the railway systems in the different countries were presented with copies, together with certain timber firms connected with railway work. Mr. Mac Mahon, shortly after the publication of the "Commercial Timbers of Queensland," was transferred to the Lands Department as Director of Forestry, and was succeeded in the Gardens by Mr. J. F. Bailey.

Commencing with last January, a system was brought into operation under which the public, through the Press, were made aware, monthly, of the condition and progress of agriculture and of stock matters throughout the State. This information, abridged from the monthly reports of the inspectors, has been much appreciated. As issued, they occupy from, say, five to six columns of the daily Press, but to bring the reports down to that limit entails considerable work.

The Acts of Parliament lately brought into operation—the Dairy Produce Acts, the Special Agricultural Selections Act, the Fertilisers Act, the Marsupials Act, the Shearers and Sugar Workers Accommodation Act—the administration of which is referred to under their separate headings, has naturally added much to the work of the Department, which, excepting the addition of the requisite field officers, has been accomplished without addition to the office staff.

The technical officers have been fully occupied throughout the year, and the constant demand upon their services has made it somewhat difficult to meet the wishes of the public for advice and instruction, but, so far as has been possible, all demands have been complied with. The necessity for advanced teaching is becoming more patent every day, and the wisdom of placing every facility for improvement at the service of the farmers is fully demonstrated by the following opinion of no less an authority than the Secretary for Agriculture, United States of America, who, in his last report, wrote:—

> A period of some industrial depression during the past two years has been saved by the farmers from the severer conditions that must otherwise have befallen, in consequence of the absorption of a large portion of the readily convertible assets of the non-agricultural classes into great and prevalent speculations. Thus, it has happened, the farms of the nation have been the sustaining power upon which a basic dependence must be placed in all stresses by people endeavouring to maintain economic self-sufficiency.

Many men have spoken of agriculture as the backbone of a country, but it has remained for Mr. Rusk to clearly define the many-sided points of the situation, and to make it clear that, of all the industries that go to make up the political economy of a nation, the work of the farmer should have the greatest encouragement and help.

The items in the College report that may be referred to as being of more than passing interest are: The suggestion of the Principal of the Queensland Agricultural College that the age of admission should be raised to seventeen years. The question of the age of admission at fifteen has been discussed on several occasions, it being considered that a student on entering at fifteen, as he is allowed to do under the present regulations, is too young, even if he complete the full course of three years, to undertake responsibilities upon his own account or to start farming. This objection does not perhaps have much weight in the case of students who are the sons of farmers; but it is entirely different with those whose parents are engaged in other than rural occupations. They have to seek employment in dairy factories, on farms, &c., and in some cases in towns, with the danger that, being at a susceptible age, their attention may be diverted and the education of three years lost. It is submitted also that a boy of fifteen, who has not been connected with farming throughout his life, is too young at fifteen to realise what he is being taught, and experience has shown that the progress of those who are willing to learn is, during the last year, altogether out of proportion to that learned during the preceding two years.

The water supply for domestic irrigation and other purposes, which has been a source of some concern during the existence of the College, owing to the heavy cost of pumping the water from the creek, whence the water is obtained, has been placed in good order by the substitution of larger and better piping, by which means the cost of upkeep has been considerably reduced and a good supply ensured. The main road from the railway siding through the College and to the intersection of the Gatton road, which in its natural state is composed of a heavy black soil, has been metalled and placed in good order for vehicular traffic of all kinds. The imported stock, cattle, and a draught stallion are now acclimatised, and the progeny of the cattle are in good demand. During last year forty prizes were secured at different exhibitions for the College cattle. The sales at Toowoomba by auction of grade and other stock have been satisfactory.

A departure from the curriculum hitherto obtaining has been the instruction of the students upon the system required under the Shop and Factories Act for boiler attendants, the object being to place such of them who might in later years require employment in that direction in a position to enable them so to do. Thirty-three students were examined under the Act, all of whom passed. For similar reasons, attention has been given to milk and cream testing, and nineteen students qualified for certificates under the Dairy Produce Acts. Reference is made by the Principal to the success of ex-students in following up the education they have received at the hands of the State. Two courses for school teachers—one during the Christmas holidays, and one during the winter vacation—have been successful. These courses will, if continued, be in future held during the winter.

Attention is drawn to that part of the report of the Agricultural Chemist relating to the tests that have been made by Mr. Brünnich of some of the different kinds of wheat that are grown in Queensland. These are particularly interesting as a guide to the growers and to the millers. To the former they indicate the best varieties to cultivate if suited to their lands, and to the latter information is available concerning the manufactured product that possibly was not before known. Of equal if not greater value are the analyses of the fodder crops, native and imported. These include native grasses, various sorghums, Rhodes grass, Massagua, prickly pear leaves, sweet potato vines, &c., and together form the most complete collection of Queensland fodders so far published, and particularly so as they have been done in accordance with the latest methods of fodder analysis. Green manuring is a matter of great concern to the agriculturist, for the enrichment of the soil and the worth of it is again borne out by a complete series of analyses of various crops.

The report of the Agricultural Chemist is most interesting, and should be carefully read by those concerned in the progress of advanced agriculture in this State.

It will be noted that the Instructor in Fruit Culture is very optimistic with regard to the outlook of the fruit industry. The citrus crop is of better quality than it has been for years, carries better, the percentage of loss has been very small, and prices are good. The banana gardens are rapidly recovering from the effects of the cyclone in the early part of the year, and considerable profits have been made owing to the short supply. He is emphatic on the point of working the markets outside the State in a more business-like and systematic manner than is done at present, to ensure a wider distribution of our fruit, which has a good reputation in the south, and where good prices can be obtained even on a glutted market. The reference to the canning of pineapples should not be passed without notice.

Mr. Nevill, the Tobacco Expert, praises the excellent quality of the last season's tobacco in the Texas and Inglewood districts, and points out that 75 per cent. of it will be used in what has heretofore been regarded as purely American work, and this without detriment to the smoking qualities of the manufactured article. The crop, moreover, has been absolutely free from disease. The cultivation of

boy leaving the Dept.

Include a return of wool in next report.

Write up Commerce Act. – Hamper to trade – fallacy of inspection and issue of certificates for articles in a manufactured state that have not be inspected during manufacture such as tinned fruit. harassment of many exporters by multiplication of forms.

Absurdity of registration of brands.

Everything has to go to Melbourne for approval.

Essence of Act was oversight of goods exported to maintain the reputation of Australia, in reality it is a fraud owing to the permissive nature of the inspection.

15270/6. C. Sec. – Col. Sec London advises 8-9-6 that in future on application the Customs in G^t Britain will admit wet and dry dutiable goods sent to Public Depts for examination free of duty, provided that if later they are put into consumption the duty will be paid

When dealing with Stock matters write up each Kind –

Sheep. cattle horses goats pigs – write well Known men for particulars.

About January write principle meat and butter exporters and ask their experience of the Commerce Act. Regulations

1. Whether it is hampering trade
2. The effect of the registration regulation as connected with the Trades Marks Act.
3. What value is placed upon the Trade description by Foreign Buyers.
4. Any objections to the trade descriptions from foreign buyers

Write up Lohima and Eastern trade
Obtain a return of goods shipped
Take up also matter Commercial - for the benefit of A
and other Dept dosg it -

5299/ Education Dept - what has been done. - Schools to be
visited.

cigar leaf tobacco is gaining ground on the coast lands between the Coomera and Cairns, and small quantities of excellent quality have been produced, which have been sold at satisfactory prices. Altogether the future of tobacco cultivation in Queensland is promising.

The Dairy Expert's report deals with many points of great interest to those engaged in the dairy industry. The fat standard of cream, concerning which there are many different opinions, that have provoked correspondence in the Press, is explained in a way that should clearly show the value of it. The matter is thoroughly gone into under several headings, and the standard is proved to be a check upon unscruplous testers, an invaluable aid to the successful grading of butter, and a means whereby errors in sampling and testing can be more quickly ascertained.

The need for weighing samples of cream for testing, as the most accurate means of determining the fat value, is also recommended.

The dangers attending the practice of pooling cream, now in common practice, is fully explained, and are set forth under headings which clearly indicate that the practice should be discontinued as soon as possible. Other main points in the direction of the improvement of the industry are, in the opinion of the Dairy Expert, to be found in the need for cream grading at factories and the better education of factory managers. Instead of the present system, the purchase of cream upon the fat content, and that flavour should be considered. The Dairy Expert advocates also that factory managers should hold a certificate of qualification.

The custom in the North of cultivating the staple crops only is, in the opinion of the Instructor in Tropical Agriculture, being gradually broken by the attraction of tropical crops hitherto not known outside the nursery, and for which the climatic conditions and the fertility of the soil offer good encouragement. The yields of coffee and the prices obtained are encouraging, and the plant installed at the nursery is stimulating production. Rubber is being planted, but, as the trees take a long time in coming to maturity, it will be years before any returns can be obtained. The replanting of young cedar-trees has proved to be successful, some 8,000 young trees having been planted out, some of which, in the short space of four years, have attained a height of 15 feet.

The State farm at Hermitage reports an absence of insect and fungoid pests, which is in some measure attributed to the dry spring in 1905. The dry belt wheats cultivated there—the Black Don, Velvet Don, and Kubanka—stood out conspicuously in the harvest results, as shown in the table included in the report of the manager, and produce conclusive evidence of the value of these wheats in a dry season such as the last. Although in a situation hostile to its native habitat, the Massagua plant throve exceedingly well so far as growth is concerned, but it did not seed. The plants flourished vigorously, growing to a height of 11 feet, with stems measuring $4\frac{1}{4}$ inches at the base, and giving an approximate return of fodder of 53 tons to the acre. The trials with the nitrogen-fixing bacteria were not a success, no difference being observable between treated and untreated plots.

At Westbrook State Farm the experiment in dwarfing trees is being continued, and, though the full measure of success cannot be determined until the trees have fruited, the progress thus far does not warrant any fear of the final result, and, that attained, a great step will have been gained towards controlling the insect pests. The manager advocates the collection and destruction of windfalls and doubtful fruit as being more successful than netting, which is liable to damage from storms, in coping with the fruit fly. During last pruning season, 20,000 vine cuttings were distributed to various districts in the North, South, and West.

THE COMMERCE ACT.

Associated with Captain Hutton as representing the meat export industry, Mr. Sinclair the dairy produce industry, and Mr. Chave the fruit industry, I attended the conference in Sydney on the export sections of the Commerce Act, called by the Minister for Trade and Customs. To those gentlemen I am much indebted for the interest shown in the subject we were called together to advise upon. No State in the Commonwealth having at the present time laws in force dealing with exports of perishable produce, excepting Queensland, it was obvious that the representatives of this State were in a somewhat peculiar position.

The conference was limited to suggesting regulations, but the meaning of a conference has, as generally accepted, a widely different interpretation. Being thus hedged in, the representatives of the meat and dairy produce industries had no alternative but to retire from a meeting in which they had no real interest, for it was beyond reason for them to advocate regulations that would hamper industries that had obtained a good footing in outside markets. Moreover, the requirements of the Commerce Act with regard to export, though excellent in theory, are so drastic that a country so young in the commercial world as Australia could never hope to comply with them and maintain its trade. A parallel can be found in the proposition made in Europe to reduce armaments. No country, excellent as the proposal may be, is ready to make the start; and so it is in commerce, in which there is no sentiment. As things now are, it is not a question of what ought to be, but what other countries demand; and, if Queensland has to find a market in competition with other countries, and is handicapped by conditions of trade, then the trade will assuredly go to the country that will satisfy the buyers' needs.

The representatives (other than official) of the meat and dairy produce industries, excepting two—one representing New South Wales, and the other Victoria—having withdrawn also from the conference, the remnant—practically officials—drafted regulations, and at the close I addressed the following letter to the Comptroller of Customs:—

Commerce Act Conference, 3rd May, 1906.

Sir,—Supervision of meat and dairy produce for export from the time of the first handling or preparation for market until it has been placed on board ship—or, in other words, from the time when a beast enters the killing crush or milk is drawn from a cow—has for years past occupied the attention of the Queensland Government, with the result that there are now in existence and in operation in that State, laws compelling purity and quality of the products mentioned when intended for export, added to which a complete system of grading is carried out.

Under this system any carcass of beef or mutton can be traced from the ship's side backwards to the freezing works or even to the cattle station where the beast was fattened; also, butter to the factory where it was made.

These laws have been drawn upon the lines of education coupled with inspection up to the point, from a Queensland view, where inspection should end without interference between buyer and seller. They have been accepted and approved of by the traders interested, and I am directed by my Minister to inform you that Queensland will not brook any interference with laws that have taken years to accomplish, and the result of which has enabled the merchants of Queensland to secure a good footing in the European and other markets.

Another matter which I am desired to bring to your notice is this: Under the Commerce Act, as it is understood in Queensland, uniformity is the ruling factor, and no difference under the Act can be made. Should this be the case, it will have a disastrous effect on trade, for the customs of commerce as applied to one market will not suit another. Moreover, trade is continually changing in locality and nature, and, if hard-and-fast rules are imposed, there will be a considerable danger in the direction of loss.

Asia requires a totally different custom to Europe, but it would seem that under the Commerce Act there is no provision for such matters. In this connection I would like to include the views of Mr. J. Reid, of Messrs. Hutton and Co., which are as follows:—

The point, so far as I can see, that will particularly affect the butter business is that in the canning department. We have been accustomed, when orders have been received from the Western merchants, to put the butter up, under their instructions, in what are termed nominal tins—in other words, in 14-oz. tins. This is only done where we have absolute instructions. If we receive an order without such instructions, we always pack 16 oz. to the tin. In the former case the tins are invoiced as "nominal," and there is no deception whatever about the matter. All the big dairying countries (England among the others) do it, and if we declined to acquiesce we would lose the business. The whole point is the buyers not being able to read English—they simply buy the tins without any regard to their weight content. They simply see a mark on the tin which they know to be all right, and they buy it. It would place Australia at a disadvantage if she was not to have this privilege; and, if she was compelled to supply full weights when the customer only wanted nominal weights, she would lose fully 75 per cent. of the business. Those who take full weights are only the small buyers. The removal of the privilege would practically destroy the trade so far as canned butter is concerned. It is a big business in the East, and it would be a great pity, for the sake of an entirely wrong sentiment and a misconception of the actual facts, to place an embargo on Australia complying with a certain trade custom. There is no such thing as deception. The buyer knows what he is getting, and it is upon his instructions that we do it. It is done by all the dairying countries. The consuming buyer simply buys a tin because there is a certain mark on it. He does not understand our weights and measures. So far as our own packing is concerned, we absolutely guarantee the 16 oz. in every tin, unless instructions are given to the contrary. It is then invoiced as a pound of butter, but in the other case the invoice is so many tins of butter. It is a trade custom which in many lines is recognised all over the world, and is accepted by both seller and buyer. Spirits, vinegars, and most liquids are sold in "reputed" measures. I do not know why we should do the heroic in Australia, and set such a grand example to the rest of the world, and if we did we would only be cutting our noses to spite our faces.

Bacon.—With regard to bacon, we have supplied Sir William Lyne with all particulars as to cases and methods of packing. I do not see any point on which the Commerce Bill will touch us with regard to bacon. The packing is generally done to suit the wishes of the buyer, and I don't suppose the Commonwealth will interfere in a matter of that sort. If a man wants his hams two in a case or twenty in a case, the Government surely will not do anything to prevent his wishes being given effect to, and I suppose it will be the same with cheese. If a man wants one or four cheeses in a case, there should not be any objection to compliance.

Rebate on the Sugar contained in Manufactured Exports.—Without this we would be unable to compete in the open markets. We could not possibly send our biscuits, preserved fruits, jams, &c., to South Africa, the East, &c., if we had to pay the Commonwealth prices for our sugar. If we go into the pineapple canning business, we will have to use, say, Mauritius sugar. The Singapore pineapple canners get their sugar for £12 a ton, and we have to pay £19. We have splendid fruit, and the English taste is for good fruit packed in good sugar. The Commonwealth sugar is good enough, but it is too expensive. We cannot afford to use Commonwealth sugar for any bacon and hams we export. My company has been in correspondence with Mr. Deakin on the subject of salt duty, but he states that he cannot allow a rebate. I may say, however, on a recent fifty-case consignment of bacon and hams I sent to Manila, I calculated I had to pay £3 17s. 6d. duty on the sugar, salt, and cloth wrappers used. Mr. Deakin said the thing was too small and paltry, but I told him that within five years our exports to other countries, notably to Manila, would be very large. Our bacon trade will also extend to England. But, if we are to be met on the very threshold with heavy charges on sugar and salt, it is going to be a very serious matter."

It is asked that this letter may be laid before your Ministers.

I have the honour to be, Sir,

Your obedient servant,

(Signed) ERNEST G. E. SCRIVEN.

To the Comptroller of Customs, Sydney.

The protests by the other Queensland representatives were:—

Sydney, 2nd May, 1906.

To W. S. Campbell, Esq.,
Director of Agriculture,
Chairman of the Commerce Act Meeting.

DEAR SIR,—I was instructed by Mr. C. P. Tindal, of Ramornie, Grafton, New South Wales, to represent his company, the Australian Meat Company (Ramornie), at the Conference of Trades on the 30th instant. It is the oldest exporting firm in Australia, and dates back to 1866. They establish trades marks and brands, and for the past forty years have stood on top as a London trading and manufacturing firm. They manufacture only first-class goods, and no such interference and mischievous legislation as proposed in grading and marking by Government officials is required on any of their exports. As working manager and director of one of the most successful meat companies in Queensland, I enter my strong protest against any interference with our long-established custom of shipping under certain conditions we have established and in accordance with London trade requirements—Customs inspection, Health Authorities' inspection, Board of Trade, Survey, &c.

In connection with the sale of canned goods, the London Chamber of Commerce have a meat section of arbitration we can always appeal to to settle any disputes as to contract conditions.

I have a long and personal knowledge of the canned goods trade made both here and in Europe, and can state no such controlling influence as proposed is required. If any such is forced upon the trade, it will be a mischievous farce, and quite unnecessary and expensive work.

Yours faithfully,

(Signed) THOS. CORDINGLEY.

Paragraph - Dept is as it should be the leader in new moves but it is not held that we hold all the wisdom of agriculture and suggestions from more experienced men upon matters pertaining thereto would be and have always been welcomed, but there seems an indisposition on the part of country men to voices their ideas on broad lines of benefit to Queensland generally. Suggestions are received upon local matters but not on questions generally.

Dairy Act. 1251/7 Dep Ag Melbourne. Suggestion relative to administration of Act. All but A.B. already in force here.

Question of inspection fees for fruit 1600/7 Vic

Pineapples 2905/7 Agent Genl

Wool Sales 3664/7 Woolselling Brokers Association

1026/7 Agent General Report on products.

Clearing Prickly pear. method used of - see papers

State Farm Biggenden - age 16. term 2 years under

agreement:	1st 6 mths	2/6 a week
2	"	5/- "
3	"	7/6 "
4	"	10/- "

The Chairman, Conference on Commerce Bill.

DEAR SIR,—On behalf of all the frozen meat works and meat exporters of Queensland, I decline to discuss the Act referred to, as I consider it an unnecessary interference with one of the principal industries of Queensland. We already have a State Government inspector for purity of beef, and all beef is graded as required by the purchasers, and any further interference will paralyse that industry in Queensland.

I am, dear Sir,

Yours faithfully,

(Signed) THOS. HUTTON.

The Queensland Meat Export and Agency Co., Ltd., Brisbane and Townsville.
John Cooke and Co., Brisbane.
Birt and Co., Ltd., Brisbane.
Baynes Bros., Brisbane.
Gladstone Meatworks of Queensland, Gladstone.
Central Queensland Meat Export Co., Ltd., Rockhampton.
Thos. Cordingley, Townsville, North Queensland Meat Export Co., Ltd.
Burdekin Meatworks, Sellheim.
Bergl Australia, Ltd., Bowen and Hughenden.

Sydney, 2nd May, 1906.

To the Chairman, Federal Commerce Act Conference.

SIR,—Without wishing to be discourteous, I, on behalf of the Butter Manufacturers' Association of Queensland, beg to withdraw from the conference.

My primary reason for doing so is that I had a misapprehension concerning the objects for which we were called together. Sir William Lyne assured the public, on the second reading of the "Commerce Bill," that it was intended not as a "Grading Act," but a "Trades Description" Act. He now states definitely that he intends to administer it as a Grading Act, even to the extent of indicating on the packages the "grade" quality, that it will apply principally to dairy produce, and not only will the produce be graded, but the States as well.

I feel confident that the Queensland producers will regard this as a serious interference with State rights, and also with the liberties of the producers themselves. I therefore protest against the proceedings by declining to assist in framing regulations under an Act which appears to me to be *ultra vires*.

As a business man I came here at considerable inconvenience, prepared to work expeditiously, and regret Sir William Lyne could not see fit to remain with the conference and thus shorten proceedings.

I also find that there is a misconception *re* representation of industries. Our State was asked to send one delegate representing each industry, but the scope of the conference has apparently been enlarged, as five delegates are allowed to represent the dairying industry of New South Wales.

Yours respectfully,

(Signed) H. SINCLAIR,

Queensland Butter Trade Representative.

STATE FARMS.

At the State Farm, Hermitage, arrangements have been completed whereby instruction in general farm work may be given to a certain number of boys who, from circumstances, are unable to receive the advantages of the college course. Buildings have been erected for the accommodation of ten apprentices, between the ages of sixteen years and eighteen years. Four only have been accepted this year, three will be received next year, and three in the following year, so that at the end of the third year there will be, and for each succeeding year, ten in residence. The boys will be apprenticed for three years, receiving nothing for their services for the first year, £1 a month for the second, and £2 a month for the third, board and lodging being provided. Sufficient stock will be also provided in order that instruction may be given in all branches of farming.

The State farm, Gindie, has undergone a considerable alteration in its operations. The idea of working the farm for the cultivation of cereals and the other crops that are included in the term "general farming" has been entirely abandoned, experience having proved that, excepting during very favourable seasons, the cultivation of cereals is a failure. It may be that, when more is known of the system of dry-belt cultivation, experiments of that nature may again be taken up, but in the meantime the farm is to be worked as an object lesson to the grazing homestead farmer. Many who follow this occupation have previously been employed on stations and when they undertake the working of smaller areas on their own account do not realise the need of having as many sources of income as possible, but are content with following the lines of their previous experience. It is upon this basis that the organisation of this farm has now been laid. Excepting for the growth of fodder for preservation against a dry time, cultivation of crops will not be followed. The preservation of natural grasses will also have attention, the grasses in that neighbourhood being eminently adapted for harvesting. The farm will also carry sheep, dairy, and beef cattle. A separator has been installed, and the cream is sent to the nearest factory. Instruction in the different lines will be at the service of those who desire information, and it is anticipated that, when this farm is in working order, the annual expenditure will be covered by the receipts.

The establishment of a State farm at Bungeworgorai, near Roma, is a most important step in the educational system of the Department, and the results of the experiments will be of great interest. The other farms in the more closely settled parts of the State—Hermitage, Westbrook, and Biggenden—are favourably situated with regard to rainfall, and there is little difficulty in maturing the crops that may be planted. The district, of which Roma may be said to be the centre, holds numerous farmers who have, more or less, entered upon general farming, in which wheat-growing is included. Climatic conditions are rather erratic, and grain-growing, up to the present, has not been so reliable as nearer the coast. The quality of the grain is undeniable, and there is a firm belief in the possibilities of this district as one of the granaries of Queensland; but to reach that goal experiments are needed, to carry out which the farmer has not the means. The class of grain suited to the district has to be determined, the best time for planting, and other matters which take time to develop, and it is to this end that the main energies of the Roma farm will be directed. Encouragement in the direction of general farming will also be a feature of the farm, and the cultivation of the vine will not be omitted. Fodder crops of many kinds will be grown, and every effort made to induce the farmer to grow other and new crops that will be of service in a dry time. The farm is situated on what has hitherto been known as the Police Paddock, and at time of taking possession in January last was so overrun with prickly pear and other weeds that

as much progress as could be desired has not been made. About 100 acres, more or less, have, however, been stumped and otherwise cleared and planted with grain of different kinds, which, up to the present, promises well. The vineyard has been planted, and a variety of fruit trees, to test the district for this kind of horticulture, have also been laid down.

The State tobacco farm at Texas, held from the Scottish Australian Investment Company, Limited, since 1900, under an arrangement by which, during the first period, the land was held free of cost, and, later, upon a division of the gross returns, will be relinquished as soon after the 30th June as the crop can be delivered to the buyers. The reason for this is that it is thought that sufficient demonstration has been given, and that the time has arrived for giving more attention to other classes of tobacco in other portions of the State. The Tobacco Expert will continue to visit Texas to give advice to the many settlers in that district.

The Texas farm is adapted for pipe or plug tobacco only, but there are vast stretches of coast lands that are capable of producing cigar tobacco of the highest quality, and it is with this object in view that the Department intends to encourage tobacco on the Northern coast. No State farm will be established, but at certain places particular attention will be given to plots grown by farmers, in the hope that by the object lesson others may profit from the methods followed and from the instruction that will be at their service. Mr. Nevill, in a report on a visit of inspection on the North Coast, has arrived at the conclusion that the Proserpine district will grow a fine cigar tobacco. Bowen, again, holds a good area of really good tobacco soil. At Cardwell the industry has already started, and, from the results of the initiatory enterprise, it is anticipated that from 15 to 20 acres will be under tobacco this year, the soils and other conditions being highly suitable.

Cairns is not interested in tobacco, the people there having other means of livelihood, though the land, like other tropical centres, is well adapted.

The experiment samples placed on the market, grown by Mrs. MacKenzie, of Cardwell, have created a demand for leaf, and, if care be taken, there is no reason why this plant should not form a valuable subsidiary crop for the North.

The tobacco sold of last season's crop, amounting to 19 hogsheads or from 9½ to 10 tons—the accurate weight is not known in the sheds—has realised from 5½d. to 9d. per lb., delivered on the farm, the prices obtained being, in the words of the purchasers, the highest paid by them for any leaf this season.

Before closing this paragraph, I would like to place on record the courtesy with which the Scottish Australian Investment Company have invariably met any request during the tenancy by the Department of their property, and the help given by their officers on all occasions.

AGRICULTURAL EDUCATION.

The importance of this subject requires no excuse for urging its dissemination wherever possible, or for again making it an item in the annual report of the Department.

Some progress has been made during the year, but it is submitted that the work done only touches the fringe of the subject. There should be no turning back, and no hesitancy, even if mistakes be made, until Queensland has become the premier State in such matters. The country, climate, and soil are superior to any other State in Australia, and the markets are available. A beginning has been made in the training of those lads who have a desire for agriculture, as advocated in the report of the last and preceding years—lads whose parents are unable to give them the benefits of a training at the College at Gatton. Buildings have been erected at the State Farm, Hermitage, for the accommodation of ten boys, each of whom will have three years' instruction in general farming. The experiment is in actual operation. It is too early to write definitely of any results, yet it is hoped that each one of the lads will, as a matter of honour, do his utmost to repay the assistance given by the State, and will leave the farm with knowledge that will help to advance agriculture in the district in which he may settle.

The initiation of the system is naturally beset with some difficulties, and, though the buildings are for the accommodation of ten lads, it will not be until the third year that they will be fully occupied. From that time there will always be ten under tuition, and each year will see three released, fully equipped with a means of livelihood infinitely superior to the callings of town life. The system thus initiated may, it is hoped, have many branches, the first of which should be a tropical school. There is so much to learn of the opportunities awaiting us in the tropical part of the State, and apparently there is so little inclination on the part of the older generation to take up new products, so long as a livelihood can be made from timber-getting, maize, or sugar-cane growing, &c., that it is needful that the interest and zeal of the younger generation should be aroused. As the State Farm, Hermitage, is supplying an education in temperate agriculture, so let the State Nursery, Kamerunga, fulfil similar functions with regard to tropical agriculture. The teacher is there, and, excepting accommodation, the material is available. Reference to the reports of the Manager of the State Nursery, Kamerunga, or the Instructor in Tropical Agriculture will reveal many things that can be profitably taught from a commercial point of view.

A most interesting forward movement is that of the school initiated, at their own cost, by the Pastoralists' Association for wool-classing, in order to raise up a class of men better equipped for their work. This commendable step might well be followed by those who are in possession of means, by the endowment of scholarships at the Agricultural College for the benefit of those who are unable to obtain its benefits by payment. The education there is free, but the charge for the maintenance of a student amounts to £30 a year. The State grants four bursaries which carry free maintenance each year, but the candidates exceed the number available fourfold. There must be men of means in Queensland who have the cause of agriculture at heart, to whom the cost of a scholarship would be but small compared to the value to the individual and the State.

The action taken by the Education Department in arranging a school of teachers at the College during the summer recess was successful in every way. There were fifty-eight teachers in attendance, all of whom undertook practical as well as theoretical work during the course, a full report of which will be found in the report of the Principal of the College. Practical teaching in the schools is followed by many of the teachers with good results, and an extension of the system is in contemplation by means of which an instructor will be at the service of these schools.

Kga. did not pulp therefore not responsible for condition - Nursery can only treat what is sent in - Not musty when dispatched but discoloured.

Buedes in coffee evidently been polished - of course better quality - 1st class

Kga coffee ~~sold~~ sold f.o.b. 7½d.

? destruction - this is answered by Sale.

Govt can only handle what is sent in - is not in business of coffee growers.

We are associating coffee growing and point out defects - this was done in cases mentioned by Thurlow -

Extra expenditure Kga. approved

£3 new Verandah mens quarters No. 1

2. Verandah to mens quarters 2

5 Sundries

£10

Install telephones generally £a.

Contribute need Coleoptales - measures.

Purchase Brown Webb Hoe Drives one horse drill with fertiliser

Oils - Cinnamon essentials - . Some class citronella Eucalyptus -

encourage oil making peanuts - cocoanut fibre castor - Sesamum linseed - - Croton. Sunflower. Will not pay freight for raw material - good market in manufactured state - mining districts

Rubber - hand rollers as for sugar except see Brunnichs plans parcel on market -

Get quotation on 50 pans - diameter 1 ft depth 2".

Send up the last thirteen years Annual Report bound in boards.

Vols 1/2 Journals for Newport.

Directory 1902 Last on hand. Pughs Post Office Gazetteer.

Nursery Books not to hand yet. See that alterations include
Incoming correspondence sent up, not what is required – title
Nursery Registers – Samples pages sent down last year.

Send up a dozen Fertilisers Acd.

D. in P. Acd
Fertilisers
Shearers
Ag. Bank Acd
Commerce Acd

} Bind in calico, and a few spare copies

Commerce Acd forms & stamps. – Index re

Fruit – Deputation Jones Report

Ostriches from africa

COASTAL TRADE.

The diversity of our products in the North and the growth of trade with the South have so appealed to the Chambers of Commerce on the Northern coast and to merchants and others engaged in trading in perishable products that letters and petitions have been received from each port from Mackay to Cairns, asking that arrangements be made whereby steamers now trading on the coast fitted with refrigerating space and machinery might be available, so that exporters southwards of custard apples, granadillas, and other soft fruits, butter, &c., might have an opportunity of placing their goods on the market in a better condition than heretofore.

The Adelaide Steamship Company offered to cool down, for a certain payment, a room on their steamers "Marloo" and "Wollowra," which have refrigerated space equal to between 40 and 50 tons of cargo, and make fortnightly trips between Cairns and Melbourne. The importance of this matter commended itself to the Department, and negotiations were opened for the inclusion of all ports as far as Cairns. The company declined to call in at Broadmount and Bowen, and preferred to negotiate directly with the exporters, and so the efforts of the Department to assist in developing the producing interests of Northern and Central Queensland have for the moment failed. The matter has not been dropped, but is held in abeyance pending communications from the Chambers of Commerce, which have been asked to again discuss the question.

INTELLIGENCE OFFICE.

In offering the suggestion that there should be an office of this nature in connection with this Department, I do not desire that it should be thought that the proposal shall in any way clash with the Inquiry Office attached to the Lands or other Departments, but submit the idea for your consideration from quite a different standpoint. The work of this Department is essentially connected with markets and marketing. When an instance happens of a new outlet being needed, every effort is made to acquire information concerning a profitable market, but it may and does happen that a season is lost from the immediate want of knowledge. Were an office in existence, it would be its duty to collect and collate information available when called for. The information gathered might be disseminated to the advantage of growers, and it is thought that such an office, if properly managed, would become of much value to the mercantile community.

There has been collected from time to time a considerable volume of information concerning market prices, customs of markets, Customs and other charges, packing, handling, &c., but for want of proper machinery the best use cannot be made of it. It is suggested that, if an office be formed, the duties of it cover, amongst other things—

1. The gathering and publication of the prices in the principal markets in the Commonwealth and New Zealand of such products as can be supplied by this State.
2. The extension of the export trade of Queensland.
3. The investigation of the requirements of the different markets of the world with which Queensland might do business.
4. The study of the conditions of demand and supply, as shown by the records of production, of imports, and exports.
5. Inquiry into any obstacles confronting the extension of trade.

The headings here given present but a crude idea of the realms into which such an office might venture. Though primary production is naturally the basal consideration, yet an Intelligence Office would, when once established, become the fount of information for the export trade. A shipper, in order to calculate his risk, desires to know the charges at a port to which his goods are to be sent on consignment. The port may be unusual and unknown for the Queensland trade, and so time might be lost, but an Intelligence Office should be in a position to give full information on such a subject.

EXHIBITIONS.

Apart from the annual exhibition of the National, Agricultural, and Industrial Association and the shows of other societies at which the Department was represented, there were, during the year, two exhibitions outside its borders in which Queensland took a part. They were the Lewis and Clark Centennial Exhibition, held in Oregon from May to November; and the Australian Native Association's Exhibition, held in Sydney in January last. The first-named was to celebrate the exploration of Oregon county, in the United States of America; and, in the hope that business in Canada and the United States might follow an exhibition of such of our hardwoods and other timbers that could be supplied in commercial quantities, an exhibit in the polished and unpolished state was prepared by Messrs. Campbell and Sons, Limited. The following were sent:—Blackbutt, tallow-wood, ironbark, blue gum, red stringy bark, spotted gum, crow's ash, Southern silky oak, bean-tree, white beech, yellow-wood, ivory-wood, bally gum, and also hoop pine, bunya pine, and red cedar, the latter from a furniture point of of view.

The Australian Natives' Association exhibits were on a more pretentious scale, though the space allotted was very small. They covered thirteen kinds of minerals, thirty-six specimens of timber, sugar, tobacco, mohair, leather, wool coffee, fibres, cereals, flour, cotton, cassava, ginger, rubber, cinnamon, vanilla, copal gum, cocoanuts, arrowroot, tanning products, preserves, pickles, meats, soups, wines, cordials, brushware, dugong, turtle, dairy products, oil, ground nuts, fertilisers, poultry food, saddlery, &c., &c.—all of Queensland production and manufacture, and a collection that few other countries in the world could put together, and one that could easily have been enlarged had the funds available permitted. The exhibits were much admired for the variety and quality of products, and for the manner in which they were displayed. Opinions were also expressed that the manufacturing exhibits were the best that were ever exhibited in connection with a show in New South Wales.

Information concerning Queensland was eagerly sought by visitors, particularly by those from the country, and much was done to enlighten inquirers as to the resources of Queensland.

Many samples of the different products were presented to such teachers of the State schools that were interested, to assist them in the Nature Study classes.

GARDENS IN OPEN PLACES.

The reference made in the last report with regard to gardens and other places open to the public at all times has been somewhat exemplified by the laying down of the plot known as the Queen's Gardens. There gardens have largely disproved the opinion hitherto held by those in charge of such places that the public are not to be trusted, and that it is necessary to surround all public gardens with bolts and bars.

The Queen's Garden was laid out as a flower garden as an experiment, and, though open at all hours of the day and night, the flowers are not stolen, nor are the plants interfered with.

The idea of bolts and bars in connection with public gardens, it is submitted, is unworthy. Instead of suspicion, trust should rule, with the alternative of a very high penalty for offences against the public property, which should be the care of everyone, instead of the care of the constable, as is the case at present.

The experiment with the Executive Gardens has been so successful that an extension of the system to the Botanic Gardens after nightfall is advocated, and the hope is expressed that those parks and gardens within the metropolis under the control of the municipal or other authorities may be treated likewise. There are, I know, people who will argue against the gardens being opened at night, but their arguments, if proper lighting be afforded, have no real weight.

The Queen's Park, Maryborough—an object lesson for public gardens in Queensland—is open at night, and the Musgrave Park, in South Brisbane, is also available at all times, but no well-grounded complaints have been heard concerning the bad influence afforded by the opportunities there given. The dweller in North Brisbane is, however, in a different position, and has to content himself of an evening with the sights that he is familiar with during the day time when he has to be working. How much better would it be were he able to spend the evening in the gardens than in Queen or other streets, walking up and down and staring at closed shops which he sees every day of his life.

In the southern States and in other countries the need for open spaces is recognised. In many towns and cities of America the houses in the residential portions are devoid of fencing on the street front, notwithstanding that grass plots and flower beds are to be seen between the pavement and the houses, and in some of the States the public parks are also devoid of fencing; but here, with a small population that could easily be educated to respect the public property, no progress is made, and the old law of bolts and bars still maintains.

NATIVE BEARS.

Laws are in operation for the protection of native birds, and laws are in existence for the destruction of marsupials because they eat the pastures that are required for the flocks and herds that bring wealth to the community; but for the harmless native bear (*Phascolarctos cinereus*), which is in no way a pest, there is no protection, notwithstanding that it is threatened with extermination owing to the value of its pelt. The Hon. W. V. Brown attempted, by a Bill presented to the Legislative Council in 1904, but which did not become law, to protect this animal during a close season.

The ease with which, by the use of poison and the consequent small outlay, to obtain a cash reward is such that these innocuous animals, if not protected by a close season, will soon be exterminated.

At the end of last year an attempt was made to ascertain the number, approximately, of the skins that had been offered for sale in the Brisbane market, and it was found that about 340,000 skins had been placed. The figures given represent the number of skins that passed through the regular markets; therefore, to arrive at an estimate of the extent of the slaughter, a considerable number must be allowed for the skins that were *not* sold, and also for the markets outside of Brisbane, as, for instance, Rockhampton. The number, therefore, can fairly be set down at 500,000, and it is not thought that the breed could sustain a continuance of such destruction for many years in succession, and, consequently, it is submitted that a close season, as suggested by Mr. Brown, should find a place in the Statutes.

SHEEP.

Mr. W. B. Slade, of Glengallan, has made an unprecedented offer, which has been accepted, to present to the Government fifty pure Glengallan stud merino ewes, in order that the pure strain of the Spanish merino may be retained in absolute purity without any mixture of strange blood. The Glengallan flock, Mr. Slade wrote, was founded by the late Mr. John Deuchar, and has been kept pure for the past thirty-five years, under Mr. Slade's supervision, and no strange blood has been introduced. These ewes will be kept at the State Farm, Hermitage, and will be received there during September, rams being supplied from time to time by Mr. Slade, who hopes that by his action the most valuable characteristic of the Australian pure merino of direct Spanish descent may be preserved, and, if possible, improved on, and the pure Australian merino type distributed throughout Queensland.

HORSES.

In continuation of the remarks in the last report upon the horse stock in the State, some inquiry has been made into the nature of the stallions that, during the season, are at the service of the public. Horse-breeding is of the highest importance, and the state of the horse market during the past few years fully warrants further reference to the matter. The demand for horses of classes required by the buyers in the market open to us—viz., Asia—is certainly not diminishing, but there is clear evidence, from the steady rise in prices now going on, that animals of the required class are diminishing in numbers in a greater ratio than should be the case. The cause can, it is thought, be found, to a certain extent, in the class of animals standing for public service, and in making this assertion it must be remembered that it is against those who are satisfied to use as an entire an animal that, by his breeding, is not calculated to produce a class of animal that buyers require.

A perusal of the table herewith, which indicates the result of inquiries made concerning 367 stallions, will afford evidence that animals are available at prices at which it is impossible, considering the cost of the upkeep of an entire and the cost of a beast of good breeding, for any benefit to be gained by the horse stock of Queensland. The headings to each column in the table are not arbitrary, but have been taken from the descriptions given by the owners when supplying the information to the inspectors. Thus it will be seen that blood horses are available in the Northern Downs districts at £1, £1 5s., £1 10s., and upwards; Clydesdales at similar figures, Arabs as low as £1 10s., and coaching stallions at £1 5s. The same figures will be observed throughout the table, and the opinions of those who have contributed to the upbuilding of the horse stock would, in relation to the low figures, be interesting reading. Improvement can be effected in two ways—by larger importations by private owners, or by the State by the establishment of breeding farms.

Skins. of certain native animals. 1906. and generally for 1905

		Bears per doz	Opossum per doz
Average value Skins	1 May to 31 October (winter)	17/6	7/-
	1 Nov. to 30 April (Summer)	16/-	6/6

— . —

Approximate trade value to Queensland for 12 months

Opossum Skins	3000 000	Skins	Value	£105000
Bear "	450 000	"	"	36 000
Kangaroo "	200 000	"	"	35000
Wallaby "	600 000	"	"	28 000
	4 250 000			194.000

Transactions of our firm for 12 months - (Moffatt)

102 428 Bear Skins value £6103

720 742 Opossum " " 29 136 £35239.

A correct estimate of the Kangaroo and wallaby Skins paid for cannot be arrived at because the fluctuations are great - The figures given above are therefor approximate.

London Sales 1906. from Australia

January	138 000	opossum.
April	950 000	"
July	730000	
September		
	2 061 000	

Of the above over 2/3rds came from Queensland.

Information of sales in London of native bear Skins is meagre but 46000 were sold at the April Sales. practically all from Q.

Kangaroo and Wallaby Skins find a ready sale in America but figures are not obtainable -

Refer to the Ordinary figs and the exact method of inspection by which the reputation of Q. was saved in this instance Also, the attempt to introduce figs from N. S. W. ex Moreton That were found to be affected with Scime fever.

Box

Agricultural Prog. Mr. Lascaphinbay

See letter from Olive 19.2.7.

Darling Downs Dairies &c sending away 3 brands of butter

D. D. Dairies Jacaifem Tiaro -

Large portion of cream from Warwick that usually goes to Willow brom Factory is travelling to Lowood & Beaudesert.

This to try and catch the graders.

See Thomsons letter also

Stallions see 1169/7. Dalby Ag. Soc.

Dept does not do enough with regard to the improvement of horse stock and the encouragement of male breeding - Even the small Colony of B. Guiana can afford to maintain two Stallions and a Jack donkey the earnings from the former including free service amounting to $1000 and $1070 respectively and (give rate in £ at 4/2) - The numbers of foals registered in 1905 as being born to Govt Stallions = 20.

Write up a recommendation for a horse farm - compare expenditure on education - this is a farming country but little Spent on the Service -

Grass Gardens.

STALLIONS.

District.	Blood.	Roadster.	Coaching.	Clydesdale.	Suffolk.	Pony.	Arabs and Grade Arabs.
—	Fees.	Fees.	Fees.	Fees.	Fees.	Fees.	Fees.
Northern Downs ... (155 stallions.)	£ s. d. 10 10 0 7 7 0 7 0 0 5 5 0 4 4 0 3 3 0 2 2 0 2 0 0 1 10 0 1 5 0 1 0 0 (50)	£ s. d.	£ s. d. 2 10 0 2 2 0 1 15 0 1 10 0 1 5 0 ... ... (7)	£ s. d. 5 5 0 4 4 0 2 10 0 2 2 0 2 0 0 1 15 0 1 10 0 1 5 0 1 0 0 ... (74)	£ s. d. 3 3 0 ... ... (1)	£ s. d. 2 2 0 1 1 0 1 10 0 1 5 0 1 0 0 ... ... (21)	£ s. d. 3 3 0 1 10 0 ... ... (2)
Maryborough and Gladstone Districts (51 stallions.)	5 5 0 5 0 0 3 3 0 2 2 0 2 0 0 1 15 0 1 10 0 1 5 0 1 0 0 (16)	1 10 0 1 5 0 ... ... (2)	2 2 0 1 10 0 ... ... (3)	3 0 0 2 10 0 2 2 0 2 0 0 1 15 0 1 10 0 1 5 0 1 0 0 ... (19)	2 10 0 2 2 0 ... ... (3)	2 2 0 1 10 0 1 5 0 1 1 0 ... ... (6)	2 2 0 1 10 0 ... ... (2)
Boonah ... ... (17 stallions.)	2 2 0 1 10 0 1 5 0 (7)	1 10 0 ... ... (1)	... ...	2 2 0 1 10 0 1 5 0 (5)	2 2 0 ... ... (1)	1 1 0 ... ... (2)	1 1 0 ... ... (1)
Logan and Albert ... (53 stallions.)	3 3 0 2 5 0 2 2 0 1 10 0 1 5 0 1 0 0 ... (20)	... ...	3 10 0 3 3 0 2 10 0 2 2 0 ... ... (7)	2 10 0 2 5 0 2 2 0 1 10 0 1 5 0 1 1 0 1 0 0 (20)	... ...	2 2 0 1 10 0 1 5 0 1 1 0 ... ... (6)	... ...
Allora ... ... (12 stallions.)	3 3 0 2 2 0 ... (2)	... ...	1 10 0 ... ... (2)	3 0 0 2 2 0 1 15 0 (4)	... ...	1 5 0 1 1 0 1 0 0 (4)	... ...
Inglewood ... ... (2 stallions.)	...	...	...	3 3 0 (1)	3 3 0 (1)	... ...	... ...
Warwick ... ... (24 stallions.)	20 0 0 6 6 0 3 0 0 ... ... (3)	... ...	3 10 0 2 5 0 2 0 0 ... ... (4)	3 3 0 2 5 0 2 0 0 1 15 0 1 10 0 (14)	1 10 0 ... ... (2)	1 5 0 ... ... (1)	... ...
Stanthorpe ... ... (14 stallions.)	5 5 0 4 4 0 1 15 0 1 5 0 ... (4)	2 2 0 1 0 0 ... ... (2)	1 10 0 ... ... (1)	4 4 0 2 0 0 1 15 0 1 10 0 1 5 0 (5)	2 2 0 ... ... (1)	2 2 0 ... ... (1)	... ...
Clifton ... ... (16 stallions.)	4 4 0 3 3 0 ... ... (2)	... ...	... ...	2 10 0 2 5 0 2 0 0 1 15 0 1 10 0 1 5 0 (9)	... ...	2 2 0 1 10 0 1 0 0 ... ... (4)	2 2 0 ... ... (1)
Texas ... ... (8 stallions.)	5 5 0 1 10 0 ... (2)	2 2 0 ... ... (1)	2 2 0 ... ... (1)	2 2 0 1 10 0 1 5 0 (3)	... ...	1 5 0 ... ... (1)	... ...
Goondiwindi ... ... (15 stallions.)	3 3 0 2 2 0 1 10 0 1 0 0 (5)	... ...	2 10 0 2 2 0 ... ... (3)	2 2 0 1 10 0 1 0 0 ... (6)	... ...	1 0 0 ... ... (1)	... ...

MULES.

Much attention is given in Queensland to the breeding of horses, and controversies appear in the Press upon this subject, but little care is devoted to the ugly but useful mule, an animal which, if the trade were properly developed, would possibly be of greater profit than the horse. The Queenslander who requires draught stock does not favour the mule, but in other countries he is of value, and it is in those countries that a good market may be found. Horses are regularly exported to India, and, as mules are in great request in that country, there would seem to be no reason why a good trade could not be developed. In the early part of 1905, the Indian Government sent an officer to the Argentine Republic to buy mules for the transport service, and some 6,000 were bought at an average cost of £15 12s. each, a price considered to be cheap. The total cost was, therefore, £93,600, a respectable sum, the greater part of which might have been handled in this State.

India requires an annual supply of these animals, and, as Queensland from its geographical position should be able to command the market, a valuable trade is allowed to pass to the advantage of others for the want of energy in prosecution.

The British Government purchased for service in South Africa during the Boer war close upon 150,000 mules, of which not one was bought in Queensland, and, though a war is not to be anticipated in an advocacy of mule-breeding, the figures show with what respect the mule is looked upon in other countries than Queensland.

The report of the Select Committee on the War in South Africa reported that "the mules now in use in the transport service have done their work well, and their stamina is good. For fast work with mounted infantry, the use of the South American or South African mule is advocated. Though smaller than the North American, they are quicker and hardier, and spans of ten have been quite able to draw the wagon in use for which 3,000 lb. is a suitable load. The North American mule, though much larger, does not seem to stand the heat so well, and, though staunch, is more adapted to slow heavy work."

The United States of America in 1905 held 17,057,792 horses, and yet found room for 2,888,710 mules, of the value of £52,466,745, of which number 3,658 were exported at an average price of, say, £23, the value on the farm being £18. In 1880 there were in the United States 1,729,500 mules, which in 1905 increased to 2,888,710, an increase of over 1,000,000 animals in twenty-five years, convincing evidence, it is thought, that when properly directed there is money in mule-breeding.

In South Australia mule-breeding is indulged in to some extent, and apparently is on the increase.

In Cape Colony mule-breeding is a considerable industry. In 1891 there were 51,000 mules; now there are more than double the number, resulting from the importations during the war. Almost all the agricultural work in the western district of Cape Colony is done by them, and most of the carrying service. They are largely used in towns and villages by contractors, builders, and tradesmen, both in single and double harness. The majority are bred in the Karroo district, and rarely receive artificial care or attention until they are put to work. The Colonial Sugar Refining Company, Limited, have lately placed an order for 1,140 mules to be worked in the sugar fields in Fiji, an order that Queensland should have been in a position to fill.

POULTRY.

That the missionaries of poultry-raising are not in error in their advocacy is amply borne out by the experience of the United States, where the steady advance of poultry in numbers and in the quantity and value of the products leads to some astonishing figures for 1904. The farmers' hens are now producing 1,666,000,000 dozens of eggs yearly, and these hens during the season lay enough eggs in two weeks, at the high prices of eggs that prevailed during 1904, to pay the year's interest on the national debt of the United States of America.

A statement such as the foregoing would seem to be beyond the bounds of belief, had it been uttered by any other person but the Secretary for Agriculture, but, coming from such a source, is to be accepted without criticism. It is true that the United States have an almost illimitable home market, and are also within easy reach of the European markets, but there is no doubt that there is money in the business when properly handled, and that being so there is no reason why Queensland should not have a share. Pessimists may declare that we are too far away, that profits will be swallowed up in freights, and so on, but there is a beginning to all things; and as the meat-exporting trades had to suffer losses before they were established, so will the poultry trade have to buy its experience.

There is a market for poultry wherever there is the opportunity for refrigerated transport, and the demand in Asia for birds fit for export is as good as it is in Europe. There is, therefore, no reason why the Queensland output should not be increased year by year, providing that the proper material be used in the making, and that it be clearly understood by poultry men that a bird because it is a bird is not necessarily fit for export, but it must be the right kind of bird. Attention has been given to this point during the year by the poultry lecturer during his tours, and not without result, for there is every evidence that the class of birds is improving.

A consignment of 96 turkey gobblers and hens and 20 guinea fowls was sent to London to catch the London market, the report on which stated that the turkeys were, on the whole, satisfactory, but some were too forward for the London trade. The packing was also satisfactory, and the weights correct. It was found, however, that, owing to the quantity of home birds raised, especially for the Christmas market, a better time for the sale of import birds is towards the end of January and in February, when the home birds have been passed out. The prices realised for the turkeys were, however, satisfactory.

In March last a further consignment of 276 chickens and 24 ducks was sent, which also realised good prices; for chickens, the highest was 3s. 6d., the lowest 2s.; for ducks, 3s. 3d. and 2s. 6d. respectively. The report on them was that the goods came to hand in good condition, and the packing was satisfactory.

Wool Sales. 1906/7.

1. July to 25 Sept. 1906. Sold in Brisbane market 11248 Bales.

Interesting details of banana mopeders with 11187/6 Kgs

Rules - look up correspondence.

Australian Meat Trades Journal 30. 4. 7

A suggestion comes from London that the Australasian Govt. should engage a meat expert to travel about the U.K. to visit the markets etc and act as detective in cases where inferior meat is palmed off as Colonial especially as N.Z. What is wanted it is suggested is a man well versed in the dressing of carcases in different countries.

Sugar. 13317/6. Customs - gives statistics of imports of Sugar overseas to States in 1903 and 1905.

Prickly pear - Exptn by certain people 2177/7. - Lands office Goond

Write up pig business in London and tables from London on butter - Contrast cables from A.G. on Thomsons inspection and extract from Courier of 20-2-7 with papers, and other reports from London Agents.

Need for something in the Commercial Intelligence line - illustrations - shipment of cheese (early March) interfered with and practically stopped owing to the Victorian Dept of Ag having reserved 35 tons space in the cheese room.

Dairy Produce Acts

Gradings for weeks ending 2 Mch 1906 1907

Boxes examined - 1906 - 9282 1907 - 8386

Grades - 1906 No 1 4309 1907 No 1 4712

No 2 3123 2 2659

No 3 1850 9282 3 1109 8386

AGRICULTURE.

The pessimism of the man who gave utterance to the statement that the Downs would not grow a cabbage still finds followers whenever a dry time comes or other obstacles prevent a high return or profit from the operations of a year, but, notwithstanding those who decry agriculture in this respect, a comparison of the returns in this and the preceding years clearly shows that, with the population required to handle our lands in the manner in which they should be treated, Queensland will surpass in her production the other States of the Commonwealth. The returns of the Government Statistician included in this Report supply details of the different crops, but a brief reference of our progress may be of service to those interested.

With grain crops, Queensland is well able to hold her own even in comparison with the southern States. Though the weather conditions were so against wheat-growing last year that a return of 9·53 bushels to the acre only were obtained, the averages for the year 1904-5 were, according to the official Year Book of New South Wales:—

South Australia	6·6	bushels to the acre.
Queensland	14·24	"
New South Wales	9·3	"
Victoria	9·2	"
West Australia	11·1	"
Tasmania	18·4	"

Upon an average of twenty years, in which are included the drought of 1902 and the dry year of 1905, the average for Queensland is 14·66 bushels to the acre, and this figure surpasses the average of the United States, India, Russia, and the Argentine.

Amongst other cereals, the need for constantly renewing the seed has had attention, though, from the failure of the crop at the station in America to which application was made, the importation of new seed wheat has not been so large as was intended. A quantity of Manitoba, or, as it is there known, Red Fife, was secured from the Department of Agriculture in Canada, and such of the consignment as was not needed for departmental use at the farms has been placed at the disposal of farmers at a price that covered cost only. It was intended, in addition, to import a small lot of each of the ten best kinds of durum or hard wheats in favour in America; but, as explained, this purpose was not realised. The immediate reason for desiring these wheats was for trial in the drier areas, for which they are said to be particularly adapted. Investigations into the best kinds of wheat to be grown and the best methods of cultivation in districts such as the Maranoa will form a prominent part of the work of the State farm lately started on what was known as the Police Paddock, at Bungeworgorai, near Roma. The experiments in this direction that have been brought to a successful issue by Mr. H. W. Campbell, of Bethany, Lancaster Co., Nebraska, U.S.A., in America, have not escaped the notice of the Department; communication has been opened with Mr. Campbell, in order to obtain full particulars of his system. The Department of Agriculture in America has also been asked to obtain and forward a "packer," which, as part of the system, is understood to be indispensable.

With other grain crops of the temperate zone, and which the southern States also cultivate—oats, malting and feed barley, maize, rye, English potatoes—the harvests, owing to the reason that diminished the wheat, were small in comparison with normal years.

The influence that dairying has upon the agronomy of Queensland is remarkable. Until 1898, when the dairying industry began to be prominent, the relation of the land under cultivation to the land under crop was in fair proportion considering the area that would naturally be in fallow. For the years 1895, 1896, and 1897 the fallow land consisted of 13,959 acres, 14,097 acres, and 14,402 acres respectively. The year 1898 saw a considerable increase, and in 1905 the total was 100,239 acres out of some 623,000 acres. A considerable quantity of this fallow land was due probably to the dry season, but a great part of it was also used for dairy stock.

To practically test the value of Queensland-grown rice of the kind imported from Japan, as compared with the imported article, seed was obtained from the Department of Agriculture, in Tokio. The seed has been sown at the Queensland Agricultural College and at the State Nursery, Kamerunga, and the produce will be handed over to Messrs. Harper and Co., who have kindly offered to clean, prepare it for market, and compare it from a commercial standpoint with the imported article. This experiment is interesting and important, for, although there is no doubt whatever that Queensland is well adapted for rice, the cultivation of it has not been consistently followed. It has been grown in larger and smaller areas on the Logan, at Cairns, and at Port Douglas; but, whatever the reason may be, the cultivation of rice has not taken the position it should have among the crops of this State.

The crops that showed increased areas were sweet potatoes, pumpkins, and melons, sugar-cane, cotton, lucerne and green forage, vines, pineapples, oranges, strawberries, apples, tobacco. Sugar-cane covered the largest area during the preceding decade, and tobacco had the respectable addition of 149 acres to its credit, with an average yield of 10·96 cwt. to the acre, as against 9·89 acres in 1904. This product has been struggling for its existence for some years, but, upon the opinions of southern buyers regarding the value of leaf grown upon the Northern coast for cigar-making, it should obtain a new lease of life. Coffee-planting does not seem to advance in favour, notwithstanding the help given to the industry. The area, according to the statistics, is steadily declining, and has now reached a total of 279 acres as against 547 acres in 1901.

Although the hurricane that devastated the banana gardens did not occur during the period to which the statistics for 1905 refer, there is a reduction in area of about 500 acres for that year. The market for this very perishable fruit is, however, limited to Australia alone, under the system of transport now available; this, therefore, may be taken as a reason for the decrease.

COTTON.

The operations for taking off and marketing the crop of 1905 were brought to a successful issue at the end of August by the sale of the crop to a southern buyer at a price which was satisfactory, and enabled the Department to return to the growers an average of 1⅘d. per lb. for cotton in the seed, notwithstanding that the cost of preparing the raw material was of necessity heavier than it would have been with a business firm accustomed to ginning cotton as part of its operations. Through the courtesy of the Queensland National Bank, the premises of the old Ipswich Cotton Company were placed at the disposal of the Department; a portable engine from the State farm, Hermitage, provided the motive power. Some expense was incurred in putting the machinery in order, replacing belts, pulleys, &c., but the total cost did not amount to much when distributed over the whole of the cotton that was sent in.

The wages paid to the hands employed ranged from 1s. 10d. per day for the youngest boy up to 8s. for skilled hands. The operations at the mill were protracted and broken, owing to the intermittent way in which the cotton was sent in; and this, notwithstanding that the farmers knew that the Department was trying on their behalf what was practically a new experiment—to find a market, for their benefit, of a product concerning which considerable doubts had been expressed. Had the cotton been sent to the mill in a business-like manner when it was ready for market, an appreciable percentage would probably have been added to the returns. The same difficulty has, it is understood, been experienced this year by Messrs. Kitchen and Sons, who, upon the success of the operations of last year, have been encouraged to lay down a complete ginning plant of the latest design.

The class of cotton treated was, with two exceptions, of the Upland varieties, for the most part grown from seed imported by the Department from America in 1903. The quality and character varied considerably with regard to length of staple, colour, and boll, the cause of which may be, to a certain extent, probably attributed to locality and soil. The different varieties being for the most part new to the State and known only by their American names and reputation, much cannot be said of the adaptability of the different kinds to our soil and climate, and further acquaintance, by observation and selection of type, will take some time for determination.

Mr. D. Jones, who is in charge of matters connected with cotton, states that so far he is able to recommend only the cultivation of the following kinds, which from his observations are most suited to Queensland:—Tool's Improved, Russell's Big Boll, Griffin, and Sea Island for coastal districts. There are about four other kinds that promise well, but until further is known of them they cannot be recommended for general cultivation.

Cotton was received from a wide area, reaching from the Maranoa and Mitchell districts in the West to the Central and Atherton districts in the North, and was, with few exceptions, carefully gathered. The farmers in the Maranoa and Mitchell took the greatest care in cleaning and preparing for the gin, but the quality on the whole was not equal to that from West Moreton.

So far as can be judged by reports from English markets, it would seem that the standard and quality of our Upland cotton is fully equal to the best American, and, if this opinion be correct, there appears to be no reason whatever why cotton should not be one of our permanent subsidiary crops, and an addition to the few main sources of income that the farmer utilises. The days of the large plantations have passed, whatever the crop may be; but, as cotton pays equally as well as if not better than maize, it should in a greater or less degree, according to the opportunity for picking, be included in the operations of every farm within the cotton area.

The season of planting (September and October) for the crop but lately picked was dry, and much of it was not laid down until November; but, notwithstanding this drawback, the crop has been satisfactory for the area planted. The stand-over plants in places where they had been properly pruned bore profusely, and those who had not before practised this form of cultivation were highly satisfied.

Mr. D. Jones, who visited the growers, instructed them in the proper methods of pruning, and pruned cotton will, it is expected, become a feature of cotton-growing here. Practical advice was also given in picking and classing. An instance of the production of a hybrid cotton found at Redbank Plains was noticed. This hybrid partook of the qualities of Seabrook, a Sea Island kind, and Russell's Big Boll, an Upland variety. From one bush 110 pods were picked, weighing 1 lb. 9 oz. of cotton. The bolls are free, easily picked, and excellent, though they do not retain the long silky staple of the Sea Island type; but if this hybrid retains its qualities it will be very valuable.

The question of picking still seems to have an influence on the extension of cotton-growing. The profitableness of it is not doubted, but there appears in the minds of some an uneasiness as to whether the labour will be there when wanted. In this connection attention may be drawn to the many families of those who are employed in Brisbane and other towns. If those who are hesitating would communicate with the several Labour Bureaux, it would be found that herein lies a light occupation for male and female, that does not require ability for hard manual labour, at which good wages could be gained during about four months in the year. As the hop-picking is done in England, so could cotton-picking be done here.

SISAL FIBRE.

The advocacy of the cultivation of this fibre in areas that would warrant the installation of a smaller or larger plant to decorticate the fibre has, during the year, been put to practical test by the installing at St. Helena of a small plant to treat the leaves of the plants growing in the nursery there. The plant purchased consisted of a Lehmann's fibre machine, and a 6½ Brake H.P. Little Samson oil engine with belting. The former cost £35, f.o.b., London, with belting or connections; and, after the machine had got properly into working order, a test was made, and it was ascertained that 100 leaves could be put through in 38 minutes, from which were produced 6 lb. of hemp and 1½ lb of tow. A larger machine would, of course, give quicker returns; but it must be remembered that the area of sisal is small, about 1 acre, and that the machine was purchased for use by prison labour.

The returns from the fibre sold have been:—

	£	s.	d.
9 cwt. 2 qr. 22 lb., at £35 a ton, f.o.b., Brisbane	16	19	4
18 cwt., at £37 10s. a ton, f.o.b., Brisbane	33	15	0

29-577

Though the above returns represent an acre, the total must not be taken as representing the returns from an acre under ordinary circumstances, because a proportion of the leaves treated would in the sugar-growers' parlance, be classed as "stand-over" leaves. In the ordinary course they would have been cut the previous season. Taking 25 acres as the smallest area that would warrant the installation of machinery, it may be estimated that from the third to the fourth year 12½ tons of fibre should be obtained, a very low figure when viewed by the experience at St. Helena. Unlike other crops, a plantation does not require after-planting, or any labour other than keeping the plants clean of grass and undergrowth. At the present value the crop would be worth, say, £450, which would more than cover the cost of machinery and labour and leave something to credit.

The importance of this industry, whether by itself or as an adjunct to general farming, can be estimated by the trade in America. The imports of sisal into the United States during the five years ending 1904 were:—

1900	...	...	...	76,921	tons	...	...	Value £2,454,638
1901	...	...	...	70,076	„	...	...	„ 1,660,950
1902	...	...	...	89,583	„	...	...	„ 2,491,919
1903	...	...	...	87,025	„	...	...	„ 2,768,634
1904	...	...	...	109,214	„	...	...	„ 3,319,907

As this fibre will no doubt form before long a notable item in our agricultural products, it may be well to record the history of its introduction. The attention of the Department was drawn in 1890 to the extreme jealousy with which the Government of the Bahamas protected the plants then growing on the island, a law being passed to prevent the export of live plants whatever. An attempt to secure plants from the Bahamas failed, but in 1892 some few plants were secured in Yucatan. These were laid down at St. Helena, and formed the nucleus of raw material from which the fibre lately sold was obtained. Though the value of the sisal was from time to time brought before the people, it was not until the lessons of the 1902 drought taught them to look for a more varied selection of crops that any attention could be drawn to it. It has been, however, since 1904 that the demand has really matured, and it is estimated that about 180,000 plants in all should now be growing in the State, of which 69,000 have been distributed since February, 1905.

QUEENSLAND ARROWROOT.

Reference has been made in preceding reports to the difficulty growers have in obtaining a footing in Great Britain, owing to the operations of the Food and Drugs Act requiring arrowroot, if sold as such and without any qualification, to be made from *Maranta arundinacea*, a variety that is not much cultivated here, the bulk of the arrowroot made in this State being from the *Canna edulis*. The climax of the difficulty would seem to have been reached in two consignments by Messrs. Harding Bros., of Geraldton—one made from Maranta, and the other from Canna—and would seem to indicate a prejudice against arrowroot from Queensland in favour of the West Indies. The consignments were sent through two different sources, and, to the surprise of the exporters, the arrowroot from *Canna edulis* brought in the open market a half-penny per pound more than that from *Maranta arundinacea*. An analysis by Mr. Brünnich, the Agricultural Chemist, showed that there was no difference in the microscopical appearance between the sample from Messrs. Harding Bros. and two commercial samples that were obtained, from different sources, from St. Vincent, in the West Indies. Indeed, Mr. Brünnich is of opinion that Messrs. Harding Bros.' sample was quite equal to either of the two other samples, and, in fact, a little purer, yet the Queensland arrowroot was quoted at £12 a ton only as against £18 and £23 for St. Vincent. A similar peculiarity was noted some little time ago, when St. Vincent arrowroot was quoted for tins at 3s. 3d. and 5s. 6d. per dozen, and Tous les Mois (or arrowroot from *Canna edulis*) at 4s. 6d. and 8s. per dozen. It may be that the prejudice against *Canna edulis* is that it is not adapted, on account of the large size of the starch grains, to the preparation of cocoa, in which arrowroot plays an important part, but this idea would not seem to be borne out by the prices paid. The Agent-General has been asked to investigate this matter, and, if possible, arrive at the reason.

BANANAS.

A trade, be it in fruit or otherwise, is reckoned by its value, and, when it is remembered that the banana trade of the Geraldton, Cairns, and other districts for a full year can be approximately valued at £152,000, the result to the townships that are the port of export, and to all others interested, of a setback such as has been experienced in those districts from the hurricane in the early part of this year, are very heavy. Trade is seriously affected, and all feel the pinch of the times until the resumption takes place. The cessation of exports for a few months until the gardens have been replenished gives an opportunity for a brief description of the rise of this industry.

These districts, whence practically all the bananas are exported, and also a goodly proportion of those consumed in the State are derived, were first known so far as the banana trade is concerned about 1884. Before that time the export trade had little volume, but Cooktown, for a few years following 1880, was an exporter, and the Brisbane and other local markets were supplied from Redland Bay, Maroochy, and Mount Cotton principally. The floods in the Brisbane district in 1887 gave the opportunity for the Northern bananas, which were then much on an equality with the Fiji fruit, an opportunity to get into the Brisbane market, a position which they have since maintained.

It was in 1887 that the Johnstone River district first became known as a rival to Cairns and Cooktown, the distinguishing feature of it being the system of packing the fruit in silky oak crates, initiated by Mr. McDermott, at one time police sergeant on the Johnstone. The presence of the fruit fly in the bananas was ever an anxiety in the trade, and as far back as 1889 Victoria refused to receive Queensland bananas unless accompanied by a certificate of cleanliness. From this refusal arose the present system of inspection, which, however, met with much opposition until the value of it became thoroughly understood, for, in the beginning, severe measures had to be resorted to. Gardens were visited, and entire cargoes were condemned before the growers understood what was required of them. Warnings had to be translated into Chinese, and every means possible adopted to bring to the understanding of the

growers the danger to the trade that would follow if proper precautions were not adopted. It was so that a trade of the value before mentioned—almost entirely won by the tireless energy of the Chinese, who form the bulk of the growers—has been built up; and it is to be hoped that no disaster such as that experienced this year will again affect a trade which cannot be carried on as successfully in any part of the State, for banana cultivation requires a special set of circumstances to make it profitable—it requires an adequate rainfall, good alluvial land, and quickness of transport, all of which are present in Cairns and Geraldton.

COFFEE.

With regard to this and many other tropical and subtropical products adapted to different localities of Queensland, profit might be derived if these were to be grown by the farmer as subsidiary crops, but it is a somewhat peculiar feature in the agronomy of this State that, excepting the few men who understand the cultivation and preparation for market of what may be termed outside crops, there is but little interest manifested in the direction of ascertaining the best method of utilising these subsidiary means of increasing the income. This statement applies particularly to the cultivation of coffee, for though the climate, soil, market, &c., are in favour of the growers, yet, excepting the few already mentioned, the interest taken had not, until the Department took the matter in hand last year, stirred them into ascertaining the requirements of the markets, and the opportunities that, through apathy, they were throwing away.

Consequent on the persistent advocacy of the Instructor in Tropical Agriculture, Mr. Howard Newport, of the advantages of coffee cultivation, especially for the farmer with a family capable of picking, as being adapted for the small grower, authority was obtained for this Department to instal a plant at the State Nursery, Kamerunga, in order to correct a state of things that was fast bringing discouragement to the small grower. It was not that the coffee-trees would not grow or produce fruit, or that the fruit was not prime, but the difficulty lay in the want of knowledge of preparing the produce for market, and ignorance of what the market wanted, the results being, naturally, low prices that would not remunerate the growers. To remedy this, arrangements were made for treating coffee, for preparing it for market, and selling it on the owners' account. Full particulars of the transactions entered into appear in the report of the State Nursery, Kamerunga, but it may be stated that, apart from those growers who, before the installation of the plant, had, by reason of the excellence of their output, established a profitable connection, no grower who sent his coffee to Kamerunga had obtained such a good price for his product. A sufficient illustration of the wisdom of the operations—which have been described as socialistic, but which should be properly described as educative—is afforded by the fact that before the Department took the matter in hand Queensland coffee was looked upon as being wanting in body, but that last year this defect had been remedied, and the value of the product appreciated.

With pardonable assumption it can be asserted that the experiments of last year will be surpassed in 1906, for it is not without reason to presume that those efforts can be improved upon.

The importance of the coffee trade, and, indirectly, the importance of it to Queensland, can be better understood by a comparison of the output. In 1832 the output of the world amounted to 95,000 tons, in 1865 to 422,000 tons, in 1885 to 718,000, and in 1903 to 1,150,000 tons. If, therefore, it pays other countries to expand so greatly, surely it will be to the advantage of Queensland to do likewise, and particularly so when it has been proved to be a small grower's occupation in this State. Of the coffee-consuming countries, the United States of America comes first, with an annual consumption of the value of £12,193,000, followed by Germany, which requires £7,157,000 worth, and France, which expends £3,617,800 annually on the same commodity. The United Kingdom, probably owing to the counter attraction of tea, spends but £1,177,000 in this direction, of which 16·6 per cent. of the whole is sent to Brazil, 12·4 per cent. to the United States, and 19·1 per cent. to the British possessions for coffee purchased. Of fourteen leading coffee-consuming countries, the United Kingdom ranks lowest, with 11½ oz. per head per annum, in comparison with Holland, where the individual drinks 14½ lb. in the year. Australia is an importing country, a condition which need not exist if Queensland seizes the opportunity that is offered to her.

PINEAPPLES.

The distribution of surplus pineapples, or the products thereof, has occupied the attention of the Department for some years past. The high prices obtainable for green fruit in London tempted experiments in shipping under cold storage conditions, but, though the experiment was partially successful, it was not sufficiently so to warrant a commercial trial, a few individual fruits arriving in sound condition.

The experiments carried out indicate that, apparently, 34 degrees Fahr. is the lowest temperature at which pineapples can be carried for any time.

Attention was then drawn by the Instructor in Fruit Culture to the possibilities of a trade in pineapple pulp, and the inquiries made pointed to a satisfactory price being obtainable. The information gained was published, and, as a result, the Zillmere Horticultural Association hazarded a consignment of pineapple slices and pulp, the former of which were sold in London, the latter in Glasgow. The returns received for the pulp were satisfactory, and, as the association wrote, "may materially assist in attaining the object—increased outlet for pineapple products." Messrs. R. and W. Davidson, of Glasgow, stated that the quality was exceedingly good, and that they could do a small trade in that city at all times. Imported pineapple pulp is not much known on the British market, the custom being for those who use it to manufacture the pulp from Singapore tinned pineapples. Messrs. Davidson and Co. also recommended that trade should be done in tinned pineapples in small sizes suitable for the home retail trade, and stated that the best selling sizes are 2½ lb. for whole pineapples, 3 lb. and 1½ lb. for pineapple chunks, and 3 lb. and 1½ lb. for pineapple cubes.

The trade in tinned pineapples has been very active of late, and it is estimated that during the last season some 43,000 dozens of pineapples, all locally grown, have been canned. The greater part of trade is with Australia, principally Western Australia, but there are indications that before long an attempt will be made to compete with the fruit exported from Singapore and other cheap labour countries.

29057. Singapore pineapples & pine apple trade. Cuba

See papers for paragraph

Temperatures. arrival Butler London Moorehead 1224/7

00766/7 Dalgety & Co. wrote their Head office pointing out the great improvement apparent in some of their butters this season.

Reply. "we think we have in our recent letters made it quite clear that we fully recognise that some Q. brands have improved very much This has been suitably related by the high prices obtained, not only for consignments but also for c. i. f. orders which we have been able to secure. We have a number of buyers who will pay us outside value for certain Queensland makes provided their present quality is maintained. Indeed, last week we made the same money for consignments of x x x as other Agents were as King as King for Choice Victorian - You will therefore see that so far as our Customers are concerned, the prejudice which was thought to exist against Q. butters has been overcome. As this is mainly due to our efforts we trust the Factories receiving the benefit of our exertions will continue to give us their whole support.

I. I. Lousdale & Co. Tooley St London - 7. 12-6 - Report on Q. butters ex "Orient" - We find an improvement in the quality on the previous shipments this season. The style of package and the packing of the box is also satisfactory. With reference to the grading we have come across instances where the second quality has been better than the first.

Trengrouse & Co. Tooley St - condition & quality of Q. butter ex Orient satisfactory and comparing favorably with the butter delivered from N. S. W. and Vic ex the same steamer. In regard to the market we quote 104/- to 106/- for Queenslands 104/- to 108/- for N. S. W and 106/- to 108/- for Victorians - special brands of the latter up to 11

Further cables & correspondence as above Ag. Gen 1292/7

Diseases in Plants Act - Write up action with regard to codlin moth from Victoria and the old cases used by exporters there.

Dairying - Necessity for correct weighing machines operated by competent persons. - Thirty five % Standard deficiencies

BRANDS ACTS.

The number of three-piece brands registered during the year 1905 was 1,160, and the total number registered up to the end of that year was 44,647.

There have been 238 symbol and cheek brands registered under "*The Brands Act*, 1898," 32 of which were registered during the year.

The total number of brands transferred was 12,512, of which 896 were transferred in 1905. During the same period 32 brands were cancelled, and 213 cancelled brands were reallotted, making a total of 1,047 brands reissued.

The registrations, &c., show a marked increase on those of the previous year.

DAIRY PRODUCE ACTS.

The principal Act having come into operation but three months before the close of the last financial year, the time before the publication of the Report for 1904-5 was too short for any information to be gathered, but the experience of a full year affords a fair basis for an opinion upon the results from this legislation.

For the better working of the Act, the area covered by the operations of it was divided into ten districts, to which fourteen inspectors were appointed, whose duty it was to visit the farmers and inculcate by advice better methods of dairying than formerly obtained. The range of the instruction given was large, for it included care of stock, improvement of yards, treatment of milk, transport of cream by road and rail, sanitary arrangements, &c.

As might be expected at the outset, many difficulties were met with; some people objected to the Act altogether; others to the advice given as to the need for improving their ways and methods; but by persuasion and continued pressure much good has been done.

There is yet much to be desired in the methods of transporting cream from the farm to the factory, but in a country of long distances this is a question of some difficulty. Some improvement has, however, been effected; the transport wagons are now covered to protect the cream from the weather, and farmers are erecting shelters for their cream while awaiting transport. The need for paying more attention to the work in the factory caused the Dairy Expert to recommend the appointment of inspectors whose duties should be more closely related with factory work, and, following the passing of the amending Act of 1905, three cream inspectors were appointed, who pay special attention to instruction in taking samples for testing, to accompany cream wagons when collecting and instruct dairymen in the treatment of cream, and to correct mistakes likely to injure the quality of cream during storage on the farm, to inspect dairy produce on the railways and also the cans used in transport, and to give advice and instruction in factories wherever it might be required.

The regulation requiring that all those engaged in milk and cream testing shall hold a certificate of efficiency from the Department has given much extra work to the Dairy Expert, who has conducted the examinations, and also to those on whom the arrangement of the examinations has fallen. During the year three theoretical and two practical examinations were held, at which 360 candidates presented themselves, and of whom 124 have finally passed and received certificates. At the examination, which commenced on the 2nd June, fifty-eight passed the theoretical and are awaiting the practical examination.

The grading of butter for export has been carefully conducted during the year; the very few complaints that have been received from London concerning it have been in such a general tone and without any definite charges that it is reasonable to assume that the cause of them lies far from any fault to be found with the grading, and rather in the direction of the rise and fall of market prices. As a set-off against these trivial complaints, the pleasing fact remains that the grading in this State is accepted in Great Britain as being of some considerable value.

The exports for the year ending the 30th June last to oversea ports, as compared with the previous two years, have shown a phenomenal increase. The Customs statistics for interstate trade relating only to values, it is difficult to arrive at a proper idea of our total export trade in quantity; but the following figures have been compiled from information kindly supplied by the Butter Manufacturers' Association:—

Month.	Boxes each 56 lb. net.	Boxes each 56 lb. net.	Boxes each 56 lb. net.	Boxes each 56 lb. net.
	1903.	1904.	1905.	1906.
January	...	18,845	18,455	25,596
February	...	15,562	25,986	30,013
March	...	15,281	25,278	30,180
April	...	12,299	12,724	26,013
May	...	17,541	12,272	*23,649
June	...	11,285	9,232	†14,221
July	...	17,173	23,094	...
August	500	7,710	4,299	...
September	650	9,574	6,854	...
October	1,142	8,192	7,547	...
November	3,678	23,196	11,121	...
December...	13,618	13,284	17,748	...

* And 50 cases of tinned butter, each 100 lb. † To 25th June.

The values of exports of butter during the three years mentioned are, according to the Customs statistics—

	Oversea.	Interstate.	Total.
	£	£	£
1903 ...	49,804 ...	... ...	49,804
1904 ...	290,253 ...	54,918 ...	345,171
1905 ...	290,294 ...	165,569 ...	455,863

There is yet much to be done to perfect the export trade, but of the Acts it may be said that they have greatly benefited the dairying community as a whole.

The operations of the Act have enabled a census to be made of the dairy stock in profit in the area in which it operates, and though the figures here given may not show the whole of the stock that should be included, because it is feared some have evaded registration, they are interesting, and will be more so as years go by and administration becomes more concrete.

Year to 14th April, 1906—

Number of factories registered	53
Number of dairies registered	8,040
Number of dairy cows returned	166,401
Number of dairy cows returned as being milked at time of application, and on which fees were paid	107,621

The Act does not operate at present north of Bundaberg, but the establishment of a factory at Gladstone, and the increasing interest in dairying in that and the Central district, will probably necessitate an extension of the operations of the Act before long.

DISEASES IN PLANTS ACT.

Excepting bananas, which practically form the sole export trade in fruit from Cairns, Geraldton, and Port Douglas, though citrus fruits are increasing in volume from the latter place, the principal export trade is with the ports of Bowen and Brisbane and by the border at Wallangarra. The banana trade has been for the time seriously interrupted by the late cyclone on the coast, but it is now recovering, and, this being a time when the fruit fly is dormant, the condemnations have not been many. The disaster to the trade permitted the Fijian bananas into the Melbourne market, and it will be necessary for our growers to be careful in what they send in order to give the southern buyers no opportunity in preferring the Fijian banana to that of Queensland. Victoria has always been sensitive of the fruit fly, though it is thought that, from the quantities of fruit despatched to that State in years gone by, the fly would assuredly have made itself manifest could it live there.

In April last Queensland was threatened by a prohibition of its bananas into Victoria unless packed in crates, as is the custom with South Australia. That State, however, takes comparatively a small quantity; but to pack for the Victorian trade into crates would be prohibitive, and, moreover, would not have the effect sought, for, whereas the Fijian fruit fly attacks the fruit in the stalk, the Queensland fly prefers the body of the fruit; therefore no gain would accrue from stripping the stem, as would be necessary in crate-packing. Negotiations were successful, and the threatened prohibition was not proceeded with, and during them it was ascertained that the action that was taken was not so much on account of the fruit fly, but rather from the rubbish accumulated on the wharves and elsewhere from leaves, bad fruit (not diseased), &c., consequent on the fruit being so long on board ships that were, in many instances, loaded to their full capacity, if not overloaded.

Of the fruits dealt with at the port of Brisbane, the imports from other States and from abroad have shown an improvement during the year. The condemnations have not been so many as formerly, a fact that can be accounted for by the activity of the jam and preserving factories in the south. Before federation, jam and preserving factories in Queensland competed with the southern trade in jams made from temperate fruits; now, the few remaining factories are concerned only with Queensland fruits, the remainder having had to shut down.

Apples from America have been in a better condition than formerly, due perhaps to the stringent conditions with regard to codlin moth; but apples from Vancouver have not arrived in as sound a condition as those from the United States.

Of exports and local market fruit, the condemnations, peaches excepted, have also been less, notwithstanding that the exports of pines and citrus fruits from the far North, Bowen, and Brisbane, all have to be inspected and perhaps cyanided. The citrus fruits inspected for the southern States have been of great volume, and it is anticipated that the year of 1906 will be a record, yet, although the demand is great and the fruit exceptionally free from disease, the Victorians are agitating for a prohibition.

DISEASES IN SHEEP ACTS.

Sheep.—The sheep in the State have been very free from disease, the few cases of poisoning reported having been occasioned by eating young herbage and poisonous weeds.

Worms have been somewhat prevalent, but the sheep so affected have been promptly treated with the usual well-known and effective drenches.

THE DISEASES IN STOCK ACTS.

Tick Fever.—This disease has been more prevalent this season than for some time past, due, largely, to the moist and humid weather following the rains; but it is pleasing to state that mostly all owners in tick-infested districts are now alive to the benefits of regular dipping, a number of whom were only convinced by the fact of losing valuable stock by their neglecting to systematically dip and thus keep their stock free from ticks, which latter are the medium for conveying the disease.

It behoves all owners in infested districts to keep up regular and systematic dipping in standard mixtures, as it is useless to dip in medicaments that are too weak to destroy the ticks, and at the same time it is extremely detrimental to pass stock through dips which are too strong and thus injurious to stock dipped therein.

All dips used for public purposes are required to be analysed by the Departmental Chemist at least once every six months, for which a fee, merely sufficient to cover the cost of such analysis, is charged; and, therefore, the owners of stock intended to be dipped should, in their own interests, insist on the proprietors of dips keeping same at standard strength.

In one or two cases severe losses have been experienced by owners trucking susceptible stock (*i.e.*, stock from clean country) through infested country, and allowing such stock to detruck in the infested areas *en route* to spell and then continue their journey after dipping. The slight detention in the infested areas is sufficient to allow the ticks to inoculate fever organisms into the blood of the animals, notwithstanding that the ticks have been subsequently destroyed by dipping.

Export in Boxes of Butter from 1.1.06 to 30.6.07

Figures from Butter Infos Assr.

1906		Austr:	China	Japan	Africa	London	Others	Total Boxes	Value	Total value £
Jan	2	434			1262	2535		4231	10¼	10229
	9	381					1	382	10½	936
	16	273				1711		1984	10½	4615
	23	135	144					279	10½	684
	30	420			1516	1936		3872	10½	9486
Aug	6				Nil					
	13				Nil					
	20	67	20	8	325			420	11½	1127
	27	47		8		1063		1118	11½	3000
Sept	3				Nil					
	10	46				1662	104	1812	11½	4862
	17		200					200	11½	536
	24	664		8		1425		2097	11½	5579
Oct	1	90				3087	54	90 144	11½	241
	8				Nil					
	15				"					
	22	61	25	13	349	3374	156	3978	11	10211
	29					6927		6927	10⅜	16769
Nov	5	121	4		450	10301	20	595	10½	1507
	12						10	10	10½	24
	19	114	149		250	11011		11524	9⅞	26554
	26		25			11011		25	9⅞	115
Dec	3	234			200	12346		12780	9½	28329
	10		2				2	4	9½	9
	17		137			11631		11768	9½	26086
	24					11312		11312	9⅝	25405
	31		100			35289		100	9⅝	225
1907										
Jan	7	~~349~~	~~93~~		1387 ~~1387~~	~~35108~~	~~520~~	1407 ~~21367~~	9⅜ ~~9⅞~~ 9 3/4	3201 ~~59969~~
	14	15				10452		10467	9⅜	22897
	21	234	93				100	427	9⅜	934
	28					14656	400	15056	9⅜	32935
		3336	899	34	5439	92041	813	102865		236496

Date week to		Australia	China	Japan	Africa	London	Others	Total Boxes	Value per pound	Total Value £
B/Fd w.		3336	899	37	5739	92041	813	102865		286496
Feb	4				2955			2955	9 3/8	6464
	11	173				15343	10	15526	9 3/8	20378
	18				1733	12582	200	14515	9 3/8	19051
	25	260	35			27925	100	395	9 1/4	852
								33391		
March	4			Nil						Nil
	11	150			794	21621		22565	9 1/2	50019
	18					5200	200	5400	9 1/4	11655
	25				Nil	26821				Nil.
								27965		
April	1				Nil	9424		9424	9 3/4	28586
	8				Nil					
	15					8677		8677	9 3/4	19740
	22		610	137	24			1031	9 1/2	2285
	29	516			1070	12341		214597	9 3/4	33927
						31442		24305		
May	6				Nil					
	13	319					200	519	9 7/8	1192
	20	572			1384	5814	200	7970	10	17748
	27	189	91					280	10	654
June	3	80			1118	5158		6337 56	10	14786
	10	204						204	10 1/4	488
	17	587			799	3216	21	4623	10 1/2	11326
	24	349			157		809	506	11	1258
		6655	635	174	15773	192417	2553	208984		446905

6655 Boxes Aust — July (1906) 10 1/4 to 10 1/2 — 11689
15773 " Africa — Aug — 11 1/2
192417 " London — Sept — 11 1/2
2553 " Others — Oct — 10 3/8 to 11 1/2
Nov — 10 1/2 to 9 7/8
Dec — 9 1/2 to 9 5/8
Jan 1907 — 9 3/4 d
Feb — 9 3/8 d
March — 9 1/2 to 9 1/4
April — 9 3/4
May — 9 7/8 to 10
June — 10 to 11

208984 / 10449 / 5224 / 2612 / 1306 / 653 / 326 / 163 / 81 / 40 / 20 / 10 / 5 / 2 / 1

Pleuro-pneumonia Contagiosa.—Isolated cases have occurred during the year, but have to a great extent been checked and, in many cases, prevented by timely inoculation.

In a number of cases, sufficient care has, however, not been exercised in selecting virus of good quality; hence the loss of tails and several deaths from blood-poisoning, which undoubtedly would not have occurred if proper precautions had been taken.

Blackleg.—This disease, as pointed out in the previous reports, mostly attacks young cattle from about three months to two years old, and, as owners now realise that when once the disease is established little, if anything, can be done to cure, they adopt preventive measures by inoculating their young stock with effective vaccines, which have undoubtedly proved that the mortalities are reduced to a minimum.

Rinderpest.—The strictest precautions are taken to prevent the introduction of this dreaded disease to the State, and all stock or carcasses thereof are prohibited from entering Queensland from any place outside of Australasia, excepting stock from the United Kingdom, which are required to undergo the statutory quarantine on arrival.

It is recognised that the strictest precautions must be exercised in preventing the merest scintilla of risk being taken in connection with this fatal disease; hence the insistence on the present rigid restrictions.

FERTILISERS ACT.

The object of this Act is to encourage the use of fertilisers and to protect the users of them with regard to the material of which they are composed, and the wisdom of it has been fully exemplified by the experience gained. Manuring of land by the application of lime and ashes was practised by the Romans, but the use of scientific and artificially prepared fertilisers, a science developed principally during the nineteenth century, has evolved the need for inspection to guard against unscrupulous manufacturers who try to foist their goods on the unwary to the detriment of the land and crops as well as the pocket of those who are the victims.

The Act came into force on the 1st of January last, and in accordance with the provisions thereof twenty-six dealers in this State have registered with this Department, and the manures with which they deal have been under the supervision of the Agricultural Chemist, and the results of his investigations have been made public through the medium of the *Agricultural Journal*. By this means and by the fact that each seller has to give the buyer an invoice certificate stating the ingredients, the buyer is safeguarded, for, if he can prove that the fertiliser bought by him is not in accordance with the certificate or warranty, he can recover in a court of law. The seller, moreover, has to affix to each package in a conspicuous place a label certifying the net weight of the fertiliser in the package.

LIVE STOCK AND MEAT EXPORT ACT.

This Act and the regulations thereunder are being strictly administered, and the system of inspection places beyond doubt any danger of fraud or deception being carried out in connection therewith.

It is also very satisfactory to state that the meat companies work cordially with the Department, and do all in their power to assist in seeing that the stock killed are duly inspected and treated in accordance with the regulations. To each portion of the carcass passed for export is affixed an official tag, and to each case of preserved meats is attached an official label setting out in each instance that same have been passed by a Government inspector. Each tag and label are numbered, the numbers of which are recorded, and thus the exported article can be traced at any time.

In addition to the above, a Government certificate of soundness is issued, and a sworn declaration from the exporter is retained by the Department, setting out that the goods exported are those for which the inspector's certificate is issued.

MARSUPIALS DESTRUCTION ACTS.

In the following table are detailed the operations in respect of marsupial destruction since legislation was first introduced on the subject in 1877 until 30th June, 1905, with the exception of the years 1891 and 1892, when no Marsupial Act was in force:—

PARTICULARS OF DESTRUCTION.

Year.	Kangaroos and Wallaroos.	Wallabies.	Bandicoots, Paddamelons, and Kangaroo Rats.	Dingoes.	Total.	Bonus Paid.	Government Endowment.
						£ s. d.	£ s. d.
1877-1878-1879...	1,171,427	595,531	...	...	1,766,958	31,056 0 5	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 7,231 13 3
1891-1892 ...	...	No Act	in force.				
1893-1894-1895...	...	No Returns	furnished.				
1896	288,658	522,653	24,449	16,782	852,542		
1897	717,717	601,307	177,811	26,000	1,522,835	Estimated at	16,959 4 1
1 Jan. to 30 June, 1898	290,163	298,078	6,505	11,090	605,836	106,450 0 0	
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
1904-1905 ...	81,892	208,631	36,164	10,176	336,863	11,272 16 2	4,176 15 8
Total ...	7,825,826	10,325,879	555,049	260,453	18,967,207	£527,470 7 5	£238,858 3 5

* Estimated.

A perusal of the above table shows that there has been an increase in the number of scalps of marsupials and dingoes paid for during 1904-5 of 71,453 on the number for the previous year, with a corresponding increase in the amount of bonus paid by the various boards of £1,371 10s. The amount of Government endowment granted during the same period shows a decrease on the figures for the previous year of £1,642 12s. 4d.

The operations of "*The Marsupial Boards Act*, 1897," and "*The Marsupial Boards Act*, 1897, *Amendment Act*, 1901," having expired on the 1st January last, an Act cited as "*The Marsupial Boards Act of* 1905" came into operation on that date.

"THE MEAT AND DAIRY PRODUCE ENCOURAGEMENT ACTS, 1893 TO 1904."

Advances and Repayments.—In connection with the funds under the above Acts, an advance of £1,250 has been made during the year under review to the Port Curtis Co-operative Dairy Company, Limited, towards the establishment of a butter factory at Gladstone, which is now in operation; while further advances of £150 and £50 respectively have been made to the Peak Downs Butter Factory Company, Limited, Capella, and the Ayr Co-operative Dairy Company, Limited, Ayr, for extensions to their factories. Provisional approval has also been given for half the cost of a butter factory at Broadsound, and for an advance of £400 for improvements to the condensed milk factory at Trelawny, Harrisville.

All repayments have been duly met by companies with the following exceptions:—The Selma Meat Extract Company, Limited, which had been granted one year's extension of the time in which to pay the first instalment of interest, has had this extension renewed for another year, to the 21st February, 1907. The Pilton Dairying Company, Limited, which suffered considerably during the drought, and whose payments fell into arrears, has gradually been reducing these arrears, and expects shortly to bring its payments up to date. No repayments have been received from the New Broadsound Meat Company, Limited, during the year, and negotiations have been proceeding for a considerable time for the sale of the meatworks at a reasonable figure to some of the chief shareholders in the existing company. No definite result has yet been arrived at, but it is expected that a satisfactory sale of the works will be made. The Mackay Meatworks and the Mount Walker and Wallumbilla Creameries, of which the board had previously taken possession, are still on its hands, all attempts to dispose of them having been so far unsuccessful. These securities are being maintained in excellent condition.

The amounts now available for advances from the funds are:—

	£	s.	d.
Meat Fund	Nil.		
Dairy Fund—			
Southern District	Nil.		
Central District	250	0	0
Northern District	2,200	0	0
Carpentaria District	500	0	0

The total amounts advanced to companies are:—

Meat Fund.

	£	s.	d.
Southern District	30,582	0	0
Central District	28,852	15	0
Northern District	38,102	10	0
Carpentaria District	2,900	0	0
Total	£100,437	5	0

Dairy Fund.

	£	s.	d.
Southern District	10,763	8	8
Central District	2,400	0	0
Northern District	1,821	0	0
Carpentaria District	Nil.		
	£14,984	8	8

The total amounts of advances outstanding on the 30th June, 1906, were:—

Meat Fund.

	Interest. £	s.	d.	Principal. £	s.	d.	Totals. £	s.	d.
Southern	78	18	9	17,435	9	6	17,514	7	6
Central	930	5	9	18,764	13	5	19,694	19	2
Northern	1,187	17	2	18,752	11	9	19,940	8	11
Carpentaria	38	15	6	2,407	4	8	2,446	0	2
Totals	£2,235	16	5	£57,359	19	4	£59,595	15	9

Dairy Fund.

	Interest. £	s.	d.	Principal. £	s.	d.	Totals. £	s.	d.
Southern	25	15	10	4,070	11	5	4,096	7	3
Central	207	4	4	2,400	0	0	2,607	4	4
Northern	60	12	6	1,821	0	0	1,881	12	6
Carpentaria	...			...			...		
Totals	£293	12	8	£8,291	11	5	£8,585	4	1

~~& 26 - half boxes~~ ~~and 23 half boxes.~~

Butter Exports Overseen. July 1907.

Week ending.	Australia	China	Japan	Africa	London	Others	Total Boxes	Value pound	Total value.
5	544	35			480	10	1069	11½	£ 27.18
8	537						537	11½	1441
15	585	8			~~464~~ ~~457~~	210	1254	11¼	3321
22.	~~585~~ ~~285~~ 272 ~~96~~	95			833	5	1205	10¾	3023
29.	(a) 313	6			1808		2129	10½	5228
August.									
5.	743				35		783.	10¼	1873
12.	611				1941		2552	10¼	2507
19	534	25					559	10½	1370
26	519	25			677	1518	2739	10½	6710
Sep. 2	374	55				[illegible]	429	10¾	103
9	[illegible]								
16	75	62					137	11¼	35[illegible]
23	150				2427		2777	11¼	7125
30	40				623		663		174

The sum of £871 5s. 4d., expended from the Northern Meat Fund in maintenance of the Mackay Meatworks since they were taken possession of by the board, is not included in the above statements.

The amounts repaid by companies during the year were:—

Meat Fund.

	Interest.				Redemption.				Totals.		
	£	s.	d.		£	s.	d.		£	s.	d.
Southern ...	804	11	0	...	2,678	8	10	...	3,482	19	10
Central ...	555	16	4	...	2,094	19	2	...	2,650	15	6
Northern ...	605	9	5	...	2,384	7	1	...	2,989	16	6
Carpentaria	106	6	8	...	251	4	4	...	357	11	0
Totals	£2,072	3	5	...	£7,408	19	5	...	£9,481	2	10

Dairy Fund.

	Interest.				Redemption.				Totals.		
	£	s.	d.		£	s.	d.		£	s.	d.
Southern ...	628	8	4	...	249	11	5	...	877	19	9
Central		...		...		...		...		...	
Northern	190	0	0	...		...		...	190	0	0
Carpentaria		...		...		...		...		...	
Totals	£818	8	4	...	£249	11	5	...	£1,067	19	9

REFUNDS TO CERTIFICATE HOLDERS.

The sum of £16,885 17s. 6d. has been refunded to certificate holders this year, making a total of £81,426 15s. now repaid, the proportion to the different districts being shown by the following table:—

Refunds.

District.	Amounts previously repaid from July, 1902, to 30th June, 1906.				1905-1906.				Totals.		
	£	s.	d.		£	s.	d.		£	s.	d.
Southern ...	25,860	11	1	...	6,201	18	8	...	32,062	9	9
Central ...	22,136	6	7	...	6,964	9	7	...	29,100	16	2
Northern ...	13,857	5	8	...	3,000	6	9	...	16,857	12	5
Carpentaria	2,686	14	2	...	719	2	6	...	3,405	16	8
Expenses ...	493	1	8	...	23	2	6	...	516	4	2
	£65,033	19	2	...	£16,909	0	0	...	£81,942	19	2

Statements showing receipts and expenditure from the inception of the funds and details of the outstanding loans on the various works are included in the Auditor-General's Report for this year.

VOTE FOR LOANS IN AID OF CO-OPERATIVE AGRICULTURAL PRODUCTION.

No fresh advances have been made from this vote during the year, although several inquiries for particulars, &c., have been received. The Roma Co-operative Milling Company, Limited, has repaid the total amount advanced them with interest, while the Bundaberg Co-operative Dairy Company, Limited, has now disposed of its three creameries on which amounts had been advanced. Only two companies now hold loans from this vote, although some questions of fresh advances are at present under consideration. The following are particulars of the advances from this vote:—

	£	s.	d.	£	s.	d.
Total amount advanced to date ...	...		...	6,824	0	0
Amounts repaid this year—						
Interest	204	15	1			
Redemption	2,014	16	8	2,219	11	9
Total amounts at present outstanding—						
Interest	11	8	10			
Principal	1,421	6	3	1,432	15	1

The securities have been inspected during the year, and the companies furnished with the Surveyor's reports, while his advice has also been largely availed of by private companies. The Surveyor paid a visit to the latest and most up-to-date factories in the Northern Rivers district of New South Wales. It is worthy of note that on the whole Mr. Ferguson considers that the leading Queensland dairy factories do not suffer by comparison with any of those he visited in his tour.

It is to be reported that in May last failing health compelled Mr. James Kemp to tender his resignation as a member of the Meat and Dairy Board. His resignation was accepted with regret.

SHEARERS AND SUGAR WORKERS' ACCOMMODATION ACT.

The administration of this Act has been arranged without extra charge to the revenue other than the appointment of two qualified inspectors in those districts where sheep are predominant, and which require more attention than could be given by the other officers of the Department who have had the work of inspection under this Act added to their duties. This Act gives no power for the promulgation of regulations, and, consequently, there has been some little difficulty in the administration in so far that, as there is no power to make regulations to deal with matters that always arise from experience in the case of new legislation, there is no power for the elasticity necessary to meet circumstances as they have arisen. Notwithstanding these obstacles, the operations of the Act have been the means of laying the foundation for much improvement in those sheds and sugar works where little attention has hitherto been paid to the comfort and welfare of those employed. Places of this character are, unfortunately, in existence in the State, and the Act will have a salutary effect in remedying the evils; but as opposed to these blots there are many stations and sugar works where the comfort and accommodation of those employed have been well cared for in every respect. Owners and managers have throughout shown a willingness and even eagerness to make the needed improvements, and the Pastoralists' Association, soon after the commencement of operations, submitted draft plans of buildings that furnished good accommodation.

The heavy rains in the early part of the year, the heavy demand upon the sawmills in the country, and uncertainty regarding the requirements of the Act, have been the main factors in applying for exemption on the ground that the improvements could not be effected before the shearing of this year.

All applications for exemption have been referred to the local inspectors, and upon their reports decisions have been made, each case being taken on its own merits. The number of stations and sugar works visited and reported on since the first of January last have been:—Shearing sheds and sugar works, 176; and the exemptions or partial exemptions granted have been:—Shearing sheds and sugar works, 152.

The applications for exemptions have numbered 190.

SLAUGHTERING ACT.

This Act deals with the meat treated for home consumption, and, as in the case of the export companies, the butchers work in harmony with the Department; and it is gratifying to state that in the metropolitan area the slaughter-yards have recently been brought up to a high state of sanitation. In some cases the yards have been completely rebuilt, while in others they have been improved and come well within the Act and regulations.

These improvements have, in nearly all instances, been effected by mutual arrangement, and the inspectors deserve commendation in so arranging such matters with a minimum of friction.

SPECIAL AGRICULTURAL SELECTIONS ACT.

Land has been secured on the Ideraway resumption sufficient for the settlement of twenty-three families upon areas ranging from 150 to 350 acres, and matters are now in progress for settling them.

The method of selection for the Gayndah group was by ballot, under the supervision of the police magistrate, a selection of seventy-five names being first obtained, and after inquiry and a second ballot that number was reduced to the required number.

Of the twenty-three applicants selected by ballot, ten withdrew for various reasons, of which some instances may be quoted:—

1. Other employment.

2. Withdrew because his wife declined to go with him, as she would not leave her mother.

3. Health not good enough. The reports concerning this man are that he is physically fit to carry out rough bush work.

4. Because a friend of his has not got a selection adjoining.

5. Has got work for over twelve months.

6. Price of land too high. (£1 2s. 6d. per acre on twenty-five years' terms.)

7. Wife not in a fit state of health to go farming.

8. Sons will not join, and, under present circumstances, arrangements will not suit.

9. Too much collective work to perform before starting on his own land. Debt is more than he cares to incur.

The intention of the Act is clearly to enable those who wish to become farmers but have not the means to make a start; but the foregoing reasons do not show that the persons who made them have any real desire to become farmers or to take advantage of the assistance offered by Parliament, or to have the grit to overcome obstacles. None of the reasons given by the 50 per cent. of the twenty-three selected in the first instance would have deterred those who, in the days before railways were so convenient, went out into the bush, lived hard, worked hard, and fought their way to a good and comfortable living.

The withdrawals have been replaced by others, the overseer has been appointed, and a commencement has been made; but it is yet early in the history of this experiment to hazard an opinion upon the probable results.

Ridgeway 400277. / Report for 1906. = turn up.
Reports from Inspectors of our Deer transactions

Jackson v Reid furnished returns up to 31-12-6 of Stations that completed during 1906.

As already referred to, the choice of a site for these groups is a matter of some difficulty, and many areas of land have been discussed, and some inspected, and reported upon. Of these there may be mentioned:—

Areas suggested to the Lands Department for inspection—

Gogango or Raglan Scrubs.
Obi Obi.
Belli.
Barmoyea.
Land in Western district.
Goomboorian.

Areas offered by the Lands Department—

Portions of land in parish of Cloyna, near Murgon.
Portions of land in parishes of Murgon and Goomeribong.
Portions of land in parish of Binjour.
Portions of land in parishes of Wallumbilla and Chadford.

Areas discussed or inspected—

Ideraway, three sections of run.
Biggenden, accessible to township of Biggenden.
Murgon
Cloyna.
Tuchekoi-Belli.
Numinbah.
Land in parishes of Wallumbilla and Chadford.
Inkerman, near Ayr.
Atherton.
Land around Barcaldine.
Goomboorian.

The site of the second group has not yet been determined, but, from the evident desire of many of the applicants for a group in the North, search is now being made for a suitable area.

The operations of this Act have been considerably hampered by the difficulty in obtaining areas of land on which those for whose benefit the Act is intended could be placed with a reasonable hope of success. The intentions of Parliament would be frustrated were those participating in its benefits settled upon land, however good it might be, if it were a long distance from market.

The Ideraway land was decided upon after full consideration relative to its situation and of the report of the Agricultural Inspector, who closely inspected the land, and is firmly of opinion that this area is well adapted for the experiment, for the success of which everything will be done.

Appended are Reports from—

The Principal of the Queensland Agricultural College.
The Chemistry Division.
The Instructor in Fruit Culture.
The Instructor in Tropical Agriculture.
The Dairy Expert.
The Colonial Botanist.
The Entomologist and Vegetable Pathologist.
The Tobacco Expert.
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 Farm, Roma.
The Manager of the State Nursery, Kamerunga.
The Director of the Botanic Gardens.
The Trustees of the Queensland Museum; and
The Report of the Government Statistician on Agricultural and Pastoral Statistics for 1905.

The Report 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 herewith to submit a report on the work of the College for the year ending 30th June, 1906. This report covers a review of the operations carried on in the several branches of College work, together with extracts from reports submitted to me by the officers who preside over the several departments. In the compilation of the report I have endeavoured to give you but a brief summary of the year's work. I may mention here that the year's operations have been a marked success, brought about by the loyalty and good feeling which prevail amongst the teaching staff, together with their combined efforts to make every branch of the College work a success.

TEACHING STAFF.

One change has been made. Mr. C. McGrath, who has been connected with the Department for over twelve years, resigned his position as Dairy Instructor, and was succeeded by Mr. E. Graham, of New South Wales. Mr. J. F. Bailey continued his lectures on Botany, and the classes entrusted to him have, with a few exceptions, shown good results. Mr. Cory, the Veterinary Surgeon, has also lectured with much credit and the appreciation of all who have attended his classes.

SCHOOL TEACHERS' COURSE.

During the period under review, two short courses, midsummer and midwinter, of ten and twelve days respectively, were conducted at the College. The number taking part in each case was sixty students, who came from all parts of the State. I am pleased to state that the affair was a thorough success, notwithstanding the fact that, when the idea was first spoken of, it was thought that the whole thing would result in utter failure. Every teacher present on each occasion paid marked attention to the instruction imparted by the various members of the College staff, and it was indeed surprising to see the aptitude in acquiring knowledge displayed by all. It has since been reported to me from reliable sources that various districts from which teachers came have profited by the knowledge disseminated by the schoolmasters on their return to their respective homes. This has been espcially the case in connection with the treatment of animals for milk fever, blackleg, and in the testing of milk and cream. Although these courses involve a great deal of extra work for the College staff, I would certainly recommend their continuance, believing, as I honestly do, that those already on the land, together with those likely to follow farming and dairying pursuits, will in an indirect manner derive much benefit therefrom.

STUDENTS' CONDUCT.

It affords me great pleasure to be able to state that, with two or three exceptions, the conduct of the students entrusted to our care during the period covered by this report has been exceptionally good. Of course, it must be distinctly understood that we are at all times certain to have a sprinkling of the "boyish" element with us; such lads always require much forcing to make them do honest work, either in the classroom or in the field. This difficulty may be overcome to a great extent by raising the age of admission. There is one very noticeable and regrettable feature in connection with the majority of the young men with whom we have to deal, and, indeed, it is the case with some of the best educated lads—that is, that they show a great lack of reverence for their parents, their elders, superiors, and their church. This fact is the more noticeable when the Queensland lads are brought into comparison with young men who have been reared in England, several of whom have gone through a course of training at this institution. The English lad gazes in amazement on the Australian boy when the latter speaks of his parents, naming his father and mother respectively as my "old man" and my "old woman." I do not for a moment wish to suggest that the words are uttered with disrespect, but such utterances, to say the least of it, have not the effect of elevating the dignity of our young fellows in the eyes of those who have travelled about, and who pride themselves on their mode of discourse. I consider that the matter is due to the parents allowing their children too much freedom in their early training.

In mentioning this matter, I may be departing from the lines on which a report should be written, but one can hardly help making mention of what is of considerable importance to those of us who are rearing families.

AGE OF ADMISSION.

After having had eight years of experience, I have come to the conclusion that we could have shown better results if we had had older boys entrusted to us. In the first place, the younger lads cannot realise the importance of the teachings here. Secondly, a boy of fifteen or sixteen is likely to indulge in a good deal of boyishness, which is a menace to the progress of the older lads. Thirdly, a young lad, at the completion of his three years' course here, is not old enough, when he leaves, to take up responsible work on his own account. For the above reasons, this and similar institutions are not able to show immediate results in connection with their ex-students following up work of an important nature. It would be unreasonable to expect a young fellow of seventeen or eighteen to be able to control a farm or dairy, notwithstanding the fact that he might, so far as knowledge of the work is concerned, possess the ability, yet he would not have sufficient firmness to handle the men under him. In my opinion the age of admission should be raised to seventeen years.

CHURCH SERVICES.

As in the past, I find that many of our students have no desire to attend church services; but the rule of compulsory attendance has been strictly adhered to, the church roll call taking place, weather permitting, every Sunday morning. It is pleasing to note that the Rev. H. Gradwell (Church of England) visits the College occasionally for the purpose of advising those of the students who belong to his church.

SOCIAL LIFE.

The social life and amusement here are well catered for, inasmuch as we have two football, two cricket, and two tennis clubs. The annual ball is always looked forward to with a considerable amount of interest. This has, on every occasion, proved a marked success, thanks to the people who come considerable distances for the purpose of assisting.

OLD BOYS' UNION.

The ex-students have formed a union, and there are now a very large number of members on the list. They meet at an annual dinner during the National Exhibition week, when they exchange ideas and help each other in every respect. It is pleasing to know that such a spirit of loyalty exists amongst students who have attended at this institution.

STUDENTS WHO HAVE LEFT THE COLLEGE.

Of the thirty students who left the College during the year under review, twenty-two have taken up mixed farming, and one is in a dairy factory. This proves conclusively that the majority of the young men who graduate through the College apply the knowledge they have acquired in the right direction.

GRADE SHEETS.

In submitting the grade sheets for the two terms of the College year, it may be observed from a perusal thereof that very good progress has been made, especially among the second and third year students. It will also be noticed that several, owing to their lack of previous educational training, have done very poor work, and must during the next term devote their whole time to practical work, attending such lectures only as are connected therewith. During the year thirty-three students were successful in passing an examination in engine-driving (held under the Shop and Factories Act), and now hold certificates as boiler attendants. Nineteen students were successful in passing the public examinations in connection with milk and cream testing. In the competition for judging live stock at the Exhibition in August last, six students competed, and were successful in carrying off first and second prizes in each class.

QUEENSLAND AGRICULTURAL COLLEGE.

GRADE SHEET.—DECEMBER, 1905.

Division.		Agriculture, Theory.	Arithmetic.	Botany.	Chemistry, Theory.	Chemistry, Practical.	Gardening, Theory.	Dairying, Theory.	Bookkeeping.	Elementary Science.	English.	Pig-raising and Bacon-curing.	Veterinary Science.	Mensuration.	Poultry and Bee keeping.	Surveying.	Breeding and Management of Live Stock.		Blacksmithing.	Carpentering.	Dairying, Practical.	Farming, Practical.	Gardening, Practical.	Conduct.	Diary.
THIRD.	R. Baker	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	85	80	...	80	80	80	...
	N. Dixon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	80	81	89	90	...
	R. Harvey	...	...	76	...	...	87	64	...	...	...	65	34	...	79	...	70	...	60	60	...	83	92	85	...
	H. May...	...	...	95	...	67	72	70	86	92	...	80	89	...	79	50	91	...	70	80	65	88	...	65	...
	J. McCready	...	...	...	77	76	...	...	...	...	...	...	...	...	...	54	...	...	80	...	...	81	90	60	...
	B. McNab	...	...	75	...	44	51	48	86	89	...	73	70	...	74	43	76	...	...	70	70	92	...	100	...
	K. Moffat	...	...	...	88	...	...	...	...	...	...	...	...	...	...	80	...	...	...	...	...	81	90	85	...
	W. Patrick	...	...	56	...	17	28	36	71	69	...	63	33	...	73	6	60	...	...	70	...	89	...	80	...
	E. Robinson	...	...	85	...	6	50	38	85	66	...	72	60	...	74	9	72	...	80	80	85	...	...	60	...
SECOND.	G. Campbell	...	...	65	...	...	35	51	...	...	78	...	...	61	50	83	61	...	67	...	90	90	...	94	93	85	...
	A. Clarke	...	...	65	...	17	42	54	69	91	53	...	...	70	55	29	88	...	77	...	...	...	80	...	...	100	...
	T. Clarke	...	...	63	...	47	18	42	65	73	35	...	...	54	51	3	62	...	66	...	...	...	70	...	...	100	...
	H. Iwers	...	...	60	...	80	39	52	92	60	75	...	...	48	73	38	68	...	52	...	65	60	...	82	94	85	...
	H. Jones	...	...	70	...	77	63	70	88	65	70	...	...	67	78	81	74	...	78	...	65	...	75	76	89	85	...
	R. Mackellar	...	...	84	...	34	65	56	80	63	80	...	...	60	48	41	75	...	89	...	70	50	70	82	80	85	...
	L. Martin	...	...	74	...	75	45	52	87	60	68	...	...	67	65	8	59	...	87	...	80	60	65	86	90	85	...
	A. Philp	...	...	90	...	90	74	66	93	92	77	...	...	90	62	90	79	...	95	...	...	90	80	92	96	95	...
	W. Rendle	...	...	93	...	65	69	54	93	94	85	...	...	90	83	74	77	...	95	...	...	...	...	76	85	75	...
	H. Scheu	...	...	93	...	92	85	65	89	90	95	...	...	95	73	63	69	...	93	...	...	60	...	80	93	80	...
	H. Stevens	...	...	72	...	60	58	65	81	72	94	...	...	66	67	65	79	...	86	...	70	70	72	88	94	84	...
	R. Stumm	...	...									Left during Term.															
	E. Wall	...	...	...	...	...	77	69	...	...	89	...	...	...	...	95	...	...	...	...	...	...	...	85	97	85	...
	N. Walker	...	...	53	...	...	7	0	47	50	*10	...	...	52	33	0	56	...	59	...	65	60	60	77	83	85	...
	W. Wilkie	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	82	...	...	85	...
FIRST	O. Anderson	...	...	45	16	...	...	...	69	72	...	29	20	55	20	...	35	...	56	...	...	50	...	84	79	70	37
	P. Blaney	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	60	40	60	74	68	85	...
	S. Briggs	...	...	95	74	25	...	...	89	93	...	74	89	89	85	...	70	...	94	...	...	60	65	76	84	86	76
	J. Brown	...	...	79	80	55	...	...	90	85	...	73	68	86	87	...	65	...	84	...	...	...	57	75	67	85	71
	C. Cadew	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	90	...	...	...	...	60	...
	E. Casey	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	90	80	...	...	89	60	...
	D. Dunlop	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	80	...	...	45	...
	O. Dunn	...	...	55	54	32	...	...	71	64	...	38	48	68	44	...	46	...	55	...	...	...	58	70	60	75	67
	R. Haldane	...	...	68	55	35	...	...	83	72	...	38	46	70	46	...	63	...	63	...	...	60	60	78	86	100	71
	T. Hancock	...	...	92	60	40	...	...	87	88	...	53	67	75	60	...	65	...	45	...	60	60	68	78	85	95	76
	S. Hays	...	...	70	65	17	...	...	75	74	...	44	46	72	22	...	51	...	83	...	...	...	90	...	...	100	73
	J. McDermott	...	...	83	69	5	...	...	85	90	...	68	62	89	82	...	71	...	91	...	...	70	59	79	80	85	75
	R. McIntyre	...	...	68	43	17	...	...	84	76	...	48	49	76	56	...	56	...	79	...	...	90	...	79	87	70	55
	C. Maunder	...	...	89	81	65	...	...	84	88	...	76	80	94	89	...	74	...	88	...	60	...	57	75	76	95	75
	F. Moody	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	70	...	70	...	...	90	...
	J. Reed...	...	...	65	35	20	...	...	80	64	...	60	47	70	77	...	69	...	68	...	...	...	56	76	82	100	75
	W. Reed	...	...	56	50	30	...	...	76	80	...	62	45	60	77	...	71	...	56	...	...	...	56	76	80	100	74
	E. Reuss	...	...	95	57	43	...	...	91	82	...	74	88	90	78	...	79	...	93	...	...	...	...	92	89	90	80
	K. Reye	...	...	85	76	53	...	...	83	71	...	84	81	70	89	...	72	...	57	...	...	...	58	78	83	90	73
	G. Rickards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	65	70	55	80	90	80	...
	C. Rosenstengel	...	...	71	52	30	...	...	70	69	...	55	69	51	46	...	32	...	56	...	60	50	40	76	62	65	69
	C. Schureck	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	55	76	79	75	...
	S. Tanner	...	...	58	3	0	...	...	69	70	...	8	12	73	20	...	66	...	52	...	...	...	...	78	80	86	55
	A. Taylor	...	...									Left during Term.															
	R. Taylor	...	...	92	99	98	...	...	87	92	...	93	96	75	93	...	71	...	88	...	70	80	50	81	94	90	81
	L. Uhr	...	...	88	48	75	...	...	81	74	...	65	87	50	76	...	70	...	73	...	60	...	...	60	76	75	65

* Elementary.

Division.		Agriculture, Theory.	Arithmetic.	Botany.	Chemistry, Theory.	Chemistry, Practical.	Gardening, Theory.	Dairying, Theory.	Bookkeeping.	Elementary Science.	English.	Pig-raising and Bacon-curing.	Veterinary Science.	Mensuration.	Poultry and Bee-keeping.	Surveying.	Breeding and Management of Live Stock.		Blacksmithing.	Carpentering.	Dairying, Practical.	Farming, Practical.	Gardening, Practical.	Conduct.	Diary.
Third.	H. May	92	...	75	...	54	...	91	...	...	...	92	63	...	...	...	88	...	70	80	90	90	92	100	...
	J. McCready	...	...	...	...	*85	...	...	...	...	...	...	...	...	...	...	...	...	60	...	90	86	90	100	...
	B. McNab	87	...	36	...	62	87	90	...	...	...	90	56	...	87	...	80	...	...	80	90	94	93	100	...
	K. Moffat	95	...	...	...	*80	...	...	...	...	...	...	...	...	...	...	...	...	65	...	90	...	86	90	...
	W. Patrick	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75	70	90	90	90	100	...
	E. Robinson	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	80	80	90	81	96	60	...
Second.	A. Clarke	65	...	...	...	...	86	82	...	...	...	82	65	...	50	...	75	...	65	60	85	...	...	95	...
	T. Clarke	68	...	...	...	...	...	63	...	...	...	65	10	...	...	...	72	...	65	60	80	88	...	85	...
	H. Jones	93	...	40	74	69	86	81	...	...	...	91	72	...	90	50	88	...	60	70	85	80	90	90	...
	R. Mackellar	74	...	...	71	62	78	78	...	...	...	75	54	...	88	74	75	...	60	60	70	85	86	90	...
	A. Philp†	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	90	90	90	94	...	100	...
	W. Rendle	...	...	...								Left	at	Mid	Ter	m.									
	H. Scheu	93	...	46	78	75	92	89	...	...	...	93	72	...	74	94	86	...	...	...	70	83	90	100	...
	H. Stevens	86	...	...	77	79	91	72	...	..	...	74	60	...	88	80	68	...	85	70	80	92	100	100	...
	N. Walker	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	80	...	85	...	84	95	...
	W. Wilkie	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75	...	85	90	97	95	...
First.	W. Allan	74	47	63	62	...	78	50	84	...	...	70	61	33	75	...	75	...	60	...	70	75	94	100	68
	P. Blaney	60	...	...	...	...	53	38	63	...	...	56	55	...	...	...	66	...	50	...	50	78	74	90	...
	F. B. Smythe	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40	...	30	74	82	100	...
	S. Briggs	93	66	52	73	...	81	68	55	...	...	95	70	78	75	...	93	...	70	...	60	81	94	100	68
	J. Brown	93	69	55	78	...	78	74	56	...	...	78	62	93	79	...	88	...	...	...	50	79	76	100	65
	F. Campbell	46	36	10	16	...	68	18	21	...	...	52	28	61	50	...	51	...	...	...	50	76	78	100	37
	C. Clydesdale	43	32	22	19	...	52	20	17	...	...	35	27	54	55	...	49	...	...	...	60	76	87	80	67
	S. Conochie	39	45	15	34	...	...	40	17	...	...	51	42	58	64	...	...	...	...	...	50	77	80	85	64
	O. Dunn	72	43	30	30	...	72	42	53	...	...	66	48	68	66	...	66	...	56	60	50	80	80	85	64
	J. Flower	65	49	33	55	...	48	50	71	...	...	67	44	66	67	...	69	...	90	...	45	...	84	65	10
	R. Haldane	82	58	32	37	...	80	56	65	...	...	73	56	59	63	...	73	...	80	60	60	81	94	100	68
	W. Hall	66	11	12	41	...	69	40	51	...	...	53	40	21	67	...	63	...	...	...	45	79	86	85	65
	T. Hancock	72	63	40	57	...	68	71	72	...	...	86	50	69	78	...	79	...	50	...	70	...	91	100	65
	C. Hannam	38	10	0	4	...	48	7	21	...	...	42	37	0	36	...	57	...	...	50	40	76	53	70	27
	F. Harley	35	14	10	16	...	46	16	29	...	...	44	26	13	50	...	58	...	50	...	50	78	90	70	35
	F. Higgs	41	28	10	28	...	28	26	44	...	...	25	36	34	25	...	29	...	...	...	30	76	52	70	66
	A. Hutchison	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	70	...	...	100	...
	H. Kirby	86	31	50	60	...	63	53	55	...	...	60	59	66	56	...	81	...	...	60	50	78	84	100	69
	J. McDermott	93	77	46	71	...	84	75	80	..	...	92	68	80	61	...	93	...	65	60	50	80	90	90	70
	C. Maunder	93	97	25	74	...	62	66	60	...	...	76	70	83	70	...	89	...	65	...	50	77	91	100	70
	P. McGurk	40	0	0	1	...	42	12	6	...	...	40	8	0	43	...	30	...	...	...	50	30	74	50	90	59
	R. Moore	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	70	50	81	90	85	...
	P. Nicol	25	25	0	5	...	0	2	7	...	...	25	2	34	42	...	28	...	...	...	30	76	72	70	52
	T. O'Neill	84	13	14	23	...	61	45	26	...	...	83	30	10	59	...	89	...	..	60	50	81	90	90	69
	A. Platt	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	76	...	100	...
	S. Reddan	48	20	12	28	...	61	35	39	...	...	62	40	48	68	...	70	...	...	...	50	79	94	90	65
	J. Reed	75	67	50	69	...	80	43	74	...	...	68	78	81	68	...	69	...	65	50	50	79	87	100	67
	W. Reed	81	51	62	82	...	83	52	53	...	...	89	60	60	71	...	72	...	65	50	50	79	85	100	69
	E. Reuss	92	84	46	60	...	86	80	75	...	...	93	78	72	81	...	95	...	80	60	50	93	...	85	33
	K. Reye	90	66	70	80	...	93	53	86	...	...	71	65	94	85	...	74	...	...	...	60	89	87	100	68
	G. Rickards	...	...	...								Left	at	Mid	Ter	m.									
	C. Rosenstengel	68	50	11	60	...	76	55	42	...	...	74	54	59	59	...	87	...	65	60	50	79	68	90	34
	C. Schurech	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	50	...	78	78	45	...
	A. Scott	63	25	14	17	...	70	38	62	...	...	69	25	47	55	...	64	...	...	50	40	76	82	85	68
	S. Tanner	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	...	70	81	84	90	...
	H. Talty	92	59	8	57	...	84	54	77	...	...	93	55	28	58	...	91	...	...	...	...	93	96	100	70
	R. Taylor	91	93	92	95	...	93	89	98	...	...	90	85	99	88	...	93	...	75	60	60	85	95	95	90
	L. Uhr	89	47	76	69	...	80	63	53	...	...	85	66	66	77	...	83	...	65	60	60	79	80	90	30
	W. Wason	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	60	80	72	100	...
	A. Willcocks	80	60	26	68	...	63	60	61	...	...	69	59	68	63	...	86	...	60	...	40	74	68	100	25

* Special course.

† Absent from examinations through illness.

FARM WORK.

Taking the season as a whole, it has been a very favourable one for the growth of crops. The rainfall for the year amounted to 35·11 inches, distributed as follows:—

1905—July	...	·98 inches	...	1 wet day.	1906—January	...	3·75 inches	... 7 wet days.
August	...	·27 „	...	2 wet days.	February	...	5·33 „	... 12 „
September		·54 „	...	3 „	March	...	9·43 „	... 16 „
October	...	2·59 „	...	8 „	April	...	1·40 „	... 1 „
November	..	3·59 „	...	6 „	May	...	1·90 „	... 5 „
December	...	4·73 „	...	9 „	June	...	·60 „	... 6 „
Total	...	12·70		29 wet days.	Total	...	22·41 inches	... 47 wet days.

Grand total of rainfall, 35·11 inches for 76 wet days.

The heavy rains during the months of February and March caused the soil to form a hard surface, to such an extent that it was found almost impossible to prepare the ground for planting the winter crops. The shortage of labour to some extent retarded the working of the farm and the keeping it in a condition creditable to the institution. It is thought by some people who are unacquainted with the lines upon which it is necessary to conduct this and similar institutions that, with a roll of sixty students, no outside labour should be employed. I would, therefore, like it to be understood that each day one-half of the students are attending class work, whilst the remaining half are allotted to the various branches of College work, in order to allow them to obtain a grounding in the different subjects that are being taught. When thirty or forty students are told off for work on our different departments—farm, dairy, smithy, carpenter's shop, garden, piggery, poultry yards, &c.—it will readily be seen that very few can be allotted at the one time either to the farm or any other department, the only exception being when work of an important or urgent nature has to be performed. Then, again, more than half of those who join have never driven a horse before coming here; this means that their services in the way of farm work are of very little value to us at the start. From the above facts, it may readily be seen that a good deal of outside labour is necessary in order to keep the farm in a creditable condition.

MAIZE.—This crop was raised under different conditions, and although the yields were not extraordinarily high—due to the fact that we were not favoured with rain at a suitable time—they may be considered very good. The only variety that did not do well was the Argentine, which happened to come into flower during a dry spell. Golden King gave the best return (36 bushels per acre), followed by Early Red Hogan (34 bushels), Golden Nugget (30 bushels), Sydney Red (28 bushels), and Horsetooth (25 bushels). An experiment was carried out in Plot 2, where an area of 4 acres was planted for the purpose of testing the efficacy of the different fertilisers. Previous to planting, the soil was ploughed twice to a depth of 9 inches. On 28th October the furrows were opened by the aid of a double-mould board plough to a depth of 4 inches,

the seed was planted by hand, and the fertilisers applied broadcast; the whole ground was then worked with a spring-tooth cultivator, which covered the seed and thoroughly mixed the manures with the soil. Each plot consisted of four rows, which were 4 feet 3 inches apart, a space of 6 feet being left between each plot. The crops showed up on the twelfth day after planting, and it was noticeable that those on the plots treated with phosphoric acid came up more evenly and strongly than was the case where that substance had not been employed. A little later, however, this distinction seemed to disappear, the whole field presenting a very even growth. The stalks attained a height of 12 feet. I may mention that the manures used in the above experiments were those recommended by Mr. Gurney, the College Chemist. Although the plots contained but a quarter acre each, the table and yields have been calculated for an acre. The crop matured during the last week of April, and was harvested with the following results:—

No. of Plot.	Manure applied: lb. per Acre.	Fertilising Ingredients: lb. per Acre.	Bushels per Acre.	Price of Manure Used at Cwt. Rates.	Price of Manure Used at Ton Rates.
1	No manure	...	34·1	£ s. d. ...	£ s. d. ...
2	Sodium nitrate ... ... 30 Blood ... ... 100 Superphosphate ... ... 400 Potassium sulphate 112	Nitrogen ... ... 17·3 Phosphoric acid (water soluble) 67·6 Potash ... ... 57·7	36·6	2 12 3	2 8 11
3	Superphosphate 112	Phosphoric acid (water soluble) 18·9	32·4	0 7 0	0 6 6
4	Ditto 224	Phosphoric acid (water soluble) 37·8	33·7	0 14 0	0 13 0
5	Ditto 336	Phosphoric acid (water soluble) 56·7	36·2	1 1 0	0 19 6
6	No manure	...	29·4	...	...
7	Superphosphate ... ... 112 Potassium sulphate 40	Phosphoric acid (water soluble) 18·9 Potash ... ... 20·6	37·4	0 12 4	0 11 7
8	Superphosphate ... ... 224 Potassium sulphate 80	Phosphoric acid (water soluble) 37·8 Potash ... ... 41·2	36·9	1 4 8	1 3 2
9	No manure	...	33·9	...	...
10	Supherphosphate ... ... 224 Ammonium sulphate 56	Nitrogen ... ... 11·3 Phosphoric acid (water soluble) 37·8	35·7	1 3 0	1 1 3
11	Supherphosphate ... ... 224 Sodium nitrate 56	Nitrogen ... ... 8·2 Phosphoric acid (water soluble) 37·8	35·7	1 2 0	1 0 3
12	No manure	...	26·8	...	...
13	Blood ... ... 160 Bone dust ... ... 124 Superphosphate ... ... 200 Potassium sulphate 75	Nitrogen ... ... 23·4 Phosphoric acid (water soluble) 33·8 Phosphoric acid (insoluble) ... 32·2 Potash ... ... 38·7	38·7	2 1 6	1 19 4
14	No manure	...	30·4	...	...
15	Thomas's phosphate 224	Phosphoric acid ... ... 25·3	52·6	0 9 0	0 9 0
16	No manure	...	25·8	...	...

The following table shows that there is an increase in all the manured plots, but that, when the expense of manuring is considered, Plots 7 and 15 only show profit. The increase of Plot 15 is considered to be due more to the sweetening effect of the lime in the Thomas's phosphate than to the phosphoric acid, as in plots where more phosphoric acid was used but in an acid manure, the gain was trifling:—

Plots.	Increase per Acre over Manured Plots.	Value of Crop at 2s. 4d. per Bushel.	Value per Acre, after Deducting Expense of Manure.
	Bushels.	£ s. d.	£ s. d.
No manure	...	3 10 2	3 10 2
2	6·5	4 5 4	1 13 1
3	2·3	3 15 7	3 8 7
4	3·6	3 18 7	3 4 7
5	6·1	4 4 5	3 3 5
7	7·3	4 7 3	3 14 11
8	6·8	4 6 1	3 1 5
10	5·6	4 3 3	3 0 3
11	5·6	4 3 3	3 1 3
13	8·6	4 10 3	2 8 9
15	22·5	6 2 8	5 13 8

CEREALS.

The cereal crops were got in under very favourable circumstances. They germinated well, and during the early stages of growth promised to give good returns. Just before coming into ear, however, a long stretch of dry weather prevailed which brought the growth—with the exception of 9 acres that were irrigated—to a complete standstill. If allowed to ripen, the sample of grain would have been a rather poor one; consequently, it was deemed advisable to convert the wheat, oats, and barleys into hay.

The 9 acres, Field 13, comprising 5 acres Belatourka and 4 Manitoba, were irrigated with very satisfactory results. The difference between irrigated and non-irrigated was most marked. Whilst the former stood from 5 to 6 feet high, the latter only showed a growth of 2 feet.

Five acres of Cape barley, Section 3, and 4 acres, Garden Paddock, produced a very heavy yield of green feed, as did also 3 acres of the Nepaul variety, Section 6. This green material was utilised by the dairy herd during the winter months.

SORGHUMS, ETC.

Those were planted in Section 10 with the double-row cornplanter in rows 3 feet apart, at the rate of 4 lb. of seed per acre. The season has been extremely favourable for this class of crop, and a heavy yield has

been the result. It was intended to convert most of this crop into ensilage. Unfortunately, when it had reached the stage most favourable for the purpose, and when everything was ready for a commencement, wet weather set in to the extent of keeping us off the field for weeks. Instead of putting it in the silo as originally intended, it was cut with the maize harvester and made into stack ensilage.

Of the varieties grown, the Amber Cane produced the most profitable crop. The Early Orange, which came next, went down somewhat with the wet, while the Saccharatum went down quite flat. This latter variety, owing to the stalks fermenting, soon became quite useless. Mazzagua, a new fodder plant from Central Africa, gives an enormous amount of green stuff, the stalks closely resembling sugar-cane.

The following analyses have also been conducted by Mr. Gurney. I may say that when the analyses were made it was intended to convert the crops into ensilage, but, owing to the continued wet weather at the time they were ready for the silo, this purpose could not be carried out. The object was to obtain the variation in feeding values of the original fodder and the resulting ensilage. For purposes of comparison, the analyses made have been tabulated with other fodders. The chemist further states that, for the purpose of comparison when calculating the ratio between digestible nitrogenous matter, the digestion co-efficients of sorghum have been used. The following is the analysis:—

	Mazzagua.		Amber Cane.		Planter's Friend.		Sorghum.		Pearl Millet.		Penicillaria. (Short-head Pearl Millet).		Broom Millet.	
Tons per Acre.	74·0		62·65		51·85		39·90		39·97		15·4		—	
	Green Sample.	Dry Matter.	Green Sample.	Dry Matter.	Green Sample.	Dry Matter.	Green Sample.	Dry Matter.	Green Sample.	Dry Matter.	Green Sample.	Dry Matter.	Green Sample.	Dry Matter.
Moisture	77·55	...	76·43	...	74·55	...	74·38	...	70·09	...	77·03	...	77·07	...
oluble Albuminoids	·178	·794	·250	1·062	·470	1·845	·199	·780	·680	2·275	·374	1·626	·139	·609
Insoluble Albuminoids	·868	3·868	·830	3·531	1·179	4·636	·836	3·263	1·020	3·412	·932	4·061	·763	3·328
Digestible Fibre	7·208	32·103	7·566	32·102	7·633	29·987	8·243	32·133	11·245	37·595	9·034	39·316	7·720	33·663
Woody Fibre	5·806	25·864	4·958	21·038	6·132	24·098	7·647	29·850	7·903	26·424	6·372	27·744	7·998	34·884
S luble Ash	1·053	4·691	·785	3·337	·752	2·954	·745	2·905	1·380	4·626	1·526	6·647	1·128	4·920
Insoluble Ash	·595	2·654	·739	3·129	·892	3·506	·730	2·853	1·045	3·494	·623	2·713	·966	4·215
Fat	·148	·660	·358	1·520	·337	1·326	·236	·922	·396	1·324	·294	1·280	·426	1·860
Amides, &c., by difference ...	6·594	29·371	8·084	34·288	8·055	31·650	6·984	27·259	6·241	20·866	3·815	16·608	3·790	16·528
Total	100·000	...	100·000	...	100·000	...	100·000	...	100·000	...	100·000	...	100·000	...
Amide Nitrogen	·094	·418	·082	·347	·047	·184	·037	·261	·052	·173	·040	·174	·024	·104
Total Nitrogen	·261	1·162	·255	1·081	·311	1·222	·233	·909	·324	1·083	·249	1·084	·168	·732
Value of nutrient digestive matter	13·906		15·059		16·098		16·046		18·367		13·894		14·131	
Ratio of digestive matter ...	1 : 18·9		1 : 20·9		1 : 17·4		1 : 22·6		1 : 19·1		1 : 18·8		1 : 28·	

BROOM MILLET.

Planted in rows, 3 feet apart, at the rate of 4 lb. of seed per acre. Only a small patch of 1 acre was grown, Section 1. Owing to the very rank growth made, the fibre was somewhat weak, although of fair quality. The yield was 16½ cwt. of cured tops per acre.

COW PEAS.

Two sowings were made, one in the Pig Paddock and the other in Section 2. Both produced a dense mass of foliage, completely covering the ground to a height of 3 feet. This luxuriant growth of vine told, however, against the yield of seed. From the Clay variety grown in the Pig Paddock, 15 bushels of seed were saved, the remainder being fed off by pigs. The varieties, Section 1, were Black, Grey, Small Purple, Large Purple, and Piebald. All those have been saved for seed, but have not yet been threshed out.

ROOT CROPS.

A large variety of root crops were grown, such as mangel, turnip, beet, kohl-rabi, carrots, &c. With the exception of the Yellow and White turnips—which were practically destroyed by aphis during the early stages of growth—they gave very satisfactory returns.

Various fertilisers were tried on this crop, Section 4, which was divided into nine ½-acre plots, with the following results:—

—	1½ cwt. Superphosphate.			No Manure.			1½ cwt. Bone Phosphate.			1½ cwt. Kainit.			1½ cwt. Sulph. of Ammonia (½ cwt. applied later.)			½ cwt. Sulph. of Ammonia and 1½ cwt. Superphosphate.			½ cwt. Sulph. of Ammonia, 1 cwt. Superphos., ½ cwt. Kainit.			Same as last, with ½ cwt. S. Ammonia applied later.			10 cwt. Lime.		
	T.	c.	q.	T.	c.	q.	T.	c.	q.	T.	c.	q.	T.	c.	q.	T.	c.	q.	T.	c.	q.	T.	c.	q.	T.	c.	q.
Sutton's Champion Swede ...	25	12	1	21	3	2	14	7	3	16	10	0	17	18	1	27	15	3	26	12	0	26	18	1	15	3	2
Improved Purple Top Swede	21	10	2	19	8	0	11	13	1	16	18	3	17	19	2	31	14	1	30	7	3	30	19	1	13	1	3
Skirving's Purple Top Swede	16	1	1	14	12	3	9	15	0	15	3	3	16	14	1	26	5	3	27	13	0	25	6	3	14	1	0
Aberdeen Yellow Turnip ...	5	14	3	4	16	1	3	7	2	3	8	0	2	16	3	7	10	1	6	1	1	5	7	0	3	15	1
Green Top Yellow Turnip ...	6	17	1	6	0	0	4	12	3	5	1	0	4	18	3	7	17	0	7	19	2	7	3	1	4	0	0
White Pomeranian	7	2	2	5	4	1	5	3	3	4	9	0	7	1	1	8	5	3	8	15	1	8	14	0	3	16	1
Purple Kohl-rabi	17	2	0	13	16	3	15	5	1	12	2	2	12	5	1	14	19	1	17	15	1	18	3	3	16	0	0
Green Kohl-rabi	15	14	1	14	3	3	14	3	2	11	12	1	13	7	3	15	15	0	16	11	0	15	19	1	15	1	1
Red Globe Mangel	31	1	2	28	5	1	28	6	0	28	0	0	30	10	1	33	1	0	33	10	2	35	1	3	30	0	0
Yellow Globe Mangel ...	32	2	0	28	10	3	29	0	1	28	10	2	31	2	2	33	15	0	35	7	1	37	11	2	29	1	3
Long Yellow Mangel ...	30	3	1	27	8	2	27	10	0	28	4	1	30	17	0	35	1	1	34	10	2	36	14	1	30	5	1
Vilmorin's Improved Sugar Beet	27	17	0	23	18	1	23	0	0	24	12	0	28	2	0	28	11	3	29	0	1	29	5	3	25	0	0
Klein Wanzelbein Sugar Beet	25	15	3	22	1	0	21	14	2	22	8	1	26	15	1	27	0	3	27	19	0	27	14	1	25	6	2

All plots were more or less affected by "aphis," and the variations in the results are, I think, more due to this cause than to the plant food supplied by the fertilisers. For example, the crops grown on the limed plot were swarming with the pest for about a fortnight before any of the others were infested.

ENGLISH POTATOES.

Under instructions from the Department, a manurial experiment was carried out with the above crop in the Garden Paddock. Owing, however, to the prevailing dry weather, together with early planting, the whole thing was a complete failure. A later planting of Blue Skins and Brownell's gave a very fair crop. Five acres of Blue Skins were planted on 20th February, Section 14. Those have done excellently, producing a fine crop of even sample and good quality. The harvesting is not completed.

SWEET POTATOES.

Of this most useful crop, four varieties were planted in the Garden Paddock, viz.:—Rosella, White Maltese, Spanish Giant, and Yellow Spanish. Each sort is being tried under different methods of planting—viz., on the flat in 3-feet rows, on hills 3 feet apart (single row), and on 5-feet hills (double row). The crop has not yet been harvested, but appearances so far go to show that the Rosella and the Spanish Giant are likely to give best results.

RAPE (DWARF ESSEX).

This crop kept up its previous reputation by giving a very heavy yield of green stuff, which is relished both by dairy stock and pigs. Two heavy cuttings were obtained from Field 3, and one from a later planting, Field 7.

LUCERNE.

Thirty-six acres were laid down in lucerne during the year, from which a return of 90 tons of hay was obtained. The older paddocks, containing 44 acres, gave a yield of 140 tons 10 cwt. Notwithstanding the continued wet weather during the beginning of the year, which delayed harvesting operations somewhat, the whole of the material was secured in good order.

COTTONS.

The crop grown the previous year, instead of being ploughed out, was pruned and allowed to stand over. The result has been very encouraging, a crop equal to last season's being secured. The yield from the respective varieties grown is as follows:—

	lb.		lb.
Culpepper	153	King's Early Improved	101
Tool's Early Improved	107	Peterkin	92
Jones' Reimproved	106	Lewis Prize	90
Russell's Big Boll	102	Griffin	88

Owing to the absence of frosts, there is still a fair picking to be secured, which will bring the total yield to approximately 10 cwt. per acre.

An adjacent area was planted with the above varieties, but, unfortunately, got choked up with weeds during vacation. It made good headway when cleaned up, but was late in coming into bearing. There is still a fair picking to be secured from this lot; consequently, the yield cannot be given.

GRASSES.

Some of the plots having only recently been laid down—some with plants and some with seeds—no exhaustive tests can be carried out until the various varieties are fully established. During the coming year, however, comparisons will be made with the following:—*Paspalum dilatatum*, *Paspalum galmarra*, *Panicum maximum*, *Panicum muticum*, Rhodes grass, Prairie, and Cocksfoot.

By planting out roots, 3 by 3 feet apart, it has been found that the varieties which take complete possession of the ground come in the following order:—Guinea, Rhodes, *Panicum muticum*, *Paspalum dilatatum*, and Russell River. In habit the Paspalum and the Guinea grow in tussocks, the Rhodes, *Panicum muticum*, and Russell River Creeping rooting at the joints during moist weather, forming a complete carpet. The *Panicum muticum* makes enormous growth when fully rooted, throwing out shoots from 18 to 20 feet long, forming a dense growth some 5 feet in height. Twenty acres of Paspalum were planted during the year, making a total area of 40 acres now under this grass. When planted in suitable soil, Paspalum grows remarkably well, resists dry weather, and responds very quickly to a small rainfall. It is much relished by all kinds of stock, either as a pasture or in the form of hay and chaff. My experience of the Rhodes grass is too limited to enable me to write definitely on its merits and demerits. At any rate, it appears to be a hard wiry grass, and one not likely to be relished by stock.

A small area of the following clovers was grown:—Perennial Red, Crimson, Alsyke, Trefoil, and White Bokhara. The lastnamed was the only one to keep under the natural growth of weeds during the summer months. The Alsyke also held its own for a considerable time.

The Saltbush varieties under observation have made fair growth, more especially the creeping sorts. Both *Atriplex semibaccata* and *Atriplex halimoides* have produced a large amount of seed, which will be sown, and its present area enlarged.

Areas recently planted: The following areas have been put under crop, but are not yet sufficiently far advanced to be reported upon:—Field 13, twelve varieties of barley; Field 4, one variety flax, one variety canary seed; Field 6, swede turnips; Field 7, rice and rape; Field 8, mangels; Creek Paddock No. 1, oats (19 acres).

At present we have stored 233 tons of hay and 20 tons of ensilage. We are, therefore, well prepared for a time of need.

The following are the particulars of the crops harvested during the year, also of those now growing:—

CROPS REMOVED, 1905-1906.

Plot.	Crop.	Area. A. R. P.	Yield.
		Farm Paddock.	
No. 1A	Castor oil	0 2 17	Small quantity of seed
1B	Maize	4 1 23	70 bushels
2	„	5 0 0	85 „
3A	Cotton	1 0 37	4 cwt. 29 lb. ginned, 3 cwt. 27 lb. kept for exhibition, &c.
3B	Cow pea	0 1 27	Small quantity of seed harvested
3C	Nepaul barley ...	0 1 23	Harvested, but not yet threshed
3D	Potatoes	0 2 1	4 cwt.
3E	Rape	2 1 13	20 tons 12 cwt. green fodder
3F	Cassava	0 0 19	Killed by frost
4A	Rape	0 1 4	Failed
4B	Turnips	0 3 6	4 tons 11 cwt.
4C	Kohl-rabi	0 2 4	7 tons 17 cwt.
4D	Mangolds	2 0 16	65 tons 11 cwt.
4E	Sugar beet	0 2 4	13 tons 9 cwt.
4F	Swedes	0 3 6	16 tons
5	Maize	5 0 0	Failed to germinate
6A	Nepaul barley ...	1 1 32	3 tons 3 cwt. barley hay
6B	Broom millet ...	0 3 6	Ploughed out
6C	Amber cane	1 1 6	„
7A	Nepaul barley ...	1 3 5	3 tons 12 cwt. barley hay
7B	Mangolds	1 2 5	37 tons 6 cwt.
7C	Rape	1 2 30	14 tons 18 cwt.
8	Cape barley	5 0 0	28 tons 5 cwt. green fodder
9	Maize	5 0 0	70 bushels
11	Lucerne	15 0 0	42 tons hay, 10 tons green fodder (4 cuttings)
13	Malting barley ...	7 2 6	7 tons 10 cwt. barley hay
14	Belatourka wheat ...	7 0 37	6 tons 17 cwt. wheaten hay
15	Oats	2 0 0	1 ton 10 cwt. oaten hay
16	Belatourka wheat ...	7 0 37	6 tons 17 cwt. wheaten hay
17	Wheat (mixed) ...	12 0 0	9 tons wheaten hay
18	Mangolds	3 1 38	74 tons
19	Carrots	1 2 27	23 tons
21	Rye	3 0 0	1 ton rye hay
6	Panicum	5 0 0	7 tons 10 cwt. hay
7	„	1 3 5	3 tons 4 cwt. hay
2	Maize (Golden King)	4 0 0	139 bushels
9	„	5 0 0	190 bushels
3	Cotton	1 0 0	839 lb.
10A	Black sorghum ...	0 3 14	33 tons 8¾ cwt. green fodder
10B	Early orange cane ...	0 3 14	43 tons 8½ cwt. „
10C	Amber cane	0 3 14	52 tons 9½ cwt. „
10D	White Kafir corn ...	0 1 27	11 tons 6¼ cwt. „
10E	Red „ ...	0 1 27	14 tons 9½ cwt. „
10F	Pearl millet	0 3 14	33 tons 9½ cwt. „
10G	Penicillaria	0 1 27	6 tons 8¼ cwt. „
10H	Mazzagua	0 1 23	29 tons 2¾ cwt. „
1A	Broom millet ...	1 0 0	16 cwt.
1B	Cow peas	2 2 0	47 bushels
5	Maize (Horsetooth)	5 0 0	125 bushels
6	Cape barley	1 2 5	1 ton 12 cwt. green fodder
7	„	1 1 26	1 ton 8 cwt. „
		Bull Paddock.	
2	Maize	5 2 26	81 bushels
3	Oats	8 1 37	49 tons 10 cwt. green fodder
		Garden Paddock.	
1	Potatoes	3 0 0	1 ton 10 cwt.
2	Cape barley	1 3 25	10 tons 5 cwt. green fodder
3	Experimental potatoes	1 2 24	Failed to germinate
3A	Sunflower	0 3 0	15 bushels seed
4	Maize and pumpkins	9 0 0	279 bushels maize, 27 tons pumpkins
		Creek Paddock No. 1.	
1	Oats	18 0 8	16 tons hay
2	Lucerne	20 2 18	70½ tons hay (4 cuttings)
		Creek Paddock No. 2.	
No. 1	Lucerne	18 0 8	36¼ tons hay (3 cuttings)
2	Maize and pumpkins	12 0 0	210 bushels maize, 48 tons pumpkins

CROPS REMOVED, 1905-1906—*continued.*

Plot.	Crop.	Area. A. R. P.	Yield.
	Calf Paddock.		
1	Cow pea	4 3 22	Eaten off by pigs
1	Clay cow pea ...	4 3 22	15 bushels seed, remainder eaten off by pigs
2	Pumpkins	4 0 8	10 tons 3 cwt.
2	Panicum	4 0 8	Panicum, 4 tons hay
2	Pie melons	4 0 8	23 tons 17 cwt.
	Sheep Paddock.		
1	Sorghums and amber cane	11 0 0	460 tons (twice cut)
2	Broom millet ...	0 2 31	Ploughed out
3	Pumpkins	3 0 0	15 tons
	Gatton Paddock.		
	Lucerne	28 1 14	81¾ tons (3 cuttings)

STANDING CROPS, 30TH JUNE, 1906.

Paddock.	Plot.	Crop.	Area. A. R. P.
Farm	No. 1 ...	Velvet beans	0 2 0
	3A ...	Cotton	1 0 0
	3B ...	Millets and canary seed	0 2 0
	3C ...	Potatoes	3 2 0
	4A ...	Rice	2 1 30
	4B ...	Flax	0 2 24
	4C ...	Canary seed	0 2 6
	6 ...	Swedes (Laing's Imperial)	3 1 35
	7A ...	Rape	1 1 26
	7B ...	Rice	2 0 28
	8A ...	Mangolds (Long Red)	4 2 0
	8B ...	Dwarf Essex rape	0 2 0
	10 ...	Sorghums, &c.	5 0 0
	11A ...	Lucerne	15 0 0
	11B ...	Paspalum	0 1 30
	12 ...	Pumpkins (Silver Nugget)	3 0 30
	13 ...	Barley (varieties)	5 2 0
	14 ...	Manitoba wheat	10 0 0
	15 ...	Baltic red wheat	5 0 0
	16 ...	Allora spring wheat	5 0 0
	17 ...	New Zealand oats	2 2 0
	18 ...	Algerian oats	2 2 0
	19 ...	Experimental grasses	0 3 0
Bull	1 ...	Paspalum	16 3 15
	Nos. 2 and 3 ...	Paspalum	17 0 37
	No. 4 ...	Root crops	1 0 0
Garden	1 ...	Sweet potatoes	3 0 0
	2 ...	Paspalum	2 0 31
	3 ...	Vegetables and fallow	7 3 14
	4 ...	Orchard	3 2 1
	5 ...	Vineyard	0 2 17
Creek No. 1	1 ...	Algerian oats	18 0 8
	2 ...	Lucerne	20 2 18
Creek No. 2	1 ...	Lucerne	17 2 0
Gatton	...	Lucerne	28 1 14
Hill	1 ...	Vines	1 0 0
	2 ...	Sisal hemp	2 0 0
	3 ...	Orchard	2 2 10
	Total area under crop, 30th June		218 1 14

DAIRY WORK.

The work in this branch of our teachings still continues to remain in favour with those who join the College. During last year, as has been the case in the past, we have many applications from young men who desire to make a specialty of this work. The limited space available in our factory will not permit of our granting such requests without considerably interfering with the instruction of those who go through the whole of our course. During the year nineteen students were examined in milk and cream testing, all of whom were successful in obtaining certificates. Many others, who are rather young to start the business of farming on their own account, have secured good positions in dairy factories and on farms. A system of selection and the mating of the various breeds has been carried on for some years, and, notwithstanding this fact, there is much difficulty in determining between a few of the best recognised breeds—in fact, I say, candidly, breed an animal suitable to the country and the conditions under which it is to be kept. With us, we find the Ayrshire surpasses all other breeds, being of a strong constitution, light, and well able to travel after food. The Shorthorns, in most cases, yield large quantities of milk during the earlier period of their lactation, but quickly go off, even when subjected to conditions similar to those under which the other stock are kept. The Holstein has proved to be an excellent animal for the dairy. I have found that they do well under unfavourable conditions, and, although large heavy beasts, they are well able to hold their own in foraging for food. I have found this breed to be very prepotent, and, when crossed with any other, a beast typical of the Holstein is the result. We have crossed some of our worst cows with a Holstein sire, and in every case

good milkers resulted. I consider I am right in saying that the Holsteins will rapidly come into favour, particularly for crossing with the Ayrshires and Shorthorns, as is the case in America at the present time. Guernseys—I have mated animals with this sire in cases where I considered good results would have been obtained, and in this I have not been disappointed, the young heifers now coming on being a very promising lot. There is a big demand for the Lincoln Red bull's stock, and also by neighbours for his services for their cows. We have many of his progeny coming on, and all show plenty of quality. The imported cow is also doing well. The same may be said of the Ayrshires, particularly the bull, whose stock are much admired. The demand for our young stock is far greater than the supply. The Veterinary Surgeon visits the College once a week, and, should any of the stock be found suffering from any ailment, his services are at once requisitioned—in fact, it is now a part of his duty to make a monthly inspection. This arrangement should be a considerable help in guarding against the outbreak of disease in our herd. We have had no complaints regarding the quality of any stock disposed of; on the contrary, we frequently receive letters of appreciation of the animals, many of which have taken prizes in various parts of the State. Every precaution is taken to have a supply of suitable fodder conserved for times of need. Hand-feeding is resorted to only in cases of necessity.

From the returns from a few of our cows given below it may be seen that during a period of five to six years (one year being a time of drought), some of these animals produced butter of a value of over £55; this, together with the value of the progeny during the time (say £60), places her value to us at £115 In this estimate, of course, nothing has been deducted for labour or food.

AYRSHIRE-SHORTHORN COW, JEANIE; born 12th October, 1898.

Sire, Professor (Ayrshire); Dam, Nell (Shorthorn).

From Oct. 8, 1901, to Aug. 28, 1902	=	324 days	...	204·21 lb. butter	=	·63 lb. daily.
Jan. 10, 1904, to Oct. 18, 1904	=	282 „	...	262 32 „	=	93 „
Mar. 9, 1905, to Oct. 12, 1905	=	217 „	...	229·46 „	=	1·06 „
		823 days	...	695·99 lb. butter	=	·85 lb. daily.

GRADE JERSEY COW, PANSEY; born 19th January, 1898.

Sire, Unknown; Dam, Playful (Jersey).

From Dec. 4, 1900, to Sept. 12, 1901	=	282 days	...	205·97 lb. butter	=	·80 lb. daily.
Oct. 28, 1901, to May 30, 1902	=	214 „	...	165 60 „	=	·77 „
July 16, 1903, to Mar. 4, 1904	=	232 „	...	259·98 „	=	1·12 „
Sept. 22, 1905, to June 30, 1906	=	281 „	...	268·93 „	=	·96 „
		1,009 days	...	900·48 lb. butter	=	·89 lb. daily.

AYRSHIRE-SHORTHORN COW, No. 48; born 23rd November, 1899.

Sire, Professor (Ayrshire); Dam, Jess (Grade Shorthorn).

From Apr. 8, 1903, to Nov. 8, 1903	=	214 days	...	166·73 lb. butter	=	·78 lb daily.
Feb. 4, 1905, to Jan. 6, 1905	=	337 „	...	296·38 „	=	·88 „
July 11, 1905, to June 19, 1906	=	343 „	...	309 80 „	=	·90 „
		894 days	...	772·91 lb. butter	=	·86 lb. daily.

GRADE SHORTHORN COW, LEMON.

Sire, unknown; Dam, unknown.

From June 18, 1902, to May 22, 1903	=	338 days	...	211·72 lb. butter	=	·63 lb. daily.
July 21, 1903, to May 28, 1904	=	312 „	...	249·15 „	=	·80 „
Aug. 5, 1904, to July 1, 1905	=	330 „	...	310·80 „	=	·94 „
Aug. 18, 1905 to May 28, 1906	=	283 „	...	231·01 „	=	·82 „
		1,263 days	...	1,002·68 lb. butter	=	·79 lb. daily.

HOLSTEIN-SHORTHORN COW, MONA; born 9th December, 1898.

Sire, Sundial II. (Holstein); Dam, Mundah (Shorthorn).

From June 3, 1902, to May 18, 1903	=	349 days	...	263·15 lb. butter	=	·75 lb. daily.
Sept. 8, 1903, to June 18, 1904	=	284 „	...	299·01 „	=	1·05 „
Aug. 1, 1904, to Oct. 8, 1905	=	433 „	...	486-80 „	=	1·12 „
Jan. 16, 1906, to June 30, 1906	=	165 „	...	198·00 „	=	1·20 „
		1,231 days	...	1,246·96 lb. butter	=	1·01 lb. daily.

HOLSTEIN-SHORTHORN COW, WHITEFOOT; born 12th March, 1900.

Sire, Sundial II. (Holstein); Dam, Polly (Grade Shorthorn).

From Apr. 27, 1903, to May 16, 1904	=	385 days	...	282·02 lb. butter	=	·73 lb. daily.
June 20, 1904, to May 19, 1905	=	333 „	...	300·70 „	=	·90 „
July 11, 1905, to May 28, 1906	=	321 „	...	275·18 „	=	·86 „
		1,039 days	...	857·90 lb. butter	=	·83 lb. daily.

HOLSTEIN-DEVON COW, NIGHT; born 11th October, 1899.

Sire, Sundial II. (Holstein); Dam, Rosie (Devon).

From Apr. 29, 1902, to Apr. 12, 1903	=	348 days	...	207·98 lb. butter	=	·60 lb. daily.
Aug. 12, 1903, to May 26, 1904	=	288 „	...	232·37 „	=	·81 „
Sep. 28, 1904, to Sept. 12, 1905	=	349 „	...	294·56 „	=	·84 „
		985 days	...	734·91 lb. butter	=	·75 lb. daily.

JERSEY COW, CARRIE; born 7th July, 1898.

Sire, Lord Harry; Dam, Content.

From Aug. 18, 1900, to July 15, 1901	= 331 days	...	244·99 lb. butter	=	·74 lb. daily.
Aug. 31, 1900, to May 4, 1902	= 246 „	...	207·34 „	=	·84 „
Sept. 15, 1902, to Sept. 30, 1903	= 380 „	...	272·67 „	=	·72 „
Nov. 20, 1903, to Oct. 31, 1904	= 346 „	...	314·30 „	=	·91 „
Nov. 19, 1904, to Aug. 13, 1905	= 267 „	...	249 94 „	=	·94 „
	1,570 days	...	1,289·24 lb. butter	=	·83 lb. daily.

JERSEY COW, JERSEY BELLE; born 11th July, 1895.

Sire, Favourite's Baronne; Dam, No. 1, by Lord Bowen.

From July 4, 1899, to Mar. 3, 1900	= 249 days	...	196·59 lb. butter	=	·79 lb. daily.
May 21, 1900, to May 18, 1901	= 362 „	...	316·73 „	=	·87 „
Jan. 17, 1902, to Nov. 15, 1902	= 302 „	...	168·59 „	=	·56 „
Dec. 16, 1902, to July 6, 1903	= 202 „	...	171·12 „	=	·85 „
Mar. 2, 1904, to Nov. 23, 1904	= 266 „	...	227·61 „	=	·86 „
Jan. 17, 1905, to Aug. 15, 1905	= 210 „	...	159·47 „	=	·76 „
	1,591 days	...	1,240·11 lb. butter	=	·78 lb. daily.

JERSEY COW, EVELEEN.

Sire, Confidence; Dam, Poddy, by Jack.

From Aug. 13, 1899, to Jun. 11, 1900	= 302 days	...	279·80 lb. butter	=	·93 lb. daily.
Sept. 2, 1900, to May 10, 1902	= 615 „	...	571·01 „	=	·93 „
Nov. 4, 1902, to Jun. 15, 1903	= 223 „	...	189·01 „	=	·85 „
Jun. 16, 1903, to Apr. 18, 1904	= 307 „	...	233·74 „	=	·76 „
July 29, 1904, to May 23, 1905	= 298 „	...	217·65 „	=	·73 „
	1,745 days	...	1,491·21 lb. butter	=	·85 lb. daily.

SHORTHORN COW, NESTOR.

Purchased from the Hon. W. Vanneck, of Lake Clarendon.

From Apr. 21, 1900, to Mar. 23, 1901	= 336 days	...	252·06 lb. butter	=	·75 lb. daily.
July 3, 1901, to Mar. 30, 1902	= 270 „	...	221·25 „	=	·82 „
July 31, 1902, to Oct. 12, 1903	= 438 „	...	349·52 „	=	·80 „
Jan. 7, 1904, to Sept. 10, 1904	= 247 „	...	239·33 „	=	·97 „
Dec. 12, 1904, to Aug. 14, 1905	= 245 „	...	219·23 „	=	·89 „
	1,536 days	...	1,281·39 lb. butter	=	·83 lb. daily.

SHORTHORN COW, KIT.

Purchased from the Hon. W. Vanneck, of Lake Clarendon.

From Sept. 16, 1899, to July 30, 1900	= 317 days	...	231·42 lb. butter	=	·73 lb. daily.
Sept. 28, 1900, to Sept. 28, 1901	= 365 „	...	272·82 „	=	·75 „
Jan. 14, 1902, to Sept. 30, 1902	= 259 „	...	176·53 „	=	·68 „
Nov. 27, 1902, to Dec. 17, 1903	= 385 „	...	320·41 „	=	·83 „
Mar. 26, 1904, to Jan. 6, 1905	= 286 „	...	265·78 „	=	·93 „
Mar. 17, 1905, to Dec. 19, 1905	= 277 „	...	254·79 „	=	·92 „
	1,889 days	...	1,521·75 lb. butter	=	mean ·81 lb. daily.

SHORTHORN COW, ROSE; imported from Victoria.

From Apr. 10, 1901, to Dec. 6, 1901	= 240 days	...	151·63 lb. butter	=	·63 lb. daily.
Apr. 10, 1902, to May 14, 1903	= 399 „	...	213·68 „	=	·54 „
July 21, 1903, to May 8, 1904	= 292 „	...	242·80 „	=	·83 „
July 19, 1904, to Mar. 14, 1905	= 238 „	...	263·00 „	=	1·11 „
June 11, 1905, to Mar. 20, 1906	= 282 „	...	309·51 „	=	1·08 „
	1,451 days	...	1,180·62 lb. butter	=	·81 lb. daily.

AYRSHIRE COW, LAURA; born 16th September, 1898.

Sire, D.C.A.; Dam, Linnet. First calving, 28th August, 1900.

From Aug. 28, 1900, to Mar. 17, 1902	= 566 days	...	366·34 lb. butter	=	·65 lb. daily.
July 12, 1902, to Oct. 20, 1903	= 465 „	...	328·08 „	=	·70 „
Nov. 29, 1903, to Oct. 15, 1904	= 321 „	...	259·08 „	=	·81 „
Nov. 19, 1904, to Aug. 25, 1905	= 279 „	...	277·73 „	=	·996 „
Jan. 2, 1906, to Apr. 30, 1906	= 118 „	...	108·65 „	=	·92 „
	1,749 days	...	1,339 88 lb. butter	=	mean ·77 lb. daily.

AYRSHIRE COW, LAVEROCK; born 16th April, 1895.

Sire, Gordon; Dam, Louisa, of Glen Elgin. First calving, 18th September, 1897; no records are available of the first and second milking periods; and the fourth, being incomplete, is left out.

From Dec. 7, 1899, to Oct. 27, 1900	=	324 days	...	289·56 lb. butter	=	·89 lb.	daily.
Aug. 14, 1902, to Jun. 18, 1903	=	303 ,,	...	226·59 ,,	=	·74	,,
Aug. 19, 1903, to Apr. 4, 1904	=	229 ,,	...	283·86 ,,	=	1·24	,,
Jul. 17, 1904, to Feb. 4, 1905	=	202 ,,	...	181·38 ,,	=	·898	,,
		1,063 days	...	981·39 lb. butter	=	mean ·92 lb.	daily.

AYRSHIRE COW, ROSEBUD; imported from Victoria.

First calving, 20th May, 1897. Our records commence at the third calving.

From Apr. 13, 1899, to Jan. 17, 1900	=	279 days	...	175·80 lb. butter	=	·63 lb.	daily.
Apr. 10, 1900, to Aug. 20, 1901	=	497 ,,	...	459·68 ,,	=	·92	,,
Nov. 13, 1901, to Sep. 30, 1902	=	321 ,,	...	241·33 ,,	=	·75	,,
Dec. 4, 1902, to Dec. 19, 1903	=	381 ,,	...	375·51 ,,	=	·96	,,
Dec. 20, 1903, to Aug. 13, 1905	=	601 ,,	...	485·16 ,,	=	·81	,,
		2,079 days	...	1,737·48 lb. butter	=	mean ·84 lb.	daily.

AYRSHIRE COW, LAVINIA; born 4th July, 1894.

Sire, Gordon; Dam, Louisa, of Glen Elgin. First calving, 18th June, 1897; no record of milk yield and test was kept until the fourth calving, 6th April, 1900.

From April 6, 1900, to Feb. 27, 1901	=	327 days	...	291·96 lb. butter	=	·89 lb.	daily.
Sept. 11, 1901, to May 27, 1902	=	258 ,,	...	318·42 ,,	=	1·23	,,
Sept. 5, 1902, to May 29, 1903	=	266 ,,	...	197·96 ,,	=	·74	,,
Nov. 3, 1903, to June 10, 1904	=	220 ,,	...	248·81 ,,	=	1·13	,,
Oct. 21, 1904, to June 17, 1905	=	239 ,,	...	246·06 ,,	=	1·03	,,
Dec. 14, 1905, to April 30, 1906	=	137 ,,	...	172·10 ,,	=	1·26	,,
		1,447 days	...	1,475·31 lb. butter	=	mean 1·02 lb.	daily.

AYRSHIRE COW, LEESOME; born 20th June, 1895.

Sire, Gordon; Dam, Leda. First calving, 12th Aug., 1897; her first and second milking periods were not recorded.

From Oct. 14, 1899, to June 4, 1900	=	233 days	...	225·52 lb. butter	=	·97 lb.	daily.
Sept. 1, 1900, to Sept. 25, 1901	=	389 ,,	...	392·93 ,,	=	1·01	,,
Jan. 15, 1902, to Oct. 20, 1902	=	278 ,,	...	209·28 ,,	=	·75	,,
Feb. 27, 1903, to June 26, 1904	=	485 ,,	...	538·22 ,,	=	1·11	,,
Nov. 1, 1904, to Aug. 4, 1905	=	276 ,,	...	273·81 ,,	=	·99	,,
Oct. 10, 1905, to Apr. 30, 1906	=	202 ,,	...	197·15 ,,	=	·98	,,
		1,863 days	...	1,836·91 lb. butter	=	mean ·985 lb.	daily.

AYRSHIRE COW, LINNET; born 5th July, 1894.

Sire, Gordon; Dam, Linda II. First calving, 23rd May, 1897; starting at her third milking period.

From June 19, 1899, to Apr. 20, 1900	=	305 days	...	256 38 lb. butter	=	·84 lb.	daily.
May 15, 1900, to Jan. 29, 1901	=	259 ,,	...	195·27 ,,	=	·75	,,
May 7, 1901, to May 5, 1902	=	363 ,,	...	350·77 ,,	=	·97	,,
Sept. 10, 1902, to Oct. 9, 1903	=	394 ,,	...	315·06 ,,	=	·80	,,
Jan. 8, 1904, to Oct. 15, 1904	=	281 ,,	...	270·24 ,,	=	·96	,,
Jan. 12, 1905, to Jan. 24, 1906	=	377 ,,	...	343·06 ,,	=	·91	,,
		1,979 days	...	1,730·78 lb. butter	=	mean ·87 lb.	daily.

SALES OF CATTLE, JULY, 1905, TO JUNE, 1906.

Sold privately—			
Four Ayrshire bulls	£42 0 0		
Two Jersey bulls	21 0 0		
Eight Shorthorn bulls	54 13 0		
One Grade Holstein bull	5 0 0		
Two Grade Guernsey bull	10 0 0		
One Ayr-Shorthorn cow	12 0 0		
		£144	13 0
Sold by auction—			
One Holstein bull	26 5 0		
Four Ayrshire cows	49 15 0		
Six Ayrshire heifers	48 5 0		
One Shorthorn cow	8 0 0		
Five Shorthorn heifers	32 2 6		
Three Grade cows	25 2 6		
Twelve Grade heifers	61 0 0		
		250	10 0
Service of bulls—Forty-one cows		14	10 0
Killed for dining-hall—			
One cow	5 0 0		
Two bullocks	12 0 0		
		17	0 0
Total value of sales		£426	13 0

STOCK ON HAND, 30TH JUNE, 1906.

	Stud Bulls.	Young Bulls.	Cows.	Heifers.	Total.
Ayrshires	2	8	30	16	56
Jerseys	2	4	19	5	30
Holsteins	1	1	3	1	6
Guernseys	1	...	2	...	3
South Coast	...	...	2	...	2
Shorthorns	2	5	35	14	56
Grades	...	...	26	41	67
Total head of dairy cattle					220
Working bullocks					14
Steers					35
Calves					34
Grand total					303

SALES OF DAIRY PRODUCE.

Silverwood Dairy Company—		
Cream, 2,422 lb.		£47 9 2
Com. butter (computed), 3,474¾ lb.		120 17 3
Government Storekeeper—Butter, 1,736 lb.		66 12 4
Stewart and Walker—		
Cheese, 505 lb.		12 19 10
Butter, 112 lb.		4 17 6
Sundry sales—		
Milk, 4,311 quarts	£17 19 3	
Cream, 10 lb.	0 3 1	
Butter, 729 lb.	31 11 3	
Cheese, 88½ lb.	2 11 7	
		52 5 2
		£305 1
Supplied dining-hall—		
Milk, 4,396 gal.	£91 11 8	
Butter, 3,790½ lb.	163 6 0	
Cheese, 206 lb.	6 0 2	
Cream, 7 lb.	0 1 9	
		260 19 7
Total value of dairy produce		£566 0 10

PIGS.

From figures given below, it may be observed that this department has had a fair share of attention. A large number of pigs have been sold for stud purposes, and, with one exception, no complaints have reached me regarding the quality of the animals disposed of. The pig is the scavenger of the place, and the cost of his keep, with the exception of the labour of feeding, is very small. Various breeds are kept here, but those which show the best results are the Berkshire and the Middle Yorkshire. The cross which stands out against all others is the Middle Yorkshire boar mated with a large, roomy Berkshire sow. The large Yorkshire boar crossed with the Berkshire sow also gives good results. The Tamworth and Tamworth crosses, although producing good bacon pigs, require too long a period to mature, and they are, therefore, not profitable pigs for the producer. At one time it was thought that the hot sun would affect the white pigs, but this idea is now exploded. We have been sending white pigs to the far North of Queensland (Cooktown), and no complaints have reached us of the animals being affected by the sun or heat. The most careful methods of rearing and feeding are adhered to, so that learners among the students have a good opportunity of gaining a thorough knowledge of the business. Bacon-curing in a small way, by methods suitable for a farmer to adopt, is also taught. The following are the particulars regarding sales, &c.:—

SALES OF PIGS DURING YEAR, JULY, 1905, TO JUNE, 1906.

	£ s. d.	£ s. d.
Berkshire boars, 31	60 12 6	
,, sows, 16	19 0 0	
		79 12 6
Middle Yorkshire boars, 20	42 0 0	
,, sows, 29	30 9 0	
		72 9 0
Tamworth boar, 1		2 2 0
Baconers, 15		19 4 9
Weaners and stores, 84		32 15 6
Service of boars, 32 sows		8 0 0
Total		£214 3 9

Forty-three pigs were killed for the dining-hall, giving 1,946 lb. of pork and 215 lb. of bacon, of a value of £38 13s., making the total return from this department £252 16s. 9d.

PIGS ON HAND, 30TH JUNE, 1906.

	Stud Boars.	Stud Sows.	Young Boars.	Young Sows.	Weaners.	Total.
Berkshires	5	19	8	14	19	55
Middle Yorkshires	3	6	13	13	...	35
Large Yorkshires	1	5	6	9	...	21
Tamworths	1	2	...	4	...	7
Store pigs	...	...	...	...	...	23
Crossbred weaners	...	...	...	...	...	14
Grand total						155

SHEEP.

In connection with sheep-breeding, a great deal of useful experimental work could be done, particularly in the direction of raising lambs for export and in determining the class of sheep most suitable for the coastal districts. An attempt was made in this direction, but, owing to our not having suitable fences to protect the flock from the ravages of the neighbours' dogs, we were compelled to abandon the work. It is hoped, however, that the time is not far distant when the authorities will see the necessity for such work. I have found the sheep bred to the place to do remarkably well. A few only are now kept for educational purposes. The following is a statement of our year's experience:—

	Stud Rams.	Ewes and Wethers.
On hand, 30th June, 1905	1	... 172
Purchased during twelve months	1	... 70
Increase	...	... 28
Total	2	.. 270
Sold to Hermitage State Farm	1	... 142
Killed for dining-hall	...	... 92
Killed by dogs, and died other causes	1	... 22
On hand, 30th June, 1906	...	... 14
Total	2	... 270

Value of wool sold, £26 13s. 10d.

POULTRY AND BEE-KEEPING.

A large amount of interest has been taken, both by the students and the general public, in these departments. The demand for purebred fowls and settings of eggs has been large.

During the period under review, 250 chickens were hatched, most of them being now available for disposal. The young stock are an improvement on those raised during previous years; this is due to the fact that a few good cockerels have from time to time been purchased for stud purposes; some of these were show birds, the remainder being good useful stock birds. The following are the sales and returns therefrom:—

	£ s. d.	£ s. d.
Stud birds, 85	50 15 3	
Settings eggs, 52	26 15 0	
Table eggs, 200 dozen	6 9 9	
Table fowls, 10	0 18 0	
		84 18 0
Supplied dining-hall—		
Eggs, 415 dozen	13 6 0	
Fowls, 123	11 15 0	
		25 1 0
Total return from poultry		£109 19 0

The stock at present on hand comprises 400 birds.

Laying Competition.—The laying competition, which concluded on 31st March, may, I consider, be looked upon as very successful. The total number of eggs laid for the twelve months was 31,885 from 174 birds, an average of 1,099·5 eggs per pen, or 183 per bird. Seven pens out of the twenty-nine averaged over 200 eggs per bird. Owing to the price of eggs being so much lower in Queensland, we cannot show such large profits as is the case with the southern competitons; but the statement of receipts and expenditure will show that, given good laying hens, a fair profit is to be made out of eggs, even at the low average price of 8d. per dozen. The feeding during the competition was conducted on much the same lines as in the case of the previous contest. In the morning, about 1 pint per pen, according to appetite, of bran and pollard (two parts of the latter to one of the former, by measure) mixed with hot water or separated milk into a crumbly mass; with this a little Sunlight oilcake was occasionally mixed by way of variety. At mid-day, green feed—such as milk thistles, lucerne, or rape—was given at times when there was not sufficient grass in the pens, also a little soup meat twice a week when available; when this could not be had, we used dried blood or Q.M.E. Company's poultry food, the latter being the better. It is a good plan to keep a box of this last-named food always before the fowls, so that they can help themselves. In the evening, wheat, maize, or good heavy oats were fed, the two first in winter and wheat and oats during the summer. The quantity of grain fed per pen was about 1 pint daily, more or less, according to appetite. Seashell grit and pure water were always before the fowls. It will be noticed that our rations were plain and simple, easily procurable by most poultry breeders. The following are receipts and expenditure: —

Receipts.

		£ s. d.	£ s. d.
Entry fees, 29 pens at 10s. each		...	14 10 0
Sales—			
College dining-hall	$1,598\frac{1}{12}$ doz.	58 11 8	
Government Storekeeper ...	$897\frac{8}{12}$ „	28 12 1	
Jackson and Co.	$143\frac{5}{12}$ „	3 7 11	
College residents	9 „	0 8 0	
Broken	$8\frac{11}{12}$ „	...	
			90 19 8
Grand total	$2,657\frac{1}{12}$ doz.	...	105 9 8

Expenditure.

Prize money				13 13 0
Egg record books (3)				0 3 0
Railage, commission, &c.				1 15 8
Cost of food—				
Pollard, 24 bags	12	2	1	
Bran, 7 bags	3	6	5	
Oilcake, 1 cwt.	0	6	6	
Poultry food, 3 cwt.	1	17	0	
Wheat, 25 bags	15	13	2	
Oats, 6 bags	3	18	2	
Maize, 2 bags	0	17	6	
				38 0 10
Profit				51 17 2
				105 9 8

Average cost of food per bird, per week, 1d.

Average profit, per bird, for twelve months, 5s. 11½d.

Average price realised for eggs, per dozen, 8·2d.

Profit for winning pen, 8s. 1d.

The present competition, owing to an outbreak of warts amongst the fowls, started badly. Some of the birds also, being somewhat young when sent, were slow to commence laying. I am, however, pleased to say that our total at the end of this month will show a large increase over that of the corresponding period last year, so that there is every reason to hope that the present contest will be as successful as the last one. The following are the totals for the competition which ended 31st March last:—

		Total Eggs.
J. H. Stanley, South Brisbane	Brown Leghorns	1,341
J. J. Carrigg, Toowoomba	Brown Leghorns	1,268
Stewart Bros., Berowra, New South Wales ...	White Leghorns	1,261
J. Stewart, Berowra, New South Wales ...	White Leghorns	1,249
H. J. Wilton, Old Racecourse, Ipswich ...	R.C. Minorcas	1,222
J. Loughman, Maclean, New South Wales ...	Black Orpingtons	1,208
C. W. Robertson, Eildon Hill, Brisbane ...	R.C.B. Leghorns	1,202
Mrs. A. Mort, Grandchester	G.L. Wyandottes	1,168
Mrs. Jas. Archer, Lower Tenthill	S.L. Wyandottes	1,168
F. P. Cummings, Kelvin Grove, Brisbane ...	Black Orpingtons	1,143
R. Burns, Warwick (No. 2)	S.L. Wyandottes	1,139
R. Burns, Warwick (No. 1)	S.L. Wyandottes	1,132
P. O'Neill, Maryborough	Black Orpingtons	1,130
W. F. Evenden, Croydon, New South Wales...	Andalusians	1,121
Mrs. Craig, Miriam Vale	White Leghorns	1,111
S. Maurice, Maclean, New South Wales ...	White Leghorns	1,106
Tugulawa Wyandotte Yards, South Brisbane...	G.L. Wyandottes	1,085
G. Cooke, Logan Village...	White Leghorns	1,068
W. H. Cole, Rockhampton (late A. Wilson, Gladstone)	White Leghorns	1,067
Chas. Brasch, Gympie	Black Orpingtons	1,061
John Soden, South Brisbane	G.L. Wyandottes	1,059
W. A. Wooderson, Berowra, New South Wales	White Leghorns	1,052
W. E. Birkbeck, Paddington, Brisbane ...	Black Orpingtons	1,036
R. Evans, Silkstone, Ipswich	G.L. Wyandottes	977
L. McAllister, Forest Hill	Minorcas	963
Geo. Barker, Clermont	Black Orpingtons	960
P. Aitken, Boonah	S.L. Wyandottes	917
Chas. Brasch, Gympie	White Leghorns	900
S. B. Kennard, Toowoomba	G.L. Wyandottes	771
	Grand total	31,885

BEES.

The apiary has also done well, considering the season, having averaged about 80 lb. per hive. We lost only four hives during last winter and spring; this may be considered very small mortality, as I was informed by a prominent beekeeper that over 50 per cent. of the bees in Queensland died off during the above period. Beekeepers who have visited the College were surprised at the strength of the different colonies, and also at the way the bees were working. Lectures, both theoretical and practical, have been given, both on poultry and bees, some of the students taking great interest in both these subjects. The following are the returns from the apiary:—

	£	*s.*	*d.*
Honey sold to residents, 15 lb. at 3d.	0	3	9
Honey supplied to dining-hall, 1,980 lb., at 3d.	24	15	0
Total	£24	18	9

VEGETABLE GARDEN.

I regret to say that the results in connection with this branch of the work were not so successful as has been the case in past years. This was brought about by unfavourable weather, together with the fact that, at the time when water was badly required, a new water supply service was being installed. I might mention also that this was a record year for grubs and other insect pests, which were a great hindrance to progress. Constant spraying and dressing with all known sprays and washes had very little effect. It was

found that caustic soda and resin were the most effective for all-round treatment, and, with the addition of Paris green and tobacco water, it is most effective for grubs. Everything is now in good order, and the soil in good condition. The following is a summary of crops grown during the year:—

Cabbages	...	15 varieties	Tomatoes	...	6 varieties
Cauliflower	...	6 ,,	Potatoes	...	33 ,,
Swedes	...	4 ,,	Potatoes (sweet)	...	5 ,,
Turnips	...	10 ,,	Beans	...	10 ,,
Carrots	...	7 ,,	Peas	...	5 ,,
Beets	...	3 ,,	Capsicums	...	6 ,,
Kohl-rabi	...	2 ,,	Marrows	...	5 ,,
Radishes	...	7 ,,	Squashes	...	4 ,,
Borecole	...	3 ,,	Pumpkins	...	10 ,,
Egg fruit	...	2 ,,	Melons	...	5 ,,
Lettuce	...	6 ,,	Rock melons	...	3 ,,
Onions	...	7 ,,	Salsify	...	1 ,,
Leeks	...	4 ,,	Chicory	...	1 ,,
Rosellas	...	1 ,,	Lentils	...	1 ,,

Herbs of different varieties were also grown.

The vegetables were for the most part disposed of to the College dining-hall. The total returns from the garden amounted to £73 1s. 8d. Hours worked by students, 3,648. Hours worked by horses, 1,864. Some experimental work was also entrusted to the Horticulturist.

EXPERIMENTAL FARM.

Russian Flax, received from the United States, was planted on 20th November (out of season). Small seed varieties came up rather thinly and unevenly. The crop made rapid growth, and was harvested on 10th February, 1906. The plants grew to a height of 2 feet 9 inches, with a heavy yield of seed; the fibre is to all appearance of a high quality. Similar results were obtained from the large-seeded varieties.

Rye (Toanor) and Oats (Sixty Day and Balgar) were also planted too late in the season (due to the late arrival of the seed) to produce satisfactory results. I have, however, planted the seed kept over at a seasonable time, and anticipate good results.

Millets (procured from Russia).—Hog Millet (Red Verongh Proso) was planted 24th November, 1905; appeared above ground in five days, and came into ear on the twenty-seventh day; continued growing, stooling out and earing until it reached the height of 2 feet inches, showing ears from top to bottom. The early maturing ears shed their seed before the crop was harvested. Harvested 14th January, 1906, when a good yield of grain was obtained. Hog Hillet (*Panicum miliaceum*), two varieties, black-seeded and red-seeded; growth and characteristics similar to the first-mentioned variety.

White Millet (procured from H. T. Hooper and Co., Ipswich).—Planted 24th November, 1905; harvested during the month of April, 1906; grew to a height of 4 feet 6 inches; returned a small yield of good seed and a large quantity of straw. If grown under favourable conditions, this would yield a profitable hay crop.

White Panicum made rapid growth, and yielded a heavy crop of nice nutritious hay; a second cutting of good hay was also obtained. As the above crops were grown out of season and planted in small areas, it is difficult to arrive at the correct yield per acre.

Rice.—A small plot of this crop was grown. Planted on 24th November, and harvested in April; produced a crop of well-filled ears, showing a splendid quality of grain.

Milo Corn.—Planted 16th January; grew quickly, and reached a height of 6 feet. Very similar in characteristics and growth to sorghums and amber cane; produced a well-developed grain. We were, however, unfortunate in the fact that some of our neighbours' horses gained access to the field, and destroyed all but a few plants; these were harvested on 2nd June.

Two varieties of peanuts were planted, but perished from the effects of heavy rain.

Sugar Cane.—Two varieties were received from Biggenden State Farm. They reached us rather late for planting in this district; have made good growth, but have not yet matured.

Arrowroot.—Varieties planted: Large Purple and Small White. The latter made vigorous growth, and promises to yield a heavy crop; has not yet been harvested.

An area of 2 acres, planted with Sisal Hemp, is also under the care of the Horticulturist. This plant, though growing on poor soil, is making good headway.

The Grasses received from the United States of America, sown 6th March, 1906, are now growing. The following are the names, with remarks thereon:—

Elymus triticoides—Very slow growing; fine.
Bromus marginatus—Fine growth; promises well.
Elymus virginicus submaticus—Dwarf, upright; quick maturing.
Uniola latifolia—Failed.
Poanevadensis—Fine growth; promises well.
Panicum bulbosum—Bulb on surface of soil; fine, upright, early.
,, *amaroides*—Failed.
,, *virgatum*—Died off.
Agropyron ripens maritimum—Fine; promises well.
Boutilona Rothrockii—Failed.
Hordeum bulbosum—Fair; slow growing.
Boutilona curtipundula—Failed.
Agropyron tenerum—Fine growth; promises well.
Septochloa—Fine, upright, early.
Sporobulus texanus—Not doing well.
Spartina cynosuroides—Failed.
Parkinsoma asuleata—Shrub-like; slow growing.
Tripsacum dactyloides—Coarse, upright.
Festuga ovina ingrata—Failed.

ORCHARDS.

A great deal of work has been done in connection with the orchards, with, I regret to say, poor returns. This is due to the fruit fly, which, as is well known, attacks the fruit before it ripens. It was, therefore, found necessary to pick the fruit in its green stage, and use for cooking purposes or conversion into jam. The College orchard, notwithstanding the fact that the best attention is bestowed upon it in every possible way, is certainly not a profitable one. In the case of most fruits, all we claim is, that by our having such an institution, we are enabled to teach the methods of planting, cultivating, budding, pruning, and grafting.

The following are the results of an experiment made with McDougall's wash for fruit trees:—This wash was applied to fruit trees and roses for scale and black aphis, the results being good. It was, however, found to have a better effect when applied one-quarter stronger than the directions recommend. At this strength it did not affect the foliage, and it was found a really good spray for all kinds of aphis. It was sprayed on peaches in November as a preventive against fruit fly, and again two weeks later; it cannot be recommended as a remedy for the above pest. It was also applied to plums for the same reason, but without effect. Each spraying was performed thoroughly, the proportion used being 1 of wash to 35 of water.

In the vineyard, the table varieties of grapes set a good crop of fruit, promising a heavy yield; unfortunaately, however, at the time of maturing heavy rain set in and destroyed the great bulk of the crop. The varieties giving the best returns were the Black Hamburg, Golden Champion, Ferdinand de Lesseps, and Isabella, the rain not affecting the last-named in the slightest degree. During the early spring the vines were pruned, cleaned, and washed with sulphuric mixture. When the young shoots were well started, Bordeaux mixture was applied, and the application continued at intervals of two weeks until the berries were half grown. Owing to the dry spring, the black spot disease was almost entirely absent. During the year the vines were ploughed four times, and frequently cultivated, and they are now in a thorough state of cultivation.

SMITHY WORK.

Blacksmithing is a very important branch of our teaching, and great interest is displayed by students in this work. Some of them have made good progress, and may at least be relied upon to make the minor parts for farm implements, and perform all general repairs necessary on a farm. The following are the principal operations carried out during the year by the blacksmith with his student assistants:—

1905.—July: Irrigating for wheat, potatoes, and lucerne. General work, shoeing horses, and repairing farm implements. August, September, and October: Erecting pump at Lockyer Creek for main water supply and irrigation purposes, laying all pipes to reservoir. Performing all necessary repairs to farm implements, &c. Keeping the College supplied with water by means of the small pump. November and December: Tyring wagon and dray wheels, shoeing, pumping water for general purposes, repairing farm implements.

1906.—January: Assisting engineer to lay main water supply pipes from the creek to the reservoir, performing all necessary repairs, and pumping water as required. February: Repairs to vehicles, farm implements, &c., and pumping. March and April: Repairs to mowers, rakes, shoeing horses, and pumping. May and June: Altering and placing field chaff-cutter in chaff-room, repairs to ploughs, tyring wheels, shoeing, sundry repairs to bullock chains and bullock plough, making new plough shares, pumping in accordance with requirements.

IMPROVEMENTS.

A splendid water supply has now been installed. A Snow pump, with a capacity of 14,000 gallons per hour, has been placed at the Lockyer Creek. To this 4-inch pipes are attached and connected with the storage tank adjoining the College buildings, the distance from the creek to same being 1 mile. The reservoir can now be filled in two and a-half hours, whereas, with our old means of supply, it occupied over ten hours to fill the tank. The present system means a considerable saving in fuel and labour. The work was carried out under the direction of Mr. Henderson, Hydraulic Engineer, and has proved in every way a great success.

A system of irrigation has been arranged, to be carried out from the present pumping plant.

Nineteen new calf pens have been erected, and have been found invaluable, both for labour-saving and from the fact that healthier and better animals are now being raised.

A new steam boiler-shed has been built on the banks of the Lockyer. New fowlyards have also been constructed.

The College buildings, fencing, gates, wagons, &c., have received attention. All buildings have been put in thorough repair, and have been repainted.

A new asphalt path has been laid to connect the administration building with the dining-hall and dormitories.

IRRIGATION.

Irrigation has, during the year, been carried on with a marked degree of success, but a great deal more might be done in this direction if the necessary labour were available. Reference has been made in an earlier portion of this report regarding the results obtained in connection with wheat-growing.

CLYDESDALE STALLION.

A high-class stallion, Prince of Pine Grove, was purchased at the last Melbourne Show. This animal has already taken first prizes in his class at the Ipswich and Lockyer shows, and, as he is the progeny of the best imported stock, he should be an acquisition to this district. It is thought that in a district like the Lockyer, where every facility is afforded at the College for horse-breeding, several other sires should be stationed here. The following are the particulars as to horses now here, purchases, and sales for the past twelve months:—

HORSES AT COLLEGE, 30TH JUNE, 1906.

Heavy draughts	27
Light harness	2
Hacks	3
Stallions	2
Two-year-old	1
Yearling	1
Mules	2
Total	38

HORSE PURCHASED, JULY, 1905, TO JUNE, 1906.

Clydesdale draught stallion	1

HORSES SOLD, JULY, 1905, TO JUNE, 1906.

Black gelding	1
Draught gelding	1
Stallion by Black Watch	1
Black mare	1
Bay mare	1
Foal	1
Total	6 head

EXHIBITION OF LIVE STOCK.

We had an excellent display of stock at the last National Agricultural and Industrial Association's exhibition in August, 1905. This was proved by the fact that we won over forty prizes, which I consider to be a record performance for this or any similar institution. Now that it is a recognised fact that we can compete successfully with stock from all parts of the world, I do not see the necessity for exhibiting again, except for educational purposes. A good display of agricultural and other products was also prepared and shown at the above show.

VISITORS.

The popularity of the College has been well maintained throughout the year under review. This is shown by the fact that 1,525 persons visited the institution. Amongst these were His Excellency the Governor and other distinguished visitors. I am pleased to say that at least 80 per cent. of the number were people who were making a living from the land; their visits were for the express purpose of obtaining information, and most of them honestly admitted that they had profited by their coming here. It is not the desire of the present management to have frequent glowing and padded reports appear in the Press, as it is thought that the results speak for the work performed.

CORRESPONDENCE.

The correspondence is rapidly increasing. Our letter copying-book shows a record of 2,639 typewritten folios, and over 3,300 articles of mailed matter were sent away. I may state that the majority of the letters were in connection with the furnishing of information on all branches of agriculture.

In concluding this report, it is thought that the year's work has been a marked success, as should be the case.

JOHN MAHON, Principal.

ANNUAL REPORT OF THE AGRICULTURAL CHEMIST.

SIR,—I have the honour to submit to you herewith a Report, relative to the work performed by myself and under my direction at the Agricultural Chemical Laboratory, for the year ending 30th June, 1906.

In the beginning of the year the laboratory was shifted into the building vacated by the Government Analyst, and we find the present arrangement a great improvement with regard to space and convenience, although we have none too much room for the greatly increased amount of apparatus and machinery required by our work.

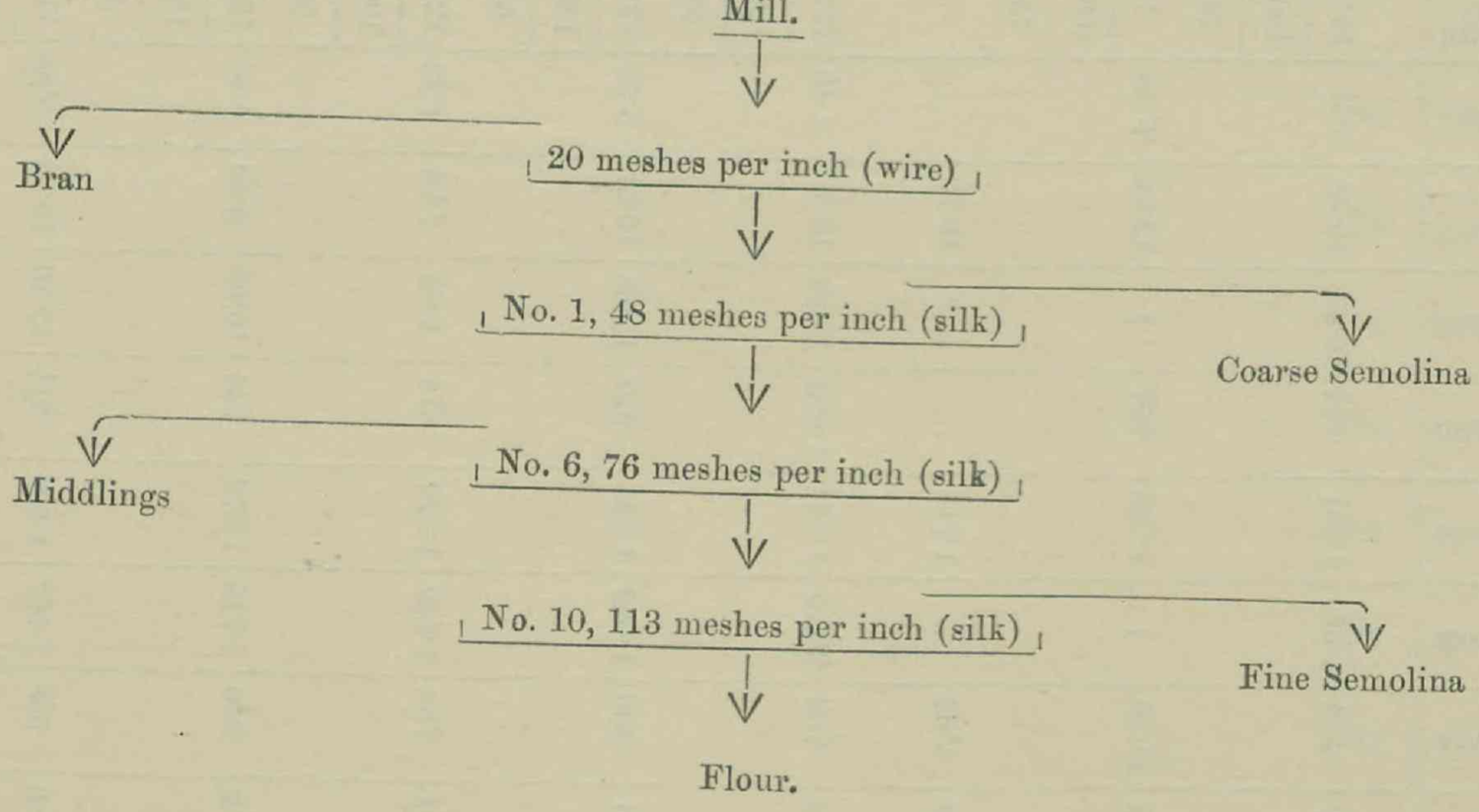
During the year two more cadet assistants were added to the laboratory staff, which now consists of my chief assistant, Mr. Frank Smith, B.Sc., three cadet assistants, and a laboratory attendant. Mr. Smith deserves special praise for the ability and diligence displayed in the carrying out of the analytical work, and I can also report that the cadets made fair progress in their work.

The following is a short summary of the work performed:—

Soils	14	Green manures	25
Waters	28	Manures	16
Dipping fluids	117	Fodders and grasses	47
Milks	139	Wheats and flours	38
Milks (condensed)	14	Sugar canes	65
Cream	60	Tree ashes	3
Butter	95	Leather and hides	25
Cheese	3	Tanning barks	5
Arrowroots	6	Miscellaneous	28
Tobacco	4		
		Total analyses	732

WHEATS AND FLOURS.—The small experimental mill, the purchase of which was mentioned in my last year's report, was erected in our new quarters, and was by the end of the year (1905) got into working order. The mill, a small two-roller mill, was obtained through Messrs. Henry Simon, Limited, Sydney; it consists of one set of first-break rollers, with about 17 grooves per inch, one set of second-break rollers with 28

grooves per inch, both sets of rollers revolving at a ratio of about 3 to 8, and one set of smooth rollers, 4·314 inches long and 3 inches diameter, revolving at a ratio 12 to 15. One of the rollers runs in fixed bearings, the other in bearings fixed to a bracket, which, with the aid of a lever, can be set quickly to any width of opening between the rollers. No means were, however, provided to accurately adjust the setting of the rollers so as to work absolutely parallel, which I, however, provided for by having one of the pins carrying the adjusting bracket made with an eccentric bush. The mill itself is placed on a substantial table, at a comfortable working height. Underneath the table the bolting box is placed, which consists of a set of four sieves, each about 18 inches square, which are connected to small boxes holding the various products.



The mill is driven by a small electric motor, supplied by the Brisbane Electric Supply Company, and this method of driving has given, on account of its convenience, complete satisfaction.

In the working out of the practical details of the milling, Mr. J. Murray, the head miller of the Brisbane Milling Company, South Brisbane, has been of the greatest assistance to me. It was our aim to obtain with our small mill flour of such quality and quantity to compare as near as possible with the practical results obtained in large flour mills. For this purpose several lots of blended wheat used in the production of the well-known "Sea Foam" flour were treated in our mill by different ways until we obtained a yield of 70 to 73 per cent. of flour of a good colour, nearly equal to that of the "Sea Foam" flour. The method finally adopted is briefly as follows:—

The wheat is hand picked, then cleaned and conditioned by being rubbed between two wet towels, left to absorb moisture for a few minutes, and finally dried with a dry cloth. Actual washing of the wheats was abandoned, as any damaged or weevily grain absorbed and retained too much water. I believe, however, that steaming the wheat, more particularly in the case of very hard wheats, will be an improvement, and I am having a small apparatus fitted up to do this work. The dry grain is now put through the first-break rollers, so adjusted that the grains are just broken into halves and only slightly bruised. The grain collects all in the bran box, and receives other three or four breaks with the second set of rollers, the last one with the rollers set fairly hard up, until the bran obtained is sufficiently clean. During this operation the products, according to their state of fineness, collect in the different boxes provided for. The amount of break flour collected gives some idea of the yield of break flour, but the actual quantity could not be correctly ascertained unless all the sieves were cleaned, which involves too much trouble, and is only done once during the reductions, and finally at the end of the operation. Besides the clean bran and the break flour, we find a large amount of coarse semolina and a small amount of middlings collected. As our break rollers are still very sharp, the bran obtained is a little more cut up than ordinary miller's bran, and the semolina contains also fine particles of bran, which sometimes with advantage are removed before reduction by putting the semolina through a No. 00 sieve. The semolina is now reduced with the smooth rollers, not set too close for this first reduction, in order to prevent caking as much as possible. Flaking of the product cannot be entirely avoided, and it is absolutely necessary to rub down the products of reduction by putting a small quantity at the time on to a piece of clean linen, to rub the little bag formed between hand and fingers, and pass through the sieves again. In the case of hard wheats, a second and third extra semolina reduction may be required. The middlings and fine semolina collected in their respective boxes are now reduced by passing them through the mill with the rollers set hard up, and given two to three, in the case of hard wheats, four to five, reductions, as may be required. A good rubbing down of the products between each reduction reduces the number of reductions required. The bolting box is taken to pieces between the second and third reductions, the sieves thoroughly cleaned, the cleanings put over a No. 10 sieve to get all the flour out, which is added to the other flour, and the tailings are added to the middlings for further reduction. As final products, we have thus bran, pollard, the mixture of the products collected in semolina and middling boxes, and flour.

The percentage amount of flour obtained is calculated on the total amount of products obtained, and not on the weight of the wheat taken.

Considering that in our process of milling the products and the flour undergo no process of purification, and that the germ cannot be removed, our final flour has a very good colour, and compares very favourably with the product of large mills.

TABLE I.—Wheat Analyses.

Variety of Grain.	Locality. Season.	Appearance of Grain.	Weight in lb. per Bushel.	Nitrogen in Wheat.	Total Proteids in Wheat.	Milling Products.			Gluten in Flour.			Appearance of Gluten.	Strength of Flour, Quarts per Sack.	Colour and Texture of Flour.	Moisture in Flour.	Ash in Flour.	Nitrogen in—			Proteids in Flour.	True Gluten in Flour.	Gliadin in Flour.	Ratio between Proteids, Gluten, and Gliadin in Flour.	Judging of Wheat by Points. Maximum Marks 100.	Milling Notes.
						Flour.	Pollard.	Bran.	Wet.	Dry.	Ratio Wet to Dry.						Flour.	Gluten.	Gliadin.					
				%	%	%	%	%	%	%	%				%	%	%	%	%	%	%	%		
Ward's Prolific (Allora Spring)	O. Schubert, Wangarry, 1905	Medium size and plump	63·2	1·965	12·28	72·0	13·9	14·1	32·0	10·9	2·93	Soft and very adhesive	47·0	Good, colour rich yellow, good texture	10·09	·554	1·674	1·661	·892	10·46	10·38	5·57	101 100 54	85	Fair to mill; 2 coarse 4 fine breaks, and 5 reductions; bran fairly clean, pollard clean.
Black Don (Macaroni wheat)	American imported wheat	Small, dark, and very hard	...	2·359	14·74	45·25	36·5	13·25	40·2	13·9	2·9	Yellow, very adhesive	53·7	Poor, dark-yellow colour, and gritty	12·72	1·146	?	1·923	·997	?	12·02	6·23	? 100 51·8	70	Very difficult to mill.
Hermitage No. 3	Hermitage State Farm, 1904	Medium quality	64·0	...	...	61·1	12·56	26·34	36·6	12·3	2·9	Light colour, coherent, and elastic	47·0	Dark colour, good texture	12·28	·562	...	1·718	...	...	10·73	...	...	79	Easy to mill.
Battlefield ...	ditto ...	Medium size, fairly plump, some grains slightly pinched	64·3	2·282	14·27	68·9	15·10	16·0	39·3	13·3	3·0	Light colour, very adhesive and elastic	46·7	Fair colour, good texture	11·84	·706	2·116	1·744	1·023	13·23	10·90	6·40	121·3 100 58·7	83	Easy to mill.
Hermitage No. 1	ditto ...	Small grains and a little pinched.	64·5	2·046	12·78	72·2	13·0	14·8	34·4	11·5	3·0	Light, very elastic and non-coherent	48·3	Rather grey, whitish colour, good texture	11·91	·630	1·982	1·634	·920	12·38	10·21	5·75	121 100 56·3	85	Easy to mill.
Free's Abundance	ditto ...	Large grain, but rather uneven	65·5	1·662	10·38	74·0	19·6	6·4	27·1	9·3	2·9	Non-adhesive, little coherent, little elastic	49·8	Colour rather too white, good texture	11·21	·732	1·540	1·272	·674	9·63	7·95	4·22	121·2 100 53·1	88	Very easy to mill.
Manitoba ...	ditto ...	Plump and uniform	64·1	1·825	11·40	72·7	9·9	17·4	26·7	9·1	3·0	Dark, stringy, and elastic	56	Rather dark colour, good texture	11·52	·960	1·710	1·370	·744	10·68	8·56	4·65	123·6 100 54·3	83	Hard to mill; sample rather over-milled.
Allora Spring	ditto ...	Uneven and a little pinched	65·6	2·099	13·11	70·0	14·1	15·9	33·2	11·5	3·0	White, tough, coherent, and elastic	50·4	Very fair colour and good texture	11·86	·598	1·937	1·620	·941	12·10	10·13	5·88	119·4 100 58	85	Easy to mill.
Gluyas ...	ditto ...	Fine large grain and even	64·8	2·049	12·80	74·7	18·4	6·9	35·1	11·2	3·1	Very light colour, elastic, and coherent	46·0	Very good colour and texture	12·29	·584	1·865	1·548	·877	11·66	9·68	5·48	120 100 56·6	90	Easy to mill

TABLE I.—WHEAT ANALYSES—*continued.*

Variety of Grain.	Locality. Season.	Appearance of Grain.	Weight in lb. per Bushel.	Nitrogen in Wheat.	Total Proteids in Wheat.	Milling Products.			Gluten in Flour.			Appearance of Gluten.	Strength of Flour, Quarts per Sack.	Colour and Texture of Flour.	Moisture in Flour.	Ash in Flour.	Nitrogen in—			Proteids in Flour.	True Gluten in Flour.	Gliadin in Flour.	Ratio between Proteids, Gluten, and Gliadin in Flour.	Judging of Wheat by Points. Maximum Marks 100.	Milling Notes.
						Flour.	Pollard.	Bran.	Wet.	Dry.	Ratio Wet to Dry.						Flour.	Gluten.	Gliadin.					
				%	%	%	%	%	%	%	%				%	%	%	%	%	%	%	%			
Kubauka ... (Macaroni)	Imported seed wheat from Kansas, U.S.A.	Small and uneven	60·5	2·302	14·38	67·8	23·4	8·8	40·6	13·3	3·1	Stringy and non-coherent	58	Poor colour and gritty texture	11·61	1·370	...	1·890	·899	...	11·81	5·61	... 100 47·5	75	Very hard to mill.
Hermitage No. 2	Hermitage State Farm, 1904	Medium to large, fairly even	67·0	2·069	12·93	73·5	9·2	17·3	36·0	11·4	3·2	White and coherent and adhesive	48	Very good colour and texture	12·61	·624	...	1·566	·856	...	9·79	5·32	... 100 54·3	89	Easy to mill.
Petatz Surprise	ditto ...	Medium size and little pinched	63·4	2·182	13·63	72·7	21·6	5·7	31·4	11·6	2·9	Elastic, adhesive, and coherent	46	Good, yellow-white colour and good texture	12·27	·532	1·940	1·670	·955	12·12	10·43	5·97	116·2 100 57·2	84	Easy to mill.
Marshall's No. 3	ditto ...	Large, but uneven and a little pinched	61·9	1·656	10·35	71·1	9·33	19·57	25·5	8·7	2·9	Tough, elastic, and coherent	47	Greyish-white colour, good texture	11·21	·691	1·523	1·224	·667	9·52	7·65	4·17	124·5 100 54·5	79	Easy to mill.
Carmichael ...	ditto ...	Medium to large and fairly plump	66·4	2·237	13·97	74·5	10·1	15·4	39·6	13·2	3·0	Light colour, soft and elastic, coherent	49	Very good, yellow-white colour and good texture	11·43	·672	2·085	1·796	1·045	13·03	11·23	6·53	116 100 58	91	Easy to mill.
Budd's Early	ditto ...	Fairly large and plump	64·0	2·167	13·56	74·6	9·0	16·4	35·8	12 8	2·8	White colour, soft and elastic	49	Fairly good, colour when dry rather grey	11·97	·612	1·938	1·915	·934	12·12	11·97	5·84	101 100 48·7	91	Easily to mill; bran fairly clean, and pollard very clean.
Manitoba ...	ditto ...	Poor grain and pinched	64·0	1·860	11·62	71·7	18·6	9·7	30·7	9·9	3·2	Dark colour, not elastic, and crumbly	54·5	Dark colour and poor texture	12·06	...	1·657	1·426	·730	10·35	8·92	4·56	116 100 51	80	Fairly easy to mill; pollard very dark but clean; bran very small and clean, like sawdust.
Hermitage No. 4	ditto ...	Medium size, short and plump	65·0	2·586	16·15	73·8	11·5	14·7	49·4	16·1	3·1	White, elastic, coherent, and adhesive	46	Fair colour and good texture	12·11	·678	2·340	2·109	1·270	14·63	13·18	7·94	111 100 60·2	90	Easy to mill; bran and pollard clean.
Baltic Red ...	ditto ...	Small to medium, a little pinched and a little weevily	63·5	1·842	11·51	70·0	17·8	12·2	29·6	9·9	3·0	Dark, stringy, elastic	48	Good, yellow colour and fair texture	13·10	·632	1·610	1·334	·760	10·06	8·34	4·75	120·7 100 57	82	Easy to mill; pollard clean, bran small but clean.

TABLE I.—Wheat Analyses—*continued.*

Variety of Grain.	Locality. Season.	Appearance of Grain.	Weight in lb. per Bushel.	Nitrogen in Wheat.	Total Proteids in Wheat.	Milling Products.			Gluten in Flour.			Appearance of Gluten.	Strength of Flour, Quarts per Sack.	Colour and Texture of Flour.	Moisture in Flour.	Ash in Flour.	Nitrogen in—			Proteids in Flour.	True Gluten in Flour.	Gliadin in Flour.	Ratio between Proteids, Gluten, and Gliadin in Flour.	Judging of Wheat by Points. Maximum Marks 100.	Milling Notes.
						Flour.	Pollard.	Bran.	Wet.	Dry.	Ratio Wet to Dry.						Flour.	Gluten.	Gliadin.						
Goos', *Triticum polonicum*	Allora, 1904	Long, transparent, but uneven size	60·0	% 2·631	% 16·45	% 63·5	% 21·6	% 14·9	% ...	% ...	% ...	Gluten was non-coherent, and could not be obtained in usual way	56·4	Dark grey colour and very gritty	% 11·20	% 1·678	% 2·620	% ?	% 1·850	% 16·37	% ?	% 11·56	...	74	Exceedingly hard to mill; pollard not too clean. bran small but clean.
Free's Abundance	Warwick, 1905	Uneven and a little pinched; 100 grs. = 3·917 grs.	67·0	2·456	15·35	74·0	10·5	15·5	43·3	14·2	3·0	Light colour, soft, elastic, adhesive	47	Good, colour reddish tinge	10·05	·526	2·336	1·829	1·194	14·57	11·43	7·47	127·5 100 65·3	91	Very easy to mill; 1 coarse and 4 fine breaks, and 4 reductions; products clean.
Budd's Early	ditto ...	A little uneven, contains immature grains; 100 grs. = 3·560	64·8	2·266	14·16	72·0	11·5	16·5	40·5	12·8	3·1	White, soft, and elastic	44	White, rather chalky, good texture	11·30	·532	2·120	1·773	1·037	13·25	11·08	6·48	119·6 100 71·8	82	Very easy to mill; 1 coarse and 3 fine breaks, and 3 reductions; semolina nice and gritty; products clean.
Carmichael ...	ditto ...	Small and irregular; 100 grs. = 3·865	64·6	2·050	12·40	73·9	13·6	12·5	33·5	10·9	3·0	Elastic and adhesive	51	Fair, yellowish colour	11·38	·728	1·838	1·555	1·015	11·48	9·68	6·34	118·6 100 61·3	88	Easy to mill; 1 coarse and 3 fine breaks, and 4 reductions; bran small but clean.
Allora Spring	ditto ...	Contains immature grain, a little pinched; 100 grs. = 3·645	63·7	2·150	13·43	71·3	12·5	16·2	31·3	10·2	3·1	Elastic, adhesive, and coherent	47	Good, yellowish colour	12·07	·640	1·778	1·476	·953	11·12	9·23	5·96	120·5 100 64·6	85	Easy to mill; 1 coarse and 3 fine breaks; 3 reductions and 1 extra semolina reduction.
Imperial Pearl	ditto ...	Fair, but rather mixed; 100 grs. = 4·31	63·2	2·773	17·36	73·2	10·1	16·7	40·5	13·7	3·0	Coarse and stringy, adhesive	49	Fair colour ...	12·51	·520	2·295	1·978	1·295	14·35	12·38	8·10	115·8 100 65·4	90	Easy to mill; 1 coarse and 3 fine breaks, and 4 reductions.
Manitoba ...	ditto ...	Fairly even and hard grain; 100 grs. = 2·52 grs.	62·0	2·411	15·06	70·4	13·0	16·6	39·8	13·3	3·0	Dark, stringy, and adhesive	51	Poor colour, reddish grey	12·55	·560	2·077	1·555	·898	12·98	9·72	5·61	133·5 100 57·7	84	Fair to mill; 1 coarse and 2 fine breaks, 4 reductions, and 1 extra semolina reduction.
Manitoba ...	Clifton, 1905	Small and hard; 100 grs. = 2·617	63·7	2·036	12·73	72·0	13·0	15·0	30·2	10·6	2·9	Coarse, stringy, little coherent	54·5	Poor colour, good texture	13·26	·784	1·856	1·539	·940	11·60	9·62	5·87	120·6 100 61·0	85	Fair to mill; 1 coarse and 3 fine breaks, 4 reductions.
Gluyas ...	ditto ...	Medium size and even; 100 grs. = 4·649	62·1	2·660	16·63	71·5	10·0	18·5	43·5	14·1	3·1	Yellow, adhesive, and elastic	47	Fair colour, and good texture	13·23	596	2·344	1·999	1·206	14·65	12·49	7·54	117·3 100 60·3	85	Fairly easy to mill; 1 coarse and 3 fine breaks, 4 reductions, and 1 extra semolina reduction.

TABLE I.—Wheat Analyses—continued.

Variety of Grain.	Locality. Season.	Appearance of Grain.	Weight in lb. per Bushel.	Nitrogen in Wheat.	Total Proteids in Wheat.	Milling Products.			Gluten in Flour.			Appearance of Gluten.	Strength of Flour, Quarts per Sack.	Colour and Texture of Flour.	Moisture in Flour.	Ash in Flour.	Nitrogen in—			Proteids in Flour.	True Gluten in Flour.	Gliadin in Flour.	Ratio between Proteids, Gluten, and Gliadin in Flour.	Judging of Wheat by Points. Maximum Mark 100.	Milling Notes.
						Flour.	Pollard.	Bran.	Wet.	Dry.	Ratio Wet to Dry.						Flour.	Gluten.	Gliadin.						
				%	%	%	%	%	%	%	%				%	%	%	%	%	%	%	%			
Manitoba ...	Imported seed wheat	Medium size, shrivelled, and uneven; 100 grs. = 2·806	62·2	2·699	16·86	69·4	14·7	15·9	39·9	13·4	3·0	Light colour, elastic, and adhesive; and fair texture	52·5	Rather chalky, but fair texture	12·80	·644	2·360	1·976	1·105	14·75	12·35	6·90	120 100 56	87	Fair to mill; 1 coarse and 3 fine breaks, 4 reductions; bran dark, small, but clean
Manitoba ...	Allora, 1905	Small grain and uneven; 100 = 2·436	63·2	2·575	16·10	70·2	14·4	15·4	46·6	15·6	3·3	Close texture, elastic, and adhesive	52·6	Fair colour and texture	14·26	·892	2·340	2·247	1·25	14·62	14·03	7·82	115 100 56	87	Fair to mill; 1 coarse and 3 fine breaks, 4 reductions.
Carmichael (Spring)	ditto ..	Small, pinched, and irregular; 100 = 2·783	61·8	2·478	15·48	71·2	13·2	15·6	46·0	15·5	3·4	Soft, adhesive, coherent, and elastic	50·8	Medium colour and texture	13·48	1·128	2·416	1·855	1·290	15·10	11·59	8·06	133 100 69·5	85	Fair to mill; 1 coarse and 3 fine breaks, 4 reductions; flour clung to sieves badly.
Hard Medeah	ditto ...	Rather shrivelled and poor grain; 100 = 3·774	61·5	2·782	17·40	62·3	24·9	12·8	53·5	18·5	3·5	Coarse, stringy, and not coherent	59	Poor colour, too dark, gritty text	12·13	1·632	2·845	2·460	1·416	17·77	15·37	9·29	116 100 60·4	78	Hard to mill; 1 coarse and 4 fine breaks, 5 reductions; semolina transparent; pollard not at all clean.
Baltic Red ...	ditto ...	Small grain, irregular size, and shrivelled; 100 = 2·372	63·7	1·887	11·78	71·8	13·4	14·8	30·0	10·1	3·0	Tough and adhesive	51·6	Dark-reddish colour, fair texture	14·00	·848	1·749	1·421	·847	10·92	8·89	5·29	123 100 59·5	82	Fair to mill; 1 coarse and 4 fine breaks, 4 reductions.
Steinwedel ...	ditto ..	Poor grain and shrivelled; 100 = 3·843	62·2	2·984	18·65	75·8	11·4	13·4	60·1	18·8	3·2	Very loose in texture, soft, and adhesive	49	Fair colour, a little greyish, good texture	11·90	1·140	2·940	2·550	1·548	18·36	15·93	9·66	115·3 100 60·6	89	Easy to mill; 1 coarse and 4 fine breaks, 3 reductions.
Marshall's No. 3	ditto ...	Poor sample, shrivelled, and irregular; 100 = 4·567 grs.	63·6	2·175	13·60	73·4	13·3	13·2	38·7	12·4	3·1	Light colour, adhesive, soft, and rather loose	48	Fair colour and texture	11·91	1·014	2·152	1·768	1·077	13·45	11·05	6·72	122 100 60·8	86	Fairly easy to mill; 1 coarse and 3 fine breaks, 4 reductions.
Budd's Early	ditto ...	Medium quality, a little pinched; 100 = 3·558 grs.	66·3	1·980	12·37	73·2	10·6	16·2	31·2	10·5	3·0	Dark, adhesive, and elastic	48	Very good colour and texture	11·96	752	1·860	1·514	·886	11·62	9·46	5·53	123 100 58·4	89	Easy to mill; 1 coarse and 3 fine breaks, 4 reductions.
Allora Spring	ditto ...	Fair grain and plump; 100 = 3·743 grs.	65·3	1·987	12·42	72·0	15·0	13·0	27·7	9·6	2·9	Rather loose and inelastic	45	Good colour and texture	11·90	·646	1·676	1·418	·858	10·48	8·86	5·36	118 100 60·5	85	Fairly easy to mill; 1 coarse and 3 fine breaks, 4 reductions.

In connection with the milling, a fairly complete analysis of the flour is carried out, including all determinations which may be of value in the judging of its qualities.

The weight per bushel of the original wheat is determined by weighing repeatedly half a pint of the wheat; the results obtained agree very closely with the weight obtained in the special apparatus—chrondrometer—designed for the determination of this weight. Some idea of the size and condition of the grain is also obtained from the actual weight of 100 grains of wheat, which is also recorded for each sample. In order to form some idea what amount of nitrogenous matters are lost in bran and pollard, the amount of total nitrogen in the wheat itself is determined, and, by multiplying this by 6·25, the amount of total proteids or flesh-formers in the wheat is obtained. The amount of gluten in the flour is determined by taking 10 grammes of flour, making it into a stiff dough with the necessary amount of water, and, after allowing to stand for an hour, all the starch in the little ball of dough is washed out with water. The gluten obtained is weighed both wet and dry, and the amount of true gluten is found by determining the amount of nitrogen in the dry gluten and multiplying again by 6·25. Particular notice is taken of the appearance of the wet gluten with regard to colour, adhesiveness, and elasticity. The total proteids in the flour are obtained from the total amount of nitrogen in the flour × 6·25. Gliadin is the sticky glue-like compound in gluten, on which, to a great extent, the baking quality of a flour depends. It is estimated by extracting the gluten or the flour itself with a dilute alcohol in which gliadin is soluble.

The strength of flour is particularly important to a baker, and it is indicated by the quantity of water the flour is capable of absorbing to produce a dough of certain consistency. We express it in quarts of water per sack of flour of 200 lb.

The ratio of proteids in flour, true gluten, and gliadin is expressed by comparing the respective amounts with gluten = 100, and in a good hard wheat the gliadin number of the flour, or the percentage of gliadin in the gluten should be between 56 and 68 per cent.

Judging Wheats by Points.—Each sample of wheat is judged, and a certain amount of points allowed for appearance of the grain (maximum points, 10), weight per bushel (15 points), ease of milling (10 points), percentage of flour (10 points), colour (15 points), gluten (20 points), and of strength (20 points), giving a total possible maximum of 100 points. Thus a value is obtained, which, strictly speaking, is only applicable for judging wheats of the same class, which, however, may be of some general use in choosing wheats for blending purposes.

On Table I. the results of milling various wheats, partly of season 1904-5 and 1905-6, obtained from different localities, which have been put through so far, are given.

Most of the milling and the analysing of the flours was carried out by Mr. G. Robertson, one of our cadet assistants, who devoted particular care and attention to this rather tedious work.

Fodder Crops.—The interesting and valuable investigation on the chemical composition of our fodders which was started some years back was continued. We obtained a very large amount of samples from the Biggenden State Farm, and also a good collection of native grasses and ordinary bush hay from the Gindie State Farm. The analyses of these grasses prove the great value of our indigenous grasses as fodders, and the conservation of bush hay cannot be too strongly recommended to our farmers.

A great variation exists in the composition of the fodders grown in different localities, and it is of importance that each farmer should grow such grasses which are the most suitable to his district. A mixed pasture is always of greatest value, and, if at all possible, different varieties of grasses should be grown. It is one of the most important parts of the duties of our agricultural laboratory to assist by the analysing of fodder crops to find the most suitable and profitable fodder or grass for each locality.

In order to compare the value of some of the fodders more easily, I give herewith a short tabulated statement, and, in explanation, must point out (a much fuller explanation was given in my short article on "Queensland Grasses" in the February number of the *Agricultural Journal*) that the value of any fodder depends to a large extent on the "albuminoid ratio," the proportion between the digestible albuminoid or proteids or flesh-forming constituents of the food, and the digestible carbohydrates and fats or heat producing constituents. In a properly balanced food ration for cattle this ratio should lie between 1 ÷ 5½ and 1 ÷ 8. We will notice that lucerne and also sweet potato vines are a very strong food, containing rather too much nitrogenous material, and, therefore, these fodders should be mixed with food containing a larger amount of carbohydrates. Should a fodder not contain a sufficient amount of carbohydrates, some of the nitrogenous materials would have to be used as heat-producers, which would be a waste of the more valuable constituents. It must also be clearly understood that not the total amounts of food constituents given on the table can be digested by the animal, and, as a rule, approximately, only from one-half to two-thirds of the amounts stated may be digested:—

—	DRY SUBSTANCE IN GRASS OR GREEN MATERIAL.		Dry Substance in Hay or Chaff.	ANALYSES OF DRY HAY OR CHAFF.				
				CARBOHYDRATES OR HEAT PRODUCERS.			Proteids or Flesh Formers.	Albuminoid Ratio.
	—	Tons per Acre.		Woody Fibre.	Carbohydr.	Fat.		
	Per cent.		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	
Very good Bush Hay	...	...	92·5	39·8	31·0	1·9	5·6	1 ÷ 15
Fair Bush Hay	...	...	93·1	45·3	32 5	1·1	2·4	1 ÷ 36
Very good Grass, *Eriochloa*	38·9	5·0	93·5	24·2	36·1	1 7	6·0	1 ÷ 12·5
Do. do. *Panicum jubiflorum* ...	33 4	5·0	93·4	27·2	38·8	1·5	5·6	1 ÷ 13
Good gr., Wheep. Mitchell	37·9	5·5	93·0	22·7	40·8	1·7	3·8	1 ÷ 22
Paspalum dilatatum	27 2	2·9	89·3	27·0	34·5	2·0	3·9	1 ÷ 15
Do. do.	25·8	1·6	89·1	20 3	40·3	1·9	8·2	1 ÷ 8·5
Buffalo Grass	22·6	1·7	90·9	13·4	48·2	2·0	8·6	1 ÷ 9
Rhodes Grass	45·4	1·8	90·8	27·2	26·1	1 0	7·1	1 ÷ 8·4
Mazzagua	25·5	12·4	90·7	27·4	39·3	1·1	7·4	1 ÷ 10·2
Maize Golden Nugget	25·4	6·7	90·8	28·4	43·2	7	6·4	1 ÷ 12·7
Sorghum saccharatum	35·6	23·8	91·5	26·4	39·5	1·1	4 8	1 ÷ 15·4
Lucerne	20·7	1·3	87·1	21·3	23·6	1·3	12·2	1 ÷ 2·4
Sweet Potato Vines	12·4	(?)	100	15·1	27·4	...	13·5	1 ÷ 2·7

TABLE II.—Analyses of Grasses, Fodder Plants, Etc.

Variety and Locality.			Tons per Acre.	Moisture.	Total Dry Substance.	Soluble Proteids.	Insoluble Proteids.	Total Proteids N. x 6.25.	Woody Fibre (König's Meth.)	Pentosans.	Starch.	Soluble Carbohydrate (Sugars).	Crude Fat.	Chlorophyl, Amides, etc., by difference.	Crude Ash.	In Ash.			Watery Extract.			Total Nitrogen.	Proteid Nitrogen (Stutzer's Method).	Albuminoid Ratio.	Remarks.
																Lime.	Potash.	Phosphor. Acid.	Total Sol. Matter.	Sol. Nitrog.	Sol. Ash.				
Bush Hay, 1 week old		Gindie State Farm	...	7·80	92·20	·12	2·51	2·63	41·42	31·59			1·54	7·79	7·23	·44	·70	·19	11·50	·182	2·05	·583	...	1 : 31	
Ditto 2 months old		ditto	...	6·53	92·47	·68	4·87	5·55	39·78	31·00			1·94	10·09	6·11	·81	·83	·27	13·55	·193	2·20	·972	...	1 : 15	
Ditto 12 months old		ditto	...	6·93	93·07	·34	2·04	2·38	45·26	32·46			1·12	4·54	7·31	·41	·48	·16	7·35	·130	1·35	·457	...	1 : 36	
Ditto 18 months old		ditto	...	8·29	91·71	·26	2·39	2·65	39·14	27·80			1·58	12·11	8·43	·27	2·57	·47	17·60	·239	5·65	·632	...	1 : 29	
Blue Grass	*grass*	ditto	*10·80*	*44·23*	*55·77*	*·53*	*1·34*	*1·87*	*19·22*	*11·47*	*6·03*	*2·39*	*1·02*	*8·10*	*5·62*	*·25*	*·67*	*·16*	*8·68*	*·180*	*2·01*	*·388*	*·301*	1 : 25	
(*Andropogon sericeus*)	hay	ditto	6·48	7·03	92·97	·89	2·23	3·12	32·10	19·12	10·05	3·98	1·70	13·50	9·40	·41	1·11	·27	14·30	·302	3·35	·646	·502		
Weeping Mitchell Grass	*grass*	ditto	*14·58*	*62·08*	*37·92*	*·16*	*1·38*	*1·54*	*11·58*	*9·26*	*5·12*	*2·24*	*·69*	*4·48*	*3·02*	*·15*	*·62*	*·12*	*5·67*	*·135*	*1·29*	*·346*	*·253*	1 : 22	
(*Astrebla pectata., v. elym.*)	hay	ditto	5·94	6·98	93·02	·41	3·35	3·76	28·42	22·70	12·56	5·50	1·70	11·01	7·37	·38	1·53	·30	13·90	·330	3·15	·885	·620		
Curly Mitchell Grass	*grass*	ditto	*10·30*	*53·43*	*46·57*	*·44*	*1·76*	*2·20*	*13·90*	*10·26*	*6·69*	*2·81*	*·79*	*6·35*	*3·58*	*·20*	*·56*	*·15*	*7·60*	*·217*	*2·10*	*·491*	*·344*	1 : 18	
(*Astrebla pectata., v. curv.*)	hay	ditto	5·40	6·96	93·04	·88	3·53	4·41	27·87	20·52	13·18	5·62	1·58	12·69	7·17	·41	1·11	·29	15·20	·435	4·20	·983	·689		
Eriochloa punctata ...	*grass*	ditto	*12·96*	*61·08*	*38·92*	*·44*	*2·06*	*2·50*	*10·07*	*7·67*	*5·86*	*1·54*	*·69*	*4·60*	*4·77*	*·20*	*1·57*	*·20*	*7·74*	*·359*	*3·12*	*·688*	*·397*	1 : 12·5	
	hay	ditto	4·86	6·52	93·48	1·04	4·91	5·98	24·15	18·38	14·05	3·70	1·66	11·03	11·35	·48	3·77	·49	18·60	·860	7·50	1·650	·956		
Brown Top or Sugar Grass	*grass*	ditto	*8·64*	*42·23*	*57·77*	*·39*	*1·48*	*1·87*	*16·47*	*13·06*	*12·17*	*3·45*	*·91*	*2·98*	*4·97*	*·16*	*·37*	*·13*	*7·53*	*·086*	*1·12*	*·317*	*·298*	1 : 27	
(*Pollinia fulva*)	hay	ditto	5·40	7·57	92·43	·63	2·36	2·99	26 38	20·90	19·50	5·50	1·46	4·78	7·96	·26	·59	·21	12·05	·129	1·80	·506	·478		
Rat's-tail Grass ...	*grass*	ditto	*7·02*	*42·83*	*57·17*	*·50*	*1·31*	*1·81*	*19·05*	*11·71*	*13·47*	*3·44*	*·86*	*1·81*	*6·53*	*·21*	*·55*	*·25*	*6·25*	*·147*	*1·17*	*·356*	*·289*	1 : 27	
(*Ischæmum laxum*)	hay	ditto	4·32	7·07	92·93	·81	2·13	2·94	31·00	19·04	21·91	5·60	1·40	2·96	10·53	·34	·89	·40	10·15	·239	1·90	·579	·470		
Panicum jubiflorum ...	*grass*	ditto	*15·12*	*66·63*	*33·37*	*·35*	*1·65*	*2·00*	*9·70*	*7·26*	*4·44*	*1·81*	*·52*	*4·16*	*3·45*	*·12*	*·91*	*·08*	*6·45*	*·256*	*1·59*	*·521*	*·321*	1 : 13	
	hay	ditto	5·40	6·60	93·40	·99	4·63	5·62	27·16	20 32	12·44	5·07	1·46	11·65	9·68	·32	2·56	·22	18·05	·719	4·45	1·460	·899		
Flinders Grass ...	*grass*	ditto	?	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
(*Anthistiria membran.*)	hay	ditto	?	7·88	92·12	0·7	2·74	2·81	29·20	18·28	17·57	5·50	1·40	5·56	11·80	·29	1·12	·32	13·05	·182	2·15	·630	·449	1 : 27	
Couch Grass	*grass*	Botanic Gardens	*4·02*	*54·88*	*45·12*	*·88*	*2·61*	*3·49*	*10·25*	*6·97*	*9·32*	*2·24*	*·60*	*7 83*	*4·42*	...	...	...	*7·04*	*·140*	*1·89*	*·670*	*·558*	1 : 14·3	
(*Cynodon dactylon*)	hay	ditto	2·01	9·99	90·01	1·75	5·21	6·96	20·45	13·90	18·58	4·47	1·20	15·62	8·83	...	...	...	14·05	·280	3·78	1·335	1·112		
Buffalo Grass	*grass*	ditto	*7·56*	*77·42*	*22·58*	*1·06*	*1·07*	*2·13*	*4·56*	*5·90*	*5·17*	*·91*	*·50*	*·92*	*2·49*	...	...	...	*4·05*	*·248*	*1·29*	*·438*	*·341*	1 : 9·0	
(*Stenotaphrum American.*)	hay	ditto	1·88	9·10	90·90	4·28	4·30	8·58	18·35	23·72	20·82	3·67	2·00	3·74	10·02	...	...	...	16·30	1·017	5·20	1·754	1·372		
Paspalum dilatatum ...	*grass*	ditto	*6·35*	*74·18*	*25·82*	*·99*	*1·40*	*2·39*	*5·86*	*5·54*	*5·01*	*1·13*	*·54*	*2 23*	*4·12*	...	...	...	*4·95*	*·158*	*1·45*	*·501*	*·382*	1 : 8·5	
	hay	ditto	1·83	10·86	89·14	3·41	4·83	8·24	20·25	19·12	17·32	3·90	1·85	6·52	11·94	...	...	...	19·18	·546	5·00	1·727	1·317		
Ditto ...	*grass*	Agricultural College	*10·53*	*72·84*	*27·16*	*·29*	*1·17*	*1·46*	*8·20*	*10·48*			*·62*	*3·32*	*3·08*	...	...	...	...	...	...	...	...	1 : 15·0	
	hay	ditto	2·86	10·72	89·28	·96	3·85	4·71	26·97	34·45			2·03	10·88	10·47	·25	1·13	·35	...	...	...	...	...		
Ditto ..	*grass*	Biggenden State Farm	*4·7*	*54·44*	*45·56*	*·70*	*2·28*	*2·98*	*14·36*	*10·15*	*4·89*	*·96*	*·50*	*5·79*	*5·94*	...	...	...	*4·14*	*·119*	*1·62*	*·478*	*·471*	1 : 10·8	Grown all winter and and spring on a well-established plot.
	hay	ditto	2·3	8·87	91·13	1·40	4·57	5·97	28·71	20·30	9·78	1·93	·99	11·57	11·88	?	·45	·07	8·28	·238	3·24	·956	·942		
Rhodes Grass ...	*grass*	ditto	*3·9*	*54·60*	*45·40*	*·30*	*3·27*	*3·57*	*13·62*	*9·40*	*3·06*	*·58*	*·50*	*8·78*	*6·00*	...	...	...	*4·90*	*·168*	*1·87*	*·674*	*·555*	1 : 8·4	Grass from a plot 10 months old which had been cut 30 days previously.
(*Chloris vergata*)	hay	ditto	1·9	9·19	90·81	·61	6·52	7·13	27·24	18·84	6·12	1·16	1·00	17·56	12·00	?	·48	·07	9·91	·336	3·74	1·348	1·110		
Mazzagua	*green*	ditto	*48·6*	*74·50*	*25·50*	*·60*	*1·48*	*2·08*	*7·70*	*6·14*	*4·49*	*·42*	*·30*	*2·17*	*2·21*	...	...	...	*3·79*	*·157*	*·99*	*·393*	*·331*	1 : 10·2	Planted 4-12-05, cut 24-3-06 ; planted in drills 4 feet apart and thinned out to plants 1 foot apart.
	chaff	ditto	13·7	9·27	90·73	2·13	5·26	7·39	27·38	21·84	15·96	1·49	1·05	7·74	7·88	?	·62	·14	13·47	·560	3 51	1·396	1·178		
Red Kafir Corn ...	*green*	ditto	*24·0*	*68·76*	*31·24*	*·34*	*2·18*	*2·52*	*7·24*	*6·53*	*6·53*	*2·38*	*·42*	*·77*	*4·85*	...	...	...	*5·46*	*·113*	*·96*	*·457*	*·398*	1 : 10·2	
	chaff	ditto	8·2	8·48	91·52	1·02	6·38	7·40	21·21	19·12	19·12	6·95	1·25	2·25	14·22	...	...	...	15·98	·330	2·82	1·348	1·178		
Sorghum—Collier ...	*green*	ditto	*60·0*	*57·86*	*42·14*	*·44*	*2·20*	*2·64*	*12·07*	*11·83*	*6·79*	*1·32*	*·53*	*2·28*	*3·73*	...	...	...	*5·26*	*·160*	*1·16*	*·502*	*·424*	1 : 13·7	Planted 20-10-05 and cut 8-3-06 ; gives 2 cuts during season, and stands more hardship than maize.
	chaff	ditto	27·8	9·21	90·79	·95	4·74	5·69	26·02	25·52	14·62	2·84	1·15	4·92	8·03	...	...	...	11·33	·344	2·51	1·081	·913		

NOTE.—*All analyses referring to the green materials are printed in italics.*

TABLE II.—Analyses of Grasses, Fodder Plants, Etc.—*continued.*

Variety and Locality.			Tons per Acre.	Moisture.	Total Dry Substance.	Soluble Proteids.	Insoluble Proteids.	Total Proteids N. x 6·25.	Woody Fibre (König's Meth.)	Pentosans.	Starch.	Soluble Carbohydrate (Sugars).	Crude Fat.	Chlorophyl, Amides, etc., by difference.	Crude Ash.	In Ash.			Watery Extract.			Total Nitrogen.	Proteid Nitrogen (Stutzer's Method).	Albuminoid Ratio.	Remarks.
																Lime.	Potash.	Phosphor. Acid.	Total Sol. Matter.	Sol. Nitrog.	Sol. Ash.				
Maize—Golden Nugget	*green*	Biggenden State Farm	*26·5*	*74·57*	*25·43*	*·23*	*1·56*	*1·79*	*7·94*	*5·94*	*4·10*	*2·06*	*·19*	*1·90*	*1·51*	...	...	...	*5·66*	*·121*	*·56*	*·372*	*·286*	1 : 12·7	Planted 5-12-05 and cut 8-3-06; is a heavy cropper, but gives only 1 crop; was grown after lucerne.
	chaff	ditto	7·4	9·19	90·81	·82	5·58	6·40	28·35	21·20	14·62	7·36	·71	6·79	5·38	?	·24	·13	15·85	·434	2·02	1·326	1·024		
Sorghum—Saccharatum	*green*	ditto	*67·0*	*64·40*	*35·60*	*·05*	*1·82*	*1·87*	*10·23*	*7·45*	*7·16*	*·68*	*·44*	*4·97*	*2·61*	...	...	...	*4·05*	*·082*	*1·22*	*·335*	*·298*	1 : 15·4	Is a heavy yielder, but not liked very much by cattle as chaff.
	chaff	ditto	26·0	8·55	91·45	·12	4·70	4·82	26·42	19·23	18·48	1·77	1·14	12·86	6·73	?	·35	·09	10·45	·211	3·14	·865	·772		
Ditto } ditto	*green*	ditto	*37·0*	*55·64*	*44·36*	*·73*	*2·18*	*2·91*	*10·31*	*9·32*	*9·52*	*3·38*	*·51*	*5·80*	*2·63*	...	...	...	*7·12*	*·195*	...	*·538*	*·460*	1 : 12·7	Same sample, but very much riper; about 21 weeks old.
	chaff	ditto	18·0	8·94	91·06	1·51	4·46	5·97	21·13	19·14	19·52	6·95	1·05	11·89	5·41	...	...	...	14·58	·400	...	1·103	·945		
Sorghum—Collier ...	*green*	ditto	*30·0*	*69·15*	*30·85*	*·35*	*1·18*	*1·53*	*5·24*	*5·94*	*7·63*	*5·32*	*·65*	*·72*	*2·81*	...	...	...	*7·14*	*·076*	*·54*	*·265*	*·245*	1 : 18·7	Crop about 16 weeks old.
	chaff	ditto	10·6	10·00	90·00	1·02	3·44	4·46	15·30	17·35	22·27	16·95	1·91	2·11	9·62	...	...	...	20·82	·222	1·58	·774	·716		
Teosinte	*green*	ditto	*39·43*	*77·72*	*22·28*	*·33*	*1·02*	*1·35*	*4·95*	*5·44*	*3·47*	*·64*	*·27*	*4·45*	1·89	...	...	...	*3·31*	*·080*	*·86*	*·243*	*·214*	1 : 12·2	Cattle do not care much for this fodder.
	chaff	ditto	9·26	6·03	93·97	1·33	4·29	5·62	20·86	22·92	14·06	2·70	1·14	18·69	7·98	...	...	...	13·90	·338	3·65	1·024	·899		
Sorghum—Coleman ...	*green*	ditto	*54·0*	*60·33*	*39·67*	*·07*	*2·19*	*2·26*	*8·81*	*9·91*	*9·65*	*1·17*	*·43*	*4·18*	*3·28*	...	...	...	*4·98*	*·204*	*1·44*	*·555*	*·365*	1 : 14·8	Cut 16 weeks old.
	dry chaff	ditto	23·7	9·82	90·18	·16	4·98	5·14	20·00	22·50	21·96	2·66	·96	9·51	7·45	...	...	...	11·32	·465	3·28	1·265	·829		
Sorghum—Early Orange	*green*	ditto	*52·0*	*62·25*	*37·75*	*·14*	*2·12*	*2·26*	*9·18*	*8·76*	*8·87*	*2·09*	*·52*	*2·94*	*3·27*	...	...	...	*6·36*	*·146*	*·98*	*·488*	*·363*	1 : 14·5	Ditto
	chaff	ditto	21·6	9·23	90·77	·34	5·08	5·42	22·04	21·00	21·29	5·00	1·24	7·04	7·74	...	...	...	15·16	·350	2·35	1·166	·870		
Sorghum—Planters' Friend	*green*	ditto	*54·0*	*67·23*	*32·77*	*·13*	*2·22*	*2·35*	*10·86*	*7·39*	*6·48*	*1·07*	*·47*	*1·09*	*2·70*	...	...	...	*3·99*	*·166*	*1·07*	*·519*	*·374*	1 : 12·4	Ditto
	chaff	ditto	19·4	9·00	91·00	·36	6·14	6·50	30·12	21·54	18·01	2·98	1·32	3·03	7·50	...	...	...	11·08	·459	2·98	1·442	1·040		
Sorghum—Amber Cane	*green*	ditto	*32·0*	*76·03*	*23·97*	*·02*	*1·27*	*1·29*	*6·81*	*6·01*	*6·25*	*·74*	*·30*	*1·68*	*2·17*	...	..	...	*2·97*	*·062*	*·74*	*·256*	*·198*	1 : 17·3	Cut 16 weeks; ripens very early and gives good second cuts.
	chaff	ditto	8·6	10·05	89·95	·09	4·74	4·63	25·52	22·62	23·42	2·78	1·12	6·33	8·16	...	..	...	11·19	·231	2·78	·962	·744		
Lucerne	*green*	Hermitage State Farm	*7·6*	*48·42*	*51·58*	*3·45*	*4·57*	*8·02*	*20·76*	?	*3·82*	*1·97*	*1·07*	...	*5·46*	...	*1·36*	*·19*	*16·65*	*·576*	*5·16*	*1·335*	?	1 : 3·8	
	dry	ditto	4·3	9·68	90·32	6·04	7·98	14·02	36·33	?	6·68	3·45	1·88	...	9·55	...	2·37	·34	29·15	1·008	9·03	2·338	?		
Cow Pea	*green*	ditto	*21·6*	*70·90*	*29·10*	*2·08*	*2·32*	*4·40*	*10·88*	?	*2·20*	*1·46*	*·81*	...	*3·55*	?	*·66*	*·12*	*7·60*	*·345*	*1·84*	*·735*	?	1 : 3·9	
	dry	ditto	6·5	12·70	87·30	6·90	7·80	14·70	32·67	?	7·34	4·87	2·70	...	11·82	?	2·18	·38	25·35	1·150	6·12	2·450	?		
Sweet Potato Vines—Bigna	*green*	Brisbane	...	*87·59*	*12·41*	*·33*	*1·35*	*1·68*	*1·87*	*1·03*	*·50*	*·80*	*4·46*		*2·08*	...	...	...	*3·71*	*·082*	*1·13*	*·297*	*·268*	1 : 2·7	
	dry	ditto	...	...	100·00	2·67	8·44	13·52	15·07	8·30	4·03	6·45	35·90		16·76	...	...	...	29·80	·657	9·11	2·396	2·161		
Sweet Potato Vines—Pink Eye	*green*	ditto	...	*83·68*	*16·32*	*·41*	*1·29*	*1·70*	*2·99*	*1·58*	*·46*	*·67*	*5·76*		*3 16*	...	...	...	*3 93*	*·139*	*1·05*	*·346*	*·272*	1 : 3·6	
	dry	ditto	...	...	100·00	2·58	8·05	10·63	18·31	9·68	2·90	4·11	35·30		19·35	...	...	...	24·08	·852	6·43	2·118	1·670		
Prickly Pear leaves—Giant Mexican	*green*	...	...	*94·37*	*5·63*	...	...	*·50*	*·80*	*·66*	*·11*	*·38*	...	...	*1·53*	...	...	...	*2·36*	*·047*	*·96*	*·079*	?	1 : 4·2	
	dry	...	...	...	100·00	...	...	8·83	14·15	11·79	1·96	6·70	...	...	27·20	...	...	...	41·90	·830	17·10	1·41	?		
English Potato ...	*green*	...	...	*75·48*	*24·52*	...	...	*2·01*	*·66*	...	*18·82*	*·15*	*1·56*		*1·29*	...	...	..	...	...	...	*·334*	...	1 : 10·9	Seed potatoes used for potato-manuring experiments.
	dry	...	..	7·54	92·46	...	...	7·56	2·50	...	68·76	·56	5·89		4·87	...	...	...	...	...	...	1·258	...		
Grains: Maize—																									
Golden Nugget ...	dry	Biggenden	...	10·70	89·30	...	...	9·73	...	...	70·0	...	4·85	...	1·26	...	...	...	16·04	·218	·98	1·557	...	1 : 9·1	
Hickory King (white)	dry	ditto	...	10·90	89·10	...	...	10·55	...	...	69·0	...	4·38	...	1·22	...	...	...	19·68	·218	1·01	1·687	...	1 : 8·2	

Note.—*All analyses referring to the green material are printed in italics.*

On Table II. the complete result of the analyses of the different grasses and fodders are recorded, and may be compared with each other. We will see a striking difference in the composition of the favourite *Paspalum dilatatum* as grown near the sea coast in the Botanic Gardens and further inland at Gatton and at Biggenden. It is, of course, only to be expected that certain localities are more suitable than others for certain grasses.

A great variety of opinions has been expressed with regard to *Paspalum dilatatum*, as a fodder grass, which variety of opinions is undoubtedly due to the locality where it was gained, and, in order to be able to draw some conclusions, a list of questions was made out, to which answers were received from different localities. (Appendix I.) Of particular value are the answers marked "A," and obtained from Mr. C. H. Gorman, the manager of the Wollongbar Experimental Farm, New South Wales, as on the Northern Rivers of our sister State this particular fodder has been grown with the greatest success by the majority of dairy farmers. The second set of answers, marked "B," came from the hand of Mr. John Mahon, the Principal of the Agricultural College at Gatton, who has a long experience with Paspalum, who was the first to bring this grass under the notice of the Agricultural Department, and who was always a strong advocate for the more extensive cultivation of this grass. Other answers were received from Mr. D. Macpherson, the manager of Biggenden State Farm, marked "C," and from Mr. Aubin Dowling, Talgai West, marked "D," who, however, states that he has not had very much experience with Paspalum, but that he thinks the grass will never be so successfully grown on the Downs as on the coast.

The new grass, Rhodes grass (*Chloris vergata*), compares very favourably with Paspalum, as in thirty days' growth it yielded, at the Biggenden State Farm, 1 ton 19 cwt. of hay per acre, whereas Paspalum yielded 2 tons 7 cwt. of hay, but was not cut before. Mazzagua is another new valuable fodder plant belonging to the Sorghum family; it seems of exceptional vigorous growth, yielding in Biggenden, after about four months' growth, 48·6 tons per acre. It has also been successfully grown on the coast. Like all the grasses belonging to the Sorghum family, it contains a hydrocyanic acid yielding glucoside, and should not be used as a feed too young.

Sweet potato vines are frequently used as fodder, and the analysis proves them to be a highly nutritious food, but already, in last year's report, it was pointed out that the vines contain a hydrocyanic acid (or prussic acid) yielding glucoside, which in some instances must have been the cause of heavy mortality in a few piggeries. The investigation was continued, and the presence of the glucoside detected in all cases by the formation of prussic acid when the chopped-up fodder was allowed to stand with water for some time. The following varieties were analysed; they all show that they contain a considerable amount of the poisonous principle, which, however, does not seem to be connected in any way with the amount of nitrogen they contain, but rather seems to depend on the variety itself:—

	Pinkeye.	Bigna.	Red Sealy.	Yandina.	Malta.	Wh. Gilkis.
Moisture ... ... (per cent.)	83·6	87·76	90·0	81·6	86·4	85·5
Nitrogen ... ... ,,	·346	·297	·355	·413	·383	·281
Prussic acid ... ... ,,	·0198	·0358	·0169	·0110	·0110	·0119
Prussic acid (grains, per lb.)	1·39	2·51	1·16	·77	·77	·83

A very important discovery with regard to sorghum poisoning, which is due to a similar glucoside, was made by Dr. S. Avery, Chemist of the Nebraska Agricultural Experiment Station, who has shown that carbohydrates (sugars, as glucose, milk sugar, and molasses) act as an antidote against the poisonous action of prussic acid and the prussic acid yielding glucoside (Bulletin No. 77 of the United States Agricultural Experiment Station: "Poisoning of Cattle by Common Sorghum and Kafir Corn"). The presence of sugars in the first place retards the action of the enzyme in liberating free prussic acid; and, again, prussic acid unites with sugars to form less poisonous addition products. Dr. Avery recommends, therefore, to give to an animal suffering from sorghum poisoning, in a case that its condition still allows medical treatment, a strong solution of glucose syrup or molasses; or, again, a large quantity of milk. Actual experiments have shown that an animal could be given a large dose of pure prussic acid, up to three times the fatal dose, if glucose was given at the same time; the animal became very sick, but still recovered. Our farmers have, therefore, a very safe remedy in molasses from our sugar-mills, which in many cases is allowed to go to waste, although it is a very valuable fodder for cattle and horses. It can be, therefore, strongly recommended that, when green sorghum, sweet potato vines, or chaff made from these and similar fodders are fed, they should be sprinkled with molasses.

Green Manure Crops.—This work is also a continuation of previous years' investigations, and again shows very clearly the great advantage of growing green manure crops by the enormous amount of plant food they collect and store up.

Cultures of the nitrogen-fixing bacteria were received from the United States Department of Agriculture, consisting of the special cultures for common pea and red clover. Unfortunately, the cultures for our more important crops—cowpea and lucerne—could not be obtained. Seeds were treated in accordance with the instructions at our laboratory, and distributed to the Agricultural College at Gatton, Biggenden State Farm, and also grown in small trial plots in a piece of ground adjoining the Brisbane Botanic Gardens. No result whatever was obtained in these trial plots, where red clover—which is not suitable to our climate—lucerne (inoculated with clover culture), garden peas, and common field peas were grown. The soil in this experimental field is a very poor, sandy soil, and overrun with nut-grass. There was no difference in the appearnce, weight, and composition of the inoculated and untreated crops. The crop of Yorkshire Hero peas grown at the Agricultural College showed a slight increase in the inoculated seed over the untreated seed, the inoculated crop yielding also more nitrogen and more total dry matters. A very striking difference, however, was obtained with a crop of field peas at the Biggenden Experiment Farm, where the crop grown from inoculated seed yielded double the amount of nitrogen per acre than the crop from untreated seeds. The crop of two varieties of garden peas grown on the same farm showed practically no difference between the inoculated and untreated seeds.

The actual benefit derived from green manuring can hardly be correctly estimated, but the direct manurial value of a heavy crop of grey cowpeas, grown at the Agricultural College, would, if it had to be supplied by artificial manures, amount to £15 per acre for nitrogen alone, which nearly all was taken from the atmosphere. The value of the phosphoric acid amounts to about £1, and the value of the potash £4 10s. per acre. These plant foods were taken from the soil itself, and are stored up in the green manure crop in a readily available form.

Similarly, a crop of black cowpeas, grown on Mr. J. Atthow's farm at Nudgee, where some of our pineapple manuring experiments are carried out, has given excellent results, supplying the soil with about 4 tons of solid dry organic matters, and also with 208 lb. of nitrogen, 67 lb. of phosphoric acid, and 325 lb. of potash per acre, corresponding to a manurial value of about £11.

The complete result of the analyses of green manure crops is given on Table III.

TABLE III.—Green Manure Crops.

Variety and Locality, Etc.	Pounds of Green Material per Square Yard.	Analysis of the air-dry material.						Yield per acre.					Remarks.
		Moisture.	Dry Substance.	Nitrogen.	Crude Ash.	Phosphoric Acid.	Potash.	Green Crop.	Dry Substance.	Nitrogen.	Phosphoric Acid.	Potash.	
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Tons.	Tons.	Lb.	Lb.	Lb.	
From Biggenden State Farm—													
Field Pea, inoculated with nitrogen culture ...	4·13	9·69	90·31	3·860	8·79	·392	3·03	8·91	1·71	163·5	16·6	128·3	Planted 7th May, and cut on 7th August, 1905; only 1·36 inch of rain during the time of growth; was in full flower when cut.
Field Pea, untreated	2·38	9·74	90·26	2·851	7·90	·373	2·31	5·13	1·22	86·2	11·3	69·9	
Field Pea, inoculated	3·13	...	...	...	...	..	...	6·75	...	...	...	...	From same plot, only cut 7th September; haulms already dried off.
Field Pea, untreated	1·56	...	...	...	...	...	...	3·38	...	...	...	...	
Black Cow Pea, untreated	6·0	11·30	88·70	1·726	8·77	·435	1·765	12·96	3·83	167·2	42·1	170·9	Sown broadcast; all seeds sown 19th to 20th October, 1904; Cow Peas just ripening, and harvested 9th to 10th March, 1905.
Purple Cow Pea, untreated	6·0	10·74	89·26	1·811	8·09	·364	1·394	12·97	4·34	197·2	39·6	151·8	
Piebald Cow Pea, untreated	6·0	10·85	89·15	1·944	7·88	·318	1·655	12·96	3·85	188·2	30·8	160·2	In drills 3 feet apart; in the samples fallen dead leaves were also collected, and are included.
White Peren. Cow Pea, untreated	6·0	9·94	90·06	2·002	10·38	·227	1·857	12·96	3·40	169·5	19·2	157·2	In drills 3 feet apart.
Narico Bean, untreated	8·0	9·74	90·26	1·910	8·98	·135	1·842	17·29	4·63	219·5	15·5	211·7	In drills 2 feet apart; in samples.
Velvet Bean, untreated	6·0	9·50	90·50	2·169	8·74	·388	2·449	12·96	4·15	223·0	39·9	252·0	In drills 2 feet apart.
Green Mauritius Bean, untreated	6·0	9·46	90·54	2·270	7·92	·315	1·945	12·97	4·16	233·4	32·4	200·1	In drills 2 feet apart.
Black Mauritius Bean, untreated	5·0	9·43	90·57	1·783	6·92	·302	1·526	10·81	3·18	140·2	23·8	120·0	In drills 2 feet apart.
Poor Man's Bean, untreated	7·0	9·27	90·73	1·971	9·84	·178	2·150	15·13	4·17	155·0	14·0	169·1	In drills 2 feet apart.
Tonga Bean or Lab-lab, untreated	5·0	13·04	86·96	1·428	7·39	·315	1·002	10·81	3·05	112·3	24·8	78·8	In drills 2 feet apart.
From Agricultural College, Gatton—													
Yorkshire Hero Pea, inoculated...	2·25	13·05	86·95	2·942	9·67	·585	2·709	4·86	1·41	106·8	21·2	98·3	Inoculated similar to Field Peas at Biggenden with the nitrogen culture, "Common Pea" No. 219, received from United States Department of Agriculture; all the seeds were inoculated at the laboratory, and the seeds then sent to the State farms.
Yorkshire Hero Pea, untreated	2·00	14·53	85·47	2·681	9·54	·585	2·655	4·32	1·23	86·5	18·9	85·7	
Grey Cow Pea, untreated	12·50	10·58	89·42	2·212	8·74	·617	1·920	27·01	8·17	446·4	124·5	387·5	
Clay-coloured Cow Pea, untreated	10·00	8·45	91·55	2·231	7·93	·472	2·400	21·61	6·59	356·3	75·4	383·3	
Black Cow Pea, untreated	9·75	6·48	93·52	2·208	9·42	·655	3·182	21·07	6·46	341·9	101·4	492·7	
Large Purple Cow Pea, untreated	11·00	11·54	88·46	2·225	10·27	·585	2·765	23·77	7·02	395·2	103·9	491·1	
Piebald Cow Pea, untreated	8·00	9·64	90·36	2·176	9·33	·617	1·927	17·29	5·21	281·2	79·7	249·0	
From Hermitage State Farm—													
Cow Pea, untreated	10·0	12·70	87·30	2·450	11·82	·379	2·159	21·61	5·66	355·8	55·0	313·2	
Lucerne, untreated	3·5	9·68	90·32	2·338	9·03	·339	2·370	7·56	3·90	226·1	32·8	229·2	
From Pineapple Experiment Plots, Nudgee—		Analysis of Green Material.											
Black Cow Pea, inoculated	10·0	82·26	17·74	·4296	1·94	·138	·673	21·61	3·83	207·9	66·8	325·5	Also inoculated with nitrogen culture, "Common Pea" No. 219, as no special culture for Cow Pea was available; Cow Peas planted 28th November, 1905, and samples cut for analysis on 14th March, 1906; the plants had flowers and seeds on, and covered the ground well; each row before planting was manured with 150 lb. of potassium sulphate and 233 lb. of Thomas's phosphate per acre.
Black Cow Pea, untreated	9·875	81·17	18·83	·4196	2·58	·141	·663	21·34	4·02	200·5	67·4	316·8	

Milk and its Products.—In connection with our dairying industry numerous analyses and investigations were carried out, partly on behalf of the Dairy Expert, Mr. G. S. Thomson, in support of his various experiments, and partly for the dairy and cream inspectors and butter graders in support of their special work.

A complete list of the butter analyses is hardly necessary to be published, but I will give a short summary of the results.

The average percentage of moisture in our samples of export butters was 11·90 per cent., with the following classification according to the percentage of moisture:—

1	sample of butter, with	less than 9	per cent. moisture	(6·02 per cent.)
6	samples with	9 to 10	per cent. moisture	
15	,,	10 ,, 11	,,	
31	,,	11 ,, 12	,,	
10	,,	12 ,, 13	,,	
16	,,	13 ,, 14	,,	
4	,,	14 ,, 15	,,	
2	,,	15 ,, 16	,,	
1	,,	over 16	,,	(16·04 per cent.)

With reference to the preservatives used, the average amount of boracic acid in salted butters was only ·09 per cent., whereas the average amount in unsalted butters was ·60 per cent., with a maximum of ·83 per cent. found in one sample.

A large number of waters from dairies and factories were sent in by the inspectors for analysis, which all had the facts in view that one of the most important factors for the wellbeing of a dairy herd is the quality and purity of the water the cattle have to drink, and that the supply of a pure and clean water for factory and general dairy use is also an absolute necessity. The results of the analyses are given on Table IV., and, on the whole, the samples sent proved to be satisfactory; but still it must be borne in mind that, in order to be absolutely certain about the purity of a water, the chemical analysis must be backed up by a bacteriological examination, which, so far, has not been done.

TABLE IV.

Analyses of Waters from Dairies, Butter Factories, Etc.

Date.	Locality.	Grains per gallon.				Parts per million.		Remarks.
		Total Solids.	Loss on Ignition.	Chlorine.	Equival. to Salt.	Free Ammonia.	Albuminoid Ammonia.	
1-8-05	Mt. Russell No. 1 ...	99·4	12·8	48·4	...	...	...	Salty taste, alkaline reaction and odour of sulphur. hydrogen.
	Mt. Russell No. 2 ...	12·9	1·5	4·6	...	...	...	Sweet taste, no odour and slightly opalescent.
	Mary River, Gympie, No. 1	2·4	·4	·4	...	...	..	Contained 8·8 grains suspended matter.
	Mary River, Gympie, No. 2	2·5	·6	·4	...	...	...	Contained 3·5 grains suspended matter.
11-11-05	Gatton Butter Factory ...	48·3	10·9	12·5	20·6	...	...	Taste, colour, and odour good.
17-8-05	...	8·2	2·1	3·4	...	·10	·06	Taste, colour, and odour good.
11-9-05	Warwick (Sample A) ...	1·8	·2	·3	...	·03	·14	Taste, colour, and odour good.
	Warwick (Sample B) ...	3·1	1·0	·3	...	·08	·34	Cheesy taste.
	Dangerfield	76·0	13·2	31·6	...	...	...	Brackish taste and odour of sulphur-hydrogen.
21-9-05	Southport	5·9	1·7	1·3				
	Afton Downs No. 2 Bore	24·2	8·4	1	4·3	...	...	Alkaline reaction, 13·4 grains as soda carbonate.
1-12-05	Moreton Butter Factory...	9·1	3·1	2·9	3·9	·21	·32	Taste, colour, and odour passable, charring on ignition.
	Logan and Albert Factory	23·1	7·7	(trace)	...	·19	·15	Fair taste, lightly opalescent, and slightly musty smell.
10-1-06	Linning Butter Factory...	3·7	1·6	·6	...	...	...	Taste, colour, and odour very good.
3-2-06	Q.M.E. and A. Company, Pinkenba	31·1	6·7	2·9	4·9	·05	·18	Taste, colour, and odour good; water pure.
25-3-06	Tiaro Butter Factory (filtered)	10·9	5·2	2·3	3·9	·13	·31	Taste, colour, and odour good, slightly tinged red.
	Tiaro Butter Factory (unfiltered)	11·3	3·6	2·6	4·5	·13	·31	Taste, colour, and odour good; unfiltered water was clearer.
10-5-06	Toowoomba (from dam)...	1·8	·9	·3	·5	1·44	2·16	Contained 5·9 grains suspended matter; water is polluted by drainage; not fit for domestic purposes, but may be used for stock.
16-5-06	Biggenden (Miller's Well)	145·2	51·3	36·5	60·1	...	...	Very brackish; this water has cured cattle suffering from tick fever or red water, which must be due to the salt which it contains.
	Warwick Butter Factory	12 9	3·2	1·9	3·2	·74	·32	Taste, colour, and odour passable.
25-5-06	Maryborough Butter Factory	155·1	42·0	66·4	109·5	...	...	This water is very hard, 5·73 total hardness, and 37·3 permanent hardness, and 40·3 magnesia hardness; it should be softened with caustic soda and soda carbonate before being used for boilers.
	Gowrie Creek	42·7	15·6	10·9	17 9	·14	·12	Taste, colour, and odour good, and well fit for stock.
25-5-06	Q.M.E. and A. (filtered)	13·1	3 6	2·9	4·9	·21	·12	Taste, colour, and odour good, no charring.
	Q.M.E. and A. (unfiltered)	11 8	3·1	2·9	4·9	nil	·10	Taste, colour, and odour good, slight charring.
1-6-06	Nanango Butter Factory	248·6	65 2	24·1	...	·23	·20	Water rather hard, colour and odour good, and fit for use.
6-6-06	Downs Co-operative Dairy, Toowoomba	43·9	15·1	9·4	15·5	·07	·02	Taste slightly brackish, odour good.
	Darling Downs Dairy Company, Willowburn	31·9	9·6	6 2	10·1	·05	·02	Taste good.
20-6-06	Roma State Farm (trial bore)	486·0	50·4	30·0	45·5	...	...	Contains large amount of suspended matter, and is very hard and unfit for irrigation or domestic use.

A complete investigation into the detection of formalin in minute traces in milk and cream was also carried out, the results of which will be published elsewhere, but I may premise in stating that such minute quantities as 1 part of formaldehyde in 1,000,000 parts of fresh milk can be detected. This fact of the ease of detection should put a stop to the fortunately not common practice of adding formalin as a preservative to milk delivered for sale in the cities.

Analyses of condensed milks proved the excellency of some of our local brands with regard to the amount of butter fat they contain.

Graduated glassware used in factories for the testing of milk and cream were tested here in our laboratory. This verification of the graduations of Babcock test bottles and of pipettes ought to form an important part of our work.

Pineapple Disease.—No results of the manurial experiments with pineapples are, so far, available, and new series have to be started. So far, the experiments have shown that the manuring of a crop which has already the disease developed will have no effect on the fruit.

Analyses of Hides and Leather.—The use of barium chloride for the adulteration of hides and leather has been reported from time to time, and a series of analyses of locally obtained harness, boot, and sole leathers were made, in order to test for such adulteration. From the full list which I give herewith it will be seen that out of 21 samples 3 were found to be adulterated, one sample containing about one-tenth of its weight barium chloride.

The use of this heavy barium salt in connection with common salt for the curing of green hides is not only an attempt to defraud the buyer of such hides, but at the same time it injures the hides, and makes them almost useless for tanning purposes. Again, boots made from leather adulterated with this poisonous salt are very injurious to the person who wears them.

Analyses of Leathers.

Moisture in Percentage of Dry Substance.

—	Moisture Per Cent.	In Percentage of Dry Substance.			Remarks.
		Total Extract.	Total Ash.	Soluble Ash.	
Harness S.	12·52	14·69	0·40	0·51	
Harness D.	19·18	9·54	0·48	0·55	
Black harness	27·08	9 59	0·51	0·34	
Ordinary harness	15·73	9·19	0·23	0·18	
Black harness J.	13·16	8·86	0·80	0·74	
English sole	10·98	21·05	2 09	2 14	Adulterated with barium chloride
Black harness D.	14·37	7·77	0·44	0 35	
Black tweed D.	11 79	4·03	0·45	0·29	
Sole D.	16·42	7·59	0·26	0·24	
Black kip D.	11·76	4·25	0·40	0·17	
Black tweed Gb.	9·18	7·60	1·21	0·99	
Black harness G.	12·23	4·10	0·30	0·11	
Kip G.	16·70	5·88	0·50	0·24	
Harness G.	13·07	8 16	0·37	0·17	
Belt G.	13·21	4 95	0·53	0·52	
Sole 1 G.	16·60	12·53	0·57	0·24	
Sole 2 G.	16·07	14·90	0·64	0·59	
Sole 1 H.	...	...	0·61	...	
Sole 2 H.	...	...	1·06	...	
Sole 3 H.	16·00	27·41	5·02	4·95	Adulterated with barium chloride
Sole 4 H.	16·00	29·00	10 07	9·70	Heavily adulterated with barium chloride

Tanning Barks.—The importance of the services of the analyst to industries is very strikingly shown by the results of a series of analyses of commercial tanning barks submitted by a local tanner:—

—	South Australian Wattle Barks.				Western Australian Mallet Bark.
	Sample A.	Sample B.	Sample I. A.	Sample II. B.	
	Per cent.				
Moisture	11·80	11·40	9·16	9·07	10·84
Soluble Extract	43·96	38·08	44·32	44·28	49·80
Tannin	30·20	22·10	26·82	27·80	13·10
Soluble Ash	0·88	1·10	0·90	1·10	1·30
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Price per ton	10 5 0	9 5 0	10 0 0	10 0 0	9 5 0
Value per ton	10 5 0	7 5 2	8 16 3	9 2 7	4 6 1

It will be seen from the table that, although the prices of the barks show only a slight variation, the actual value of the bark, based on their tanning qualities, show very much greater differences. It will also be seen that if the tanner bases his valuation on the strength of his extract as indicated by the barkometer, which simply gives some idea of the total soluble matters in the bark, he would be very much misled, and would pay the highest price for the mallet bark, which contains less than one-half of tannin than the South Australian wattle bark.

Some of the Queensland wattle barks, more particularly the bark of *Acacia decurrens*, contain a large amount of tannin, and compare very favourably with the imported barks. The systematic cultivation of wattles for the production of tanning barks should form one of our important industries.

Dipping Fluids.—The owner of cattle dips have availed themselves largely of the services of the Department for the analyses of the dipping fluids, which are made at the cost price at 10s. per analysis.

An analysis of the liquids used for dipping, in order to ascertain its correct strength, is absolutely necessary from time to time—say, once every six months—as the dips are liable to get too strong by evaporation, or they are weakened by continued use and also by rain waters getting into the dip.

The average of all the dips analysed showed a strength of 8·42 lb. of arsenic per 400 gallons, which is just slightly over the standard strength of 8 lb. per 400 gallons. The variation of the strength itself was very considerable, as one dip only contained 2·7 lb., and another as much as 24·9 lb. of arsenic per 400 gallons, which quantity may do serious injury to cattle.

Several of the dip concentrates manufactured locally, and now largely used on account of their convenience by the dip-owners in the preparation and also in the strengthening of their dips, were analysed and found of the correct strength.

Publications.—During the year some of the results of analyses appeared from time to time in the *Agricultural Journal;* and every month I published one of my elementary lessons on the chemistry of farm, dairy, and household, which seem to be very much appreciated by a large number of the readers of the *Journal*. The lessons will be continued during the coming year.

J. C. BRÜNNICH, Agricultural Chemist.

APPENDIX I.

Re Value of Paspalum dilatatum as Fodder.

Question 1.—Do all cattle prefer Paspalum to other grasses, as natural pasture, couch grass, &c.?

Answer.—

A.—As a permanent pasture, my experience goes to show that dairy cattle prefer *Paspalum dilatatum* as against any other grass in this district; most certainly it is better relished than natural pasture.

B.—Yes, with the exception of cases where the Paspalum has been allowed to grow coarse and reach the seeding stage.

C.—When young and fresh, stock like Paspalum as well as any, and better than most, of the natural pastures.

D.—Have had no experience.

Question 2.—Is Paspalum readily eaten in all its stages of growth and at all times of the year?

Answer.—

A.—Yes; except, perhaps, when the growth is extra rank. This can be prevented by proper handling of the pasture—that is, by mowing and reaping.

B.—Yes; but animals prefer couch or other succulent grasses to Paspalum if the latter is in the seeding stage.

C.—When the seed heads begin to form, stock will leave Paspalum for more tender grasses. If it is allowed to seed, they will refuse it altogether unless they are very hungry.

D.—Yes.

Question 3.—Is Paspalum hay readily eaten by cattle and horses?

Answer.—

A.—Yes.

B.—Yes; especially if fed in the form of chaff.

C.—No. It is possible that, if the grass were cut before the seed head formed, the hay would be better; but then the yield would be comparatively small.

D.—Have only tried it on a small scale, and the stock do not care about the hay.

Question 4.—Is it customary to have Paspalum paddocks kept closely cropped by the cattle, or is the crop allowed to grow and the grass cut and fed as hay?

Answer.—

A.—It is better to keep the grass well fed down or mown, but if hay is required fewer stock may be depastured.

B.—It is the custom here, as in New South Wales, to keep the grass well eaten down—*i.e.*, after a good coating of grass has been established. In many cases, owing to partial failure in germination in the case of the first planting, the first crop is allowed to run to seed.

C.—Generally grazed. Best results are got by close grazing.

D.—No experience.

Question 5.—Have any records been kept to show how the milk supply and yield of cream have been affected by changing milking cows from Paspalum to other pasture, or *vice versâ?*

A.—As a summer pasture, trials have been made, but it is not considered advisable with dairy cattle to confine them to one pasture for any length of time. Prairie grass and rye are superior to Paspalum for milk production, but then they cannot be always available; the same with cocksfoot.

B.—Yes; and in every case, with the exception of cows grazing on lucerne, the yield of milk is considerably increased.

C.—I have no opportunity to obtain record as to the effect grazing on Paspalum has on the milk and cream supply, but I have often heard it said that the cream yield is improved when cows pasture on Paspalum during its succulent stages of growth.

D.—No records kept.

Question 6.—How does young stock thrive on Paspalum pasture?

Answer.—

A.—Very well.

B.—Very well, if the grass be well stocked.

C.—I have no reliable data.

D.—Have never tried.

Question 7.—Is there any difference between Paspalum grown on various soils, as red volcanic, black scrub, heavy black forest soil, and light sandy soil?

Answer.—

A.—Yes. On volcanic scrub soil *Paspalum dilatatum* is at its best. On a tight soil it does not thrive so well, nor does it make good headway on poor, sandy soil. This grass requires good soil.

B.—Yes. The grass does best on black scrub soils, or red volcanic, but better still on swampy and wet soils. Poor growth is obtained on a light sandy soil, although even then it is superior to the natural grasses that are grown.

C.—The grass does better, and is easier to establish, in scrub or alluvial soil. In stiff soil it has a tendency to rise out of the ground, when it is more easily affected by drought or frost. I have had no experience with it in light sandy soil.

D.—No experience.

Question 8.—What is your opinion as to the value of this grass—(*a*) as a heat and drought resister; (*b*) as a winter grass to withstand frost?

Answer.—

A.—As a heat and drought resister it is unequalled in our district. As a winter grass to withstand frost, it is fair only. It feels anything like a severe frost.

B.—Heat has not the slightest effect on the grass, but has rather a tendency to increase its growth. Although the grass makes but little growth during a drought, it retains its vitality, and responds quickly to a small rainfall or a slight flooding by irrigation. As a winter grass it withstands the cold weather very well, and, although it dries off somewhat after heavy frosts, it retains a green undergrowth which is much relished by stock.

C.—As a heat and drought resister Paspalum is easily the best of the introduced grasses. Rhodes grass will, I think, beat it; but, until this is absolutely proved, I will give Paspalum pride of place. During cold dry weather it turns quite brown. Both frost and drought resisting powers are increased by cultivation.

D.—(*a*) As a heat and drought resister, no good; (*b*) the first grass to succumb to frost.

Question 9.—Is the grass easily established? Is propagation by divisions of roots or by seed preferred? If the latter, what quantity of seed per acre is recommended?

A.—Yes. On ground that can be prepared it is preferable to sow seed. Where country is rough and seed likely to be wasted, planting roots is advisable. There is more certainty in the latter method for any class of land, owing to the large percentage of ungerminable seed.

B.—Yes. The propagation by roots is the quickest and surest method, but the cost is 70 per cent. more than by raising from seed; 12 lb. of good seed is sufficient to plant 1 acre. If planting roots, the best method is to plant in a similar manner to that employed in planting the potato tubers.

C.—A newly sown paddock will stand more hardship than one that has been down some time. I am of opinion that Paspalum paddocks could be lightly ploughed every two or three years with advantage. It transplants easily into the native pastures, but does not spread itself to any extent. To get it into the native pastures, propagating from roots is best, but where the land is cultivated seed is much more satisfactory. The seedling plant does not tuft so much as the transplanted one. The best results I have had were got by sowing a crop of canary seed with the grass seed. Good results have also been got on scrub land by sowing with maize. I would advise sowing the seed thickly—not less than 12 lb. per acre.

D.—It takes some time to establish itself. Two or three years before there is a really good crop. I prefer propagating by seed; about 10 lb. to the acre we sowed. Roots are too slow and costly.

Question 10.—What number of stock can be carried per acre during the winter, if grazed on Paspalum?

Answer.—

A.—Some of our farmers advise that one beast per acre can be carried. I am, however, inclined from experience and observation to place the carrying capacity at one beast to 1½ acres.

B.—The stock-carrying capacity is dependent upon several conditions—climatic conditions, district, soil, rainfall, time during which the grass has been established. I should say that, in the North Coast districts, on scrub soil, it should carry two beast to the acre. In this district, one beast. On part of the Darling Downs country and the western side of the Dividing Range, this grass will not prove a success.

C.—This would depend largely on the season, as in an open one its carrying capacity would be three times as great as in a severe one. I have no reliable data to get an average from.

D.—Do not know.

REPORT OF THE INSTRUCTOR IN FRUIT CULTURE.

Sir,—The year ending 30th June, 1906, has been one of somewhat varying fortune to the fruitgrowers of this State, but, taken as a whole, the fruit-growing industry has made a decided advance.

The winter of 1905 was noted for its severity throughout the State, and the unusual cold was followed by a dry spring and late frosts. This resulted in a considerable loss to our strawberry growers, as the early crop was checked by the cold and the late crop had not enough rain to develop. In consequence, the output of the fruit was small, and manufacture of jam fell off to a very large extent, so much so that our market has been bare of the local product for months.

Pineapples and bananas also suffered in some parts from the cold spell, but no serious damage was done.

The dry spring was followed by good soaking summer rains, which have had a very beneficial effect on all fruit trees and vines, and this rain was followed by fine dry autumn weather for maturing our winter fruits, and good winter rains that will carry us well on into spring. At the time of writing there is a very promising outlook for the fruit industry, as fruit trees of all kinds, vines, pineapples, strawberries, &c., never looked better, nor gave more promise of a satisfactory return.

The good soaking summer rains did a vast amount of good, as they have re-established normal growth conditions in all our semi-tropical fruits, this condition having been in abeyance during the recent seasons of uncertain and erratic rainfall. One result of this is, that the crop of citrus fruit is of much better quality than it has been for some years. It carries better, the percentage of loss in shipment is comparatively small, and, what is of most importance, it is selling well.

Although all kinds of fruit trees benefited by the summer rains, vignerons were heavy losers thereby, as the downpour occurred just when the fruit was ready for gathering in Roma, Stanthorpe, and several other districts. The vines themselves have made good growth, and there is a distinct improvement in the quality of the grapes now being grown as compared with those of a few years since, choice varieties of European origin having in a great measure superseded the American types previously grown.

Banana-growers in the North also suffered heavily from a cyclonic storm, which destroyed the bulk of the fruiting plants in the Cairns and Geraldton districts. The plantations are, however, rapidly recovering, and ere long heavy shipments of fruit will again be made. The loss to the Northern growers was a gain to the Southern growers, as the latter have been receiving a much better price for their fruit, in many cases nearly double what they have been getting for some years.

The crop of deciduous fruits, the growing of which is practically confined to the Downs and Stanthorpe district, was only a medium one, though prices were very satisfactory, and the quality of the fruit grown was good. Trees have made a good growth, and matured their fruit wood, so that, given a favourable spring, there is every promise of a good crop next year.

The general condition of our fruits at present may be summarised as follows:—

Bananas.—In the North: Fast recovering from the effects of the cyclone. In the South: An increase in the planting of sugars; plantations generally looking well, and showing a fair lot of winter fruit.

Pineapples show an all-round improvement; gardens never looked better. There is a considerable increase in the planting, and every Ripley Queen and smooth-leafed sucker is being set out. The principal extension is in the Cleveland, North Coast, and Wide Bay districts.

Citrus Fruits.—A large number of the trees planted during recent years are now in bearing, with the result that there is an improvement in both the quantity and quality of the crop. Trees generally are in good order, and the bulk of the crop is remarkably free from pests of all kinds. The fruit is of good quality, and is shipping well, and late ripening varieties are proving a success, as last year they were kept on the trees till the Christmas week in the Blackall Range district. This late fruit realises a high price, and enables us to place oranges on the market for at least nine months in the year.

Strawberries.—There has been an increased area put under this crop, and the planting has been very successful. The fruit has ripened early, and the local markets have been well supplied during the month of June. The plants look well, and, given an open winter and a few showers in spring, we should have a record crop. There is a good demand for jam berries, and the prices offered are satisfactory; Queensland strawberry jam meeting with a ready sale both in this and the southern States.

Vines have made a good growth, and there is plenty of fruiting wood for next season. Vineyards generally are in good order.

Custard Apples.—This fruit is fast coming to the front, and there is a considerable increase in its production. Improved varieties, that weigh up to as much as 4 lb. 6 oz. each, and have few seeds, are taking the place of the sweet sop, which is very seedy. These improved custard apples are meeting with a ready sale at very satisfactory rates.

Mangoes.—When there is a heavy crop, this fruit is very difficult to dispose of. It is one of our hardiest fruit trees when grown in districts that are free from frost, and bears heavy crops every other year. There is an improved demand for the green fruit for chutney-making.

Deciduous Fruits have made a good growth and matured their wood well. The future success of the deciduous fruit industry depends very largely on the keeping of pests, particularly the fruit fly, in check. This is a matter which is dealt with later on, under the heading of "Fruit Pests."

The Market for our Fruits.—So far, only citrus fruits, pineapples, bananas, and strawberries are shipped from this State in any quantity. The markets to which these are sent are mainly those of the southern States, though a few pines and oranges have been sent to both New Zealand and Canada. The southern markets have been so good this season that our shipments have been confined thereto, and I am of opinion that were these markets worked in a more business-like and systematic manner than they are done at present, so as to get a much wider distribution of our fruit, that we will have a sale for all the fruit that we can produce for some time to come, as, now that the quality of the Queensland-grown fruit is better known, they will sell even though the southern markets are glutted with locally-grown fruit of inferior quality, as there is a certain section of the buyers who will have good fruit, and who are prepared to pay for same. At the same time, I am of opinion that oversea markets should be secured, as the time will come when we will want them to relieve us of our surplus. In the handling, packing, and marketing of our fruit there is a marked improvement, and the cases in which the fruit is shipped are always new and clean. The case question is one that urgently requires to be settled, as once a definite sized case is decided upon it will be to the advantage of both the grower and consumer, and last, but not least, the sawmiller, as the many sizes of cases in use prevent the latter from accumulating a stock of well-seasoned case timber during the off seasons, which he would be able to do were there a standard size, and, further, it increases the cost of the case to the grower, which would be reduced if all cases were cut to a given measurement.

The above remarks apply to the disposal of fresh fruit, and I will now refer to the utilisation of our fruits. In this respect I am glad to be able to say that we are making steady progress, though there is still a very great deal to be done in this direction.

The canning of pineapples is being undertaken by some half-dozen firms, whose output during the past season was over 5,000 cases of canned pines a week, each case containing 2 dozen 2-lb. cans. This output will be greatly exceeded during next summer, as practically the whole of the pack has been sold to Victoria and South Australia, and the Western Australian, Tasmanian, New South Wales, and Queensland markets have been barely touched. There has been a demand in excess of the supply, as the quality of the Queensland pack is superior to that of the imported Singapore article. Our pack is, however, by no means perfect, as, although the quality of our fruit is of the best, it is not too well got up, the cans being not nearly as well or as neatly filled as the Singapore article. This is, however, a matter of detail, and one that, in my opinion, we will overcome ere long. Machinery for preparing the pines for canning has been introduced, and has also been made locally, and one of the latter machines promises, when perfected, to be a great help to the industry. In the canning of pineapples there is a large amount of waste material, and the profitable utilisation of same is a matter that is engaging the attention of the Agricultural Chemist and the writer as, if this can be accomplished, it will be a very great help to the pineapple-growing industry of this State. The manufacture of pulp also gives promise of a profitable outlet for our surplus pineapples, as a trial shipment to London, made by this Department on behalf of the Zillmere Canning Association, realised a satisfactory price, and shows that, once we can get the home buyers to take it up and put it on the market, it is probable that there will be a steady demand for it at satisfactory rates.

The manufacture of mango chutney is also showing a steady increase, and a good market is being opened up in the southern States, but a much larger market is necessary before we can utilise the many hundreds of tons of the fruit that annually go to waste in the North. Still, a beginning has been made, which may lead to a profitable use of much fruit that would be otherwise lost.

As already stated, Queensland-made strawberry jam meets with a ready sale south, the only trouble being that, for the past two years, the crop of fruit has not been sufficient to supply the demand. In the putting up of this and other typical Queensland fruits, such as the rosella, guava, cape gooseberry, &c., our manufacturers have made great strides, and the products, especially when put up in glass, compare favourably with the very best of the southern output.

Fruit Pests.—Growers throughout the State are realising the importance of keeping all pests in check, with the result that scale insects of all kinds are doing far less injury now than they were some years since. The grower who neither sprays nor cyanides is the exception, whereas only a few years since scale insects were allowed to increase unchecked. There is, however, one great pest—in fact, by far and away our greatest pest—that is not being systematically fought, though attention is being constantly called to it by the officers of this Department and by the public Press—viz., the fruit fly. I do not think I can do

better than again reiterate the remarks and suggestions that I submitted to you on the 11th of May last, in which I stated "that, in my opinion, the fruit fly will never be kept in check in this State, particularly in deciduous fruits, but will tend to increase year by year till such a time as our fruitgrowers realise the necessity of destroying it instead of systematically breeding it. This is a matter which is in the hands of the fruitgrowers themselves, and they have mainly their own apathy to blame for the increase of the pest, as, instead of making any serious attempt to keep it in check, many growers have allowed it to breed and spread entirely unmolested. There are many ways by which fruitgrowers might lessen the evil, one of the simplest and least expensive of which is the destruction of worthless fruit trees that are only a breeding ground for the pest. There are many such trees throughout the State, such as inferior peaches, plums, guavas, &c., which are frequently met with in a semi-wild condition, that are totally uncared for, and the fruit of which is usually allowed to become fly infested, to fall on the ground and rot, and thus to breed up a vast army of flies that destroy more valuable fruit. Such trees, that are only breeding grounds for the fruit fly, should be destroyed, the trees that are worth keeping should be looked after properly, and all fly-infested fruit produced in same should be gathered and destroyed. It is folly to plant fruit trees and then so neglect them that they become a breeding ground for the fly, and the sooner that our growers realise this and only plant such trees as they are prepared to look after thoroughly, the sooner the ravages of the fly will be reduced. . . . Systematic and combined action on the part of all fruitgrowers—

First—To do away with the growing of rubbish, and the destruction of worthless trees that are only breeding grounds for the pest;

Second—To gather and destroy all fly-infested fruit from all trees that are worth keeping;

Third—To trap and destroy the mature insects wherever found—

will, in my opinion, do more towards keeping the pest in check than trusting to Providence and the possible introduction of one or more parasites that may or may not prove of value in destroying it." If growers are too apathetic to carry out these suggestions for their own protection, then there is nothing for it but to enforce "*The Diseases in Plants Act of* 1896." As showing the good results that are derived from not growing inferior fruits, that simply act as hosts to the fly and carry it on from season to season, I may mention that on the Blackall Range, where the main industry is the growing of citrus fruits, and where there are very few deciduous fruits, the fruit fly does little damage. This was shown last season, as oranges were kept on the trees up till Christmas, and were free from fly; and this season there is no fly to speak of.

During the year, I have paid a visit to most of the fruit-growing centres in the State, have acted as judge at a number of shows, have delivered a number of lectures on fruit-growing and the marketing of fruits, laying especial stress on the value of co-operation in the disposal and utilisation of our fruits. I have also contributed articles to the *Agricultural Journal,* written a work on Queensland fruits, and given general information on fruit matters, both personally and by letter, to many growers throughout the State. In conjunction with Mr. Brünnich, I have also carried out a number of pineapple manurial experiments, which will be continued during the coming year, and have also done some experimental manuring of citrus trees. These experiments are not sufficiently advanced to give a detailed report, still I feel that I am justified in making the statement that potash manures have a very beneficial effect on both pineapples and citrus fruits, and that the pineapple disease is more or less prevalent in all sour soils, soils that give an acid reaction in the laboratory, and that require liming and draining before they are suitable for pineapple-growing. In other words, the pineapple disease is an unhealthy condition of the plant, due to the fact that it is being grown on unsuitable, sour, badly drained land.

A. H. BENSON.

REPORT OF THE INSTRUCTOR IN TROPICAL AGRICULTURE.

Sir,—I have the honour to submit my Report for season 1905-6. My work during the past season has consisted of carrying out the operations of curing the coffee sent in for treatment and sale, and operating the engine and machinery erected last season for that purpose, ginning the cotton sent in, affording advice and information regarding the culture of many tropical industries, some touring work, lecturing from time to time, giving object lessons to classes of State school children, demonstrations at Kamerunga State Nursery to visitors and applicants, the planting of cedar trees under the Forestry Branch of the Lands Department, inspection of seeds, &c., received in the Cairns Post Office, and control of the work under the Diseases in Plants Act in the Cairns district, carrying out inspections and valuations under the Agricultural Land Bank Act, making the necessary inspections and reports under the Shearers and Sugar Workers Accommodation and Fertilisers Acts, and in controlling and directing the work of the Kamerunga State Nursery.

The season as a whole has been a good one. The earlier part of it was somewhat dry, and especially was the absence of the usual rains in December and January very trying, and in parts severely felt. This five months' dry season terminated in a severe cyclonic storm on the 28th of January. It was thought at first that this storm would have a disastrous effect on the crops and agricultural operations generally, and a good deal of alarm was felt and expressed, but it was found later that the previous dry weather had so retarded growths that comparatively little damage was done by the wind, and this was more than compensated for by the copious rainfall that, commencing with the storm, continued throughout the latter part of the season.

In sugar-cane culture the cane was till then so backward that but little more than the supple leaves and tops were opposed to the storm; had it been older, and more rigid and brittle cane existed, the damage would have been indeed serious; as it was, the cane, except in a very few instances, recovered quickly, and the crops, as a whole, in the district give promise of being as good and as heavy as they have ever been.

In maize much the same condition of alarm for the crops, which was ultimately found to be unfounded, was experienced. Some damage was, of course, done, but the dry part of the season was found to have left a far greater mark upon the growth than the storm. The maize as a result is, in the more exposed situations at any rate, very much smaller in the stalk, but, owing to a most favourable latter part of the season, has cobbed fairly well. The crops will be good, but not heavy.

Such staples as coffee, cotton, fruit trees, &c., mostly escaped, the crops being very young. Citrus trees that were at all forward suffered most by having the young green fruit stripped off them. The output of citrus fruit will in consequence be small. The dairying industry, at a stage here in the North at which it can the least stand reverses, fortunately escaped. Buildings, sheds, and outhouses suffered, but stock and cultivation were uninjured. Such crops as rice, tobacco, &c., had not been yet planted.

Taken as a whole, agriculture in tropical Queensland is in a stage of transition. Hitherto it has practically been confined to one or two staple industries; each newcomer found himself, either by choice or force of circumstances, dropping into the cultivation of one or other of the already existing staples. Now, ideas are materially widening, and new settlers are coming, attracted not especially by any particular industry, but by the fertility of the soil and favourable climate conditions in general, and who are the more open to

launch out into some one or other of the new cultural staples for which no country can offer a more extensive or favourable range. It is a stage, however, in which, to ensure a speedy and sound advance, all the tact and energy of the individual officers, and the indulgent consideration of the State towards the incipient industries, together with the wise and considerate guidance of the supreme or Commonwealth Government, are necessary.

The work of encouraging tropical agriculture and agricultural industries in North Queensland has hitherto been, and to a great extent still is, subjected to a heavy handicap in the apathetic opposition on the part of settlers by a disinclination to open up in what may appear to be new lines. This is not by any means due to the fact of the settlers invariably being so successful in the cultivation of the staple they may already be engaged in. Those who are doing well, and they are not the minority, could hardly be expected to view with satisfaction any suggestion to embark in the cultivation of a staple they were not acquainted with, but even those whose case is otherwise, or who appreciate the advisability of extension in other directions, parallel with, rather than at a tangent to the line they are following, would seem to be imbued with a spirit of conservatism bred of the limitations of the pioneer, who, labouring under difficulties of communication, transport, and very newness of his land and clearings, is very materially restricted in his choice of staples for culture. So much is this the case that it is to the newcomers and to new blood that the country must largely look for the expansion of tropical agriculture and extension of new staples.

While the land still under virgin scrub may be in excess, and the pioneer hewing out a home and a living for himself from it by no means a thing of the past, side by side with him almost may be seen well-to-do settlers, with all modern appliances, implements, and machinery. Though there is ample room and ample scope for felling and clearing, there is also, in the North, a by no means inconsiderable area of good land to be found on which the settler can start where the pioneer left off, and put in the plough, the seed drill, and the reaping machine where the pioneer had perforce to use the hoe, his hands, and his sickle. No climate in the world offers so large a choice of staples or so long a list of products capable of successful cultivation, and each in itself capable of becoming an independent industry, as does the tropical. No country affords better and more remunerative returns with less effort than those where Nature undertakes the fertility. That some effort is necessary is not to be denied, and that difficulties do not exist is not to be expected. With perennial or permanent crops in the tropics the main difficulty is the fact that in many instances the staple requires several years to attain maturity and become income-producing. With cereal or annual crops this difficulty is not experienced, and, therefore, unless the two are combined, or the settler can take to other work, means of some kind, even though small, are necessary to tide over the unavoidable period of waiting. It would seem to be a provision of Nature, however, that when such a preliminary period of non-production is met with, the subsequent returns are proportionately compensating, and not infrequently the very cost of upkeep and cultivation is lowered as the plantation matures and the returns increase.

It is not possible in this report to touch upon many products capable of profitable culture, either as primary or subsidiary staples. These will be found detailed to some extent in the report of the Kamerunga State Nursery. I can only touch here upon those products already being grown, or in which there is an immediate probability of extension of cultivation.

Coffee Culture.—The season has, on the whole, been very favourable for coffee. The dry weather of the earlier part of the season proved no detriment, and the crops will be heavy and good, the good rainfall of the latter part ensuring a steady growth of the berries, so that a good sample as well as a good crop should result. The crops are again somewhat late. The prices of coffee are keeping up well, and, if anything, slightly increasing. The average price last season was between 65s. and 80s. per cwt., which is very fair. In some cases, mostly for private sales—*i.e.*, to retailers—and in small quantities, picked coffee samples obtained as much as 96s. to 112s. Seeing or hearing of such sales, the ordinary grower is still very apt to lose sight of the fact that qualities in coffee differ very materially and that a little carelessness in preparation often makes a great difference in price, and to blame everything but the obvious cause of his own coffee not obtaining top prices.

The necessity for care and attention to picking, pulping, and drying operations cannot be too much emphasised. Nor, because seasons are good and other matters claim attention, can the coffee plantation be neglected and yet expected to bear well or produce better qualities of coffee. That coffee culture, even as an auxiliary product, pays well is shown beyond all doubt. In many instances it pays in spite of neglect and but meagre attention in the matter of even weeding, and is a standing indication of what it would do with due and reasonable attention.

Very little touring or field demonstration work has been undertaken this season, most of the time devoted especially to coffee having been occupied in curing—*i.e.*, hulling and grading—the coffee sent in for treatment at the Kamerunga State Nursery by the machinery, the erection of which was reported last year. The large 36-inch Smout's huller was found to require more power to work than the little oil engine supplied was capable of generating, and had to be replaced by a smaller locally-made huller. This worked very satisfactorily, attaining an output of 1 cwt. per hour at full speed. The engine did not work satisfactorily, however, giving a lot of trouble, and costing far more in repairs and loss of time in cleaning than it should have done.

The advantages of hulling and grading thus afforded by the Department were very fairly availed of, and coffee was sent in, between July and October, from Cooktown, Atherton, Tolga, Mantaka, Myola, Kuranda, and Babinda Creek. This work of curing was carried out entirely by myself and the office assistant. The cost of the work amounted to 1·48d. per lb. gross, which included railages to the works, bags, cost of curing, railage to port, shipping, brokerage on sales, &c. The actual cost of curing amounted to ·39d. per lb. only or about £3 12s. 9d. per ton, which, in view of the natural difficulties of working the new machinery, &c., was very satisfactory. The other expenses, amounting to 1·09d. per lb., which made the total cost appear somewhat high, consisted of railages, bags, &c., and such out-of-pocket expenses as might have had to have been paid in any case, which the Department paid for the owners of the coffee. All the coffee, except one consignment, which was returned to the owner after grading, was sold in Sydney, at the request of the growers, by the Department at an all-round price of 7½d. per lb. or £70 per ton. This price, in view of the fact that the samples sent in this first year could not be taken as a criterion of the best quality of coffee Queensland can produce, was very satisfactory. Prices of coffees ruling at the time were—Ceylon plantation, £50 to £120 per ton; and Santos, £40 to £57 (in bond, duty 1½d. per lb. and ¼ per cent.). The first season's run of the works, as previously pointed out, could not be expected to revolutionise the industry, and, on the whole, the machinery has justified its existence in the very much more lively interest in and demand for Queensland coffees, as evidenced by numbers of letters from dealers and manufacturers from Queensland, New South Wales, Victoria, and South Australia, in indicating as it does a distinct step forward for the industry, and as an inducement to production and an encouragement in improvement of quality. The direct benefit will be more felt by the growers as the grading of the staple obtains for them better prices, and when uniformly good crops being obtained local growers have as much as they can deal with, and the more open market must be sought. Local manufacturerers can naturally always afford to pay better prices than those in distant States, and so long as there is possibility of local sales growers should accept and take advantage of them.

Last season the coffee was packed in double 70-lb. bags. This season, to save expense, it is suggested that the growers' own large bags, if in good order, should be used. Besides this, material concessions in railway freights have been obtained, and it has been decided that a uniform charge, to cover all expenses from the time of receipt of the coffee at the railway station to time of sale (except brokerage, if any), of £3 10s. per ton for lots of 1 ton and over, and £4 for lesser lots, will be made. This is slightly cheaper than last year. This will save a deal of calculation and trouble to the growers in computing the charges likely to accrue on consignments sent in. It is anticipated also that the charges for brokerage, insurance, *del credere*, &c., which last season amounted to 7½ per cent., may, owing to the increasing demand, be reduced and possibly eliminated. As a result of last year's work also, it is anticipated and hoped that an average price of £80 may be obtained.

Cotton.—A few small areas were put under cotton last season, mostly in the Atherton district. Of the small plantings below the range the crops were not considered worth harvesting. There is no doubt that cotton grows excellently well in North Queensland, and, since the heavy-bearing perennial varieties and tree cottons can be exclusively grown, it should pay very well indeed. With cotton, as with coffee, the main difficulty is in harvesting the crop, and the first season's experience is apt to be discouraging on account of the light crop generally obtained. If the grower does not become so disheartened as to neglect the cultivation of his plot, however, the second and subsequent crops show far more satisfactory figures for picking on account of the far heavier cropping of the same areas and trees. Cotton is difficult to dispose of in the seed, and expensive in freights in this State; moreover, the erection of cotton gins and engines to run them are beyond the means of small producers. The Department has, however, stepped in here again to remove this impediment in the way of production, and has erected at Kamerunga State Nursery a cotton gin, by which any grower can have the lint separated from his seed at actual cost. These privileges were also availed of to some extent last season, though not as much as was hoped and expected.

The ginning of the cotton sent in was carried out during November, the percentages of lint and seed being 71 per cent. seed and 29 per cent. lint. The varieties were mixed, and not all in the best condition, containing a considerable amount of stick and leaf, which gave a loss by dust of about ¾ per cent. The gin sent up was a very old style of saw gin, and a shaky machine and slow; it did the small amount of work required fairly satisfactorily, however, but would be hopelessly inadequate were any great quantity sent in for treatment. The actual cost of treatment worked out at ·78d. per lb. of cotton in seed, and other expenses, railage, &c., amounting to ·23d., the gross cost being just over 1d. per lb. The samples were favourably commented on, and valued at 5½d. to 6d. per lb. The lint was packed in pressed chaff bags, no baling press being available, and the seed in corn sacks, and sent to the head office for sale. The price actually realised I was not advised of.

Tobacco.—The culture of tobacco is beginning to receive some, though spasmodic, attention. The seasons in the North have been favourable, and it has been shown beyond doubt that a good and valuable quality of cigar leaf can be grown. The experiments at the Kamerunga State Nursery would indicate that with due care the trouble that decimated the crops when an effort was made to grow tobacco some fifteen years ago—blue mould—may be avoided, and that there are certain varieties of cigar leaf tobaccos that would seem especially suited to this district. Certain kinds of soil are required for successful tobacco culture, and many of the farmers and settlers have eminently suitable plots on which tobacco would prove a sure and exceedingly profitable by-product.

Rubber.—This most valuable tropical product is attracting considerable attention in North Queensland now. For reasons above stated—*i.e.*, the length of time it takes to become revenue-producing—it is not through the present residents of the Northern districts that any expansion of rubber culture can be looked for. The report of the rubber plantation at the Kamerunga State Nursery amply shows that several of the best varieties of rubber-producing trees grow and thrive well in the Northern soils and climate. Rubber requires but little cultivation and attention, and the collection of the latex and its subsequent manipulation are operations that can be readily done with white labour. The returns per acre are higher than almost any other known product, and the market is certain and rising. Several influential individuals, both on their own account and representing small companies, have approached me for advice and information, and it is probable that shortly several plantations will be opened in the district. Ample and eminently suitable land is available, and plants and seed, in limited quantities at present, but annually increasing, are available through the Department of Agriculture locally. It is to be regretted that holders of land in the vicinity do not recognise the value of this industry, and, while seed and plants are available, do not add to the value of their present waste lands by planting up rubber. Hitherto, unfortunately, the demand for seed and plants in the State has been more than met by the supply, and a quantity have been sent to the Islands of New Hebrides, Solomons, Fiji, New Guinea, &c., where the value of the product and industry is appreciated. This season, however, it is anticipated that the demand within the State will absorb all the available seed and plants, and, shortly, that the demand will far exceed the supply.

Fibres.—The culture of fibres, more especially sisal hemp, is also steadily increasing in the North. In many instances, however, the areas planted are so small as not to warrant the erection of machinery. Where a number of cultivations are within reasonable reach of each other, possibly some co-operative arrangements for decorticating might be made. Murva fibre or bowstring hemp, as a quick-growing fibre plant and as an auxiliary product capable of being treated by the same machinery, is receiving attention. This latter fibre certainly grows to perfection in the tropics.

Of Cereals, maize is the main product of the North, and is certainly a most useful standby in new land, since it can be profitably worked by the hoe previous to the elimination of stumps from the land. The tendency, however, would seem to be to continue this method of culture rather than to use the plough, harrow, and implements as soon as may be possible, which would in many ways reduce the cost of production. Husking and shelling are still done mostly by hand power, and the tank method of preservation the usual one. There is ample room for more modern methods in maize cultivation, particularly, perhaps, in the direction of artificial drying and improvement of storing arrangements. The crops this season are fair to good, and prices are keeping up.

Rice is also receiving more attention, I am glad to be able to report. The market for this cereal, although ruled by China and Japan, is steady. With due attention to seed and cultivation, quite as good a sample may be produced, and, if modern appliances such as seed drills and harvesters were used, the cultivation of rice, at present prices, would be found one of the most profitable industries.

Fruit Culture.—In some parts of the North this is receiving considerable attention. The seasons being generally earlier than in the South, good prices can be obtained for the early crops. In the vicinity of Cairns itself this industry is neglected. With reasonable attention to cultivation, destruction of infested fruit, spraying, or the regular use of cyaniding tents, citrus orchards, as well as orchards of many excellent and readily saleable tropical fruits, would prove very profitable. This season fruit is—to some extent owing to the cyclone—comparatively scarce, and prices are high.

Dairying.—This promises to become one of the main industries of the North. The tropics afford special advantages in the matter of green fodders; *Paspalum dilatatum* has come to stay, and is proving a reliable friend of this industry. During the year several experimental plots of Rhodes grass or the giant couch (*Chloris vergata*) have been laid out with most promising results. It is encouraging to see the manner in which the initial difficulties of this industry are being overcome. The Cairns Butter Factory has proved a boon to many a small settler; and the dairy bank scheme of the landholders, organised and inaugurated by Mr. W. J. Munro, whereby the farmers may co-operatively import first-class southern stock at lowest cost, and at the same time obtain loans for the purchase, is going to be the means of overcoming one of the natural difficulties now hampering the rapid advance of the dairying industry.

In touring work during the past season 132 days, or over four months out of the twelve, were occupied, some twenty-two separate tours being undertaken. Were more of this touring work possible, it would be to the advantage of, and materially assist in, advancing tropical agriculture. A number of lectures were given in different places when on tour, as well as object lessons to State schools and demonstrations at shows and on the State Nursery. The number of visitors from southern States as well as Southern parts of this State, seeking information and advice on all manner of agricultural matters relating more or less to the tropics, with letters of introduction from officers of the Department of Agriculture and Ministers and officers of almost every other department, are noticeably on the increase. Reports on many and varied matters by other Federal as well as State departments, are from time to time sought and submitted.

The Diseases in Plants Act.—The early part of the season was normal, both in the matter of exports and imports. The cyclone was particularly severe on the banana plantations. Most of the plants carrying bunches, even though immature, were blown over. When bearing, the banana plant is always somewhat top heavy, and generally has to be supported, while the large leaves present a considerable surface to the storms. As results, large areas were literally denuded of bearing plants, and few gardens escaped some damage. In the Jungara district a number of new gardens from which no returns had yet been obtained, but which were just commencing to bear, were completely flattened down, and had to be replanted. The banana takes six months to attain maturity; allowing, therefore, for small plants of one month or so, it would take some five months at least from the date of the storm for the returns to equal the previous output. In the Mulgrave district many garden owners, seeing their banana crops thus decimated, planted maize as a catch crop between the newly planted rows of young bananas. Owing to a favourable season, such maize crops have been good, and will compensate for the loss of returns for bananas, but the growth of the banana plants, where this has been done, is noticeably retarded.

The business in cased fruit is principally in the earlier part of the season, and was not so much affected by the cyclone. Exports of bunch bananas came almost to a standstill from the 1st February. Just about this time, however, the new regulations came in requiring the inspection of all potatoes imported. Potatoes are received from Tasmania, Victoria, and New South Wales mainly, and the imports are considerable.

The work of inspection, therefore, during the last five months of the season has been largely in connection with imports instead of, as previously, with exports, and, while the work has been quite as heavy, the collections have dropped latterly, as no charges are made on the inspection of imports. The imported fruits, &c., are discharged from the boats promptly, and hence can be inspected and passed without delay. Potatoes, on the other hand, are stowed in the holds with other merchandise, and are discharged in turn as the cargo from the different ports is reached, Tasmanian and Victorian consignments coming last, so that, as the importers are waiting to take delivery, to prevent delay it is absolutely necessary that the inspector should put in the whole of the unloading time at the wharves. An average Cairns cargo on any interstate trading vessel is about 450 tons, and this takes generally from 5 a.m. to 6 p.m. to deliver, and in the case of late arrivals a good deal of inspection must be done at night. This work ties the inspector largely to the wharf. Since the cyclone damaged the banana plants, the gardens have not called for much attention latterly, but, if the imports increase as they have been doing, when the exports attain their normal amount again it will be necessary to have an assistant inspector who can take over the wharf inspection work while the senior inspector is away on garden inspection duties.

It is anticipated that the export trade in case fruit will materially increase shortly, and the pineapple crops are expected to be very good if not record ones this season.

As recommended last year, it has been decided that the very nominal charges made for the services of the inspector, and for certificates of cleanliness of fruit inspected, shall apply to all ports of this class.

Forestry Work.—Another planting of cedar seedlings in the reserve at East Barron, near Atherton, was undertaken this season, and I proceeded to Atherton on the 14th March in connection with the matter.

The figures for the 1906 planting disclose 3,014 cedar plants put out, which are all doing well. The cost worked out at 2·72d. per plant, which is the cheapest yet attained. The work has now been reduced to a complete system. The cutting of tracks through the scrub was done in the dry season, and the places for the plants were marked out and prepared, as well as the plants marked down, previous to the advent of the wet season, so that no delay was experienced, and the plants were enabled to have the benefit of the full rainy season. The seedlings were put out within a month of the breaking of the monsoonal weather.

Of the plants put out, 2,714 were in new ground and some 300 as supplies where last season's plantings had failed. The mahogany plants put out last year were not a success, nearly all succumbing in the continued dry weather; a few are, however, still showing signs of life.

A map showing the areas planted in the different seasons and the unplanted areas was compiled and submitted on the 22nd of March, the plants at present growing being as follow:—

Plot 1.—Planted 1903—1,480 plants, about 10 to acre; average height, about 15 feet.
Plot 2.—Planted 1904—1,497 plants, about 20 to acre; average height, about 8 feet.
Plot 3.—Planted 1905—2,280 plants, about 37 to acre; average height, 2 to 3 feet.
Plot 4.—Planted 1906—3,014 plants, about 40 to acre; average height, small, 1 foot to 18 inches.
Totals, 4 plots, 8,271 cedar plants.

The cost of the work for 1906 amounted to £34 11s. 8d. The actual planting was on contract, at the rate of £1 1s. per 100 plants. The total cost of the whole operations, so far, have amounted to £139 18s. 8d., which gives an average cost of plants living of 4·06d. each. The work was very ably carried out by Mr. Andrew Maddock.

Under the provisions of the Shearers and Sugar Workers Accommodation Act, the three sugar-mills in the district—Mossman and Mulgrave Central Mills and Hambledon (C.S.R. Company's mills)—were visited for the purpose of a preliminary inspection, during which the matters referred to in the Act were carefully gone into with the managers, engineers, or directors, and those requiring alteration and attention were pointed out. This work has involved a considerable amount of correspondence, and numerous minor regulations and alterations of the standing regulations were found necessary in adjusting the new Act to the different conditions obtaining in the different localities. The Act will undoubtedly be of great advantage,

and mill directors and managers are taking a keen interest in making quarters, &c., comfortable and hygienic for the hands, and doing all in their power to conform to the spirit of the Act. Of the mills in the district only one has as yet started crushing. During the next month or so all will be crushing, when another inspection will be made to see that suggested alterations have been made and all is in conformity with the regulations.

Under the Fertilisers Act but little work has hitherto been required in the North. One or two firms have been registered as agents or dealers, but no samples have been required to be taken for analysis. Most of the artificial or chemical manures used in the North are manufactured in and supplied from the Southern parts of the State, and are shipped North under the certificates of analyses made in the South.

A considerable portion of my time is taken up in the management and controlling of the operations and experiments in the State Nursery, Kamerunga, which are also my headquarters. A separate and detailed report of the work of the State Nursery being given elsewhere, it is unnecessary to recapitulate.

HOWARD NEWPORT, Instructor in Tropical Agriculture.

REPORT OF THE DAIRY EXPERT.

SIR,—I have the honour to submit my second annual report to the Department of Agriculture.

During the past twelve months, a great advance on the industry has been made, and the outlook for the State in the export of butter and cheese is decidedly bright. There is, however, a good deal to be done to improve our position in oversea markets, and this largely rests with the factories of the State, who are in a position to bring about reforms of the highest importance and value to Queensland. This will be referred to under the heading of "Evils of the Industry."

The work of the past twelve months has been exceptionally heavy, entailing night duty for the greater part of the year, and I earnestly hope that my efforts to improve the dairying industry of the State will be productive of a lasting good. Since my last report was prepared, an amended Act has been enforced, making it compulsory to supply cream to factories in which the fat content is not less than 35 per cent.

That legislation in this direction was necessary may be judged from the following:—

FAT STANDARD OF CREAM.

In the export of dairy produce the efforts of the industry should be to win the confidence and patronage of buyer and consumer, and build up a sound remunerative business in all markets. But this is liable to be lost sight of in competitive circles, and the attention of manufacturers and exporters is necessary to safeguard the interests of the industry, and particularly of the producer, upon whom the future so much depends. The universal aim should, therefore, rest in perfecting our dairy produce, by promoting all reasonable measures to uplift the industry, and place it on a parallel with other countries. We are no longer competing amongst ourselves, but are face to face with the prowess of foreign nations, who spare neither effort nor money to meet with the rapidly increasing requirements of the public in the export of dairy produce. We must catch up to them, and in the effort put to one side all petty prejudices and jealousies, and unite with a strong determination to bring Queensland more to the front amongst the world's producers. The possibilities are great in this State, and the road to success lies in the application of modern methods rendered necessary by climate and conditions, and which will remain indispensable to the progress of the industry. We hear and read of the comprehensive changes that have taken place in European dairying countries, and much that is being done by our rivals to raise the standard of farm produce is applicable here; still we must regulate the industry as requirements demand. In much-talked-of Denmark the separation of milk and the production of butter take place under the same roof, thereby giving the manufacturer absolute control of the raw material. Combined with this priceless advantage, Denmark has a rigorous climate to combat fermentation and the development of injurious flavours. The Dane seizes the opportunity, and separates a high density cream, or, in other words, a thin product, pasteurizes it, inoculates it with pure culture of bacteria, and waits upon the ripening like a nurse looking after a child, and, when the proper degree of acidity has been reached, converts the cream into butter. It is not the manipulation of the churn or the worker that produces a pure butter: it is the quality of the cream. It should no longer be necessary to demonstrate that the great elements in successful butter-making rest with the process of ripening, and in this Denmark has outrivalled every other country, proof of which is found in the choice flavour of the butter produced, and, above all things, the equality of her shipments at all periods. Give the British buyer, whose palate is trained principally through the agency of the Danish butter-maker, a uniform article of good flavour, and he will patronise, irrespective of sentiment, for no longer is it allowed to stand in the way of his domestic requirements. Compare what I have said of Denmark with what exists in Queensland. The laws of climate and market that govern the great industry of the former country go forth to show that our State must also do as the conditions and requirements demand, and that our first thoughts and our greatest efforts should combine to improve our cream supply, which, as already shown, is the vital organ in the healthy life of our export trade. And in the accomplishment of this I know of no more powerful factor in maintaining a good cream supply than the fixing of the cream standard and the carriage of cream in the original package, the value of which must be apparent to the farmer, for whose benefit the former was principally enforced. That it was imperative to fix a fat limit in cream will be universally accepted when the heat of our long summer, the absence of congested dairying districts, scattered farms, long and slow cartage and railage of cream, and the distance Queensland is from the oversea markets are considered. But the most important factor calling for the standard is the total absence of separating stations or creameries, the cream supply of the State being drawn directly both from the cottage dairy farm and the large holding of 100 cows or over. To be without a standard to protect the interests of the industry would be to sacrifice far more than the name of Queensland dairying would well be able to bear.

CHIEF ADVANTAGES OF THE STANDARD.

UNIFORM BUTTER.—The energies of the butter-maker are directed to procure a good flavour in his output, and to maintain uniformity in the quality of shipments. But he cannot succeed unless there be a choice flavour in the cream supply and a uniform density or fat percentage. The 35 fat standard is the bulwark to evenness in the product. Before the Dairy Produce Act of 1905 came into operation, the fat content of cream varied from 12 to 50 per cent., and at this stage I shall endeavour to explain in practical language how marked differences in the fat percentage and other solids, as sugar and casein, act on the flavour and keeping properties of butter. Cream of low density is short-lived in warm climates;

that is to say, the development of acid is very rapid in the presence of large quantities of bacterial food—sugar and casein. The lactic organism, which is the valued ferment, soon dies in thin cream, leaving a high percentage of acid, which, in many instances, is unevenly distributed amongst the solid matter. The fermentive stage at which the much-desired sweet-acid flavour is produced is of short duration, its valuable properties giving place in a few hours to a strong harsh acid. As soon as the lactic organism ceases to work in thin cream, very objectionable bacteria attack the abundant supply of casein, producing a very bitter substance called butyric acid. A similar change takes place in milky butter, and the name "rancid" is given to denote this much-dreaded flavour. In thick hand-separator cream the low percentage of sugar and casein provide a less favourable field for the multiplication of bacteria, hence the improved keeping properties of the product. Let it be queried: What is the result on the quality of butter when quantities of thin and thick cream are mixed and churned? From such components having different percentages of fat, different quantities of acid, different degrees of viscosity, and having undergone dissimilar chemical and bacteriological changes, the flavour of the butter produced would not be fixed; in other words, it would soon change from a first-grade to a second or third rate quality. This condition has to be specially guarded against in the classification of export butter, being one of the many elements which made compulsory grading indispensable. It will be seen from this argument that the present practice of dairy farmers supplying cream to the factories which varies greatly in the fat percentage is hurtful to the best interests of the industry.

I think the above is alone sufficient evidence to justify the fixing of the fat standard, for it draws the dairying industry of Queensland closer to the essential of a successful butter-producing country.

Just as the flavour of butter in our warm climate is protected through the virtues of the standard, the texture, colour, salting, and packing are improved. With cream varying in fat percentage and non-fatty solids to a wide range, it is reasonable to expect that the mixed supplies will be detrimental to the valued characteristic of butter. With thin cream travelling a long distance in the heat of summer, churning of the fat and coagulation of the non-fatty solids are a natural consequence. This damaged quality is mixed with cream of a better consistence, to be blended with a still thicker quality, and which causes a mottled appearance in the butter through an excess of casein matter. Streakiness and shades in the colour of the butter are also attributed to this condition, and want of uniformity in the packing is most likely to arise through the influence of suppliers of cream of irregular density. The water percentage and weight of butter will also be regulated by the standard.

Absence of Taint.—From what has been said, it will be recognised that hurtful organisms are deprived of a wide field for their reproduction and the development of very injurious taints when the fat percentage of cream reaches 35. It is recognised by practical dairymen, and is an established fact in scientific circles, that bacteria cannot feed on fat and rapidly destroy the good properties of cream; it is through their destruction of the non-fatty solids that the bad flavours in butter arise, and which has lost Queensland many thousands of pounds and prevented the advance of the industry to the extent desired.

Even Consistency of Fat and Non-Fatty Solids in Cream.—With no fixed density to aim at, there will be a very marked variation in the chemical and bacterial purity of the cream and butter composition of the product, hence the numerous changes that are ever taking place to the detriment of the butter manufactured, and which have not been investigated, although ample evidence takes us back to an uneven cream supply as the source of danger.

It is understood when excess of the food of organic life—the separator milk—is taken away from cream, there is a check put upon the multiplication of the bacteria, hence the better keeping properties of cream. To prove this, let two thoroughly clean glasses be taken, and put into each a sample of cream from the same separation, one containing about 20 per cent. of fat, and the other about 35 per cent. By exposing the glasses to similar conditions of temperature and atmosphere, it will be found that the rich cream will retain its sweetness, followed by the good acid flavour, longer than the thin cream. The rate of fermentation is chiefly governed by the temperature of the atmosphere, and, this being the case, Queensland has adopted a standard fat regulation to best suit climatic conditions.

Uniformity in Ripeness of Cream for Churning.—Every dairy farmer knows that the best butter is made from well-ripened cream of even consistency, and in which the fat percentage is uniform. As soon as thin and thick supplies are blended, there will be a difference in the acidity of the whole body, for the sugar of the cream in some instances will not have been appreciably affected, while in other cases the process of fermentation will have exceeded the requirements of a fine aroma and attached the caseous matter, producing bitter flavours of different degrees. How will this affect the butter? Sugary matter will be left in the manufactured article to ferment, and the bacteria of butyric acid will also be retained to attack whatever casein there is left, and especially where supplies are mixed the difficulty to get rid of the milky water is increased, owing to the uneven distribution of the component parts of the blended creams. It is fallacy to believe that cream of different density can be mixed sufficiently to prevent hurtful changes in butter. It is in these matters science predominates, but the practical man knows that butter made from sweet cream will quickly lose its flavour, while the well-ripened and unmixed product can be converted into a choice article. Blend the ripe and the sweet supplies, and then churn, and the result, as already shown, will be disappointing.

Properties.—It cannot be too frequently said that uniformity in the flavour of butter is the way to the success of Queensland in the oversea markets. This is obtained from uniformity of ripeness of cream, the necessity of which has been shown. It is beyond denial that this State should strive above all other countries to ensure the maintenance of this much-desired condition.

Uniformity in Churning.— With cream in which is contained all that is required for the manufacture of a high-grade article, churning will be uniform—that is to say, the cream will give up its particles of butter fat at the same time; but when quantities are dissimilar in content of fat, casein, sugar, acid, albumen, &c., and mixed together, the cream will break irregularly, causing more fat to escape in the buttermilk, and detriment to the quality of the butter. Time occupied in churning cream of uniform density and ripeness will also be more regular.

The choice aroma is retained for a longer period in the butter. I think the reader will at this stage have come to be convinced that the 35 fat standard operates considerably towards gaining this valued object.

Analysis of butter shows regularity in the composition of the article, and, as this, together with weight, are provided for in the graders' certificate and recognised by the Tooley-street buyers, prominence should be given to the subject.

Where cream fluctuates in composition in the manner described, the analysis of different portions of a churning will likewise show marked variation in composition, proving a fault against the quality of the butter for export purposes. The weight of butter will also be better regulated, and which is a material consequence in a climate like Queensland.

I think I have demonstrated beyond dispute that the 35 fat standard renders butter better able to withstand the hurtful influence of atmospheric heat before and after refrigeration. This alone is an important element in support of the fixing of the standard.

Invaluable Aid to the Successful Grading of Cream and Butter.—Should the standard not be fully recognised, it will be impossible, in the present state of the industry in Queensland, to successfully carry out the greatest adjunct to the production of butter of long-keeping quality.

A More Thorough Check upon Unscrupulous Testers.—With cream of even fat percentage, as shown by the farmers' returns, unscrupulous testers will more readily be found out. Without a standard for fat, chances of escape from detection were made less difficult.

Errors in Sampling and Testing More Quickly Ascertained.—In the absence of a regulation to fix the butter-fat content of cream, mistakes in testing would be unnoticed, but with the regulation a higher standard of proficiency and greater accuracy of testers will result, as rich cream is more easily mixed than a thinner product when it has been left standing for a day or two. The separation of the fat from the heavier or more watery constituents takes place more quickly in thin cream, causing the formation of a stiff layer on the top, and which cannot be broken up to evenly distribute the fat. There is also in the thin cream a much greater uniformity throughout, the bottom portion being whey or water; the middle of the can will also contain whey from the coagulated milky compounds. Its occurrence acts as a very strong warning to the butter-maker of the danger to the quality of his output. It is known to factory managers, and particularly those engaged in cheese-making, that the putrefactive properties of whey rapidly destroy all traces of good flavour in the manufactured article.

There is also the quick formation of gases in thin cream, which increase the bulk in the can, and, unless extreme precautions are taken in testing with the pipette, serious losses will be suffered by suppliers.

More Separator Milk for Pigs and Calves.—Cream of poor density will contain food that the pigs and calves have a much greater gith to than the bacteria in the cream, and I think the production of good pork is more profitable to the farmer than injurious flavours in the butter through the energies of germs feeding on the milk in the thin product.

A Saving in Cartage and Railage.—Thin cream requires more space than thick to produce a given quantity of butter, and, therefore, costs more for cartage and railage. It has also been shown that thin cream is readily churned in the cans through splashing, which causes mottle in the butter, and is otherwise injurious to its market value.

Cream Cans Will Last for Months Longer.—The life of a cream can largely depends upon the action of the acids contained in cream upon the metal. In thin cream the production of lactic and butyric acids are rapid, and especially where cans are not of a superior make will the destructive properties of the acids be more marked. Corroded cans are a marked objection to the carriage of cream.

Influence on the Separation of Milk.—The educational value of the 35 fat standard will be felt in the working of separators. It will necessitate more careful handling to skim an even density of cream from day to day, and the dairy farmer will derive much benefit from the more careful attention to the speed of his machine and other factors upon which the consistency of the cream depends. It is an established fact amongst up-to-date cream-suppliers that the uneven running of a separator raises or lowers the density of fat content of cream, and, when children and young and old persons are entrusted with this very important duty, little wonder fluctuations arise.

Less Encouragement to Add Preservatives.—Previous to a regulation making a cream standard compulsory, the addition of preservatives to extend the keeping properties of cream was freely indulged in. The thinness of the cream and the rapid fermentation following was a strong inducement to indulge in this dangerous practice. The richer cream required by the Dairy Act and the knowledge of its superior qualities was a factor in supporting the disuse of preservatives in milk and cream by Act of Parliament.

How It Will Influence Artificial Ripening.—The ambition of the factory manager is to govern the ripening of cream, what has been written will show how far he is from obtaining this object. Artificial ripening of cream is being practised in some factories during winter weather, and the success attending the introduction of starters shows that the 35 fat standard, even in the coldest weather, is not a drawback to the manufacture of the choicest butter. No doubt in rich cream the development of lactic acid is slow at low temperatures, and by reason of this artificial ripening will be more fully appreciated, and no doubt in course of time its application will be universal in the State. When this is accomplished, the fat standard may require to be altered to suit the more advanced methods, but in a warm climate like Queensland care will be necessary before this step is taken.

A GREAT FACTOR.

Few, if any, factories in the State have adopted the weighing of samples of cream for fat-testing, and it is unlikely that it will be adopted for some time to come. In the southern States, however, measurement of cream has been abandoned by a number of factories, and strong inducement is being given by teachers and writers on dairying to adopt the system of weighing as the most accurate means of determining its fat value. With the enforcement of the 35 standard, assisted by other reforms, measurement will be shorn of much of its dangers to the farmer and the factory.

ALLEGED SERIOUS DISADVANTAGES.

It has been stated that the 35 standard will not operate satisfactorily during the four cool months of the year, owing to the increased viscosity of stickiness of the cream by the influence of lower temperatures. This is, however, disputed by managers in parts of Queensland where the situation of factories is at high altitude, and who have shown that careful stirring of the cream at intervals during collection on the farm, and particularly when a fresh supply is added to the original can, will overcome the alleged objection. To prevent adhesion in the cream, an appliance has been perfected, and from personal knowledge of its application I have reason to strongly recommend it to every dairyman and cream-supplier in the State. It is of simple construction, strong, and durable, and is effective in all classes of cream. The mixer has an adjustable handle, and is supplied with two plungers of the perforated and propeller design, and its use is invaluable in summer, and it is indispensable in the winter season. The appliance operates with the following advantages, and I would recommend them to the consideration of our progressive dairymen:—

(*a*) Prevents cream from setting in the cans.

(*b*) Destroys adhesive layers in which the fat percentage varies.

(*c*) Reduces the risks of inaccurate sampling and errors in testing.

With the 35 fat standard, the good influence of the farmers' mixer, and the application of the patent plunger and sampler, the dairy farmer of Queensland is strongly protected against abuses which otherwise would act very hurtfully to his progress and the general advance of the industry.

The practice of using a stick to stir the cream in the dairy is in operation on a few farms, but satisfactory results are not obtained. The improvements of the new mixer will be readily recognised, and no doubt fully appreciated. The mixer has received the approval of the Department of Agriculture and Stock, and is now in the hands of all dairy and cream inspectors, who are demonstrating its use to the farmers' advantage.

POOLING CREAM.

One of the most ruinous practices connected with the dairying industry of the State is the pooling or indiscriminate blending of farmers' supplies of cream. Through the agencies of the factories, keen competition for the patronage of cream supplies ensues, and to cater for the raw product carts employed by the factories visit the farms and collect the cream. It thus follows that the age of the product is regulated by the frequency of the draymen's visits, and the most disastrous element emanating from the system is the filling of cans with different supplies picked up *en route*, and in which the fat percentage, age, flavour, body, and colour are at variance. Under these conditions, the production of an article of uniform quality is utterly impossible when the classification of the cream is so severely disregarded; and the bad influence on the industry is made all the more damaging through the absence of opportunities for the butter-maker to train himself in the grading of cream and improve his knowledge in this the most important branch of factory management. There is one remedy for the "pooling" of cream, and that is the compulsory carriage of all supplies in the original can and package. But some recognise this as a harsh measure, because of the small supplier, who might suffer if some provision was not made to enable him to reap some corresponding benefit. No doubt this measure could be taken, and it should be the earnest desire of the factories of Queensland to do the collecting of cream on lines most likely to give the greatest impetus to the production of superior butter.

OTHER DANGERS.

There are other serious dangers menacing the success of butter-production, and which are the direct outcome of "pooling." I refer to the sampling of supplies by carters or those engaged in the transit of cream from the farm to the railway station, depôt, or factory. Just consider for a moment this vital duty being given to the inexperienced lad or the ordinary drayman, who is paid a pittance to do what the skilled factory hand and trained mind should only be entrusted with. It is a deep reflection to know that the farmer is at the entire mercy of irresponsible persons, and he is paid according to the fat content of the samples collected by them. In their own interests it is to be hoped that dairymen will emphatically denounce the wagon or the roadside as a proper place for determining the sample of cream, and should insist upon this very highly important duty being done in the depôt or at the factory, and by one who is competent and is thoroughly acquainted with the grave dangers which surround the practice. No doubt the difficulties occasioned by cartage of unpooled cream will be raised as an objection to the practice, but the utilisation of double-decked wagons, in which accommodation is provided for two tiers of cans, will obviate inconvenience. In the instance of small supplies of cream, two or three tall mixing-cans may be used to hold first or second grades.

In concluding, I may be permitted to tabulate the serious objections to "pooling," so as to convince the doubtful of the urgency for immediate reform in this direction:—

(*a*) Pooling encourages the storage of cream on the farm, for it has to wait its removal by the carter.
(*b*) Temperatures of supplies vary, which is hurtful to the quality and sampling.
(*c*) Dishonesty is encouraged in manipulating the sample, and the possibilities of errors in this direction are considerable.
(*d*) Fresh, ripe, stale, weedy, thick, thin, rich, and poor qualities of cream are blended together.
(*e*) Sample bottles for cream, which are used extensively, are frequently dirty, and, augmented by age, the cream ferments, becoming spongy and gassy, causing a low and irregular reading of fat.
(*f*) Test and churn cannot agree unless the cream is pooled, and this would be more marked in the absence of the 35 standard.
(*g*) Cans for pooling are not washed at the time of emptying, but taken home, and in some cases only rinsed out and left till the next washing up. The possibilities of the cans not being sufficiently clean are many, and contamination of supplies is a natural consequence.
(*h*) Sampling, which is the premier element in testing, is taken in a haphazard manner, and it is not uncommon to find the dairyman being entrusted with it. There is a very fertile field for error in sampling pooled cream.
(*i*) Collection cans are usually inferior as well as badly washed.

From what has been said, I think it will be recognised that weighing, sampling, testing, and grading of cream should be done by certificated men. It is really surprising that the industry has progressed so well under adverse conditions; it speaks well for the future of the State in the production of butter upon more improved lines.

CREAM-GRADING.

We have reached a stage, the importance of which cannot be over-estimated, and upon which Queensland's name as a reliable butter-producing country largely depends, for without grading the excellence and reliability in the quality of butter cannot be claimed; and we must admit that the education and training of the factory manager in this the most essential part of his duty is neglected. There is certainly no encouragement given to perfect his education in this direction, with the inevitable result that managers are not sufficiently equipped to satisfactorily undertake the work entrusted to them. There is not the basis for their training with pooled or blended cream supplies, and I may be permitted to say that the evidence already given in this report justifies the urgency for remedying evils, and making the indiscriminate blending of farmers' cream a thing of the past, and for immediately introducing the compulsory sampling, testing, and classification of all supplies of cream at the factories. I would also strongly recommend that the purchase price of cream be not based only upon the fat content, but that the flavour should be considered. It is a well-established fact amongst practical dairymen that the fat proportion of cream is not a guarantee that the flavour is first class, and if a supplier keeps rich cream until it is tainted he should not be paid the highest price for it (and this is one strong reason for mixing first and second together when churning). Until flavour is universally acknowledged as a principal factor of payment, remedial measures to raise the standard of cream will be greatly robbed of their true worth to the industry, and the education of suppliers to guard against evils ruinous to the product discouraged. It cannot be denied that the present system is very objectionable in the eyes of progressive dairymen who are doing everything their means and ability will allow to improve their dairies and comply with the requirements conducive to a good supply of cream, but the painstaking are made to suffer for the deeds of the careless.

EXAMINATIONS.

The necessity for holding examinations of competency in the testing of milk and cream was brought forcibly before the Department of Agriculture when the dairying industry showed a rapid expansion. Theoretical and practical examinations are held at periods throughout the year, and the successful candidates receive certificates which enable them to test milk and cream; without the certificates, the Dairy Produce Act prevents this.

The theoretical examination must be passed before a candidate is admitted to the practical; 50 per cent. marks are necessary to ensure a pass in each instance.

WHY EXAMINATIONS ARE NECESSARY.

It is certainly astonishing that in the States of the Commonwealth this subject, which to the farmer appears the most important, has been neglected, for the methods practised are neither business-like nor just. Readers will recognise this when considering the system in vogue in some factories and depôts in Australia, where the quality of cream is not determined by any approved and reliable method. In my book on the "Milk and Cream Supply," ample evidence is given of the value of a cream standard, and how blending affects the fat proportion of cream. These subjects require very careful study by the student, whose object should be to thoroughly master them before embarking on the more practical side of his work.

HEAVY LOSSES.

There must be very heavy losses incurred where milk and cream testing is not conducted on the most up-to-date lines, and farmers should make this their first consideration before attaching themselves to any factory. No stone should be left unturned until this branch of dairying is beyond suspicion.

EXAMINER'S REPORT.

The written papers were, on the whole, satisfactory, when it is considered that candidates came from parts of the State where little or no tuition could be obtained. Failures were chiefly attributed to want of knowledge of the vital elements in testing, such as mixing the cream and sampling. Attention to detail was especially weak, many showing a desire to treat the subject lightly, and where great care was necessary this was most in evidence.

PRACTICE.

In the practical test, bad manipulation was a prominent weakness amongst the less successful men, the majority of whom give little consideration to detail; in fact, this was noticeable throughout the examination. There appeared to be a feeling that preparation for the examination was quite unnecessary, past experience being relied upon as the qualifying element to success. It was also noticed in quite a number of cases that nothing was done to meet with the requirements of an examination, no special effort being made to improve the condition of the test-room. No doubt, in future, this matter will be remedied, and candidates will be more thorough in their work. I might also point out that greater application is necessary.

TEACHING CENTRES.

The teaching of milk and cream testing is being attended to by the technical and art colleges of Queensland, and already classes are being held in North and South Brisbane and other centres. In appointing instructors, very great care is necessary to secure the services of good men, as the success of students will largely depend upon the ability and skill of the teacher to impart sound instruction.

Special inducement should be given to farmers to attend the classes and take part in the practical work of milk-testing.

FACTORY MANAGERS' EXAMINATIONS.

The practice of holding examinations in Queensland to qualify candidates for positions in the dairying industry should not end in the testing of milk and cream, but extend to the management of butter and cheese factories. The status of factory education will have to be raised, and there is no better way of doing this than enforcing a sound system of instruction with qualifying examinations twice yearly. Much has been said of the necessity for grading cream at our depôts and factories and the appointment of Government officers to do the work, but the selection of men to successfully undertake this vitally important task has received little consideration by prominent people in the dairying industry. At present there are no facilities in the State for the education of factory managers in the grading of cream on practical and scientific lines—a matter that is to be regretted, as the ability to ripen and classify the product practically decides the quality of the butter under the factories' different brands. Managers are to be sympathised with on account of their position in this respect, but, having shown a feeling of satisfaction with their knowledge of the subject, encouragement has not been given to institute a course of instruction on the lines indicated. To improve this outstanding weakness in the direction of factory work, I would very strongly support the institution of a winter course of instruction in the ripening and grading of cream for managers and their assistants, who would be admitted for periods ranging from a week to a month or more if desired. The theory and practice could be taught, the whole period of instruction being devoted to the subject, as it is of considerable magnitude and cannot be mastered unless the course has been thorough in every detail. Examinations would be held, and which would include three grades, the candidate having the option of taking one and two singly or together, and, if successful in passing, he would be admitted to the higher qualifying examination. Instructing managers in cheese-making during the slack months of the year would also prove a help in the manufacture of a better article.

CREAM INSPECTION.

The work accomplished by the three cream inspectors has been very satisfactory, many changes of a beneficial kind having been made in the handling and treatment of milk and cream. Dairymen have given the officers good encouragement to discharge their varied duties successfully, and I have no hesitation in predicting a lasting good to the industry through the efforts of the inspectors.

A GROWING EVIL.

The purchase of inferior milk and cream at top prices has become a recognised thing in many dairying districts in Australia, arising from very keen competition and bitter antagonism amongst factories. One factory may rigidly enforce just measures towards keeping up the standard of quality of their manufactured products, by paying for milk and cream according to its purity and richness, while other factories are striving, regardless of reputation, to add to their number of patrons by accepting the raw produce at the highest price, irrespective of its condition. What follows this suicidal policy? Encouragement is afforded suppliers to become careless in the treatment of milk and cream, and, instead of the factory extending its sphere of

usefulness to a district and being of educational value to its suppliers, it becomes a source of evil to the whole dairying industry. Disruption amongst suppliers and factories follows in its wake, the laws of honest trading are broken, all of which act most injuriously against the future prosperity of the farmer. This recklessness is particularly evident in the vitally important branches of dairying which affect the supplier most of all—namely, the taking and testing of samples of cream, and grading the same according to its quality. With no distinction in price between good and bad cream, how can cream-grading be successfully done, especially where pooling is looked upon as a legitimate element of the industry? It is impossible, and I unhesitatingly assert that the produce of factories participating in the practices cannot be relied upon in a way that will give confidence to buyers. This is characteristically illustrated in the official grading at the port of shipment, in which all qualities and conditions of butter are put together under the one brand. How can it be otherwise than disheartening to grading inspectors when their faith in the classing of butter at the factory is shattered, and how can they examine every box in a shipment of thousands of boxes so as to guarantee to the reliability of the official stamp? Grading has brought to the clear light of day what was crippling the butter trade of Australia as a national industry, and the greatest exponents against the system have either shown a deplorable want of knowledge of the requirements of the industry or have been reaping a rich harvest at the expense of the misguided farmer. Now that exposure has been made of practices ruinous to an export trade, it is fully anticipated that, with the assitance of compulsory grading of butter in all the States, the industry will deservedly improve to the satisfaction of those who are chiefly dependent upon it for a livelihood.

SUPERVISION OF GLASSWARE.

All glassware and appliances in connection with the testing of milk and cream, also butter-weighing machines, weights and measures of every description, should be under very careful supervision, not only in the interests of the farmer, who is entitled to protection, but also to safeguard the factories against losses and exposure to criticism for imperfect methods and administration. The risks of error through the use of defective or badly constructed and designed apparatus is a matter too important to be neglected, for what might be looked upon as a trifling error would involve the loss of large sums of money where considerable quantities of cream are supplied.

There is also danger in factories using small pipettes, say 8·4 instead of a larger size—namely, 8·8. In the use of the former, the liability of error is increased, owing to the smaller proportion of cream used. On that account it should be compulsory that every pipette used should have an 8·8 capacity, and be marked accordingly. I am aware that pipettes are in use in Queensland factories on which there is no indication of what the measures will hold, and I am justified in saying that such an incident calls for unfavourable comment.

Again, we find a pipette used which is conducive to the escape of cream through the large opening or outlet, and consider what differences in the fat percentage of farmers' test this might be responsible for. It is a matter of great difficulty to prevent a drip; and even where the most extreme care is taken the wide-mouthed pipette is not to be recommended.

Again, we have cream bottles in which the graduations vary from 0 to 30, 0 to 40, and 0 to 50. The more widely graduated of these are dangerously high, and should not be allowed into a factory or for use in the testing of farmers' cream, for it is next to impossible to satisfactorily estimate the proportion of fat contained in the necks of such bottles.

Knowing that the narrower the mouth the more easily it is to accurately measure the depth of the fat column, the reader will recognise the necessity for insisting on the use of narrow-necked bottles.

To further illustrate the urgency for discarding the wide-necked bottle, let it be considered that the operator makes a slip of 1 per cent. less than the correct measurement. What loss would it amount to in the testing of hundreds of gallons of 40 per cent. cream?

GRADING OF BUTTER.

From the 10th April, 1905, to the 30th June, 1906, 248,343 boxes (in round numbers 6,208 tons) of butter were examined, the bulk of which was for export, chiefly to London. The balance, such of it as was not disposed of within the Commonwealth, was sent to South Africa and the East, where in both places a rapidly increasing trade in this commodity has been established.

Out of the total amount of boxes examined, 190,338 were stamped "No. 1"; 39,045, "No. 2"; and 18,960, "Not Approved."

Complaints as to irregularities in the grading can be attributed to the three following causes, viz.:—The fact of the graders being compelled to stamp any consignment bearing the same date of churning the same grade as any inferior sample detected therein; the want of a central depôt, where proper facilities for carrying out the work in a more thorough manner would be provided; and the numerical strength of the staff, as it is impossible for two men to open more than a limited percentage of boxes when so many different depôts have to be attended to.

With regard to the first, it rests with manufacturers as to when, if ever, it will be advisable that the regulation referred to should be relaxed, but at present, owing to the mixed quality of butter purporting to be No. 1 coming from some factories, it would be extremely injudicious.

The difficulty in connection with a central depôt has to some extent been overcome by the renovation of the railway cold stores at Roma Street, and the fact of a grading-room—now within a few weeks of completion—having been added thereto will be an improvement on the conditions obtaining hitherto.

Taken as a whole, the work done during the period under review has amply demonstrated the necessity for a system of independent supervision of our export butter; and, though at present compulsory grading is not in favour in certain quarters, I feel confident that it must ultimately be of great benefit to the Queensland butter industry.

SYSTEM FOLLOWED.

After a percentage of the boxes of a consignment has been selected, and the brand and dates of churning posted in the grading notebook, a sample of the full depth of the box is taken with the trier.

The flavour, texture, colour, salting, finish, condition of boxes, &c., are then carefully noted, and points awarded therefor, and the boxes stamped according to grade. This chiefly is decided by the flavour, and not necessarily by the aggregate number of points. For instance, it is possible for two butters carrying the same total number of points to be in different grades, owing to the difference in the points awarded to each for flavour.

The margin in the number of points for flavour for first-grade butter is from 46 to 50; for second grade, 42 to 45; and for third grade, 37 to 41; under 41 the butter is condemned for table use.

When considered necessary, temperatures are observed and samples taken for analysis.

In the case of cheese, the mode of procedure is similar to that followed with regard to butter—each separate cheese having the grade stamp placed on it.

On the receipt of a manufacturer's certificate intimating the number of boxes for examination and their destination, certificates containing the particulars taken from the grader's second book are issued to the shipper and the manufacturer. In the case of the latter, the defects, if any, are pointed out, and each certificate bears a facsimile of the grade stamp placed on the butter or cheese for which it has been issued.

When required, the weights of from 5 per cent to 10 per cent. of the boxes are taken.

The work done by the grading inspectors calls for special mention, and I feel sure no officers in the service of the Queensland Government have laboured with greater zeal and under more trying difficulties during the past heavy export season.

G. S. THOMSON, Dairy Expert.

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 1905-6. As in former years, there has been a continual flow of applications for information regarding plant life in general, and in reference to our indigenous plants in particular, which has necessitated a very large amount of my time being devoted to identification, the work of which would have been much easier had the sender taken more care in preparing the various specimens prior to their despatch. This particularly applies to teachers who have forwarded specimens in a fresh state just as they have been collected by their pupils, and it may be imagined in what a condition they reach my hands after having been thus packed for even only a day or so. However, it has given me great pleasure to find how eagerly both pupil and teacher have taken to inquire into the wonders of the vegetable life of their immediate surroundings. Thus, if nothing more, our young folks will obtain some knowledge of the plants that grow by the wayside, and in after years be thankful to the forethought of the Minister who recommended that "Nature Study" should have a place in the school work. Here I may be allowed to say that my work has been greatly increased by my late assistant having been appointed Director of the Brisbane Botanic Gardens, he having formerly helped me largely in the work of identification, &c. Nevertheless, I feel proud that one of my training should be placed in that position, and have no fear of the results.

For want of accommodation, the collection of carpels and other exhibits in the showcases of the Museum have not been added to, except here and there by an individual exhibit. This having been referred to in other reports without avail, I will say no more, only that such objects are of very great value to students where botany plays a part in the profession for which they are preparing; such come to consult these exhibits as others come to consult the wood exhibit, which, by the by, for want of funds, has not been added to for five or more years.

The Botanic Library has also been at a standstill for the past five years, I might say; for the small sum allowed only permits of a few periodicals being obtained. A botanist feels this, for, be it remembered, that he can no more work without his books than the artisan without tools.

The herbarium has been steadily increased by the kindness of my numerous botanic correspondents and others who have forwarded specimens for the sake of identification.

Here I may be allowed to refer to the Tryon and Young expedition to the Percy Islands in December last. I have lately gone over the large packets of plant specimens handed over to me by Mr. Tryon, and found them in excellent condition, considering the wet weather experienced while on the islands. Among them were a number fresh to the herbarium, and some hitherto undescribed species, which will be published in the *Queensland Agricultural Journal* as opportunity occurs; many of the others will be used up in exchanges —when I can find the time to make such.

Many of my former publications are now out of print, but one cannot but feel pleased to find still constant applications for them. I have decided to publish privately the one mentioned in my last report as in course of preparation, and it is now being issued in parts, under the title of "The Weeds and Suspected Poisonous Plants of Queensland." This, like most of my publications, is being written outside office hours. I have slightly increased the letterpress, so as to make the work useful to teachers in giving their lessons on plant life, and included illustrations to assist in identification of the plants brought under notice.

Most of the additions to the State's flora will be found recorded in the parts of the *Queensland Agricultural Journal*.

This report may be deemed very short; but when one is constantly reporting to one or other dwellers of the State, it is only a repetition to embody such in an annual report, so for this brevity I hope to be forgiven.

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, 1906,* to report as follows:—

VISITORS.

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*Furlough.—This Report, although covering the period 1st July, 1905 to 31st June, 1906, deals but with ten of the twelve months that it embraces Not having had any extended leave of absenc (excep ing during a brief period of "retrenchment") since my first entry into the service of the Government—1st August, 1883—and official connection with the Department as Entomologist—1st August, 1894—application was sought and acceded to for two months' vacation at the commencement of the present year on full pay. This furlough was spent in attempting the Natural History Exploration of the Percy Islands of the Great Barrier Reef, in furtherance of a project cherished when some years since I took steps that led to the formation of a scientific committee of the Australian Association for the Advancement of Science to investigate the land flora and fauna of the islands and islets of our great coastal protector. The Government assisted the enterprise, rendered possible through the bounty of a friend, by carrying my party to and fro between Mackay and the site selected for visiting, by allowing the equipment needed being purchased through the Colonial Stores, by the loan of tent accommodation, and in other ways. And all those involved in rendering this assistance used much praiseworthy effort. The expedition included Messrs. P. and H. Young, of Fairymead, and a camp attendant and taxidermist. Unfortunately, owing to certain unfortunate—and in one respect most sad—contingencies, the full force of the expedition could not be brought to bear on the investigations projected. The material, however, secured, when fully worked up, will form an important contribution to a knowledge of the land flora and fauna of the localities referred to, especially in the matter of the phanerogamic plants and insects that more especially claimed attention. Indeed, the former have already been examined by the venerable Colonial Botanist, Mr. F. M. Bailey, as is alluded to in his Annual Report also, pending a fuller reference thereto.

The whole of the collections, except a few duplicate specimens that have been reserved for my companions of the "Tryon-Young Expedition," have been given to the State, to be incorporated in the collections of this office, those of the Botanist, and those of the Museum.—H. T.

CORRESPONDENCE AND REPORTS.

In addition to the information that has emanated from the office relating to questions concerning plant pathology and agronomic entomology, on the occasions above alluded to, the following, omitting reference to the more common topics, have formed objects of written communication and report: —

I.—ECONOMIC ENTOMOLOGY.

AGRICULTURAL CROPS.

Sugar-cane.—An instance of injury by the Plant Louse (*Aphis adusta*), affecting especially the Badila variety, in the Bingera district; and leaf-sheath disease, caused by *Tarsonemus Bancrofti* (Michael), Mackay and elsewhere (*vide* Plant Pathology).

Maize.—"Blight," caused by *Peregrinus maidis* (Ashmead), the maize leaf-hopper, Bowen district, occasioning much destruction of crop.

Cotton.—Cotton-stainer (*Dysdercus sidæ*), Charleville district; False Chinch Bug (*Oxycarenus Frenchii*), there also and at Chinchilla; Smaller Boll-borer (*Earias faba*), Chinchilla; dipterous larvæ occurring in damp decaying bolls, and erroneously considered injurious, there also; and Black Lecanium Scale Insect (*Lecanium nigrum*), Isis district.

Cucurbitaceous Plants (Pumpkins, Melons, &c.).—The Banded Pumpkin Beetle, *Aulacophora* [*Cartereti*, Guerin]?, the Plain Pumpkin Beetle (*Aulacophora sp.*), and the Cucurbit Plant Bug (*Megymenum insulare*), Burketown district; Plant Louse (*Aphis sp.*), Brisbane; Banded Pumpkin Beetle (*Aulacophora Olivieri*), the same. (*Note.*—It is of interest to note that the Northern and Southern districts have each special species of *Aulacophora*—both orange black-banded insects—injuriously related to cucurbitaceous plants, and that the one, noted and occurring in the former, is now recorded for the first time as an injurious insect.)

Potato.—The Potato-mining Caterpillar (*Gelechia solanella*), and a Fly Maggot (*Agromyza sp.*), apparently the cause of partial failure of crop, Mackay district; Leaf-destroying Flea Beetle (*Arsipoda sp.*), Goodna.

Sweet Potato.—Sweet Potato Weevil (*Cylas turcipennis*), Lowood, and many other localities; Barbados Sweet Potato Weevil (*Cryptorhynchus batatæ*), Biggenden, on imported tubers.

Clover.—Steps have been taken to ascertain the present status of imported *Bombus spp.* as fertilisers of clovers in New Zealand for future guidance when the question of their introduction to this State is being considered.

Sisal Hemp.—Soft Scale Insect (*Lecanium alienum*), Douglas, Brisbane district.

HORTICULTURAL CROPS.

Apple.—Codling Moth (*Carpocapsa pomonella*), Stanthorpe district.

Plum.—Leaf-eating Caterpillar, *Thalassodes pieroides*, Walker (Geometridæ), Cleveland; Glover's Scale Insect (*Mytilaspis Gloveri*), Cairns.

Citraceous Plants.—The Fruit Fly Maggot (*Tephritis Tryoni*), and Spotted Fruit Fly Maggot (*Tephritis psidii*), Moreton district and Nerang. White Scale Insect (*Chionaspis citri*), Fernvale, Bowen, Mataka, &c.; Chaff Scurf Scale (*Parlatoria pergandei*), Bowen; Bronze Plant-sucking Bug (*Oncoscelis sulciventris*), affecting young fruit, North Coast Railway; Fulvous Mussel Scale (*Mytilaspis fulva*), North Coast district; White Bar Sucking Moth (*Ophideres materna*), and two other reputed fruit-sucking moths (*Ophiodes tirrhæa* and *Serrodes inara*), Cairns district. (*Note.*—The Fulvous Mussel Scale is rapidly spreading throughout the Southern district, evidently through the agency of citrus nursery stock. This is much to be regretted, insomuch it is probably one of the most harmful of the scale insects affecting members of the citrus tribe.)

Mango.—A Plant Bug, *Arocatus* (*rusticus*, Stal)?, Fam. Lyæidæ, was received from Bowen, accompanied by the statement that it gave rise there to disease in connection with both foliage and fruit. A foliage-eating Beetle, *Lepidiota sp.* (Fam. Scarabæidæ), was received from Daru, B.N.G.

Tomato.—Fruit Fly Maggot (*Tephritis Tryoni*), Bowen.

Garden Fruit Trees Generally.—The Fruit Fly Maggot (*Tephritis Tryoni*). Owing to the special meteorological conditions that obtained in Southern Queensland during the last winter season and in early spring, the damage caused by this fruit pest, as periodically happens, was very pronounced, and was much adverted to in the public Press. The incident evoked many recommendations for coping with the evil; of these some were obviously inadequate, whilst others were such as have been advocated by the office (as the best that could be advanced, having regard to the limitations of our knowledge) from time to time during the last twenty years. The prevalence of the insect in the orchards of the Toowoomba district, brought under notice by the Chamber of Commerce existing there, was the occasion of the preparation of a special memorandum on the subject. A report was also prepared dealing with the official announcement that Victoria was imminently threatened with an invasion of the insect by the agency of fruit importation from Queensland. Another traversing the suggestion that a considerable modification should be observed in forwarding our bananas was also issued. The office has also dealt with the proposal of making the subjugation of the fruit fly one for federal action. "It is possible (to quote the views expressed) that good would result from the co-operation of this and other States. At the same time, I regard such a contingency as highly improbable." (*Note.*—It has been announced in the Press of Victoria that the Government Entomologist of that State has reared specimens of the so-called Mediterranean Fruit Fly (*Ceratitis capitata*) from oranges derived from Queensland. Its occurrence here has not been corroborated by this office. The incident, however, is regarded as being a serious one, and as threatening to greatly restrict the business of fruit exportation, since the pest mentioned is considered by the official referred to as one especially liable to adapt itself to the climatic conditions characteristic of the State with which he is connected).

Vegetables Generally.—Noctuid Caterpillars (*Agrotis, Heliothris, Spodoptera, &c.*) were very troublesome in gardens during the early weeks of 1906.

Miscellaneous Plants—*Cocoanut.*—Leaf-destroying Beetle (*Lepidiota sp.*), occurring at Daru, B.N.G.

Ivy.—The following scale insects were brought under notice as occurring upon the introduced ivy at Goodna:—Pink Wax Scale Insect (*Ceroplastes rubra*), Ross's Circular Scale Insect (*Aspidiotus Rossi*), and the Soft Scale Insect (*Lecanium tesselatum*). The incident was commented upon as illustrating a possibly wide distribution of harmful insects through the agency of a common ornamental plant.

Pastures and Lawns.—During March a novel destroyer of grass, in the Brisbane district, was brought under notice by more than one correspondent. This proved to be the caterpillar of the Pyralid Moth (*Botys phœopteralis*, Guenée). This had completely gnawn down the foliage. Fortunately, its ravages were restricted to circumscribed patches, and it displayed partiality for a grass of no great economic value—the Buffalo grass (*Stenotaphrum americanum*).

The Grass Caterpillar (*Leucania extranea*) was also locally prevalent, but not to an extent sufficient to give rise to a so called "caterpillar plague."

The Mole Cricket (*Gryllotalpa africana*), damaging bowling-greens at South Brisbane and Kangaroo Point.

Timber.—A summary report on insects injuring pine wood—the borers *Anobium*, two species; *Eurhamphus fasciculatus* (Curculionidæ); *Buprestis aurantiopicta* (Buprestidæ); *Dysthæta anomala* (Cerambycidæ)—was prepared for the Director of Forestry; also one on injury occasioned by insect borers exhibited by hardwood tent-pegs of Queensland origin whilst in store in Victoria.

HUMAN PARASITES.

Material relating to a reputed instance of Myiasis (negative) at Brisbane. The occurrence of a minute mite, the larval form (Leptus) of a *Trombodium* infesting children as well as goats, cats, and fowls in the Rockhampton district.

RAT PARASITES AND PLAGUE.

A report on the fleas, &c., found associated with the naturalised rats (*Mus. decumanus*, *M. ratus*, and *M. alexandrinus*)—viz., *Pulex chœops*, *P. fasciatus*, *P. serraticeps*, *P. irritans*, and *Typhlopsylla musculi*—a mite (*Holaspis*), and a louse (*Hæmatopinus piliferus*), for the Commissioner of Public Health's Report on Plague in Queensland. On the sex distinctions in fleas for the same. A request on behalf of the British Museum (Natural History), submitted through the Colonial Office, for examples of certain blood-sucking insects, has been referred to the office, and is receiving attention.

STOCK PARASITES—TICKS, Etc.

Stock.—The determination of ticks, authoritatively, for the Stock Branch of the Department, and especially of such examples as may have been detected by inspectors in the course of their duties, has been continued. This work, that is regarded as one to which great responsibility attaches, receives very close attention.

The desirability of forming a complete reference collection of Queensland Ixodidæ led to the preparation of detailed instructions, relating to mode of occurrence, method of collecting, &c., for the information of parties who might be expected to facilitate the realisation of the project.

A Dog Tick (*Rhipicephalus sanguineus*), hitherto unrecorded from Australia, has been identified as an external parasite affecting both cattle and dogs in the Brisbane district, and as infesting dogs only at Burketown and Bowen.

The Scrub Tick (*Ixodes holocycla*) has been identified as a tick occurring on cattle at Toowoomba. The part played by it in communicating a fatal disease to dogs as well as the nature of this malady are matters that need inquiry.

A species of *Amblyomma* has been identified as a tick of horses in the Burketown district.

The ordinary Cattle Tick (*Rhipicephalus annulatus, var. australis*) : A summary history of its life-history and transformation was submitted. It was identified as a tick maturing on horses at Mount Crosby; as a tick occurring on cattle that—suffered to become tick-infested whilst in transit thereto—had been transported to a station in the western area of the Central division of the State; and as a tick met with on sheep at Bundaberg, in which connection it had attained the age corresponding with the habit of egg-laying. (*Note.*—It is due to me to here recognise the skill manifested by some of the stock inspectors in detecting the occurrence of these parasites when as yet only they have attained the minute larval and nymph conditions, and which on more than one occasion has doubtless saved country still unvisited by these animal parasites from infestation by them, Mr. A. Beck's proficiency in this direction being especially commendable. The ticks thus procured have in many cases been referred to this office for identification and for an estimate of their approximate age; the matter referred to is, therefore, one of which it has special cognisance.)

Investigation of ticks associated with a native animal, the Common Opossum (*Phalangista vulpina*), served to dispel a suggestion that this animal was capable of disseminating the tick of cattle; it being found that these parasites in its case were not examples of the tick alluded to, but belonged to the genera *Hæmaphysalis* and *Ixodes*—*i.e.*, to ones distinct from the genus that includes the more notorious pest.

A so-called "Flying Tick" (a term usually applied to the Horse Parasite, *Hippobosca equi*), reported as occurring in a coastal district to the south of Cairns, was found to be a close ally of the Bird Fly Parasite, *Ornithomyia*, and not of the horse-loving insect named.

In September, 1905, an instance of a local and limited outbreak in recently imported stock of the Ox Warble was brought to light by this office as occurring in the Richmond district. This gave rise to a special report on the life-history of the insect, its harmfulness, and the significance of its occurrence; and, with the co-operation of Veterinary Inspector Dr. Cory, measures for coping with its presence were devised that, on being put fully into practice, have apparently led to its extermination. The incident has also suggested some minor modification in the procedure relating to stock importation.

POULTRY PARASITES.

Ticks from Camooweal occurring on fowls have been identified as *Argas persicus*, a poultry parasite that is becoming increasingly common in the fowl-houses throughout several districts of the State.

Individual Insect Species.—The following insects have been separately treated of in reports from the point of view of their life-history, transformations, and habits:—The Water Carnivorous Bug (*Belastoma indicum*), Brookfield and elsewhere; Brachyscelid plant gall-producing insects, Beenleigh; the Pink Wax Scale (*Ceroplastes rubra*); the Torpedo Plant Bug (*Siphanta acuta*), Dunwich; *Monophlebus ovicola* of Eucalypts, Brisbane; the Tree-locust (*Acripeza reticulata*), Brisbane; fly-capturing insects, for the information of a Northern correspondent; the spider *Ordgarius monstrosus;* ants as household insects; the neuropterous genus, *Psychopsis*, &c.

INSECT PARASITES AND SERVICEABLE INSECTS.

An Enemy of the Cattle Tick (*Rhipicephalus australis*).—In March, 1906, it was reported to the Inspector of Stock in the Rockhampton district that, in the neighbourhood of Yeppoon, a fly attacking ticks whilst still attached to their host had converted them to "mere lifeless and bloodless shells." An example of the insect to which this character for utility was bestowed, on being examined, proved to be the ordinary Stable Fly (*Stomoxys calcitrans*). The incident was not corroborated by the officer referred to. However, a similar one was mentioned as occurring elsewhere by a correspondent of the *Brisbane Courier*.

Lady Birds—Coccinellidæ.—During September, 1905, the Lady Bird *Verania frenata*, Erichson, occurred in the Rockhampton district in prodigious numbers, the Instructor in Fruit Culture, Mr. A. H. Benson, reporting that they might have been secured "almost in hatfuls." A local resident assumed that they caused the destruction of mango blossoms, an observation that suggested the preparation of two memoranda: "Friend and Foe," and "The Insect and Plant Eating Coccinellidæ."

A Sunnybank correspondent brought under notice the eminent services locally rendered by the widely-distributed *Orcus chalybeus* in consuming the Red Scale Insect, and a Redland Bay resident did so likewise. This is one of the lady birds especially extolled in the "Report on Insect and Fungus Pests" in 1889, and afterwards transported to and established in the United States of America. From the latter locality was also received as serviceable to the orange-grower the scale and aphis eating lady birds *Rhizobius ventralis* and *R. dorsalis*; and, in addition, the larvæ of a special Lace-wing Fly (*Chrysopa*).

Clover Fertilisers.—Steps have been taken, as already remarked, to ascertain the extent of the services of the imported *Bombus* species in fertilising clovers in New Zealand, in view of their possibly being requisitioned for similar work in this State. As, however—as long since observed—red clover, when grown in the Stanthorpe district, already possesses the habit of seed-production, doubtless owing to the visitation to its blossoms of some local hymenopterous insect. A similar observation may be credited to A. H. Benson.

Fruit Fly Parasites.—Much has been written concerning the parasites of fruit-fly maggots and their importation with advantage from other countries, the strenuous efforts of the West Australian Government to subjugate one that I formerly identified as *Ceratitis capitata*, a naturalised insect of that State. No parasite, however, has yet been discovered that promises to exercise greater efficacy, so far as the destruction of our local fruit-destroyer is concerned, than the small Braconid *Opius*, whose existence and circumscribed efficiency in this respect were already made public by the writer now several years since; and it is noteworthy that, whereas the West Australian entomologist has roamed over both hemispheres in quest of a parasite for the fruit fly prevalent in his State, his steps have not yet been directed to the region—the East Indian Archipelago—wherein were procured the first specimens of that insect described by Wiedemann, and that is probably its original home.

Parasite of the Purple Mussel Scale of the Orange (*Mytilaspis fulva* or *citricola*).—It is noteworthy that whilst this introduced pernicious insect, affecting citraceous and some ornamental trees, is being disseminated from two centres—Cairns and Brisbane—a minute Chalcidid parasite has already commenced to attack it. However, observations do not indicate that it will prove of much service in exterminating it.

Wax Scale (*Ceroplastes*) Parasites.—For some time past there have been indications that in the Brisbane district at least the Pink Wax Scale Insect is gradually succumbing to some parasite agency; and an hymenopterous parasite has been discovered, independently by A. Koebele and the writer, attacking in Queensland a variety of the White Wax Scale Insect.

A project having in view the introduction to Queensland of a parasite or parasites from the Hawaiian Islands for service in the extermination of *Ceroplastes rubra* was abandoned when it was learnt that the Queensland Acclimatisation Society proposed to engage in this useful project, and although since their efforts have not been successful it has not been through lack of endeavour on their part.

Parasite of Leaf-eating Lady Bird (*Epilachna 28-punctata*).—It is worthy of record that this insect is being destroyed in Queensland to a limited extent by an hymenopterous insect that, as does that of the Orange Mussel Scale, still awaits description.

Black Scale (*Lecanium oleæ*) Parasite.—A most formidable enemy of the insect named, that I discovered twenty years since and already described in 1889, when I announced its services to the local fruit-growers, has been transported by Compere to West Australia, named after him, and described afresh.

A suggestion that the discovery and utilisation of serviceable parasites, &c., for the subjugation of injurious insects of widely-extended occurrence should be referred to a standing International Committee, made by the Hon. Elwood Cooper, of California, who early made known in the United States the researches of the Queensland Entomologist in this direction (*vid.* Presidential Address, Report State Board of Horticulture for 1900), has received the approval of his office.

Parasites and their Services in California and West Australia.—The published claims, made on behalf of these parasites that have been transported to these countries in their endeavour to cope with injurious insects already prevalent therein, have been studied with especial care, and a recommendation has already been made that these should be inquired into, and, if possible, established independently by competent observers other than their present promulgators.

Conditions Determining the Utility of Parasites.—The introduction of a parasite foe of an injurious insect to a country in which the latter has become established has, in a large number of instances, proved either of little avail for accomplishing this service or of none whatever. In fact, success in achieving this purpose is dependent on circumstances commonly ignored, and that are as follows, to quote our unpublished report:—

1. The parasite must be one whose inherent rate of increase is high, and its parasitic habit must involve the destruction or suspension of reproduction of its host.
2. The insect whose destruction is contemplated through its agency must constitute its exclusive or well-nigh exclusive food, and must be freely accessible to its attacks.
3. The climatic conditions of its new home must not be detrimental to its existence and development.
4. It must be introduced without previous, simultaneous, or subsequent introduction of its own natural enemies (hyperparasites especially) being effected.
5. The country to which its introduction is effected must not already possess any insect in its fauna that will as a parasite attack it; or contain other formidable form of natural enemy.

Due weight being bestowed on these essential considerations would have prevented the anticipations of the more sanguine advocates of the use of parasitic insects, for the purposes referred to, from being unfulfilled.

APICULTURE.

Apiculture being a branch of applied entomology, it has been ever felt that it should come within the scope of the office, so long as no provision were made for dealing with it by the appointment of one especially conversant with the subject.

In the Annual Report of the Entomologist for 1904-5, details were given of a syllabus as a guide for tuition in this branch of technical learning, that—submitted by him—had received the imprimatur of the

Board of Technical Instruction, and afterwards of the Department to which this was accessory; and it is gratifying to record that this syllabus referred to has secured the commendation of the Bee-keepers' Association of Queensland.

The only questions, referred to the office during 1905-6, have been in connection with the obscure ailment or ailments of bees known as "dwindling," and one on a suggestion—mooted in the Press—to import from another country a disease concerning which it was asserted that it was inimical there to certain insects (wasps) included in the same family as are bees, with possible result that it might prove fatal to the notorious Fruit Fly, but with perfect disregard for the fact that although it might accomplish this—a very unlikely contingency—it would with greater probability injuriously affect the insects connected with the industry now under consideration. Further, Victorian experiences of the so-called eucalyptus flavour attributed to Australian honey have been inquired into.

However, recognition of the prominence given by private individuals to apiculture, and familiarity with the views of the more enlightened of those connected with it, has suggested that the Department might, with considerable public advantage, endeavour to a greater extent than in the past to further cultivate, what elsewhere is regarded as an important field of legitimate undertaking, as a feature amongst its activities.

Even under present conditions, there are settlers in the State who make a living from this branch of industry, and many amongst whom it is one that is subsidiary to other pursuits in providing income; and it cannot be gainsaid that both foreign and home markets can absorb—with profit to those who furnish them—many times the amounts of good honey and of bee-products that now enter them, for it is a fact that the public taste for honey as a food is in process of rapid development, and that the utilisation of honey, bees'-wax, &c., finds increasing prominence in various technical industries; so that the above-mentioned state of affairs as regards the local industry that relates only to a comparative small number of residents—although by no means an insignificant one—will admit of a considerably extended application.

We have in our myrtaceous trees alone—the species of Eucalyptus especially—an immense untapped source of wealth in the honey that their blossoms yield, and that is made available through the agency of bees, and of bees only; a circumstance that is emphasised by the procedures of the residents of other countries wherein these immense flowering trees have been already extensively naturalised. A well-known bee-keeper of considerable local experience (D. R. McConnell) informs the writer that he has estimated in the course of his work that a single eucalypt may yield honey in amount equivalent to that furnished by an acre of ordinary bee-pasturage. Many other plants comprised, too, in our rich flora, are similarly endowed. Moreover, apart from direct potential wealth; success in horticulture and general agriculture alike, may be oftentimes favourably influenced by the fertilisation of the flowers of plant-crops by bees, whilst, on the other hand, they are never prejudicially affected by their agency.

However, everyone is not naturally endowed with a special aptitude for bee work, and, therefore, qualified to become a successful apiarist; for the good bee man (as the editor of the *British Bee Journal* has remarked) must be somewhat akin to the bees themselves in disposition, temperament, and demeanour—a not very common endowment; yet everyone, by engaging in the industry, endeavouring to fulfil its requirement, and studying bees and their habits, as he must if he aim at success, will be affected by a discipline that, whilst strengthening the traits alluded to, will make for his advantage as a man.

Moreover, apiculture is a pursuit that especially appeals to the capabilities of women whose tastes or necessities lead them to engage in some rural occupation of profit, as is abundantly evident from what is so noticeable elsewhere, if not already illustrated in this State.

As a special instance of what can be done for the industry under consideration, the West Indies, and the development of apiculture therein, may be referred to. There one can perceive the results from strenuous efforts on the part of both the Imperial Department of Agriculture and of the Bee-keepers' Associations, alike actuated by a single purpose consistently pursued. Thus in Jamaica alone the exports of honey in six years—1897-1902—increased nearly eightfold, and have maintained similar progressive development ever since; prejudice against both the honey and wax that they supplied being overcome, and the latter, indeed, securing the highest prices in the London market—*i.e.*, £7 10s. to £8 15s. per cwt.—whilst the honey has obtained remunerative prices.

To obtain such results there, as elsewhere—in West Australia, New South Wales, New Zealand, for example—it has been found necessary to provide for the services of an highly qualified expert, who could at once get into touch with the people, impress them with a sense of his attainments, and show them exactly the class of product that the public taste and world's markets require; and, not only so, but how to discern it, how to encourage bees to produce it, and thereupon how to use the best means for securing the product of their industry.

In Ireland the Department of Agriculture and Technical Instruction not only does this, but the county committees of A. and T. I. of ten counties, co-operating with the central organisation, provide for instruction in bee-keeping by itinerant experts also.

It is also deemed necessary to publish information connected with apiculture in book form for convenient reference, issuing a publication relating not so much to the principles of the subject—already dealt with in many cheaply obtainable treatises—but how to apply those principles under the varying local conditions that confront the industry; and further, by this and other means, to impress the public generally with a full sense of the value of honey as a food, even in comparison with sugar, and of its many uses for this and other purposes, so as to promote local demand, at present but poorly exploited.

As a feature in successful Nature Study, now so greatly favoured by our educational authorities, and that is comparatively of little avail if it be not something more than informative, few objects can be treated with such facility and advantage as can the honey bee—a consideration generally, however, overlooked. I am informed, further, by the Director of the Brisbane Technical College—himself well qualified not only as an educationalist but also as a bee-keeper to express an opinion on the subject—that the principles underlying the hive, its construction, and its management might readily find place also in the curriculum of some of our primary schools, in a more extended reference to the subject than is above alluded to. Should a model lesson be carefully prepared for subserving those scholastic ends, it might thus serve as a stepping-stone and introduction to an undertaking, rendered profitable, if by no other means, then by the mental discipline and enlightenment thus early accorded and created, and that must form no inconsiderable portion of the capital of the successful bee-man.

Allusion has just been made to the importance of teaching what is best in honey and in bee-products generally. Standards of excellence with respect to different classes and varieties of these might be arrived at and maintained by our Department also, as already in the case of dairy products. Elsewhere, however, other agencies accomplish the same result under official encouragement—in Jamaica, as an instance; for, although there the Imperial bureau uses every effort to impress on bee-keepers the necessity of aiming at a high degree of perfection in these matters in consonance with the requirements of different markets, insisting again and again on the utility of efficient grading, the realisation of the end thus aimed at is mainly dependent

on properly organised combined effort embodied in the non-official Bee-keepers' Association. This (to quote a report to hand) "is a commercial undertaking, working along co-operative lines, which has set itself steadily to improve the quality and the appearance of the honey supplied. With this object in view, a board of examiners was appointed (by it), which inspect every package sent by members of the Association for shipment. The product is then graded by the examiners, and if it is found to come up to the required standard the package is branded with the association stamp." Accordingly, "in the market reports during the last three months (states our authority elsewhere) it has been quoted at from 15s. to 30s. per cwt." [*Agricultural News*, Imperial Department of Agriculture, II., 1904.]

Of course, all localities are not suitable for bee-keeping, a result influenced by many factors, and of those that are some are more so than are others. Where these localities are, and in what their special merits consist, should be inquiries that the public might with confidence refer to the Department also.

And here it may be remarked that it will be found that some of the best sites for the bee-keeper occur in districts not required for agriculture; and, in some instances, moreover, not only not suitable for its requirement, but also similarly unfavourable for those of the follower of pastoral pursuits. Even comparatively arid districts may, under some circumstances, produce honey of the highest quality, as we see from the estimation in which, for example, the product of Chili is held. This must happen, especially in Australia, with an industry whose success is identified so largely with the growth of honey-producing trees, many of which (*e g.*, Eucalypts, &c.) thrive only, or in special degree, in elevated rocky situations.

This will suggest the observation that pastoral and apicultural pursuits, independently followed by separate individuals within the same areas, are not incompatible; and accordingly it is a matter for consideration if bee-keepers should not be encouraged and protected in starting bee farms on leased country or such as is subject to some form or other of occupation license, wherever this be suitable for their pursuits, as is already done in Victoria and Western Australia, their status and tenure being confirmed—as there—by special legislative enactment defining the mutual relations of the two classes of tenants alluded to, securing the preservation from destruction by the pastoralist of the honey-producing trees occurring within the area granted to the apiculturist, and certain exclusive rights of bee-pasturage to the latter within a limit of three miles from the centre of his holding, but so long as he may maintain a bee farm consisting of twenty or more hives alone.

Such privileges, legally recognised, whilst they would enable an important natural asset to be realised. would have the ulterior effect also of staying the destruction of valuable timber trees—hardwoods especially—that is constantly being deplored; and, moreover, otherwise bring advantage to the State, if even alone in preserving the favourable influence of arboreal vegetation on the distribution of rainfall, already widely recognised as obtaining.

Apart from their bearing on the influence of localities on honey-production, the components of any particular local flora are a great determining factor on the character of the honey produced; for, whilst some of our trees yield an indifferent product, others give rise to ones of the highest excellence, and all, perhaps, honey of special qualities. This is a matter for special elucidation and precise statement. Already a great deal of information on this head has been gleaned and is distributed amongst individual bee-keepers, but it requires collecting, consolidating, and supplementing. The preparation of a bee flora, with respect to geographical distribution and seasonal manifestation, would serve a similarly useful purpose.

Any temporary failure in the natural supply of the honey from native vegetation or spontaneous decline in honey-production by bees otherwise originating should be made a matter of investigation and record, to the end that it might both be anticipated and obviated in times to come. Moreover, in view of such occurrences, steps should be taken to ascertain if the native sources of honey might not be supplemented by planting special honey-bearing trees or plants, as has been done elsewhere, the interests of forestry and horticulture often being identical with those of the apiarist so far as this work is concerned. The Imperial Department of Agriculture of the West Indies is wont to extensively distribute special plant seeds amongst bee-keepers, in its recognition of this requirement of the industry. Often such trees are of high economic value, apart from that which resides in the nectar content of their blossoms, as, for example, the Logwood-tree and the Central American Rubber (*Castilloa elastica*), both of which, whilst producing honey of the highest quality, will thrive in many parts of the State.

Even the most appropriate form or forms of beehive to meet the needs of bees under our special conditions of climate is a matter that—as Dr. Hamlyn Harris has represented to me—is one for special inquiry.

At present the existence of that serious disease of bees spoken of as "Foul Brood" has not been observed as far as is known to the writer in Queensland as yet; and it is a matter for consideration, since its occurrence in both Victoria and South Australia has been reported (apparently on sufficient evidence), as to whether it be not expedient to enact here a Foul Brood Act similar to that of the West Australian measure of 1899, but with the amendment proposed in that State in 1903. Of course, in making this suggestion, it is assumed that the finding of Pasteur, followed by Watson Cheyne and Cheshire, that attributes its origin to a special bacillus, be correct, and that Foul Brood be not actually produced by the normal *Bacillus mesentericus* of the bee alimentary canal, as the investigations of Lambotte ("Annales de l'Institut Pasteur, 1902") possibly indicate.

Seeing, moreover, to what extent apiculture is capable of being advanced by co-operative effort, the Department might also use its influence in promoting this in every direction, that any embodiment of such effort might decide to legitimately proceed along, in furtherance of this enterprise. The same remark applies to conferences of bee-keepers, and to expositions by them illustrating either the art of bee-keeping or the products of the industry; also to special scientific investigations—chemical inquiries—decisive of the quality in some respects of honey and the presence of adulterants above all. It also, through its agencies, might ascertain the locations and requirements of different markets, as well as the nature and extent of price fluctuations that they may from time to time exhibit.

INSECTIVOROUS BIRDS

Attention to the subject of insectivorous birds has continued to engage the attention of the office. The departmental collections, illustrating those represented in the fauna of the Moreton district, were exhibited for a second time at the annual exposition of the Queensland National Association in August, 1905; and a selection thereof figured in a public exhibition of objects incidental to the furtherance of Nature Study held under the auspices of the Royal Society. The value of such demonstrations was emphasised by the local Press in both instances. The collection, accommodated in special cabinets, is now on permanent exhibition in the Economic Museum attached to the Department offices.

A report was submitted adverse to a proposal (1) To except seed-eating birds from the provisions of the Native Birds Protection Acts, with especial reference to the beautiful Gouldian Finch (*Poephila mirabilis*); also (2) to restrict bird-trapping to individuals paying a specified license fee in return for the exclusive privilege; and, further (3) to permit them to capture and deal at all times with birds whose protection is now legally provided for.

Also, one on a suggestion covering the destruction of fish-eating birds (cormorants, shags, &c.).

Further, one on the Chowong (*Shepera graculina*) and other birds in reference to their dissemination of the naturalised plant *Lantana camara*.

A large series of stomachs of insectivorous birds has been brought together, and is being periodically added to, in order that a methodical investigation into the specific regimen of the different representatives of this group may be carried out, and thus evidence as to their utility, incapable of refutation, be made available for supplementing expert testimony.

It is due to me to bring under notice the fact that the Queensland Society for the Prevention of Cruelty, in a highly commendable manner, has endeavoured to impress the youth of both sexes and their preceptors with the claims of our useful birds on their protection, and to make them objects of study on their part, instituting to this end prizes, alike for juniors and seniors of both sexes, to be competed for both amongst the attendants of the separate schools (public and private) and by the schools as a whole *inter se*, the competition taking the form of an essay which, whilst descriptive of any ten birds known to the competitor and of their habits, disclosed a knowledge of the provisions of the Native Birds Protection Acts and their local bearing. That the purpose in view has been amply met is shown by the quality of the essays submitted, a conclusion that this office has had abundant opportunity for arriving at.

II.—VEGETABLE PATHOLOGY.

AGRICULTURAL CROPS.

Sugar-cane.—Two instances of the occurrence of root disease caused by *Heterodera radicola*, in the Isis district, were inquired into, involving in each case local investigation. This, under special meteorological conditions, is likely to be quite harmful within circumscribed areas, and to become more general. It is doubtless often attributed to parasitic fungi, as organisms of this nature attend its development in the plant; their relation to the disease is, however, secondary.

In December, 1905, a Wide Bay correspondent brought under the notice of the office what appeared to be a serious disease of sugar-cane, occurring at Nikenbah and in its vicinity, affecting more than 75 per cent. of the cane in one instance, and as extending its range of occurrence, having "spread to an alarming extent" since its first appearance five years ago. It is to be regretted that a request on the part of the office to visit the locality indicated, either at the time or on a subsequent occasion, and to inquire into the origin of the trouble with a view to remedying it, could not be complied with.

This decision has not encouraged further prosecution of inquiries into the pathology of sugar-cane, hitherto regarded as an important province of legitimate undertaking, and for which, through strenuous effort long continued, reputation has been secured in quarters widely remote from the State, accorded by authorities of the highest attainments.

In one district at least there are indications of a local development of "Gumming Disease," and evidently through disregard of the lessons conveyed in the Bulletin of the office on that subject.

Maize.—"Blight," Bowen and elsewhere in the North (*vid.* Entomology).

Sorghum.—A common disease, simulating "rust," was brought under notice by a Biggenden correspondent. This was a root affection of non-parasitic origin, and the symptoms were indicative of physiological injury implicating the entire plant constitution.

Oats.—The ordinary rust disease of oats, caused by *Puccinia coronata*, was identified as occurring as far North as Atherton, in the Cairns district.

Lucerne.—A partial failure in lucerne was brought under notice, that was apparently due to the Leaf Fungus, *Læstadia destructiva*, in whose manifestation and development small Jassid insects doubtless assisted.

Potatoes.—What was described as a serious disease was reported to the office as damaging potatoes, cultivated under experimental conditions, in the Beenleigh district. The occurrence, however, was reported when the time for investigating it had already elapsed.

(*Note.*—It may be noticed in this connection that the potato crop is continuously manifesting an increase in the extent to which Scab Disease is prevalent; whilst, on the other hand, the far more serious Bacterial Disease, originally elucidated by this office, and now identified as occurring widely throughout the world, has, during 1905-6, manifested no special larger extent of development. The former event is coincident with the decision on the part of the New South Wales authorities to regard "Scab" as a disease that, when present on potatoes, is to be deemed a bar to their importation; a decision that has had the effect of causing potatoes subjected to scab disease to be forwarded to Queensland to an extent not previously witnessed. This statement applies to "Eel-worm" or Nematode disease also, a matter of much greater consequence, having in view the number of staple crops that it seriously injures.)

Sweet Potato.—The failure in the production of tuberous roots and so of crop, a physiological trouble, was brought under notice as occurring at Mackay, and suggestions made for obviating its occurrence.

Mauritius Bean.—Comparatively enormous root tuberosities, suggestive of the presence of disease, occurring in the Isis district, were found to be due to the ordinary symbiotic bacteria of the leguminous root system.

Cotton —A leaf disease in the Moreton district awaiting elucidation.

Sisal Hemp.—Leaf affection, destructive alteration of the tissue of the younger foliage, caused by sudden meteorological changes, occurred at St. Helena and Peel Island Plantations. A distinct parasitic fungus disease has also been detected, and awaits investigation. Its presence, however, is not of much economic significance.

HORTICULTURAL CROPS

Cabbage.—A highly injurious leaf disease, caused by *Alternaria brassicæ*, was submitted by a Biggenden correspondent, but it is known as occurring in many other parts of the State, where neither its cause nor the mode of its prevention is respected or recognised.

Tomato.—A bacterial disease, caused by *Bacillus solanacearum*, existing at Yeronga and elsewhere.

Citraceous Plants (Orange, &c.)—Premature shedding of fruit in the Brisbane district; a constitutional trouble, due to dry soil conditions. Failure in young citraceous trees, occurring at Caboolture; of obscure origin. "Die Back," associated with the presence of the fungus *Phoma* (*citri*, Saccardo)? on the terminal woody growth, at Bowen.

APPLE.—An obscure fruit disease, affecting only special classes of apple, and simulating "Bitter Spot"; apparently originating in the attacks of some small haustellate sap-loving insect, Ballandean.

GRAPE.—Destruction of crop, caused by excessive rainfall, Moreton and other districts; Gall or Eel-worm disease, caused by *Heterodera radicola*, Enoggera district; five instances. (*Note.*—This disease is becoming increasingly prevalent; and, as ultimately it is as prejudicial to the plant as is *Phylloxera vastatrix*, is one to prevent whose dissemination very special precautions are needed.) "Gumming" disease, Brisbane.

MANGO.—Premature shedding of fruit in the Brisbane district, originating from unfavourable soil conditions, and not—as is usual—caused by parasitic fungus attack. Two special leaf diseases brought under notice by a Bowen correspondent proved to be caused respectively by the parasites *Glœosporium mangæ*, and the other by a species of *Pestalozzia*; one may be appropriately designated "Leaf Freckle," the other "Anthracnose."

STRAWBERRY.—A leaf disease, apparently distinct from that caused by *Sphærella fragrariæ*, Ipswich and elsewhere. A disease that might be appropriately designated "Black Root," caused by *Botrytis cinerea*, a parasitic fungus, also attacking the leaf stalks, Brisbane. (*Note.*—This disease has been remarked on plants in process of importation from Victoria.)

ORNAMENTAL PLANTS.—A serious carnation disease, especially baneful to certain varieties, caused by *Septoria* (*dianthi*, Desm.)? has been very prevalent in the Moreton district, and has on several occasions claimed attention. (*Note.*—It is one of the carnation diseases met with commonly on recently imported plants; a remark that applies also to a second disease, due to *Uromyces Caryophyllinus*.)

III.—PLANT PHYSIOLOGY.

Investigations under this heading, apart from those incidental to pathological inquiries, have not claimed the attention of the office. Two memoranda, however, were prepared—(1) A description of the method devised by Dr. W. G. Borsama for the estimation of saponin in plants; and (2) theoretical considerations pointing to a possible preventive remedy in the sorghum-poisoning of stock, and as apparently yielding an explanation of certain anomalies in the hydrocyanic acid estimation with respect to different plant species or plant organs.

These matters are mentioned in order to emphasise the fact that, whereas this office receives valuable aid through its opportunities of conference with the able chief of the chemical division, Mr. C. J. Brünnich, whose investigations are receiving world-wide reputation, some effort is attempted to reciprocate this service.

MISCELLANEOUS.

Reports have been furnished dealing with many miscellaneous topics—*e.g.*, the habits of Bandicoots (*Perameles spp.*) and the protection of crops from their injuries. (*Note.*—Their insectivorous propensities have meanwhile been fully insisted upon.) Poisoning of Opossums (*Pseudochirus vulpina*), in an instance of their manifesting an appetite for ripe oranges still upon the trees. On the method adopted by the Pasteur Institute in the preparation and exhibition of the Danyz virus in rat destruction, after the method of M. H. de Lapparente, for the Department of Public Health. On an occurrence of a "plague" of rats near Walla, Gin Gin district. (*Note.*—The information available was inadequate to admit of other than general advice concerning methods of repression being afforded.)

PUBLICATIONS.

The duty imposed upon the office of providing articles for inclusion in the official organ—the *Queensland Agricultural Journal*—has not been discharged, other claims on its attention having arisen to render the fulfilment of this impracticable, except in a perfunctory and unsatisfactory manner. (*Note.*—This regrettable incident finds its explanation in the circumstances alluded to under the concluding paragraph of the report headed "Provision for Expansion.")

However, a lengthy treatise on "Top-rot of the *Sugar Journal*—an Inquiry into the Nature and Origin of a Disease affecting Sugar-cane in the Herbert River and other districts of Queensland," the printing of which has been undecided, was considered of sufficient interest by the Colonial Sugar Refining Company to suggest to it the expediency of itself preparing and publishing a very full and ably prepared summary, a duty imposed on the head of its chemical staff, Dr. Kotmann, and whose work has already been republished by the Press as well as by the Department itself. As already reported, Dr. Kotmann's article contains the material points from the cane-planter's point of view of the memoir, and these are set forth in an especially lucid manner. It is not, however, considered that the summary embraces the full ground covered by it when regarded as a contribution to the pathology of sugar-cane, in which feature its value, if any, would appear to reside.

Many of the reports alluded to in this Annual Statement of the work of the office have been presented in a form suitable for publication, a statement that must be taken into consideration when absence of contribution to the official departmental publication alluded to are referred to.

IV.—DISEASES IN PLANTS ACT, 1896.

Unless in exceptional cases, my services as inspector under the Diseases in Plants Act have not been requisitioned, doubtless out of consideration for the demands of other important work of a more epecial kind proper to my office and of another description, and whose value would have been impaired by the consequent interruption involved. . . . . .

However, there are several matters of importance connected with the administration, apart from the work of the inspectors, on which my opinion has been solicited, some being matters with regard to which it has been both respected and acted upon. Thus, amongst questions submitted the following may be mentioned:—

(1) The question of importing seed cane from the Hawaiian Islands;
(2) Of importing plants from British New Guinea;
(3) Of importing sugar-cane from Java ;
(4) Of packing bananas destined for export to Victoria in cases;
(5) Of importing plants from British New Guinea.

(In this instance a collection of orchids and crotons, alleged to be of high value, but coming from a locality that it was considered by the office was accessible to wind-borne spores of the fungus of Coffee Leaf Disease (*Hemileia vastatrix*), was submitted as a consignment that might be excepted from the effect of the regulation under which an embargo exists against plant importation from the State referred to; and the question raised was met by the following expressed opinion:—"I am not aware of any circumstance connected with the present lot [consignment] that should justify its admission as an exceptional act.")

Potato Importations.—The question of importing potatoes was raised on more than one occasion, under circumstances that would require that the regulation that interdicts such importation from countries in which the potato murrain caused by the fungus Phytophthera exists should be temporarily set aside. The market dearth in these vegetables, by reason of the partial failure of crop in Tasmania, led to much importance being attached to the attitude of the Department towards this proposal. However, this was greatly influenced by the fact that quite recent experiences in New Zealand had shown that the embargo sought to be set aside had great justification for its existence and consistent respect. There the following facts had been officially announced regarding the disease against whose introduction the regulation referred to is directed:—

(1) The origin of the disease here (*i.e.*, in New Zealand) must be attributed to the importation of diseased seed either from America or Great Britain;

(2) It was first noticed in the Auckland district towards the end of October, 1904;

(3) The exportation of diseased potatoes from Auckland in the earlier part of the season has without doubt been largely responsible for the dissemination of the disease throughout many districts;

(4) The area under potatoes in 1903-4 was 31,778 acres; in 1904-5, 26,331 acres; showing a decrease of 5,447 acres. Disease has reduced the yield by fully 2 tons per acre, which equals 52,662 tons, which at only £3 per ton means a direct loss of £157,986 (Annual Report of the Biologist, New Zealand, for 1895).

(*Note.*—New Zealand, wise after the event, has been led now to adopt the Queensland regulation restricting potato importations.)

The office has reported that the prohibition against the importation of potatoes must extend to Europe, America, British India, and Japan, as well as to New Zealand especially.

The suggestion strongly urged, that British Columbia should be excepted from the scope of the regulation that referred to America, was met by two reports—(1) "On the grounds that should influence the Department in excluding potatoes from British Columbia"; and (2) "On further evidence of the occurrence of the disease" there.

Special forms of certificate that should accompany all potato importations from oversea ports have been prepared and submitted.

In the case of one small consignment of valuable seed potatoes whose importation was stayed, the office recommended that the consignee, being evidently actuated by motives of public interest in attempting "to add a valuable variety to those potatoes already growing in the State," should be supplied "with seeds of other recently created kinds in lieu of those destroyed," and from the supply already raised by the Department.

Threatened Importation of Phylloxera.—The opinion expressed in the section of the report for 1903-4 (Rep. Dep. Agr., p. 69) under this heading is submitted to the attention and consideration of the Department, whose policy with regard to the question in view should be that of South Australia itself, our vignerons and wine-makers having interests identical with it.

During the period 1905-6, no new disease was detected in matters in process of importation, except the Potato Weevil of Barbados (*Cryptorhynchus batatæ*), that arrived here on seed tubers; a most serious enemy of the plant named. It must, however, be mentioned that the opportunity for examining plants figuring in the import trade is seldom forthcoming.

V.—THE NATURE STUDY MOVEMENT AND FORMAL INSTRUCTION.

On several occasions oral and written instruction has been given to the individual teachers of primary schools pertaining to the nature and features of interest in various objects embraced in the insect world, in furtherance of the Nature Study provisions of the educational curriculum that they are required to conform to. This is a province of work by no means merely nominal, as will appear from the fact that it has necessitated the preparation of reports for the behoof of applicants from all parts of the State, in many cases reports of considerable length, and involving the determination of many insect species.

Further, a course of nine lectures, under the auspices of the Brisbane Technical College, has been delivered on the subjects of—Insects (5), Molluscs (2), Crustacea (1), and Echnioderms (1). These, presented on Saturday, have been largely attended, principally by teacher students, whose evident interest in them has been much appreciated.

Requisition for lecturing before the members of the Moreton Teachers' Association has also been received.

Moreover, as an effort in the direction of promoting Nature Study also, the office has been instrumental, with the co-operation of certain local enthusiasts, in inaugurating a Field Naturalists' Club that, embracing many teachers amongst its members, should subserve important educational ends.

These activities should, to some extent, make amends for the cessation of the oral instruction in Economic Entomology and Plant Pathology afforded during a considerable period of the past by the Entomologist to the students of the Queensland Agricultural College, and that is now no longer requisitioned.

The use of itinerant lecturers in Tasmania, under the auspices of the Department of Agriculture of that State, for the purposes of conveying information on agricultural topics, especially those concerned with plant diseases, having been well spoken of, inquiry has been made with a view to ascertaining how far it could be adapted to our local conditions and with regard to the subjects covered by the work of this office.

CO-OPERATION BETWEEN CERTAIN OFFICERS AND THE ENTOMOLOGICAL DIVISION.

Having few opportunities for local inquiry, owing to the nature and to the extent of the work devolving upon me rendering it imperative that a considerable portion of my time shall be spent in the head office, I have sought to create intelligence agencies in the persons of those members of the staff resident in the country districts whose avocations are connected with agriculture, making to this end a recommendation that, as is understood, has been referred respectively to them. In submitting this proposal, I have been actuated also by the following considerations:—

(1) It is desirable that this office be generally informed as to the pests and diseases affecting special crops and cultivated plants, irrespective of kind, in the different parts of the State (wherein they severally reside);

(2) That this information be promptly communicated, in order that opportune advice be issued, embodying the latest teachings of a new and progressive science, for the behoof of those directly interested in coping with whatever agencies of the nature indicated be prejudicial to their industry;

(3) That the significance of the presence of destructive insects or disease, even when slightly manifest, be authoritatively determined;
(4) That, in the event of local occurrence only, measures to obviate wider distribution may, if practicable, be recommended for adoption or be prosecuted; and
(5) That, insomuch as crop returns may be greatly affected by the occurrence of pests and diseases, such information be submitted that a due estimate may be formed by the Department of the local state and prospects of any particular agricultural enterprise.

It is gratifying to announce that this suggestion has been complied with by the management of the State institutions at Biggenden and Cairns; and it is hoped that other ones will emulate their example, those at Mackay and Bundaberg especially.

LIBRARY.

With the exception of certain publications of periodical issue, no works have been acquired by purchase. In order, however, to keep the office abreast of recent discoveries in the domains of entomology and plant pathology—a matter regarded as of great importance, and one held constantly, therefore, in view—some recent works of reference should be acquired. Donations have, however, as in the past, formed a not inconsiderable element in the list of works added to the official library, and the generosity of their respective givers is gratefully acknowledged.

COLLECTIONS.

The official collections of insects and of objects illustrative of diseases in plants now occupy the entire number of store boxes and cabinets secured for their preservation, and, in fact, are already too numerous to admit of their methodical disposition.

Accordingly, it will be necessary to have at least a number of store boxes provided, not only for further enlargement of the series of insects obtained, but also to remove the last-mentioned undesirable state of things that has arisen.

Unfortunately, during the excessive wet weather that occurred during the earlier months of the year, great humidity developed in the office occupied by the collections under consideration, partly on account of their situation. This, unfortunately, resulted in the occurrence of much mouldiness and corresponding damage.

Granted an assistant and a number of suitable show cases, it would be practicable to provide valuable object lessons conveying important knowledge regarding destructive and useful insects, their structure, transformation, and food relationship, and so give effect to a project long cherished. Meanwhile, the services of a technical assistant have been requisitioned; and these, it is trusted, will be early secured.

PROVISION FOR EXTENSION.

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24th July, 1906.

HENRY TRYON, Entomologist and Vegetable Pathologist.

REPORT OF THE TOBACCO EXPERT.

Sir,—I have the honour to submit my annual report upon the tobacco-growing industry in Queensland for the year 1905-6.

The crop of 1904-5 proved to be a record one since the growing was transferred to the Texas and Inglewood districts. This applies to the yield per acre, quality, and quantity. There was about 1,100 acres under tobacco, yielding nearly 1,325,000 lb., or something like 1,200 lb. per acre. The average quality was the best that had been produced up to that time, and was sold at prices ranging from 4½d. to 9d. per lb. There is yet unsold of this crop some 25 tons, mostly of a medium or poor quality; and some, pressed too soft, has become somewhat mouldy.

The crop in the above districts for 1905-6 is a fine one, showing colour and texture, with good wrapping qualities, and a large portion of it will doubtless go into what has heretofore been considered strictly American work, and, I am sure, without detriment to the smoking qualities. It is probably 75 per cent. of the new and best varieties of the plant, and to this is probably to be attributed largely the splendid quality of the crop. The crop will not exceed 275 tons, owing entirely to the dry weather which prevailed throughout most of the district during the season for transplanting.

There is a disposition among some of the larger growers to take up flue-curing, and, though this method has not been considered profitable in the United States for this class of tobacco, it is a hopeful sign that the growers are beginning to realise the importance of care in the curing and handling of this crop, and the buyers are pressing the lesson home to them by buying according to quality. It also means the displacing of alien for white labour.

There has been no disease the past year in the tobacco beds or fields, blue mould seeming to have abated for a while at least.

At the State farm we were only able to get out some 10 acres, a part of which did not mature well on account of the dry weather, but we have been able to secure some 5½ or 6 tons, most of which has cured fairly well. The varieties grown were Lacks, Yellow Pryor, and Yellow Orinoco on equal areas, and these proved all good and satisfactory sorts.

There is now in the country a large amount of acclimatised seed of the finest varieties of tobacco, and improvement in the quality of the product should continue, and, consequently, increase the demand for our tobaccos, as it will probably displace a good deal of the imported article as it continues to improve.

Cigar Leaf.—There is now a demand for a limited amount of cigar tobacco, and at satisfactory prices; and farmers in the coastal districts are inclined to go in for growing this character of tobacco, and some 30 or 40 acres will probably be planted the coming year, divided between the Upper Coomera and the Cardwell districts, with a small lot at Bowen. For the small experimental lots grown this year very satisfactory prices were obtained. The samples have elicited most favourable comments from the purchaser, with the opinion that an export demand can be created; should this be so, the demand for these tobaccos will be a large one. I believe it is true, for some of the samples show considerable merit, which will be greatly improved as the growers become more expert in the growing and handling.

These tobaccos should prove very profitable, as in the country north of Bowen two crops per year can be grown, and should yield a ton to the acre—say, 12 cwt. for the first crop, and 8 cwt. for the second one. At 7½d. per lb., this would yield £70 per acre. This crop can thus be made a very profitable one to small farmers with growing families, as children of either sex, from twelve to sixteen years of age, can be employed to great advantage.

I consider the outlook for the future of the tobacco industry in this State as most promising, and, if farmers can be induced to take the necessary care both in cultivation and handling, we will gradually displace much of the imported article.

Thorough cultivation is very necessary in this crop.

R. S. NEVILL.

REPORT OF THE MANAGER OF THE STATE FARM, WESTBROOK.

Sir,—I have the honour to submit my report for 1905-6 as follows:—

It will be noticed in the meteorological table that the rainfall for the first quarter of the year was very low and quite insufficient to stimulate action in early-bearing fruit trees. This also seriously affected field and garden crops. A sharp visitation of hail took place in November, which damaged the orchard fruits, and heavy hail fell again on the 1st of April, when most of the early planted winter vegetables were destroyed. Any plants that might have recovered were afterwards badly attacked by insects, as the weather for the following three months was mild and at times unseasonably warm as well as dry, which made it very favourable to insect life—

	Rainfall.	Rain fell on.	Total for Month.
1905—July	... ...	2 days	... ·70
August	... ...	3 ,,	... ·61
September	... ...	2 ,,	... 1·23
October	... ...	7 ,,	... 2·60
November	... ...	7 ,,	... 3·61
December	... ...	8 ,,	... 2·53
1906—January	... ...	9 ,,	... 4·99
February	... ...	11 ,,	... 4·01
March	... ...	20 ,,	... 5·11
April	... ...	3 ,,	... ·92
May	... ...	5 ,,	... ·49
June	... ...	4 ,,	... ·55

Orchard.—This being our most important branch, I place it first in this report. Owing to the winter and spring of 1905 being so dry, the trees made very little new wood during the summer, but have continued healthy throughout. The land was once ploughed last winter, and four times scarified before January. Wet weather then set in, and it was nearly four months before an implement could be worked on it. Consequently a considerable amount of undergrowth was produced, which has since been incorporated with the soil by two ploughings and one scarifying.

Pruning was commenced in June, and by the end of the month one-half the orchard was completed. Very hard pruning is being adopted on some trees for the purpose of forming a new head, so that the fruit may be produced nearer "home." Other trees, not having made much new growth, are pruned fairly hard into the old wood, where plenty of fruiting spurs are left to receive the extra vigour which will be induced, thus producing finer fruit. Others, again, are lightly pruned—*i.e.*, shortening back and thinning out new growth. These methods are very instructive, as by leaving a few trees unpruned as witnesses it has been noted that not only are the quality, colour, and weight of the crops improved or otherwise, but that the fruit matures at different periods; the latest to ripen being borne on the hardest pruned trees of the same variety. The importance of experimenting in this direction is clearly seen in such varieties as ripen very quickly, when it is a question of hours, not days, in which to gather the crop. With apricots, for instance, the earliest fruits of one tree can be made to come in fully a week later than the earliest fruits of a neighbouring tree of the same variety. This fact was also demonstrated in different degrees with other deciduous trees during the past summer.

After the 1905 pruning was finished, the deciduous trees were sprayed with sulphur, lime, and salt mixture, and, after growth had started, individual trees were treated with whale oil soap and tobacco extract as a preventive of aphides. The olives did not receive any treatment, as at that time they were clean. In the autumn, however, scale developed, and it was found necessary to treat them. The smaller trees were cyanided, and the largest were sprayed with resin wash, the latter treatment being as effective as the first.

The number of trees planted in the orchard is 1,176, including 241 varieties. After careful observation of several varieties whose behaviour had proved their unsuitability, 100 trees were rooted out and replaced with approved kinds.

A start was made last year with the system of "dwarfing" proposed in my last annual report. The plants operated upon have made satisfactory progress, but nothing definite as to the success of this experiment can be reported until a nearer approach to the bearing stage.

The crop of fruit, with the exception of apricots, was of high quality. Some apricot-trees which had been hard pruned gave a good return of nice fruit; but the bulk of the crop was small as a result of the dry spell, and was also damaged by hail. As the fruit ripened at a most inconvenient time for marketing and fly being slightly in evidence, I decided to sacrifice it. I believe, by this measure and by boiling the windfalls, the midsummer fruit was saved from injury.

Peaches were excellent; they were never so good before. The varieties Globe, Lady Palmerston, Foster, Muir, and some others realised 2d. each in the wholesale market.

The drought affected the early plums, but the late sorts and the prunes were a fair crop, and sold well.

Pears.—Bartlett's, Clapp's Favourite, Flemish Beauty, &c., picked and stored early in February, were first class, and free from fly. Subsequent gatherings of these and other fine varieties were more or less affected, and required careful examination at the time of packing. The past season has been the most prolific pear crop we have had.

Relative to the fly pest, I have stated in previous reports and now reiterate that I know of nothing so serviceable in checking it as collecting and boiling the windfalls and doubtful fruit. Netting will prevent its ravages, but netting is only practicable on small trees, as it is hardly possible to keep it intact on large ones when strong winds prevail, to say nothing of the cost. The neeting put on trees in November was blown to ribbons, but that used in December stood well. The poultry we have running in the orchard, together with winter cultivation, helped to minimise the evil.

Vineyard.—A new vineyard was laid out last July, and planted with 1,000 cuttings of the leading grapes, but insufficiency of moisture resulted in a bad strike. Another 3,000 cuttings were planted in nursery rows, which were more satisfactory.

In the old vineyard, the vines are planted in rows running down the slope from south to north, but, for many reasons, it is desirable the rows should run east and west across the slope. In No. 1 Block, containing 2,000 vines, half the number have been reconstituted by grafting every other vine with select kinds, with the object of training them in the desired direction. The grafts of each kind are worked across the present (twenty) rows, so that each kind is worked on twenty different stocks, which operation itself should prove a valuable experiment, as it will determine the degree of affinity the scion bears to each stock, and to what extent the growth of the plant and the quality of the fruit will be influenced.

The remainder of the vineyard, containing 5,000 vines, was pruned, decorticated, sprayed, and tied in. Pinching back and training the shoots was continued throughout the season. The land between was ploughed and afterwards kept clean by the cultivators.

The various methods of pruning and training cause considerable interest to intending planters, and are a standard object lesson to the general public

About 20,000 cuttings were distributed to fifty localities, from Charters Towers to the Southern border and from Cunnamulla to the coast.

The promise of a fine, clean crop of grapes had never been so favourable in any previous season, but the continuous rains in February and March ruined the greater part of it. As it was, we marketed a fair quantity of splendid grapes. The following varieties best withstood the weather conditions:—

Muscat of Alexandria	Servant	Mrs. Pince's Muscat
White Morillon	Bermatia	Colorado.
Doradillo	Lenoir	
Black Hermitage	Snow's Muscat	

The following ripened before rain did any damage:—

Madeleine Royal	Chaouch	Blue Portugal
Chasselas Negropont	Censant	Wantage.

Field Crops.

Maize.—Only one variety, called Star Leeming, is grown, with the object of improving the strain. There were three plantings made, at intervals of one month, the first being put in during October. Specially-selected seed was used, and all three crops did well, and have yielded an improved grain and cob to that of last year.

Hay and Lucerne.—Six acres of wheat were cut for hay, which was very light; 4 acres of oats, not worth reaping, was fed off. Two light cuttings of lucerne were saved off a 4-acre block, and the balance was grazed by the horses.

Sorghums, Millets, &c.—Panicum was sown in December on the 4-acre block where the oats had failed, and gave a very good crop; it is in stack ready for threshing. Three varieties of broom millet were grown; the seed has been threshed and the fibre saved.

Kafir corn, the red and the white, have yielded the best crop of seed for the last three seasons. The rows were 10 chains long, and the brick-red and white lines had a very striking effect.

Sorghum sacch., amber cane, orange cane, and imphee all matured good grain. Seed of all the above varieties is now available.

Mazzagua.—Three-quarters of an acre of this plant was sown on the 1st November. The growth is remarkable, resembling a field of sugar-cane more than anything else; the average height is 16 feet, and in places it reaches 18 feet; the computed yield of stalk and flag is 52 tons 17 cwt. per acre. As it has grown here, the plant is too coarse and woody as a fodder.

Pulse.—Three varieties of peas were sown on a $\frac{3}{4}$-acre block; the weather being dry throughout their period of growth, they failed to pod. Cow peas were grown on a piece of wornout land ($1\frac{1}{2}$ acres) for the purpose of renovating it. Part of the seed sown had been treated with nitrogen culture. In appearance there was no difference in the crop; the pods, however, were more abundant on the untreated than on the treated plants.

Potatoes.—The following table shows the result of the potato trials. The sets were planted in September; they remained a long time in the ground before starting, and then had a struggle to make tubers at all:—

Variety.	No. of Sets.	Average per Plant.	Aggregate Weight.	Variety.	No. of Sets.	Average per Plant.	Aggregate Weight.
Schoolmaster ...	36	1 lb. 6 oz.	50 lb.	Avoca	25	1 lb. 14 oz.	46 lb.
Supreme	13	1 lb. 2 oz.	19 lb.	Early Rose	25	1 lb. 2 oz.	28 lb.
Satisfaction	30	1 lb. 0 oz.	30 lb.	Suffolk Champion ...	20	1 lb. 0 oz.	20 lb.
Reliance	7	2 lb. 0 oz.	14 lb.	Red Russet	16	1 lb. 12 oz.	28 lb.
Robin Adair	25	1 lb. 14 oz.	47 lb.	White Rock ...	20	1 lb. $6\frac{1}{2}$ oz.	28 lb.
No Name	42	2 lb. 0 oz.	84 lb.	White Rough ...	3	1 lb. 5 oz.	4 lb.
Beauty of Hebron ...	28	1 lb. 8 oz.	42 lb.	Flourball	15	1 lb. 8 oz.	22 lb.
Manhattan	25	1 lb. 7 oz.	40 lb.	Vicar	2	2 lb. 0 oz.	4 lb.

None of the following sorts averaged more than 1 lb. per plant—viz., Century, Nonsuch, Seedling, Ideal, Windsor Castle, Epicure, Ninety-fold, and La Brittany. Sweet potatoes were represented by six varieties, and, considering the lateness of the season, turned out a fair crop of marketable tubers.

Mangels.—The Mammoth Long Red and Yellow Globe varieties were sown last autumn. They were allowed to stand over the summer, and are now a heavy crop of gigantic roots, quite solid and succulent. I find this crop very useful for the horses in the dry winter months or whenever green feed is scarce. Half an acre was sown in April, which germinated very irregularly.

Swedes.—A fine crop of the Purple Top was sold in the spring at good prices. The present crop was sown in April, and is doing as well as can be expected in such an adverse season.

Pumpkins.—Silver Nugget, the best of all table pumpkins, is the only variety we grew here this season. The strain has been kept pure, and seed is now available for distribution.

Rape and Kale.—These two valuable sheep fodders were grown in small areas of well-tilled land following cow peas, but an insufficiency of rain only allowed of one average cutting.

Grasses.—Paspalum is spreading from the original cultivated block to the adjoining grass paddocks, and, although the frosts keep it back where it is grazed, it nevertheless gives good winter feed if protected from stock in the autumn—to allow some cover to form over the crown. Awnless Brome grass is an excellent winter and spring feed, but it dies out, reseeding the land during the summer. Mitchell grass is now being grown for the first time.

Canary grass (*Phalaris commutata*), from a cropping point of view, is the best all-the-year-round grass I have tried, resisting drought and frost with impunity. I have a fine patch planted out, as I anticipate a demand for it after it becomes known to the Downs farmer. As I am not acquainted with its nutritive qualities, specimens when in flower will be sent for analysis.

Winter and Spring Vegetable Garden Plots.—In spite of the previous adverse conditions, the crops of winter and spring vegetables gave very gratifying results, but, for reasons already stated, the present winter crops are not so satisfactory.

Asparagus.—The spring cuttings from one-sixth of an acre netted £7 10s. Cutting ceased by Christmas, after which the haulms made a robust summer growth. In June, the beds were cleaned up, the land between the rows was then ploughed, the whole surface scarified and harrowed; fine coarse salt was broadcasted over the beds to finish the operation.

Borecole and *Brussels Sprouts* were represented by four varieties each, and were very much admired.

Cabbage, &c.—Succession and Autumn King proved the best market sorts out of a collection of eight, realising from 2s. 6d. to 4s. 6d. per dozen wholesale. *Cauliflowers* were also an excellent and payable crop. The varieties doing best were Gilt Edge, White Queen, Veitch's Autumn Giant, and Metropole. The present season's planting consisted of 10,000 plants put out in March, which were nearly all destroyed by hail, and the plot had to be replanted later on. Dry warm weather followed, and caused an extraordinary visitation of insect life.

Carrots.—Six varieties were grown, all of which did well.

Onions.—One-sixth of an acre of Brown Spanish and Extra Early Yellow Globe netted £5. Five other varieties were grown, but none were equal to the two named. Four fertilisers were tried in connection with this crop, but, owing to the dry weather, failed to show any signs of action.

Rhubarb.—Topp's Winter and Giant Victoria are the two most continuous croppers. Stott's Monarch and Hogan's Shillalah are late varieties, and do not respond to good treatment as quickly as the two former. A new plantation has been laid out, containing 120 roots.

Summer Vegetables.—A numerous collection of squashes and marrows, including the beautiful, the grotesque, and the useful, made luxuriant growth.

Cucumbers.—The seed of the following four varieties was received from England:—Walter's Selected, Redlands, Worthing Favourite, and Rochford Market, anyone of which is an acquisition to this class of vegetable. They are all enormous croppers, bearing beautiful, long, cylindrical-shaped fruits, and each variety is quite distinct.

Melons in ten varieties were also grown

Jerusalem Artichokes were planted in August. They did not start until the rain came, to which they quickly responded; their myriads of medium-sized sunflower blossoms presented a gorgeous effect. The tubers have since been lifted and pitted.

Tomatoes.—A good-sized plot of Combination was planted out in January, and trained on trellises. The wet season which followed caused rampant growth, and they were slow in setting fruit. Later on, they were very prolific, and carried a clean sound crop. Tomatoes pay well if the crop is managed so as to come in after the summer fruits are over.

Several varieties of French beans produced a heavy yield; but, as they came in at a time when all hands were busy with orchard fruit, they were allowed to ripen seed. Tall and dwarf Lima beans were late, and were smashed by hail.

Miscellaneous Vegetables.—Small areas of the following were also grown in their season, viz.:—Eschalots, garlic, tree onions, potato onions, broad beans, Globe artichokes, celery, capsicums, chillies, egg plants, horseradish, radishes, lettuce, liquorice, herbs, ground nuts, kohl-rabis, and beets. The strawberry plantation has also been extended.

Exhibits.—A representative exhibit of the farm products was staged at the Toowoomba and Brisbane Exhibitions. The displays included a "Silent Lecture," illustrating several examples of pruning, which was favourably commented upon. Samples of peaches were sent to Pittsworth, and collections of grapes to the Warwick and the Stanthorpe Shows.

C. ROSS.

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, 1906.

The Season.—From a farming point of view the natural conditions prevailing throughout the earlier portion of the year were not all that could be desired; but, after the prolonged dry spell during the spring, a more favourable outlook was given to the agricultural prospects of the season.

The first quarter of the year closed under very trying conditions, the rainfall for July, August, and September totalling only 1·46 inches, and this, together with the severe frosts during July and August and the strong drying westerly winds of spring, greatly retarded the growth of the cereal crops—in fact, the rainfall for these three months was lower than that for the same three months during any of the past ten years, not excepting the last drought year—1902—when 1·57 inches were recorded during July, August, and September. In consequence, the wheats, oats, barleys, &c., stooled very thinly, and a limited yield of grain was anticipated.

Many farmers in the district took a pessimistic view of the situation on account of the prolonged absence of rains, and, in many cases, cut their crops for hay and feeding purposes. However, by the middle of October, when we enjoyed a good soaking downpour, the prospects underwent a decided change, and proved that the situation was not beyond recall.

The crops up to this time had held out remarkably well, considering the lack of moisture; and, with the exception of several plots sown on soils of poor capillary power and water-holding capacity, a good recovery was made.

One beneficial point to be noted regarding the dry spring was the instrumentality of the weather in checking fungoid and insect pests.

Most of the wheats and all the barleys possessed very short straw, and the stools were thin; but the quality of the grain harvested was all that could be desired.

Rust was conspicuous by its absence; but in many cases the plots were dry-weather tipped to a more or less degree; and in these instances the yields were poor.

The cereals on the better soils of No. 7 Paddock (New Hermitage) showed a more healthy and vigorous growth. Those in No. 3 Paddock and parts of No. 6, where the soil is heavy and of low capillary power, were conspicuous in showing the worst effects of the season.

Amongst the wheats on the farm which came through the season remarkably well may be mentioned the dry-belt wheats obtained in the United States of America—viz., Black Don, Velvet Don, and Kubanka.

These varieties stood out conspicuously as drought-resisters, and thrived well, despite the dry nature of the soil during growth; but, as only a limited quantity of seed was on hand for sowing, definite data of their behaviour under field conditions will not be available until the coming season. Another dry spell is upon us at present, considerably hampering the seeding operations for the ensuing year. After the rains of March, advantage was taken to prepare the land on the farm for the future cereal crops; but since the soil was brought to the proper state of tilth no rain of any consequence has fallen, and planting is very backward all through the district.

During April only one light shower of 21 points was registered, not sufficient to assure germination and growth. In May, 54 points were recorded, extending over four days.

These meagre falls do more harm than good in many instances at planting time.

The farmer has to consider whether his land is moist enough or dry enough before he risks putting in the seed.

The rainfall for the twelve months ended 30th June, 1906, was as follows:—

July	·25 inches	..	1 wet day.
August	·87 ,,	...	3 wet days.
September	·34 ,,	...	5 ,,
October	3·80 ,,	...	8 ,,
November	1·65 ,,	...	4 ,,
December	3·50 ,,	...	9 ,,
January	1·74 ,,	...	7 ,,
February	1·94 ,,	...	6 ,,
March	5·19 ,,	...	10 ,,
April	·21 ,,	...	1 ,,
May	·54 ,,	...	4 ,,
June	·56 ,,	...	3 ,,

Wheats.—Further trials of wheats grown the preceding season at the farm were carried out during the past year.

A selection was made of those varieties which gave most promise, and all those of inferior qualifications were culled out.

The strains selected for further trial were sown on 1-acre blocks, with few exceptions, as previously; and all the plots were treated in a similar manner.

Three-quarters of a bushel of seed to the acre was drilled in with a Massey-Harris and a Reid and Gray drill, after being treated with a solution of formalin—1 lb. to 40 gallons of water.

The land on each plot had been well worked, and at time of planting was in good order. Germination in most cases was rapid, and the crops were well above ground about one week after sowing.

Owing to the before-mentioned prevailing conditions during late winter and early spring, slow growth was made by the wheats, and stooling did not ensue satisfactorily. Many of the varieties came into ear unevenly and irregularly before the rains of the middle of October, and these suffered to some extent through being dry-weather tipped.

The plots all round, with few exceptions, were stunted in growth, the length of straw ranging from only 2 feet on the poorer plots to 4 feet on the better.

No rust was noticeable, save a few specks here and there, the moist conditions favourable to this fungus not being present.

The quality of the harvested grain was very good, although the yields were comparatively light when compared with the previous more favourable season.

It was found necessary to feed down some patches of the blocks in No. 6 Paddock, as prairie grass and black oats had asserted themselves:—

Variety.	Area.	Sown.	Above Ground.	Stooled.	Earing.	Harvested.	Weight per Bushel.	Yield per Acre.
	Acres.						Lb.	Bushel.
Cumberland	1	May 16	May 22	Medium	Oct. 15 evenly	Dec. 4	66	22·2
Budd's Early	13½	June 15	June 22	Fair ...	,, 22 evenly	,, 6	65	21·1
Plover	1	May 16	May 22	Medium	,, 15 evenly	,, 4	64	21·1
Baroota Wonder	1	,, 15	,, 21	,,	,, 21 irregularly ...	Nov. 29	64	21·0
Schneider	1	,, 16	,, 22	Thinly ...	,, 21 unevenly ...	Dec. 4	63	17·9
John Brown	1	,, 17	,, 23	,,	,, 15 unevenly ...	,, 5	62	17·1
Carmichael	1	,, 16	,, 22	,,	,, 15 irregularly ...	,, 5	64	17·1
Red Fife	1	,, 15	,, 21	,,	,, 21 irregularly ...	Nov. 29	63	15·5
Battlefield	1	,, 17	,, 23	,,	,, 2 very irregularly	,, 29	66	15·2
Moulds	1	,, 16	,, 27	,,	,, 21 patchy	Dec. 4	64	15·0
Medeah (Durum)	¾	June 29	July 7	,,	,, 21 evenly	,, 8	65	15·0
Bobs	1¼	May 15	May 21	,,	,, 10 very poorly ...	Nov. 29	63	13·7
Petatz Surprise	1	,, 17	,, 23	,,	,, 2 very poorly ...	Dec. 4	62	8·8
Hermitage No. 1	2	June 8	June 14	,,	,, 12 irregularly ...	,, 4	62	14·4
Ditto 2	2	,, 8	,, 14	,,	,, 15 unevenly ...	,, 5	61	16·4
Ditto 3	2	,, 8	,, 14	,,	,, 15 irregularly ...	,, 5	64	13·4
Crossbred No. 12	1	,, 1	,, 8	Medium	,, 9 evenly	Nov. 23	69	22·0
Ditto 24	1	,, 1	,, 8	Thinly ...	,, 5 patchy	,, 25	65	9·3
Ditto 25	¾	,, 1	,, 8	,,	,, 9 irregularly ...	,, 24	65	17·0
Ditto 26	1	,, 2	,, 9	,,	,, 10 very unevenly ...	,, 24	64	6·4
Ditto 28	1	,, 2	,, 9	,,	,, 10 very unevenly ...	,, 24	64	6·5
Ditto 33	1	,, 1	,, 8	,,	,, 5 irregularly ...	,, 23	66	18·1
Ditto 34	1	,, 3	,, 10	,,	,, 9 very unevenly ...	,, 24	62	9·0
Ditto 36	1	,, 2	,, 9	,,	,, 2 very unevenly ...	,, 24	63	6·5
Ditto 37	1	,, 3	,, 10	,,	,, 10 irregularly ...	,, 24	65	16·3
Ditto 50	1	,, 1	,, 8	,,	,, 5 very unevenly ...	,, 23	64	8·8
Ditto 53	1	,, 1	,, 8	,,	,, 7 very unevenly ...	,, 23	65	11·5
Ditto 91	1	,, 3	,, 10	,,	,, 10 very unevenly ...	,, 25	65	13·7
Ditto 121	1	,, 5	,, 12	,,	,, 10 irregularly ...	,, 25	66	16·6
Ditto 173	1	,, 2	,, 9	,,	,, 10 very unevenly ...	,, 25	64	6·2
Ditto 175	1	,, 3	,, 10	,,	,, 5 very unevenly ...	,, 25	64	13·7
Ditto 181	1	,, 5	,, 12	Medium	,, 10 unevenly ...	,, 27	67	21·7
Ditto 190	1	,, 2	,, 9	Thinly ...	,, 2 very unevenly ...	,, 27	66	5·7
Ditto 343	1	,, 3	,, 10	,,	,, 10 very unevenly ...	,, 27	62	13·6
Ditto 347	1	,, 5	,, 12	,,	,, 2 very unevenly ...	,, 27	68	18·0
Ditto 348	1	,, 3	,, 10	,,	,, 10 very unevenly ...	,, 28	60	7·6
Ditto 349	1	,, 1	,, 8	,,	Sep. 25 irregularly ...	,, 23	65	16·0
Ditto 353	1	,, 5	,, 12	Medium	Oct. 10 irregularly ...	,, 28	65	20·3
Ditto 354	1	,, 2	,, 9	Thinly ...	,, 10 very unevenly ...	,, 28	64	7·7
Ditto 504	1	,, 5	,, 12	Medium	,, 10 evenly	,, 28	64	24·7

Smaller sowings of a number of other wheats were made with a view to the further propagation of any showing special qualifications for our dry cereal seasons and soils.

These were planted in short drills, and the resulting seed will be sown on larger areas this season:—

Durum or Macaroni Wheats—

Black Don: Imported from U.S.A.
Velvet Don: Imported from U.S.A.
Kubanka: Imported from U.S.A.
Russian Ulka: Imported from Russia.
Morocco: A very large grain.
Corn: A very large grain.

Bread Wheats—

Muzzafur Nagar: An Indian wheat.
Indian Head: An Indian wheat.
Tarragon: A new variety.

The manurial experiment blocks of wheat which had previously not given satisfactory or convincing results of the value of applying fertilisers on our soil were simply resown last season without any further addition of manures. However, one-half of the plots were limed at the rate of 1 ton to the acre.

Following is the yield for the last three years:—

Block.	Yield per Acre, 1903.		Yield per Acre, 1904.		Yield per Acre, 1905.	
	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.
	T. C. Q. L.	Bushels.	T. C. Q. L.	Bushels.	T. C. Q. L.	Bushels.
1 A	2 0 0 22	28 10/60	2 16 2 0	28 28/60	1 16 0 0	25·2
1 B (limed 1 ton per acre)	1 18 0 12	26 52/60	2 3 0 16	26 48/60	1 6 2 0	17·8
2 A	2 2 1 26	26 44/60	2 12 0 0	25 26/60	1 10 3 4	21·1
2 B (limed 1 ton per acre)	2 1 3 26	26 42/60	2 7 1 4	24 50/60	1 10 0 0	22·6
3 A	2 6 0 18	27 58/60	2 13 2 8	27 26/60	1 13 2 0	20·0
3 B (limed 1 ton per acre)	1 15 2 10	27 10/60	2 13 3 12	34 8/60	1 5 2 0	23·4
4 A	2 15 1 26	28 42/60	2 10 0 0	27 48/60	1 7 2 0	20·2
4 B (limed 1 ton per acre)	1 14 1 4	28	2 14 0 24	34	1 18 2 0	27·4
5 A	2 1 0 2	26 58/60	2 15 2 0	29 8/60	1 7 2 0	22·6
5 C (limed 1 ton per acre)	1 10 0 0	25 4/60	2 3 0 0	28 36/60	1 3 0 0	17·2
6 A	2 1 2 22	29 22/60	2 7 2 0	27 18/60	1 2 0 0	16·8
6 C (limed 1 ton per acre)	1 10 1 0	25 40/60	2 3 2 0	28 30/60	1 1 1 12	19·6
7 A	1 18 3 22	27 10/60	2 7 2 8	24 50/60	0 18 0 0	11·8
7 C (limed 1 ton per acre)	1 15 0 16	24 40/60	2 3 2 0	28 53/60	1 4 0 0	18·1
8 A	2 0 1 14	27 26/60	2 2 2 0	20 36/60	0 9 0 0	12·1
8 C (limed 1 ton per acre)	1 13 0 24	28 32/60	1 19 0 16	26 24/60	1 2 0 0	18·6
9 B	1 18 0 6	25 54/60	1 12 2 16	28 6/60	0 19 1 4	16·1
9 C (limed 1 ton per acre)	1 13 1 0	26 52/60	2 3 0 0	26 54/60	1 13 0 0	25·8
10 B	1 12 2 6	26 2/60	2 10 4 0	20 54/60	1 5 2 0	17·6
10 C (limed 1 ton per acre)	1 17 2 16	28 56/60	2 6 2 24	30 36/60	1 8 3 4	25·7
11 B	1 4 1 12	27 37/60	2 3 0 24	28 40/60	1 3 0 0	18·8
11 C (limed 1 ton per acre)	1 9 1 26	24 2/60	2 9 0 24	31 2/60	1 12 0 0	22·6
12 B	2 0 4 2	25 18/60	2 11 2 0	28 20/60	1 9 0 0	21·7
12 C (limed 1 ton per acre)	1 10 2 16	26 42/60	2 0 2 0	29 44/60	1 13 0 0	28·5

It will be noticed that all those blocks of wheat, with the exception of two, which were limed previous to sowing, have returned larger yields of grain.

As pointed out in previous reports, there would appear to be no necessity to apply fertilisers on this class of soil, and, in order to ascertain the value of different manures suited to wheats, it would require a much poorer class of soil to experiment on. However, liming is greatly beneficial in the heavier patches of our black clayey soils, and it is to be recommended for this class of soil.

A trial of bat guano was carried out in conjunction with the above.

Two plots, ½-acre each, were manured with 2 cwt. of the guano to each plot; and another block was left unmanured for comparison.

One of the manured plots yielded 34·8 bushels of good grain (the highest yield on the farm this year), but the other manured plot, which received similar treatment, only returned 18·2 bushels per acre—a fact which can only be explained by the class of soil on this particular plot, which is very low in capillary power, and contains a large percentage of chlorine. Appended is the result of this trial:—

	Manure.	Area.	Sown.	Seed.	Harvested.	Yield.		Remarks.
						Straw.	Grain.	
						Tons cwt. qr. lb.	Bushels.	
Plot No. 1	2 cwt. bat guano	½-acre	16 June	¾-bushel	30 November	1 2 3 0	18·2	Poor heavy soil.
2	2 cwt. bat guano	½-acre	16 June	¾-bushel	30 November	2 2 0 0	34·8	Good soil.
3	Unmanured	½-acre	16 June	¾-bushel	30 November	1 13 0 0	28·7	Good soil.

Barleys.—The various barleys grown during the season did fairly well, although the yields were lower than the previous year.

As in the case of the wheats, they suffered to some extent from want of moisture during winter and early spring.

The growth of straw was unusually short, and some difficulty was experienced in binding the crop. Many of the plots attained only to a height of 2 feet, but the ears filled well, and produced a fair quality grain.

The Carters Malting, Californian Brewing, and Danubian barleys are good yielders under trying conditions, and a number of the Chevaliers have given good results.

All the plots came into ear irregularly and unevenly. The following varieties were planted on newly tilled land in No. 7 Paddock (New Hermitage); seed drilled in at the rate of 1 bushel to the acre:—

Variety.	Area.	Sown.	Above Ground.	Earing.	Harvested.	Yield per Acre	—
						Bushels.	
Californian Brewing	1 rd. 34 per.	7 June ...	14 June ...	5 Oct. ...	27 Nov. ...	34·0	Cape Type.
Carter's Malting	1 acre	7 ,, ...	14 ,, ...	7 ,, ...	27 ,, ...	33·5	Malting Type.
Danubian	500 x 24 links	12 ,, ...	20 ,, ...	18 ,, ...	20 ,, ...	32·7	Cape Type.
Chilian Chevalier	1 rd. 26 per.	7 ,, ...	14 ,, ...	10 ,, ...	27 ,, ...	32·0	Malting Type.
Kinvers Chevalier	1 acre	7 ,, ...	14 ,, ...	8 ,, ...	25 ,, ..	30·5	ditto.
Oderbruck	500 x 12 links	12 ,, ...	20 ,, ...	18 ,, ...	20 ,, ...	29·0	Cape Type.
Golden Grain	1 acre	6 ,, ...	13 ,, ..	7 ,, ...	25 ,, ...	28 5	Malting Type.
Hallet's Chevalier	1 acre	6 ,, ...	13 ,, ...	7 ,, ..	25 ,, ...	28·0	ditto.
English Chevalier	500 x 31 links	12 ,, ...	20 ,, ...	18 ,, ...	20 ,, ...	26·0	ditto.
Webb's New Golden Giant ...	1 acre	6 ,, ...	13 ,, ...	7 ,, ...	25 ,, ...	24·0	ditto.
Hungarian Chevalier	500 x 23 links	12 ,, ...	20 ,, ..	18 ,, ...	20 ,, ...	24·8	ditto.
Invincible	1 acre	7 ,, ...	14 ,, ...	8 ,, ...	25 ,, ...	23·3	Battledore Type.

Oats.—Sowings were made of the best varieties of oats grown previously and found suitable to our climate; also two new varieties to Queensland, Belgak and Sixty-day oats.

The seed of the latter two was obtained from the Black Sea provinces of Southern Russia. Belgak oats is a vigorous grower of rather coarse stems. It possesses a rich dark-green and very broad flag, and the grain is of large size, almost twice as big as the ordinary oat. It is a rather slow maturer, but it thrived better than the other varieties throughout the dry spring.

Variety.	Area.	Sown.	Above Ground.	Stooled.	Earing.	Harvested.	Yield per Acre.	Remarks.
Belgak	500 x 12 links	19 June	26 June	Fairly well	8 Nov.	30 Nov.	25 bushels	A late maturer of good rust-resistant quality; coarse stem; abundant flag; very plump and large grain.
Sixty-day ...	500 x 13 links	19 June	26 June	Fair'y well	18 Oct....	20 Nov.	22 bushels	An early maturer; long thin stem and grain; suitable for hay purposes.
Skinless ...	½-acre ...	1 July	9 July	Medium ...	9 Oct....	25 Nov.	Cut for hay	An early maturer; flowering glumes do not adhere to the grain; fine stem; suitable for hay.
Red-Rust-Proof	2 acres ...	1 July	8 July	Medium ...	4 Oct....	20 Nov.	Cut for hay	An early maturer; good rust-resister; medium grain and fine stem; suitable for hay purposes.
Algerian ...	2 acres ...	1 July	9 July	Medium ...	7 Oct....	24 Nov.	Cut for hay	An early maturer and good rust-resister; long thin grain; fine stem; very good hay oat.

Maize.—The late maize season has proved a most favourable one with both the early and late planted crops, and the output in the Warwick district will be considerably more than has been the case during the past few years.

The rainfall during the growth of the crop was very opportune, good falls having been registered at the critical period of tasselling, and, in consequence, heavy yields have been secured.

The maize plots on the farm were planted during the last week of October, after rain the week previously, following on a protracted dry spell throughout the spring.

The grain germinated quickly, and good growth ensued throughout the early summer. The crop was ready for harvesting at the latter end of March.

Ten plots of 1 acre each were prepared in Paddock No. 2, in order to compare check-planting with drill-planting, and to note the benefits to be derived from good cultivation of the soil during growth.

The soil of each plot had been well worked, and at the time of planting was in good tilth. In check-planting several grains are planted together in the drill at regular intervals, and in drill-planting single grains are dropped, but closer together than in the case of the former. Seven of the plots under trial were planted check-row system, and three were drilled in. Each plot was covered with a scuffler and then harrowed crossways, and those plots which received after cultivation were scuffled to a medium depth of 3 inches. In each case, excepting block No. 9, light furrows were run out, 3 feet 8 inches apart, and the seed was dropped therein. On block No. 9 no furrow was cut, but the maize drill was run along the surface of the ground. Results:—

Plot.	Method of Planting.	After Cultivation.	Yield per Acre.
No. 1	Sown check row, 2 grains, 4 feet apart	...	48·5 bushels
,, 2	,, 3 ,, ,,	...	55 2 ,,
3	,, 4 ,, ,,	...	66 0 ,,
4	,, 4 ,, ,,	Cultivated once ...	61·5 ,,
,, 5	,, 4 ,, ,,	,, twice ...	67·1 ,,
,, 6	,, 4 ,, ,,	,, thrice ...	68·2 ,,
,, 7	,, 4 ,, ,,	,, four times ...	70·6 ,,
,, 8	Drilled in, in furrow	...	58·5 ,,
,, 9	,, not in furrow	...	49·8 ,,
,, 10	,, in furrow subsoiled block...	...	46 5 ,,

It will be seen that the check system of planting has given better results than the drill-planting, and that good shallow cultivation is beneficial. Cultivation too deep not only injures maize by destroying a percentage of the delicate roots on account of their spreading out near the surface of the ground, but during the period of cultivation it prevents the surface roots from feeding in the most fertile part of the soil. Another advantage gained by check-planting is that the crop can be cultivated both ways, a great advantage in dirty ground. Maize is also more expeditiously sown by hand.

The average yield per acre of the whole ten 1-acre blocks was 59·1 bushels, which must be considered very satisfactory. The variety of maize used in this trial was Golden Superb, a good-sized sound grain.

Mazzagua.—This tropical plant, which was introduced to Queensland for the first time last spring, was given a trial at the farm amongst other places. It is known as a dry-season corn, and is cultivated largely in Northern Nigeria by the natives for food. Although little is known as yet of its qualities, it should be of value in the Northern and Western districts.

The ground on which it was tried consisted of heavy black clay soil, well worked, and, at the time of planting, in good order. The previous crop had been broom millet, and two ploughings, 8 inches deep, were applied before sowing commenced. The drills were 3 feet apart, and the seed was sown on the 19th October, after rains. Vigorous growth took place, and the plants flourished throughout the late spring and summer. The soil between the drills was cultivated twice during growth.

By the end of February the plants had attained to a height of 11 feet, with an abundance of flag. The stems at the base measured 4¼ inches in circumference, and resembled sugar-cane. Early in April a few heads began to appear, but up to the end of that month, when light frosts made their appearance, only a few plants here and there had seeded, so the crop was cut and converted into stack ensilage.

The plants stooled out well, and yielded a heavy cutting of rather tough cane. In its young state it should make good silage. A 40-ton stack was built from the three-quarters of an acre planted, so the approximate yield was about 53 tons to the acre. Height at time of cutting, 12 feet.

Sorghums.—Three varieties of sorghums were grown in No. 2 Paddock, and the resulting crops were very satisfactory.

Imphee or Planters' Friend, Amber Cane, and Black-seeded or Sorghum saccharatum were drilled in on the 31st October after the good rains of that month, and the soil being moist and warm rapid growth ensued. On attaining a height of 2 feet, the scuffler was used between the drills, but no other after cultivation was found necessary.

The Black-seeded Sorghum was the fastest in growth, and had yielded a good crop of ripe seed before the other two varieties had finished heading. Part of this crop was cut for green feed during summer for stock feeding, and the remainder was cut for seed early in April. The stalks were medium in thickness, with plenty of flag, and were readily eaten by cows and pigs. The average height of the crop was 7 feet 6 inches.

The Early Amber Cane, which is rather quicker in maturing than the Imphee, proved the best of the three varieties as far as yield was concerned. The stalks were thinner and more numerous than the former variety, and were well covered with foliage. Average height of crop, 7 feet 6 inches. This crop was cut before the seed ripened for ensilage-making. It was chaffed and elevated into our 25-ton silo, yielding at the rate of 30 tons to the acre.

The Imphee or Planters' Friend is a good all-round variety, but slower in growth and coarser in the stalk than the Amber Cane and Black-seeded. It had more flag on the stalks, broader and longer than the Amber Cane flag, and the seed heads were thicker and more compactly set. Average height of crop, 7 feet.

This crop was converted into stack ensilage, and yielded at the rate of 25 tons to the acre.

Millets.—Sowings were made of samples of Russian millets (*Panicum miliaceum*), the seed of which was obtained from the Voronezh district of Southern Russia. Plots of red-seeded and black-seeded varieties, named respectively Red Voronezh Proso and Black Voronezh Proso were planted on 1st November, and were showing above ground a week later. Slow growth was made right up to seeding, which took place in January, when the plants were only about 12 inches high. This dwarfed condition will probably be remedied when the Prosos become acclimatised.

The seed heads, which shed rather easily, yielded a fair quantity of plump seed for further trial on a larger area during the coming season.

Canary Seed.—Some 8 acres of canary seed were planted, but a portion of the crop was fed off on account of poor growth. The yield from the area harvested was 12·8 bushels to the acre. This crop should command more attention from farmers.

Lucerne.—The paddock of lucerne laid down some fifteen months ago, and subsequently subdivided for sheep and pigs, although not getting a very good start, progressed favourably during the latter end of 1905, and yielded some good cuttings of first-class hay through the summer months. Since the last cutting in April last, there has been little growth above ground, the young plants not yet having sent their roots deep enough to benefit from the underlying water of the field. All the black soils of the district are admirably suited to lucerne-growing, and there is scarcely a farm in the locality where it has not gained a footing.

Linseed.—A small area of linseed flax was planted in July, but did not give good results during growth. The seed harvested was not well developed or of good quality, but this crop should not be overlooked when calves are reared on a farm.

Rye.—This cereal has always done well on the farm, and ranks above the other cereals under severe conditions.

The plot of Thousand-fold Rye planted stooled out fairly well, and yielded a good cutting of tough and wiry hay, whilst a portion was left to ripen for seed.

The sample of Ivanov Rye from Russia was of extra good quality, and promises to be eminently suited to our conditions.

Potatoes.—Some four varieties of potatoes were planted in September. They were Northern Star, Sir John Llewellyn, Southern Star, and Satisfaction. The larger tubers were cut into uniform pieces, each piece possessing from three to four eyes; and the smaller ones were planted whole in drills 3 feet apart, dropped at intervals of 15 inches at a depth of 4 feet. For the first month after planting, the unfavourable weather caused the potatoes to make poor growth, but after October they came on well.

The rows were hilled in November, and the tubers were dug in January, after being four months in the ground.

The rainfall during growth was 10·53 inches. Results:—

Variety.	Amount Sown.	Date.	Above Ground.	Hilled.	Dug.	Yield.	Remarks.
	Lb.					Lb.	
Northern Star ...	14	Sept. 12 ...	Sept. 20 ...	Nov. 30 ...	Jan. 12 ...	81	Small in size; good colour and good keeper.
Sir John Llewellyn	14	Sept. 12 ...	Sept. 20 ...	Nov. 30 ...	Jan. 14 ...	75	Large; good shape and colour, but rather poor keeper.
Southern Star ...	7	Sept. 18 ...	Sept. 24 ...	Nov. 30 ...	Jan. 14 ...	71	Medium size; uniform; good keeper, good colour.
Satisfaction ...	28	Sept. 18 ...	Sept. 24 ...	Nov. 30 ...	Jan. 15 ...	155	Good size, shape, and colour; and good keeper.

Grasses.—The native grasses planted out in drills some fourteen months ago have, with few exceptions, done well, and, considering the adverse conditions prevailing for some five months after their establishment, they have demonstrated their remarkable recuperative qualities.

Most of the grasses were procured from the dry Maranoa district, where only those of hardy and drought-resistant capabilities can survive. It is a matter of importance to dairymen and others to give more interest to the cultivation of these hardy native grasses, amongst which may be mentioned the Panicums and Andropogons.

The following observations were taken during the growth of the native grasses on trial at the farm:—

Umbrella grass (*Panicum divaricatissimum*).—A strong and vigorous grower, with large spreading panicles; yields good herbage during summer and early autumn; seeds abundantly; height, 2 feet 6 inches at maturity.

Australian millet (*Panicum decompositum*).—Another strong and luxuriant grower; rather more coarse than the other Panicums, but it would make good hay if cut before seeding; height at maturity, 4 feet 6 inches.

Coolibar grass (*Panicum trachyrrhachis*).—A strong grower and prolific seeder, yielding considerable herbage during summer; height at maturity, 3 to 4 feet.

Slender Panick grass (*Panicum gracile*).—A dwarfed species of the Panicums, but vigorous in growth, and a good pasture grass.

Panicum leucophœum.—Not doing as well as the other Panicums, but good for pasturages under moist conditions.

Satin Heads (*Andropogon crianthoides*).—A very strong and vigorous grower, attaining to a height of 5 feet at maturity; produces abundant fodder; seed stems rather coarse.

A Blue grass (*Andropogon sericeus*).—A good permanent pasture and hay grass; grows strongly to a height of 3½ feet, and seeds profusely.

A Blue grass (*Andropogon intermedius*).—A rather coarse grower; height, 4 feet at maturity; vigorous in growth.

Wheat grass (*Agropyrum scabrum*).—A valuable and vigorous grass of drought-resisting qualities; grew luxuriantly through the dry spring; height, 4 feet; stooled out densely, and produces excellent fodder.

Scented Golden Beard (*Chrysopogon parviflorus*).—Strong and vigorous in growth; height at maturity, 3 feet 6 inches; forms large tussocks, and produces succulent herbage when young; the seeds possess a peculiar fragrance when crushed.

Black Heads (*Pappophorum nigricans*).—A good dry-weather grass, yielding herbage through early summer and plenty of seed at maturity; height, 3 feet.

Star or Windmill grass (*Chloris truncata*).—A good herbage and hay-making grass; strong and vigorous in growth; height, 2 to 2 feet 6 inches at maturity; variable in habit.

Blue Star grass (*Chloris ventricosa*).—Not doing well; variable in height and inflorescence.

Kangaroo grass (*Anthistiria ciliata*).—A very strong and vigorous grower, the seed stems running to a height of 7 feet; rather coarse for grazing when matured.

Brown Love grass (*Eragrostis Brownii*).—A splendid pasture grass, producing herbage all the year round; strong and vigorous in growth.

Parramatta grass (*Sporobolus indicus*).—A strong and vigorous grower; 5 feet at maturity; a prolific seeder; succulent when young.

Yak-ka-berry (*Sporobolus Lindleyi*).—Not doing too well, but a good grass out West; seeds abundantly.

Southern grass (*Ischæmum pectinatum*).—Not doing very well, but good for pasture under more favourable conditions.

Sugar or Brown-top grass (*Pollinia fulva*).—Possesses a rich-brown silky head, and makes good pasturage under moister conditions.

Early Spring grass (*Eriochloa punctata*).—The transplanted roots of this grass failed to establish themselves.

Curly Mitchell grass did not thrive on account of dry weather after planting; only one or two plants survived.

Rhodes grass (*Chloris virgata*) failed to germinate, owing to the dry state of the soil.

Seed Inoculation Trials.—The plots of lucerne and red clover which were treated with nitrogen-fixing bacteria culture were carefully watched during the season to note any influences this preparation might have had on their growth, but no distinctive difference was observed between the treated plots and those left untreated for comparison.

As our soils are rich in plant foods, and probably contain a good percentage of natural nitrogen-fixing bacteria, the results from inoculation of the soil or seed would not necessarily be of any marked degree, as no decided benefits would accrue, except when the proper nodule-forming bacteria are lacking in the soil.

Most legumes do well on our soils, especially lucerne, and it would appear that the introduction of artificial manures for the improvement of this class of crop is not necessary, although it must be admitted that a crop of nodule-bearing legumes will always improve the soil for succeeding crops. Since the functions of these organisms are considerably affected by their surroundings, and they behave differently in different soils and climates, these differences may prove to be very pronounced in Queensland, where both soil and climate are so extremely variable and peculiar.

It is, therefore, not possible to accept all the results as conclusive obtained by investigators in other countries, and it becomes necessary to study their behaviour under local conditions.

It is improbable that the soils of this farm would benefit to any appreciable extent by the introduction of these cultures, although in parts of the State they might prove of special merit.

Lands which are devoid of sufficient soil nitrogen would benefit by the application of the organisms, for their special qualification is to render the free nitrogen of the air available to the plant.

The 6-acre block of treated lucerne was drilled in at the rate of 13 lb. of seed to the acre in April, 1905. Slow growth was made through the winter and spring, but during summer some good cuttings were secured and converted into hay.

No appreciable difference could be noted regarding its growth when compared with the untreated lucerne alongside.

One acre of red clover was sown with inoculated seed in No. 1 Paddock, but, as in the case of the lucerne, no decided advantage was observed in the growth.

Some inoculated plots of garden and field peas were also tried, with untreated plots alongside, but these plants perished during very dry weather. Although it may not be right to draw conclusions from one season's trials, which were carried out under unfavourable weather conditions, it would appear that the introduction of this class of soil improvement is not actually required on our Downs soil.

Soils which contain the manurial conditions essential to the action of these organisms invariably possess a sufficient number of the bacteria to ensure luxuriant growth when moisture and temperature are favourable.

Tobacco.—Two varieties of tobacco were tried—Lack's and Yellow Pryor; both yielded some nice leaf.

Cotton.—Small sowings were made of the following cottons:—Jones', Russell's, Tool's, King's, Peterkin, Griffin, Lewis' Prize, Culpepper, and Sea Island. Fair growth was made, and a limited quantity of seed is now on hand.

Roots.—A variety of roots were sown on the 21st October, mainly for stock feed, but only a limited yield resulted. The varieties which did best included:—Champion Yellow Globe and Mammoth Long Red Mangels, Vilmorin's Imported and Klein Wanzleben Sugar Beets, and White Belgian and Long Red Surrey Carrots.

Another sowing of various roots was carried out in the autumn of this year, but no growth was made, owing to the dry weather.

Live Stock.—All the stock on the farm have been in good order and health throughout the year, no disease of any kind having asserted itself. The extra accommodation for pigs was carried out, including two new yards and a grazing area of lucerne.

Some 150 head of sheep were fattened and sold during the summer for a satisfactory figure, and the lucerne subdivisional paddocks are ready for the lamb-raising trials, although at present there is very little growth of the lucerne.

Some 20 acres of rape and barley mixed, with a small quantity of mustard in it, have been laid.

Orchard.—In order to mitigate the depredations of the fruit fly, which in the past few years has given some trouble in the orchard, a thorough system of cultivation has been continuously kept up. Repeated ploughings, cultivations, and chipping under the trees were carried out at intervals. Turkeys have also been running through the orchard all the year round, and there is no doubt that they will be found to have done much good in destroying many flies in the pupal stage.

Otherwise the trees have been quite free from disease or pests, and are all healthy and in good condition.

The usual winter pruning and spraying were carried out satisfactorily.

The plum crop did not amount to anything during the past season, but peaches, apricots, pears, and apples did fairly well. The olive-trees produced good sound fruit.

Improvements.—A new skillioned implement-shed has been erected to accommodate the farm machinery and implements.

No. 4 Paddock has been subdivided into four grazing areas of lucerne—three for sheep, and one for pigs; and an extra piece of grass land on the New Hermitage has been fenced off for sheep in wet weather. New gateways have been placed in the subdivided lucerne paddocks, and a shelter-shed and four yards have been built for sheep.

Accommodation for Apprentices.—Quarters have been erected on the farm for the accommodation of the farm apprentices who are expected to take up their residence and duties here shortly.

Visitors, Etc.—Many visitors from various quarters of the Commonwealth have looked over the farm during the past year, and numerous inquiries for information in all branches of agriculture have been attended to.

Seeding Operations for 1906-7.—No. 3 Paddock has been laid down with Budd's Early wheat; 19½ acres.

No. 6 Paddock was sown with a mixture of rape and barley for sheep feed; 20 acres.

Twelve acres of imported Manitoba wheat have been planted, and the New Hermitage has been marked out in 1-acre blocks with the following wheats and barleys: —

Wheats.—Cumberland, Plover, John Brown, Mould's Medeah, Bobs, Schneider, Hermitage No. 1, Hermitage No. 2, Hermitage No. 3, Crossbreds Nos. 12, 25, 33, 121, 181, 347, 349, 353, and 504.

Barleys.—Californian Brewing, Carter's Malting, Danubian, English Chevalier, Oderbruck, Hungarian Chevalier, Invincible, &c.

Areas of Belgak and Sixty-day oats and Ivanov and Thousand-fold rye have also been laid down.

Smaller sowings of the following wheats have been made:—Farrer's Durum (a Macaroni), Macaroni No. 1, Jonathan, Minnesota Blue Stem, Sussex, Kubanka, Black Don, Velvet Don, Federation, Cretan (a Macaroni), Power's Fife (Manitoba), Bunyip, Morocco, Tarragon, Russian Ulka.

ALEX. MARTIN.

REPORT OF THE MANAGER OF THE STATE FARM, BIGGENDEN.

Sir,—I have the honour to report for the year ending 30th June, 1906.

The year has been one of extremes of wet and dry, and for many of our crops anything but a good one. The spring was a very dry one; the summer so wet that for three months no proper cultivation could be done. Then it set in dry suddenly, and, owing to the sodden condition of the soil, everything suffered unduly. This lasted until the middle of May, when we got nearly 6 inches of rain in one week, and from then till the 25th June, when we got our first frost, the weather continued mild and damp.

Vineyard.—Owing to dry spring, the early varieties of grapes were later ripening than usual; the first of them were just ripe when the December rains set in. One pound of these early grapes is, from a marketing point of view, worth 3 lb. of the later ones, and the loss of them brought down the returns from the vineyard considerably below last year, though the total weight of grapes sold was 400 lb. in excess. Total sales: 2,369 lb. of grapes for £16 12s. 8d.; 4,784 grape cuttings for £7 11s. 6d.

Citrus Orchard.—A few of the Sevilles bore lightly for the first time. There were also a few mandarins of fair quality, and a few navel and sweet oranges of inferior quality. Two trees of Tahiti limes, and two of Sicily lemons, bore fair crops of good quality fruit. The rest of the orchard did nothing.

Deciduous Orchard.—Figs, persimmons, and loquats were the only fruits that set. The loquats did not amount to much. Four trees of the Nightingale's seedless persimmon bore well, considering the small size of the trees, and the quality of the fruit was excellent. The other twelve persimmon-trees did not bear. The fig crop was a good one, and I got the fruit marketed a little better than last year. Sales: 484 lb. figs for £2 10s. 5d. The fig crop is always a difficult one to handle. Carefully picked and packed figs travelled safely to Maryborough, but a trial lot sent to Rockhampton arrived there worthless. The Col De Signora

Nera is the best fig we have, with the Brown Turkey a good second. Madeline is the earliest. The San Pedro never ripens a sound fig, and the White Adriac generally bursts before it is properly ripe. The bulk of this orchard consists of peach and plum trees, which have, so far, shown no sign of bearing, and might, I think, be taken out to make room for something else. Fruit-fly netting was used with satisfactory results on the small persimmon-trees, but on the large fig-trees it went to pieces long before the crop finished.

Cotton.—Fourteen varieties, including the four Egyptian varieties sent up by the Department, were planted on the 1st December. It was my intention to get them planted in November, but the dry weather prevented this. Last year the 7th December was found to be rather late, while October sowings lost a lot of the crop by ripening during wet weather. This season the first bolls opened on the 14th April, and the full flush of the crop was on when the May rains fell, so that I lost the bulk of it. Heavy rain in May is not the rule; and I think that if Sea Island, Seabrook, and the Egyptian cottons were planted in October, and the quicker-maturing varieties in the last fortnight of November, the crop would have a good chance of being harvested without much loss from rain.

Maize.—Two varieties were planted—Hickory King in October, and Golden Nugget in December. Hickory King was grown from our own seed, carefully selected from last year's crop, and this year came nearly all true to name and a very good sample, giving 34 bushels per acre where bat guano was used as a fertiliser, and 30 bushels where no manure was used. The dry weather experienced after planting, and the wet weather at harvest, went very much against the yield. Golden Nugget was grown from seed procured by the Department, as I did not consider our own seed of this variety to be pure enough to plant. Unfortunately, the seed obtained was not pure either, and the crop contained several varieties of maize; I have, however, obtained enough good seed from it to give me a start next year. This maize was planted after lucerne, and from seeding to harvest had every chance. The crop is not all shelled yet, but will, I am sure, go over 60 bushels per acre.

Sorghum.—From the varieties grown last year I selected Collier, Early Orange, and Folger's Early. Though sown in October, these did not germinate until December, owing to the want of rain. The first growth was in all cases good, going from 15 tons per acre for Folger's Early to 30 tons for Collier. Except where the first growth was cut to waste in January, the second growth did not have time to come to much before the cold weather set in. Folger's Early would have had ample time for a second crop, as it matures so much quicker than the others; but, owing probably to the water-logged condition of the soil, the stools of this variety rotted right out after the first cutting. Folger's Early was the only variety that suffered in this way.

Kafir Corn.—Red Kafir was the most successful, giving 45 bushels of seed per acre, and after the seed was harvested the stalks were cut up for chaff, and were relished by the stock. The weather conditions that affected the sorghums also prevented a second growth of Kafir corn.

Mazzagua.—Planted 4th December, in drills 4 feet apart, and afterwards thinned out to a plant every foot. In four months from date of sowing the crop was from 16 to 18 feet high, and yielded at the rate of 48 tons per acre. At this stage it made excellent green fodder when chaffed; as it got older it got rather woody, and the leaves at the bottom died off like trash on sugar-cane. As it reaches maturity, the stalk gets richer in sugar, and it is probable that after the seed is harvested the stalks will form excellent fodder. During the wet weather of May the crop was blown flat down. There is now some fully-formed seed on it, but none of it quite ready to harvest yet. It is most probable that the excessive wet made this plant grow stalk at the expense of grain, as the yield of seed will be only small.

Millets.—Red-seeded Proso, Black-seeded Proso, and United States millet, seeds of which were forwarded to me by the Department, were sown in October and again in early February. Both plantings germinated badly. Enough seed of the Red and Black Seeded Prosos were got from the first planting to plant another piece on the 23rd February. This gave a much better strike, but it only grew from 1 foot to 18 inches high; the seed, too, sheds very easily, and could only be harvested profitably by a stripper.

Green Manures.—Poor Man's Bean, Black, Mottled, and Green Mauritius Beans, were planted in the deciduous orchard, where they will be allowed to seed, and, if the frost has not destroyed too much of them, I should have a nice bit of seed for distribution. Getting seed of these beans here is very uncertain, as all that are not ripe when the frost comes are destroyed. It seems to be quite impossible to get any quantity of Narica or Tonga Bean seed for this season. The advantage beans have over cow peas for green manure was very plainly shown this year. Both were sown for green manure in Nos. 2 and 4; owing to weather conditions, they could not be turned under at the proper time. While this did not matter much with the beans, the cow pea ripened seed and died down, leaving the ground full of cow-pea seed, which, of course, grows and is more or less in the way of succeeding crops.

Cow Peas.—Eight varieties were planted. The Blackeye is the earliest, and is the best for table use. White's Perennial is a very late one, and rather a poor seeder, but it makes better hay than any of the others. For green manure, Black, Purple, and Skewbald are about equal, the White, Clay, and Piebald not being quite such strong growers.

Rape, Swede Turnips, Kohl-rabi, and Cape Barley.—These should have been sown early in February, but I delayed, hoping to get the land into better order. The rain, however, quite prevented this, and I had to decide between planting in badly-prepared land and not planting at all. I got them sown in the last week of February, and while the wet weather continued they did well enough, but were quite unable to stand the eight weeks' dry weather that followed.

Peas.—Planted under the same unfavourable conditions as turnips, &c., but they did well, and gave promise of a good crop. The May rains, however, coming just before they were ready to harvest, caused all the peas to sprout.

Mangel Wurzel.—A first sowing was made on the 8th February, but for some reason these all scorched off; later plantings, however, were successful. This crop held its own against all weather conditions, and, given a strike in January or February, seems a safe crop to count on for winter feed.

Vetches.—Sown for green manure; are doing better than last year.

Grasses.—A detail report on these has already been sent in. Half an acre in No. 1 Grass Paddock has been broken up, enclosed, and sown with Rhodes grass, so as to be able to test this grass for grazing. Other grasses now being tested are Prairie, *Paspalum virgatum*, Strawberry clover, Poverty Bay Perennial rye, Red-top grass, and *Bromus inermis*.

Linseed.—Seed of the large and small seeded Russian flax was sent up by the Department. Sowings were made in October and February. The first planting failed; the second did fairly well. Both varieties grew to the height of 2 feet 6 inches. The small-seeded gave at the rate of 132 lb. of seed per acre, and the large-seeded at the rate of 120 lb.

Wheat.—Indian Fife has been used for the main crop this year, and twenty-seven trial plots have been sown with different varieties. This year, early-sown wheat died right out during the dry autumn, but later sowings are, so far, looking well, quite reversing the experience of last year.

Manures.—Mangels, sown April, 1905, with 3 cwt. of superphosphate per acre, gave, when harvested in February, 1906, 54 tons per acre; with 3 cwt. of kainit, 40 tons per acre. A check block, unmanured, gave only 21 tons per acre. A 5-cwt. dressing of the same manures did not give such good results. In February, 1906, superphosphate and Thomas's phosphate were used on rape, turnips, and mangel, in quantities of 3 cwt. to the acre. At first a great difference in favour of the manure was seen in the turnips, but when the dry weather set in the manured portions were the first to fail. The same thing happened with the rape, and in the mangels the ones manured scorched more than the others. Evidently, under certain weather conditions, it is a distinct mistake to sow these manures with the seed.

Bull and Boar.—The services of these animals have not been much availed of, only seventeen cows and seventeen sows having been sent to them for service.

Poultry.—I have twenty White Wyandotte pullets that should start laying any time now, and the four original hens, making two dozen laying birds for this season.

Turkeys.—I have sold three gobblers and four hens, and have twenty-seven still on the farm. They are most unsatisfactory stock for an experimental farm, as if let out they do no end of damage, and if shut up they eat their heads off.

Exhibits of products of the farm were made at Biggenden and Maryborough during the first month of the year, and again at Maryborough, Degilbo, and Childers during the last two months. These exhibitions, coming earlier this season than usual, clashed more than they would otherwise have done with the work of the farm, the more so as, owing to the constant rain, the summer's work got so much behind that I scarcely had it in hand when I had to give most of my own and staff's attention to preparing exhibits and attending shows.

D. MACPHERSON, Manager.

REPORT OF THE MANAGER OF THE STATE FARM, GINDIE.

Sir,—In submitting my annual report, I may state that the rainfall for the months of May, June, July, and August of last year was very light, amounting in all to only 98 points, but, notwithstanding this, the barley, wheat, and oats did very well, especially the Cape barley. This was a full crop, and would have yielded a splendid return of grain had it been grown for that purpose. The malting barley did not give quite as good a return, owing to a part of it being grown on high ground, and, in consequence, not able to stand the dry weather so well as that which grew on the lower portion, where the crop was a good one. These crops were divided, some being cut for hay, and the balance made into ensilage.

The oats did not do so well; some few tons of it were cut and put on the ensilage stack, and the rest fed off by the sheep.

The wheat did fairly well. A small portion was cut for hay, and the rest was fed off. It was very acceptable for this purpose, as other green feed was very scarce. The stubble and the uncut portions of these crops kept the ewes going until the rain fell in November.

As soon as the ensilage stack was finished, I commenced to feed it to some of the farm stock. They did not take to it for a few days; eventually they got a liking for it, and would eat all they could get. The effect of this feed was soon noticeable on two or three milkers. It not only increased the quantity of the milk, but also imparted to their coats the healthy look usually seen on cattle grazing on good natural grasses.

After the rain fell in November, we discontinued using this feed. Later on, the balance that was left of it "fired" and was destroyed.

In September, a bush fire was raging on the Emerald side of the farm. As soon as it was noticed, the men and myself started to run a trail from the road to the river, to save the farm paddocks. After twenty-six hours' continuous work this was accomplished, but in spite of all our efforts a considerable amount of fencing was destroyed. This was temporarily repaired, and we were congratulating ourselves on getting over this business so lightly when another fire started, right in the middle of the river paddock. Owing to the quantity of fallen timber, we could not get near the fire, but merely kept on the back of it, to save the top paddock. This we managed to do. As the hay was stored here, we were particularly anxious to keep the fire out of this paddock; but it was not to be, as it was fired by lightning. A number of the neighbours assisted in keeping the flames from the haystacks. After working all night, half of this paddock was saved, but the fence suffered considerably.

In December, some acres of maize were planted. This came on nicely, but was eventually destroyed by grasshoppers. Some cow peas were also put in, but, owing to the extreme heat and want of moisture, they did not come up very well. We obtained a little hay from them.

Drills were opened on 6 acres of land. This was intended to be planted with maize, should sufficient rain fall in December or January, but, as it did not, the land remained unplanted. Land had also been prepared for setaria, but could not be planted for the same reason.

Up to present date, 36·16 acres of wheat have been planted with three varieties—namely, Medeah, Manitoba, and Budd's Early. This has been sown with the object of converting it into hay. The threshing expenses and railage from here to Maryborough or Brisbane would, I think, prohibit anyone in this district growing it for grain. Some acres of this wheat are up, but we shall require rain to bring the balance through the ground.

During the year 21 tons of hay have been sold, which realised £89 17s. 9d. The most of this went to Longreach. The bush hay could also have been sold to go out West, but I did not think it advisable to part with it, as the outlook here at the time was not too bright. Another stack has been added this year. The quality of this hay is first class; the greater part of it is Blue grass. There was a splendid crop of Barley grass (*Panicum jubiflorum*) in the sheep paddock, and it was intended to have a stack of this put up, but before the land was dry enough to carry the binder the grasshoppers attacked it, and simply left it a wreck. It is unfortunate that they were so severe in this paddock in particular, as the area available for the sheep is too small as it is. Of the 600 acres, at least 200 are as bare of grass as at the end of the drought. The old ewes were kept in one of the cultivation paddocks as much as possible, as there was a fair amount of herbage in it. They pulled along fairly well.

The young sheep bred on the farm and the 200 ewes purchased this year have done well. The latter have just commenced to lamb.

The grasshoppers did little damage in the lower paddock, so there has been an abundance of feed for the cattle; consequently, they are all in tip-top condition. The addition to the farm herd of twenty head of dairy heifers lately purchased has given a great deal of satisfaction to those interested in the dairying industry. Nine of these heifers have calved—three Shorthorn, two Holstein, two Holstein-Shorthorn cross, one Ayrshire, one Ayrshire-Shorthorn cross. The cattle were rather low in condition when received here, and, calving so soon after their arrival, they have not had a chance to put on much flesh, so that they are not at their best; but they are milking well, nevertheless. I have no doubt the necessary appliances will be furnished for testing the quality of their milk; then we shall be able to say something definite on

this subject. The male calves from these cows have been bespoken, and will be disposed of as soon as they are fit to wean. The ordinary farm cows have been handled as they calved; those that were considered good enough were put with the dairy bull Richmond Lad; and the others that are more of a beef type are placed in another paddock, and are now running with the beef Shorthorn bull lately received from Glengallan.

The breaking-in of these cattle will add to their value, but, in order to lessen the cost of handling, a separator has been obtained, so that the milk can be utilised. At present a little cream is being sent to the Capella Butter Factory.

I have had many opportunities to sell cows, but have refrained from doing so, as the farm has been very lightly stocked. The addition of the twenty cows just received will make it possible to part with a small draft next year. There will be a fair number of steers of a saleable age and also some butchers' sheep to dispose of. This, with a little additional wool, should tend to make the next year's revenue of the farm of more pleasing proportions than this year's.

Should the weather be favourable during the summer, plantings of maize and millet will be made, with the object of converting them into ensilage. Cow peas and setaria will be planted for hay.

A small parcel of Massagua received last season will be put in. Fortunately, it was not planted; had it been sown, most likely it would have been destroyed by the grasshoppers, as was the case with maize. If the feed value of this plant is right, it will be well worth growing, if a small plot that I saw grown by Stock Inspector Laver was a fair criterion of what the yield per acre would be.

			Head.
Number of cattle returned 30th June, 1905			142
Increase during year	48		
Increase by purchase of 20 heifers, 1 bull	21		
	—	69	
			211
Died	3		
Sold	14		
	—	17	
Present number on hand			194

		Head.
Number of sheep returned 30th June, 1905 (including 6 rams purchased) ...		375
Increase during year		332
Increase by purchase		200
		907
Died during year	40	
	—	40
Total remaining on hand		867

Area under Crop at Present Date.

	Acres.
Wheat	36·16
Fruit trees	3·0

Rainfall for Year 1905-6.

	Inch.
July	0·37
August	0·09
September	0·00
October	1·11
November	3·79
December	0·00
January	1·92
February	9·15
March	5·92
April	0·00
May	2·32
June	0·00
Total rainfall for the year	24·67

Improvements.—The improvements carried out during the year consist in the erection of a windmill, a 3,000-gallon tank, and troughing in the sheep paddock. This was much needed, and will be appreciated during the coming season.

One of the cultivation paddocks, 160 acres in extent, has been netted in. This is a benefit in two ways—it provides a considerable amount of feed for a few sheep, and they keep the grass and weeds down, which is a benefit to us when we come to plough, as we have not a lot of rubbish to deal with.

An addition was made to the calf-pen, and two bails were added to the cowyard. The yard has also been pitched with stone. This was necessary, as during the wet weather it was almost impossible to use the yard.

ROBERT JARROTT.

REPORT OF MANAGER, STATE FARM, ROMA.

Sir,—I have the honour to submit the following report in connection with this farm:—

The area set apart as a reserve for this institution is 790 acres, more or less.

The variety of soils found on the property comprise most of those (other than plain) under cultivation in the Maranoa district.

Previous to the clearing operations which have been carried out here, the paddock was practically in places valueless for the purpose it was being put to—that is, a horse paddock—on account of the dense mass of undergrowth and pear that existed, and which were fast covering the best-grassed portions of the property.

The work of reclaiming has been accomplished with labour supplied under Public Estate Improvement Fund.

The following is a brief account of the method employed to obtain the desired result on each block, as well as a few other particulars:—

Block A.—Set apart for the cultivation of cereals. This was the first area dealt with; was heavily timbered, besides being covered with a dense mass of undergrowth. Extent: 103 acres. Soil for the most part sandy loam; has a fairly even surface, excepting at extreme northern and southern ends, where gullies exist affecting a portion containing about 25 acres. All trees, stumps, undergrowth, &c., were taken out to a depth of 9 inches, and, excepting any useful timber, burned. This block was completed on the 3rd of March, although previous to that an area of 50 acres was ready for the plough.

Block B has an extent of 81½ acres. On this area are situated the sites selected for the buildings, the block set apart for the vineyard and orchard, as well as the house paddocks. The soil ranges from sandy to sandy loam. Previous to being dealt with, the condition of it was similar to Block A. The treatment it received is as follows:—Individual trees have been left, a distance of 6 yards apart; all others have been dealt with in a similar manner to that employed in previous area.

Block C contains 125 acres. This has been dealt with in such a manner as to still afford protection to the areas set apart for cultivation from the north and west winds. All straight and sound timber has been left, undergrowth has been grubbed out, leaving individual specimens 6 yards apart. The cypress pine met with has been treated in the same way.

Blocks D and E have both been set apart for grazing purposes; they embrace an area conjointly of about 410 acres. Both of these portions have been dealt with in the following manner, viz.:—All undergrowth has been grubbed out, as well as all saplings up to 4 inches in diameter, over that size being ringbarked, good specimens being left, having a distance of 20 yards intervening. Logs, &c., have been got rid of by burning. A great portion of the ground contained in these two blocks is subject to floods in wet seasons, and is, therefore, practically unfit for any other purpose than the above.

Block F is situated on the western side of the Bungeworgorai Creek. This has been cleared of all timber, &c., in a similar manner to that employed on Block A. Contains 38 acres of deep, rich, alluvial soil. It is intended to devote it to the cultivation of miscellaneous crops. Before it can be prepared for this purpose, it will have to be enclosed.

A commencement was made with agricultural operations on 20th February, on which date the ploughing of Block A by contract was begun. This work was finally accomplished on 19th March. All subsequent cultivation received has been carried out by the labour permanently employed on the farm. The roots overlooked in the process of clearing were numerous, and have been very trying on all the implements used. A start was made with seeding operations on the 27th April, and an area of about 67 acres was dealt with. Owing to the unfavourable weather conditions prevailing on the completion of this, it was deemed prudent to discontinue the work. Seasonable weather being subsequently experienced, sowing was resumed on the 28th of May, and completed on the 30th.

The original intention of establishing permanent blocks for determining the value of different depths of cultivation, kinds of fallowings, and rotation of crops in the growing of wheat has not been proceeded with this season. Instead of this, a large number of wheats, most of them new to the district, have been procured from different sources, and sown in areas according to the quantity of seed supplied. From the Hermitage State Farm the following wheats were received, and an area of ¼-acre has been allotted to each:—Hermitage No. 1, No. 2, No. 3—Bobs, Cumberland, J. Brown, Schneider, Moulds, Plover, C12, C25, C33, C50, C53, C91, C121, C175, C181, C343, C348, C349, C504.

An area of 3·24 acres has been sown with the following, procured from the same place:—J. Brown, C12, C25, C348, C353, C504.

In addition to these, nineteen other small blocks have been seeded with the wheats procured by the Department from New South Wales, where it is stated they gave the best results last season of all wheats growing under departmental observation.

The following were received, viz.:—Belatourka, Bobs, Bunyip, Cumberland, Federation, Glover, J. Brown, Jonathon, Rymer, Schneider, Sussex, Tarragon, Cretan, Farrer's Durum, Kubanka, Macaroni, Velvet Don, Power's Fife, and Minnesota Blue Stem. Bulk sowing have been made of Budd's Early and the Manitoba imported this season. An area of about 15 acres has been seeded with the former, and nearly 40 acres are under the latter.

Three blocks, each containing about 2½ acres, have been sown with the following barleys:—Californian brewing, Carter's malting, and Invincible.

A bushel of Manitoba wheat was obtained from the Roma Milling Company, by whom it was imported from Canada three years since. An area of 2 acres has been put under crop to this.

All seed previous to being sown was treated either with formalin or bluestone, to prevent the appearance of smut.

The progress made by the crops up to the present leaves nothing to be desired, favourable weather for the growth of same having been experienced since seeding.

The block of land, containing about 15 acres, set apart for the orchard and vineyard was prepared previous to being ploughed in the following manner:—

All trees, stumps, brush, &c., grubbed out to a depth of 15 inches. This was accomplished with labour procured from the same source as that occupied on other work of this description.

The ploughing of this to a depth of 18 inches has been completed, as well as the subsequent cultivation required prior to it being planted. The condition of the soil at present warrants this work being proceeded with immediately.

With a view to ascertaining the possibility of obtaining another water supply than that which existed, a bore was put down with a plant kindly lent by the shire council. In sinking, water was met with at a depth of 45 feet, and rose 7 feet in the hole. Owing to the poor quality of this, it was decided to go still deeper, thinking it might improve, but such was not the case. A sample forwarded to Brisbane on being analysed was found to contain the following:—

Total solids (clear liquid)	486	grains	to the gallon
Chlorine	30·4	,,	,, ,,
Equal to common salt	45·5	,,	,, ,,
Loss on ignition	50·4	,,	,, ,,

It is, therefore, unfit for domestic or irrigation purposes, and nearly so as drinking water for stock.

The original paddock has, so far, been subdivided into seven, necessitating the erection of about 3 miles of fencing of the following description:—Posts, 22 feet apart, 4 feet 2 inches above ground, having three plain wires and one barbed, 1 foot apart, running through them, and strained every five chains. On

the flooded portion, over which one fence runs, the wires have been tied on the downstream side of the posts, and not put through. The gateways left have a width of 15 feet. All the work in connection with this has been done by contract.

The buildings completed and in the course of erection consist of a temporary shed as a cover for such implements, tools, &c., it can contain; manager's residence; and quarters for the employees.

All the horses, harness, implements, vehicles, tools, &c., necessary to meet the present requirements of the farm have been procured.

The following meteorological instruments have been received and placed in position:—Stevenson's meteorological screen, thermometer for dry bulb, thermometer for wet bulb, maximum thermometer, minimum thermometer, terrestrial radiation thermometer, rain gauge, and measuring glass.

The rainfall recorded since the above were installed totals 1·82 inches, representing four wet days in May and six in June.

A number of horses, the property of the police, have the run of the 250 acres situated north of the dividing fence recently erected. An area of a little over 200 acres, which contains a swamp, well-grassed flat, and a good dry ridge, has been set apart solely for the use of the farm horses.

Already a certain amount of outside interest has been displayed in connection with the farm, and many inquiries have been made as to the likelihood of stud stock, more especially cattle, being introduced here in the near future.

R. E. SOUTTER.

REPORT OF THE MANAGER, STATE NURSERY, KAMERUNGA.

Sir,—I have the honour to submit my report for the Kamerunga State Nursery, Cairns, for season 1905-6.

The season, climatically, has been most unusual, and, in the early part, very unfavourable. The first two months of the season, July and August, were normal, but from the last week in August until the last week of January a drought was experienced, during which period of 152 days—practically five months—only 2·570 inches of rain fell. September to November is not infrequently fairly dry, but December and January can generally be relied on for heavy rain; as a consequence, the dry weather, extending over these last two months, was rather severely felt. The unusually dry season terminated somewhat abruptly in a cyclonic storm on the 28th of January. The rainfall during the storm itself was not excessive; what damage was done was by the wind, which attained considerable velocity. The Nursery, being situated so close to the foot of the ranges, escaped any serious damage, the most important being the depriving of many bearing trees of fruit or blossom, the blowing over of the only bearing specimen of the Algaroba Bean-tree (*Prosopis juliflora*), the loss of one or two less important trees, such as cinnamon, sago palms, &c., and damage by falling branches to the vanilla vines. This unusual weather made the planting season very late, which proved somewhat of a handicap, February and March becoming exceptionally busy times, as, owing to the advent of the rainy season, not only did the growth of weeds, &c., on the Nursery require attention, but all the planting, sowing, potting, and transplanting had to be done, and at the same time labour, urgently required on the Nursery itself, had to be taken off to pack and despatch packets and parcels of plants and seeds for which application had been received.

The mean temperature for the season was 74·96 degrees Fahr., as against 74·30 degrees Fahr. last year, and the range from 42·5 degrees Fahr., the lowest minimum, to 102·5 degrees Fahr., the highest maximum.

The application for plants, seed, &c., has decreased somewhat, to a great extent due to the charges now instituted by the Department. This, however, has had the effect of causing the plants distributed to be the better cared for and looked after, as only plants or seed really required for use are now applied for, and but little for mere curiosity. The distributions were as follows:—Plants, 1,353; seeds, 2 cwt. 2 qr. 9 lb. 11 oz.; cuttings, 1,793; bulbs and rhizomes, 18 lb.; grass roots, 232; suckers, 18; sisal hemp plants (bulbils), 10,295; and sundries, consisting of 20 items exhibits (2 qr. 12 lb. 13 oz.), 9 items fibres, and 139 items bottles of seeds.

The correspondence, including applications for advice and information, is steadily on the increase, having reached totals of—incoming, 1,873; outgoing, 2,166.

The collections by sale of seed, plants, &c., during the year amounted to a sum of £44 2s. 2d., which is the largest amount yet obtained by this means, and is some 30 per cent. in excess of the estimated collections for the season.

The numbers of visitors to the Nursery are correspondingly on the increase, and no inconsiderable amount of time is taken up in showing these round, or affording the advice, information, or demonstration desired. Not infrequently the whole day, or the greater portion of it, is taken up with a series of field lectures and demonstration to visitors. The lists include many distinguished gentlemen as well as settlers and farmers. While universal courtesy is extended to all visitors, a number of those coming out to the Nursery, while ostensibly seeking information, only do so from curiosity. Even though the plants, &c., are mostly named, such parties cannot be left to look round by themselves, unfortunately, owing to a tendency to vandalism among some, who, in spite of notices, if not personally conducted, break plants and pick fruit, flowers, and seed. The flowers of some of the valuable economic plants are certainly pretty, and fruit pods and seeding heads uncommon and unique; but, when these represent the result of perhaps years of work and are required for propagational purposes, it is especially annoying to find they have been ruthlessly torn off and removed. Cocoa pods notably attract attention. For this reason, on Sundays, when the overseer and men cannot be expected to be on duty, it has been found necessary to emphasise the printed notices at the entrances by padlocking the gates.

Trophies from the Nursery were sent to three shows during the season—Atherton, on the 3rd to 8th July, 1905; Port Douglas, on the 24th to 31st August; and Ingham on the 4th to 18th September—which were much appreciated.

The general expenditure of the Nursery has been about the same as for last season, but the work has so materially increased that increased expenditure will be unavoidable next season to keep pace with it; for, while the scope and detail of the work on the Nursery has extended considerably, the amount of labour—decreased during the time of retrenchment—has not as yet been restored to the normal and necessary amount. It is a constant effort, especially so at times of heavy rain, to keep the work in hand, and many useful experimental works have to be foregone purely on account of inadequate amount of labour.

In connection with the encouragement of Nature teaching in State schools, several collections of seed, fibres, cottons, and items useful as objects for object lessons have been prepared and distributed. No charges were made for these beyond postages, &c., the schools supplying bottles, &c. Several lectures or object lessons were also given, both on the Nursery itself and at State schools, to classes of children.

General repairs during the year consisted of the replacement of a set of outside steps to the overseer's house, some flooring, part of the men's quarters, and painting of the latter. The fencing round the Nursery, having been up some fifteen or sixteen years, and, in some cases more, requires more and more attention every year; posts require renewing; and the wire netting—very necessary for keeping out wallabies and bandicoots, &c.—is so rotten in parts that it affords but little protection against the smaller vermin. During the cyclonic storm, the erection known as the "granadilla shed"—a kind of rough trellis on posts 6 to 7 feet high, with saplings across the top, on which such creeping fruits and vegetables as the granadilla, the passion fruit varieties, the choko, the Indian snake vegetable, condols, &c., are grown—was blown down, and had to be re-erected. This occupied some time, as it necessitated the dray going over the river to bring in forked posts and ti-tree saplings.

The new areas brought into cultivation this season also occupied some time, and materially added to the work of the overseer and hands. Field 1, Section III., which had been under Ceara rubber and was badly infested with couch grass, was cleared, broken up, and planted with a manurial crop. A part of Field 3, Section III., also, that had not been previously ploughed, was broken up; and a new portion, of some half an acre or so, was added to Field 3, Section I., and is named Field 3A of that section. The grubbing out of stumps and the worst of the boulders was done by contract, and a contract also given out for the ploughing. The contractor for the latter work, finding the land stony, after breaking one or two ploughshares, refused to continue, and the work had to be done by Nursery labour. The cross-ploughing and harrowing of these fields, as well as the digging, planting, and sowing, was done by Nursery labour during the season, and constituted a material addition to the work of the Nursery.

Since the abandonment by Chinamen of the land previously occupied by banana plantations in the vicinity, and the resulting advent of noxious weeds, the paddock, though only some 5 or 6 acres in extent, has, during the last two or three seasons, required more and more attention in the mowing of Chinese yellow burrs, pink burrs, and *Sida retusa*. This work has to be done by hand with bramble scythes, as time may permit, and this season has proved a most formidable addition to the work to be done. If neglected, these burrs grow to a height of 6 or 7 feet, and no grass is obtainable for the Nursery horses. The purchase of a small reaping machine, which could be worked by the horse, would very quickly repay its cost in saving of time and labour.

No especial trouble has been experienced in the working of the pump for the water supply; but the boiler is very old, and the inspector under the Shops and Factories Act, on inspecting it in January, stated that it was no longer safe to use the normal head of steam required for the pumping—some 80 lb.—and reduced the certificate to 50-lb. pressure, at the same time intimating that we may expect to have the old boiler entirely condemned shortly. This was during the above-mentioned dry weather. The water supply being thus materially reduced when most wanted, with a probability of entirely ceasing at any time, it was feared great loss of valuable plants might ensue; but, fortunately, very shortly after the matter was reported to the Head Office, the weather changed, and a copious rainfall relieved the situation.

The requirements with regard to water having been materially increased since the inception of the Nursery and the installation of the present pump and system of water supply, a scheme was submitted to the Department for the obtaining of a plentiful supply of water by gravitation from Rocky Creek, on the railway line in the ranges behind the Nursery. This scheme would require no more plant than the actual piping, would supply more water, require little or no upkeep or expenditure in fuel and time, and would cost but little, if any, more than would be involved in the purchase and erection of a new boiler and larger pump. It is hoped that this scheme will be approved, sanctioned, and shortly set in hand.

New species of plants and seeds, or further supplies of seeds, &c., of plants already at the Nursery, have, as usual, been received and sown during the year. These were mostly obtained by means of exchanges with similar institutions in other parts of the tropical world. It is only possible to give the most important—

Anona cherimolia, Cherimoya—Brisbane; 49 per cent. germinated.
Chloris virgata, Rhodes grass—America; 90 per cent. germinated; doing well.
Pithecolobium saman, Guango-tree—Ingham; 95 per cent. germinated; doing well.
Ceratonia siliqua, Carob-tree—Cyprus; 95 per cent. germinated; doing well.
Tobacco, 11 varieties—California; 95 per cent. germinated; doing well.
Sorghums and Kafir corn, 5 varieties—California; 50 to 70 per cent. germinated.
Musa textilis, Manila hemp—Manila; failed.
Rice, Japan seed paddy—Japan; growing well.
Cotton, Chiquitas—Chiquitas; growing well.
Mangoes, special variety—Daintree; growing well.
Black and other palm seeds, 3 varieties—Daintree; mostly failed.
Pumpkins and squashes, several varieties—California; did well.
Papaver somniferum, opium poppy—California; failed.
Broom Corn—California; failed.
Mussœnda frondosa—Manila, 5-3-06; just germinated.
Benincasa cerifera, Condols—Manila; 10 plants obtained.
Cinnamomum camphora, Camphor Laurel—New South Wales; not germinated.
Elettaria cardamomum, Cardamoms—Samoa; doing well.
Quassia amara—Samoa; doing well.
Zalacca edulis—Samoa; failed.
Aglia edulis—Samoa; failed.
Calamus tenuis—Samoa; alive, but sickly.
Eugenia, species, &c.—Samoa; some thriving.
Crotalaria juncea, Sunn hemp—Manila.
Psophocarpus tetragonolobus—Manila.
Sicana odorifera melocoton—Trinidad.
Funtumia elastica, rubber—Trinidad; sown 13-6-06.
Gliricidia maculata—Trinidad; sown 13-6-06.
Gynocardia odorata—India; sown 21-6-06.
And many others.

A case of valuable plants sent to the Nursery from Samoa, properly packed in a wardian case, apparently travelled well until it reached the Queensland coast, where it was subjected to rough handling; on arrival it was found to have been turned upside down, and the valuable contents were, in consequence, considerably damaged, accounting for a number of failures among the above.

The seeds set during the season by the overseer, in pots, boxes, or beds, excluding field crops, represent 148 species, all of which required watering and tending, potting, planting out, &c. A number of trees have been planted out permanently in the Nursery, mostly in the newly broken up area of Field 3, Section III. The principal are:—

1 Copal Gum—Field 3, Section III., 17-4-06.
2 *Prosopis juliflora*—Field 3, Section III., 17-4-06.
1 *Ficus macrophylla*—Field 3, Section III., 18-4-06.
1 *Sterculia trichosiphon*—Field 3, Section III., 19-4-06.
2 *Ceiba sp. (Santa ana)*—Field 3, Section III., 19-4-06.
1 *Parkia biglandulosa*—Field 3, Section III., 19-4-06.
2 *Ficus sp.* (Samoa)—Field 3, Section III., 17-4-06.
2 *Thespesia populnea*—Field 3, Section III., 17-4-06.
8 *Ceratonia siliqua*—Field 3, Section III., 19-4-06.
2 *Ceiba pentandra*—Field 3, Section III., 19-4-06.
2 *Olea europæa*—Field 3, Section III., 19-4-06.
2 *Melia composita*—Field 3, Section III., 19-4-06.
2 *Afzelia bijuga*—Field 3, Section III., 29-4-06.
2 *Diospyros cardifera*—Field 3, Section III., 20-4-06.
2 *Cryptocarya Bancroftii*—Field 3, Section III., 20-4-06.
2 *Elæocarpus Bancroftii*—Field 3, Section III., 20-4-06.
1 *Ficus rigo* (N.G. rubber)—Field 3, Section II., 1-6-06.
1 *Veitchia Joannis*—Field 3, Section II., 1-6-06.
1 Native Cherry—Field 2, Section II., 10-10-06.
1 *Caryota urens*—Field 1, Section I., 7-1-06.
1 *Martinezia caryotæfolia*—Field 1, Section II., 10-10-05.
2 *Catalpa hybrida*—Field 3, Section III., 20-4-06.
2 *Catalpa Kaempferi*—Field 3, Section III., 20-4-06.
2 *Cryptocarya Palmerstonii*—Field 3, Section III., 20-4-06.
2 *Podocarpus pedunculata*—Field 3, Section III., 20-4-06.
1 *Licuala grandis*—Field 1, Section II., 10-10-05.
1 *Rhapis flabelliformis*—Field 1, Section II., 10-10-05.
1 *Thrinax elegantissima*—Field 1, Section II., 10-10-05.
1 *Corypha umbraculifera*—Field 1, Section II., 10-10-05.
1 *Oreodoxa regia*—Field 1, Section II., 10-10-05.

Citrus Orchard.—The citrus fruit trees in Field 3, Section II., have grown well during the season. A small quantity of the meatworks manure supplied to the Nursery was applied to them, and the roots mulched over, with very gratifying results. The following trees have been added during the year:—2 Beauty of Glen Retreat mandarin, 2 Valentia late orange, 2 East Indian limes, 2 Villa Franca lemons, 1 Lisbon lemon, 1 kumquat, and 1 Seville orange, obtained locally and raised from seed.

The small orchard now consists of 33 citrus trees of 16 different species more or less especially suited to the Northern climate. All are growing well, and the Tahitian limes and variegated lemons bore a few fruit for the first time this season. It is hoped that it will be possible to bud some stock during the coming season for distribution.

Rubber Plantation.—The small rubber plantation in the main block of the Nursery consists of 60 trees of Para (*Hevea brasiliensis* and 17 of Central American rubber (*Castilloa elastica*); also, planted in various parts of the grounds, 3 mature and several young trees of Rambong Rubber (*Ficus elastica*), some 12 mature trees of Ceara Rubber (*Manihot Glaziovii*), a number of West African Rubbers (*Tabernæmontana crassa*), and one or two young trees of New Guinea Rubber (*Ficus Rigo*). Other trees, producing a latex from which rubber may be obtained in more or less quantity, are being propagated and experimented with, such as *Beaumontia grandiflora*, *Artocarpus integrifolia*, and *A. incisa*, and indigenous species of the Ficus family. Besides this, a few more trees of *Castilloa elastica* were planted, more especially with the object of seed production for propagational purposes, in the annex to the Nursery known as the "cocoa block." These were planted about 1902-3, and should be bearing seed the coming season.

The Rambong Rubbers (*Ficus elastica*) have been in bearing for some time; but, as only a few trees exist here, the rubber obtained is required for exhibition purposes and for samples. These trees are not yet fruiting, and, therefore, only plants are available for distribution. Owing to its hardy nature, and the fact of its thriving in poor, stony, and rocky situations, coupled with the fact of the ready coagulation of the latex, it will establish itself as one of the most useful of rubber-producing trees for this country.

The Para-trees (*Hevea brasiliensis*) produce the rubber obtaining the highest price in the market.

The small plantation at this Nursery was planted on the 7th of April, 1899, and is, therefore, just over seven years old. The average girth of the 60 trees at the base is 25·51 inches, and at 4 feet from the ground 14·18 inches. It will be possible to systematically tap these in another two or three years, though casual experiments in this direction are carried out on the larger specimens from time to time. The largest specimen shows a girth at the base of 34 inches, and at 4 feet of 19½ inches, the smallest being 13½ inches at the base and 7 inches at 4 feet.

The Central American Rubbers (*Castilloa elastica*), producing a product second only to Para and worth almost as much, is also a most useful variety for this country, being quicker growing and coming into bearing four years sooner than the Para. These trees were planted on the 30th of January, 1901, and are, therefore, under five and a-half years of age; but in both girth and height have caught up to the Para-tree planted two years earlier. The average girth of the 17 trees at base is 25·73 inches, and at 4 feet from the ground 18·73 inches. The largest tree gives a measurement of 36 inches at the base and 26 inches at 4 feet, while the smallest is only 10 inches and 6½ inches. The majority of the trees are, however, well grown, as may be seen by the averages; indeed, only one specimen of the 17, which for some unknown reason is sickly, is noticeably small.

Tapping operations will be begun on these trees this year. Ceara (*Manihot Glaziovii*) and West African (*Tabernæmontana crassa*) Rubber-trees, being quick-growing species, will probably be found of great value as a temporary product between the rows of the slower-growing varieties during the first few years after the inauguration of a plantation. Seeds of a variety of African Rubber (*Funtumia elastica*), not hitherto in cultivation here, having been obtained, it is hoped that plants will be raised, and this variety added to the list of rubber-producing trees and plants at the Nursery.

Tropical Fruits.—The breadfruit trees again bore well, as did also the Jackfruit. These most useful trees of the Artocarpus family are worthy of more consideration at the hands of farmers and settlers in the tropics. The di apple, custard apple, and mango crops suffered severely in the cyclone, the ground being strewn with immature fruit and the trees left bare, the windfalls having to be carted away. The Longan, as is often the case with these trees, after the heavy crop of last season, failed to bear at all this year. The *Monstera deliciosa*, papaw, soursop, &c., bore well, as did also the tamarinds. For these latter there would

seem to be a good and increasing demand. Plants or seed of numerous other tropical fruits—such as granadilla, Cherimoya, star apple, Avocado pear, pomegranate, guava, Madagascar plum, Davidsonian and Burdekin plums, Brazilian cherry, Yung Tau and Wampee, Kei apple, rose apple, breadfruit, Natal plum, Cape gooseberry, pineapple, rosella, loquat, bananas, &c.—are available.

Fibres.—A considerable number of sisal hemp bulbils were distributed this season, though the demand was far in excess of the supply. The drought in the early part of the season materially retarded the growth of the poling sisal hemp plants, and the cyclone broke several on which the bulbils were yet immature. It is estimated that 20,000 to 25,000 bulbils will be available during the coming season. A quantity of bulbils of Bombay Hemp (*Agave vivipara*) are now available, and, besides the other well-known fibre-producing plants of this family, two varieties of Murva or Bowstring Hemp (*Sansevieria zeylanica* and *S. guineensis*) are in cultivation at the Nursery, and plants are available in limited quantities.

Tobacco.—The net amount of dried and cured tobacco obtained from the seventy-five plants in the experiment plot of last season amounted to 17 lb. 2 oz. Owing to the want of proper curing-shed room, and the very dry season experienced, the drying of the leaf was difficult and unsatisfactory. Favourable reports were, however, received on the quality of the leaf, and both size and quantity were satisfactory. No sign of blue mould was apparent at any time during the season, and the indications of the experiment are that, with ordinary care and attention to the first laws of Agriculture, the culture of cigar-leaf tobacco in the North would prove a certain as well as a highly paying crop.

This season the experiment is being continued with different fertilisers and some new varieties of tobacco received from California. The seed was germinated in boxes in the germinating-house on the 3rd of March; when the plants were some 2 inches or so high they were again transplanted into boxes, about 6 inches apart. On the 7th May, when some 6 inches high, they were planted out in the field, this time in Field 3, Section II., again in rows 3 feet apart, with the same distance between the plants in the row. The following are the varieties and number of plants with fertilisers used. The plants are now growing very well, and some 18 inches to 2 feet high. The difference between unmanured and manured plots is most noticeable. Plots 3 and 5 would seem, so far, much in advance of the others; the combination of superphosphates and sulphur of ammonia seeming to be especially advantageous with these plants in the matter of growth. Whether the tobacco from these plots will maintain its superiority when cured remains to be decided:—

15 Plants of Each.		Fertilisers.	At Rate of Per Acre.
Divided transversely into plots, consisting of three plants of each variety, for manurial experiment.	1. Large Gerard. 2. Persian Rose. 3. Pennsylvania Seedleaf. 4. Rheus de Sumatra. 5. Zimmer Spanish. 6. Virginian Oakhill Yellow. 7. Brazilian-American. 8. Honduras. 9. Stirling. 10. Havana. 11. Connecticut Seedleaf. 12. Conqueror.	*Plot* 1.—Unmanured. *Plot* 2.—Concentrated superphosphate and sulphate of potash ... *Plot* 3.—Concentrated superphosphate and sulphate of ammonia ... *Plot* 4.—Sulphate of potash and sulphate of ammonia ... ... *Plot* 5.—Concentrated superphosphate, sulphate of potash, and sulphate of ammonia ... ... (All fertilisers in equal proportions.)	2 cwt. 2 „ 2 „ 3 „

Cotton.—A plot in the new area, Field 3A, Section I., was set aside for cotton cultivation this season. The seed was sown in the field where the plants were to remain. Three seeds or so were sown in each spot on the 29th February, and the resulting plants were thinned out some six or seven weeks later, when some 6 inches high, leaving only one strong plant. Twenty varieties were sown, as under, in rows 5 feet apart, with 5 feet between the plants:—

1. Christopher, Upland.
2. Doughty, Upland.
3. Caravonica, S. Island.
4. Truit's Big Boll, Upland.
5. Culpepper, Upland.
6. Matafifi, S. Island.
7. Lewis's Prize, Upland.
8. Jones's Big Boll, Upland.
9. Barbadiense, S. Island.
10. Russell's Big Boll, Upland.
11. Seabrook, S. Island.
12. Chiquitas (?)
13. Santa Ana, S. Island.
14. Santa Ana, Big Boll, Upland.
15. Variety unnamed, Upland.
16. Eldorado, Upland.
17. Kidney, S. Island.
18. Egyptian, Upland.
19. Parker, Upland.
20. Brady, Upland.

Of these, all are doing well except No. 20, the seed of which failed to germinate. A small quantity of meatworks manure was applied when the seed was sown, with most beneficial results. The plants now average 3 to 4 feet high, and have mostly blossomed. The bolls may be expected to ripen during August, when records will be kept of the returns per tree, percentage of lint, quality of the cotton, &c., and seed in small quantities will be available.

Cocoa, Coffee, Tea, Etc.—The cocoa-trees are not as robust and healthy as might be hoped, the dryness of the soil and climate in the Nursery proving somewhat of a handicap. A moist, humid climate, rich soil, and protected situation are what this tree requires. While it can hardly be expected that climate, soil, and rainfall can be found in one small nursery to suit the widely differing wants of the very many plants and trees grown here, it is unfortunate, while so very many eminently suitable localities exist as may be found in our Northern river areas for the profitable cultivation of this valuable plant, that the specimens at the State Nursery should not be able to attract attention by the luxuriance of their growth. The trees bear fairly well, but the seed, owing to its very short vitality, is seldom distributed. Plants, however, are always available, and applicants with suitable localities have the satisfaction of knowing that plants will both grow and bear better than the parent trees.

The cocoa-trees suffered somewhat during the dry months, and are, in consequence, not bearing heavily this season. A few trees in the Cocoa block are blossoming for the first time this season.

Tea and coffee shrubs are much hardier, and are doing very well. Tea is particularly hardy, and well suited to many parts of our tropical land, especially those having a heavy rainfall. It is also capable of withstanding more cold than many tropical plants.

Kola-nuts, Kapok, Carob Bean-trees, Etc.—The kola nut-trees are showing luxuriant growth. Only two bore any crop this season, and plants raised, from the seed produced, and are available.

A further small quantity of seed of the Carob bean-tree was received from Cyprus, and plants in bamboo plots are available. Plants of this tree, it is found, seldom thrive when transplanted from seed beds; to obviate this difficulty, therefore, the seed was set in bamboo pots, which can be planted with the seedling, and will shortly rot away. The kapok-trees are growing well, and a limited number of these useful plants are available for distribution.

Spices and Drugs.—*Vanilla:* The plants in the annex to the Nursery are growing well; but, unfortunately, were considerably damaged in the cyclone, a large number being thrown down, and many being broken. The crop will be small this season in consequence, but the next season a heavy crop is anticipated. A few pounds of last season's crop were sent to the Head Office as samples. The size of the beans, being the first crop, was not remarkable, though good; but the quality and aroma were excellent. *Cinnamon:* One of the large trees in the front of the Nursery was blown out of the ground in the cyclone, and, as it would have left an unsightly gap for many years to come had it been removed and a new one planted, it was with some difficulty replanted, and is doing well. *Cardamoms:* The one plant reported as bearing last year succumbed during the dry weather. From the seed it produced a number of plants were, however, raised, and, I am pleased to report, are growing well. For safety, 2 dozen of them have been planted in the bushhouse; a further 2 dozen plants are being carefully nursed in pots. It is hoped shortly to have plenty for distribution. *Camphor Laurel:* A small quantity of seed was set, but the percentage of germination was very low. A few plants are available. *Pepper:* The only plant of the true *Piper nigrum* is now giving indications of luxuriant growth. Plants of *Illicium anisatum* (producing aniseed), *Schinus molle* (producing Peruvian mastic), *Croton tiglium* (producing croton oil), *Erythroxylon coca* (producing cocaine), *Piper cubeba* (producing cubebs), *Myrtus pimenta* (producing allspice), &c., &c., are available.

Forestry Seeding Beds.—The three beds of Bunya Bunya pine seeds, sown last season, came up fairly well this year. Considerable trouble was experienced with bandicoots, and the beds had to be covered with wire netting for some time. The majority of the seed seem to have escaped damage, however. One bed of last year's, and three of this year's, plants are available, as also one bed of Honduras mahogany plants, and two beds of Doomba plants.

Cereals.—*Rice:* Two rows of Ninety-day American rice paddy were sown in Field 3, Section I. The seed germinated well, and the rice grew well, but ripened its crop very irregularly. Sown on the 2nd of February, it was harvested during May. The resulting sample was not very good, but may improve when acclimatised. The seed has been kept for resowing. A quantity of Japan rice seed received from the Head Office on the 23rd of March, 1906, was sown in Field 1, Section II., about ¾-acre, on 26th March. A test of the seed gave a percentage of germination of 95 per cent. exactly. The seed in the field germinated well, and in a few days. The sowing was unduly late in the season, and the returns cannot, therefore, be taken as a criterion of the capabilities of the variety. The weather was favourable, in spite of the lateness of the season; but whether, owing to this or not, a patch some 20 yards by 10 yards, about the middle of the field, was attacked with a species of rust, specimens of which were sent to the Vegetable Pathologist of the Department.

A small quantity of the seed was distributed to two or three reliable settlers for experiment, reports from whom have not yet been received. The paddy may be expected to be harvested in July. The bulk of the seed has been stored in tins for sowing next season. The amount received was 303 lb.; quantity sown, 16 lb.; distributed, 80 lb.; balance in hand, 207 lb.

Sorghum, Kafir Corn, Maize, Millets, Etc.—Small quantities, one or two rows of each, of the following cereals were sown in a portion of Field 3, Section I., and Fields 1 and 3, Section II.:—

Mexican Gigantic Maize, Milo Maize—Failed to germinate. The land on the Nursery is not suitable for maize.

Dwarf Brown Millet, Evergreen Broom Corn, Early Japan Broom Corn, Californian Golden Broom Corn—Soil not suited for broom millets either. Some germinated, but did not do well.

Early Amber Cane Sorghum—Very poor crop. Kept seed.

White Kafir Corn—50 per cent. germinated; fair crop; about 6 feet high.

Red Kafir Corn—50 per cent. germinated; fair crop; about 6 feet high.

Jerusalem Corn—50 per cent. germinated; fair crop; about 6 feet high.

Imphee—80 per cent. germinated; did well; 6 to 7 feet high.

Brown Saccharatum—Did very well; a good variety; 11 to 12 feet high.

Giant Honduras Sorghum—The best of all for this climate; 11 to 12 feet high. Good crop and good ratoons.

Coleman's Sorghum, Early Orange Sorghum, two American varieties Sorghum—Did fairly well; about 6 feet high; seed available.

Bulrush Millet—Failed to germinate.

Teosinte—An excellent fodder for the Northern climate; 5 to 6 feet high.

Penicillaria—Fair; a good fodder plant for certain districts.

Japanese Buckwheat—Did well; a heavy cropper.

Eleusene (Raggi)—Did well; prolific bearer; good poultry food; about 3 feet high.

Manurial Plants.—*Cow Peas:* The following varieties were sown on 8th February, 1905, in Field 3, Section III., and all did well. Seed in limited quantities available. Black, Purple, Slate, Piebald, Skewbald, Cream, Yellow, White, Blackeye, Speckled, and Whites' Perennial. The last (Whites' Perennial) still maintains its position as the best variety for the extra tropical localities, being quick-growing, prolific, and producing the most green stuff per acre. *Beans:* Some ten varieties were propagated in different plots in the Nursery, the most important being:—Black, Mottled, and Green Mauritious beans, small Madagascar or Mauritius, Narico, Tonga, Poor Man's bean, &c. All did well, and seed in limited quantities is available. Applications for bags and hundredweights continue to come in, which, of course, cannot be supplied from this institution. There should be a good opening for farmers in this district to produce these manurial beans and peas in quantity and sell the seed.

Vegetables and Root Crops.—*Pumpkins and Squashes:* Some seed of new varieties of pumpkins and squashes, said to be especially suited to the tropics, having been received from California, were sown in Field 1, Section III., and all grew very well. The varieties and average weights of the vegetables were as follow:—

Mammoth Tours Pumpkin.—A large red species; average weight, 30 lb. 14 oz.; weight of largest specimen, 39 lb. 10 oz.

Mammoth King Pumpkin.—Large whitish-green, mottled; average weight, 34 lb. 10 oz.; largest specimen weighing 52 lb. 12 oz.

Mammoth Whale Squash.—A large oblong variety, shaped like a whale's head; average weight, 16 lb. 6 oz.; largest specimen weighing 22 lb. 8 oz.

Some gerkins were also sown, which came up well, and now promise a heavy crop. The essentially tropical vegetables, such as choko, okra, Paraguay snake beans, egg plants, &c., are kept in cultivation, and seed or plants are available at any time.

Root crops, such as arrowroot varieties, sweet potatoes, cassava, yams, turmeric, ginger, ground beans, peanuts, &c., all did well this season, except the yams. Certain manurial experiments are being carried out with some of these. The natural humus in the soils of the Nursery being exhausted, and no bulk or farmyard manures being available, new land is required for these crops.

A quantity of ornamental and shade trees have been distributed, and a number are still available, suitable for public grounds, parks, esplanades, school grounds, street planting, hospitals, and for Arbor Day planting. If secretaries of committees, school teachers, and others, desiring such trees, would, when applying, give some particulars as to nature of soil, locality, and rainfall, and whether trees are to be guarded and can be watered, &c., if required, trees especially suited to the conditions obtaining will be selected for them, and which, having a far greater probability of ultimate success, would save possible disappointment.

HOWARD NEWPORT, I.T.A.,
Manager.

SCHEDULE A.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS TAKEN AT KAMERUNGA STATE NURSERY, CAIRNS.

[Readings at 9·20 a.m., local time.]

Thermometer Readings.	1905.						1906.						Totals and Averages
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mch.	Apr.	May.	June.	
Mean maximum	76·32	77·53	81·51	92·19	86·53	91·97	91 30	87·05	87·25	83·6	78 17	78·23	Mean average maximum, 84·3.
Extreme maximum ...	81·50	82·0	88·0	98·5	93·0	102·5	97·0	96·5	94·5	88·5	84·5	83·0	Extreme average maximum, 102·5.
On date	12th	12th	21st	24th	13th	5th	12th	6th	7th	2nd	3rd	3rd	On 5th December, 1905.
Mean minimum	57·54	57·35	60·81	62·67	66·36	70·74	71·80	72·23	71·29	68·1	65·22	63·38	Mean average minimum, 65·62.
Extreme minimum ...	48·0	42·5	50·0	57·0	57·0	66·0	67·0	67·5	64·0	61·5	58·0	52·0	Extreme average minimum, 42·5.
On date	13th	1st	2nd	25th	1st	16th	9th	13th	22nd	30th	30th	30th	On 1st August, 1905.
Mean temperature ...	66·93	67·44	71·16	77·44	75·95	81·35	81·55	79·64	79·27	75·85	71·7	70·30	Mean average temperature, 74·96.
Rainfall	1·110	2·160	...	0·630	1·050	0·330	7·250	13·760	14·930	4·940	4·130	3·550	Total rainfall, 1905-6, 53·840 in. ditto 1904-5, 72·915 in.
Wet days	6	9	...	3	10	2	10	13	19	22	17	12	Total wet days, 1905-6, 123. ditto 1904-5, 148.

REPORT OF THE DIRECTOR OF THE BOTANIC GARDENS.

SIR,—In accordance with the usual custom, I have the honour to submit a report of the gardens under my charge for a portion of the year 1905-6. I assumed my duties on the 11th November last, and found the staff to consist of a foreman, six labourers, and two youths in the gardens proper, and one gardener and two labourers in the Government Domain.

REPAIRS TO WALKS AND BUSHHOUSE.—During December and January the asphalt walks were repaired by the Works Department, and the work greatly improved the appearance of the gardens. The upper portion of the bushhouse was repaired a month before my appointment, and the first work was to have the roof of the structure covered with fresh tea-tree (*Leptospermum flavescens*), and the whole of the inside overhauled and planted; and the plants, of which there is now a fine collection, have done remarkably well since. I hope shortly to add to the variety of the collection, particularly with regard to the many desirable indigenous plants.

WATER SUPPLY.—Up to the end of 1905, water had to be paid for, but now the gardens are allowed the free use of 5,000,000 gallons per annum. Unfortunately, it is difficult to use water conveniently in all parts of the gardens, owing to the inefficient pipe service. Besides this, many of the pipes have been so long in the ground that they are constantly being repaired, and a thorough overhauling of the service is required.

RAINFALL.—During the first quarter dry weather was experienced, but subsequently excellent rains fell, as will be seen by the following table of monthly falls:—

1905—July	·26	inch.		1906—January	2·71	inch.
August	·56	,,		February	11·46	,,
September	1·47	,,		March	4·10	,,
October	2·98	,,		April	·31	,,
November	3·71	,,		May	2·81	,,
December	*10·14	,,		June	1·33	,,

Total for 12 months, 41·84 inches.

PLANTS DISTRIBUTED.—A large number of plants have been distributed during the year for planting in school and hospital grounds, cemeteries, &c.; 1,182 were sent to schools, 132 to hospitals, 254 to cemeteries and churches, 118 to shire councils, 255 to reserves, and 468 for planting about Government buildings.

EXCHANGES.—Various exchanges in the way of plants and seeds have been effected. A fine collection of shrubs, &c., was received from Mr. W. R. Guilfoyle, Director of the Melbourne Botanic Gardens; and Mr. J. H. Maiden, the Director of the Sydney Botanic Gardens, during a visit to our gardens last month, promised to send a number which are not represented in our collection. The Queensland Acclimatisation Society has also lent valuable assistance in this direction.

ECONOMIC PLANTS.—It is my intention, so soon as opportunity occurs, to devote a suitable portion of the gardens for the cultivation of medicinal and other economic plants for the benefit of students of plant life. Special plots of sugar-cane and other economic plants are set apart for the purpose of showing visitors from beyond the State some of the resources of our State; but, owing to no funds being available for the employment of a ranger, supervision can only be imperfectly carried out, with the result that a sad mess is made of the sugar-cane and trees bearing edible fruits by youthful visitors.

LABELLING.—In a botanic garden labelling is an essential feature, as without labels much of their educational value is lost. This is particularly necessary now that Nature Study is so important an item in the curriculum of our schools. There are certainly a large number of labels now in use, but these, for the most part, are unreadable. A large number of persons from beyond the State have visited the gardens during the past three months, and many deplore the absence of readable labels, so many of the plants growing here being different to those they have been accustomed to see.

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* 6·81 inches of this amount was registered for eighteen hours ended the 7th December.

Visitors.—During holidays the gardens are largely availed of by picnic parties. In the southern States people make use of the parks for this purpose, but here the Botanic Gardens seem to be the chosen spot, notwithstanding the fact that there are several fine reserves admirably adapted for the purpose, both on the north and south sides of the river, and these quite as accessible as the Botanic Gardens.

Rubbish Bins.—Rubbish bins are greatly needed in which to deposit waste paper, empty bottles, fruit peelings, &c., which at present are scattered all over the gardens by visitors, and, consequently, cause a great deal of extra work on the already small staff.

River Road.—The principal entrance to the gardens is from Edward street, but little can be done to beautify the spot owing to the order, issued prior to my appointment, that the large gates must remain open all day, thereby converting the river road into a common thoroughfare for the encouragement of a great deal of unnecessary vehicular traffic, which not only breaks up the road and creates a continuous dust, which is detrimental to the proper growth and appearance of plants, including the grass, but allows free access to stray animals. I do not consider that this is necessary for a drive, seeing that it is only a short road, and when such a fine drive as the river road at North Quay is so accessible.

River Bank.—The river bank should also be one of the beauty spots of the gardens, but any horticultural effect which might be attempted would be spoilt by the unsightly vessels which are from time to time permitted to anchor within a few feet of the shore. Large vessels are often anchored near the banks, and, although one of the by-laws states that "goods must not be shipped to or from vessels lying off the gardens," it is being constantly infringed owing to the easy access obtainable at the Edward-street gates, and which is difficult to prevent owing to a ranger not being provided on the staff.

Stray Dogs.—The flower beds have suffered severely from the depredations of dogs, and the nuisance became so bad that I had to strictly enforce the by-law relative to the destruction of stray dogs.

Aviary.—Several valuable additions have been made to the aviary. I obtained three black swans in the early part of the year, which were greatly appreciated by the many children who constantly visit the gardens; but, unfortunately, all three died, from some unknown cause, a few months after their arrival.

Glasshouses.—The entire roof of one section of the glasshouses is urgently in need of repair. This, I am informed, was greatly damaged during the 1893 flood, and has received little attention since; consequently, the whole is liable to collapse at any time.

Show-plant House.—The house which had for some years past been used as an eagle-house has, since I took charge, been used for the purpose for which it was originally constructed—namely, a show-plant house—and during the latter half of the summer it was filled with choice plants from the glasshouses. This was much appreciated by the visitors, and I intend shortly to construct a glass frame within the house, and exhibit orchids and other showy plants as they come into bloom.

Seats.—There are very few seats available, and it is hoped that during the coming year funds will allow a number to be made and placed in convenient spots throughout the gardens.

Band Concerts.—During the past six months band concerts have been given regularly on Saturday afternoons by the military bands of the city, and by the private bands occasionally on Sunday afternoons. These concerts were greatly appreciated by the large number of persons who attended each of the performances, and the players deserve thanks for their services, which are given gratuitously.

Library.—With the exception of a few periodicals, there were no books in the library when I took charge, but, fortunately, I have the use of the Botanic Library at the Department of Agriculture, and this I found very useful, as I have had to classify many of the plants in the gardens. The following publications are regularly received:—

The Natal Agricultural Journal;
The Agricultural Journal of the Cape of Good Hope;
The Transvaal Agricultural Journal;
The Journal of the Board of Agriculture;
The Journal of Agriculture of Victoria;
The Agricultural Gazette of New South Wales;
The Reports of the New Zealand Department of Agriculture;
The Board of Trade Journal;
The Hawaiian Forester and Agriculturist;
The Bulletin of the Botanical Department, Trinidad;
The Bulletin of the Royal Botanic Gardens, Kew;
The Bulletin of the Department of Agriculture, Jamaica;
The Journal of the Royal Horticultural Society;
The West Indian Bulletin;
The Agricultural News (West Indies);
The Agricultural Bulletin of the Straits and Federated Malay Straits;
The Publications of the Imperial Department of Agriculture for the West Indies;
The Foreign Office Diplomatic and Consular Reports;
The Bulletin of the Virginia Agricultural Experiment Station;
Experiment Station Records (Department of Agriculture, United States of America);
The Bulletin of the Department of Agriculture, Madras;
Agricultural Journal of the Royal Botanic Gardens, Ceylon;
The Agricultural Ledger (India);
Proceedings and Journal of the Agricultural and Horticultural Society of India; and
Annual Reports of various botanic gardens.

Repairs to Fountains.—The pretty fountain in front of the Houses of Parliament, which had not been in use for some years, was recently repaired at a small cost, and planted with water lilies; and it is hoped that during the coming summer the beauty of this portion of the gardens will be enhanced by the change. Repairs were also effected with the fountains in the four ponds near the river.

Botany Lectures.—I have paid weekly visits to the Agricultural College, Gatton, for the purpose of delivering lectures on botany to the students, and also to the school teachers during the summer and winter courses arranged by the Department of Public Instruction.

J. F. BAILEY, Director.

REPORT OF THE TRUSTEES OF THE QUEENSLAND MUSEUM.

Sir,—We have the honour to report that the work of the Museum has steadily progressed during the year that has now closed. The retirement of Mr. C. W. de Vis from the position of Director has placed us at some disadvantage as compared with previous years; but the retention of his services as Scientific Adviser, and the ready help he has given the Trustees and the staff, has enabled us to overcome some of the difficulties which, without his valuable assistance, might have caused considerable inconvenience.

Mr. Wild has given anxious attention to the new duties and greater responsibilities cast upon him as Acting Director. It was found, however, that the additional tax upon his time seriously interfered with his ordinary work. The appointment of a doorkeeper, and lately of a boy to assist in clerical work, has given him greater freedom, and he has thus been enabled to resume the duties of his special department with more regularity.

During the year a number of new show cases were secured, and, under the care of Mr. Broadbent, these are being filled with birds, which are grouped according to their respective families. The old cases, in which the exhibits were necessarily overcrowded, have been relieved of a number of specimens, and those which remain can now be more readily examined. The excellent arrangement of the new cases is a source of additonal attraction, and assists students in the prosecution of their studies. Two new wall cases are used for exhibiting lizards and snakes. When the bottles which have been ordered come to hand, the large and valuable collection of snakes will be shown to the best advantage.

The comparatively small sum placed at our disposal limits the Museum's sphere of usefulness as an educational institution. We look forward, however, to a time when the improvement of the public finances will justify such an increase to the annual vote as will enable us to employ special scientists, whose duty it will be to make available the fullest information as to the resources of the State, and to teach the public how to develop these most readily.

During the year the staff have been diligent in the work of cleaning and maintaining the numerous and varied exhibits which the Museum possesses. We propose to add to these as opportunity offers, in order that the institution may be brought more nearly into line with those in the other States.

The attendance of visitors during the year has been well maintained, 59,769 persons having passed through the turnstiles. Of these, 34,292 attended on week days, and 25,477 on Sundays. The donations received number 374, and nineteen works were copyrighted.

The Standard Weights and Measures occupy a small room in the basement, and are carefully attended to by Mr. de Vis.

The building and its contents are in good order.

We feel that we should fail in our duty if we closed this report without expressing our appreciation of, and our thanks for, the excellent work done by Mr. de Vis during the many years he had charge of the Museum.

A. NORTON, Chairman.

REPORT OF THE GOVERNMENT STATISTICIAN ON AGRICULTURAL AND PASTORAL STATISTICS FOR 1905.

LIVE STOCK.

I have been prevented from securing an earlier issue of this Report by two causes. One of these has become chronic—the neglect of stockowners to make their returns within the time prescribed by law. The apathy displayed in this respect will, I am satisfied, never be overcome until drastic steps are taken to penalise defaulters. A few prosecutions in each district at an early period of the year, against persons depasturing substantial numbers, would speedily effect an alteration. A special cause of delay was the floods resulting from the seasonable rainfall experienced during the early months of the present year.

Although over a considerable area of Queensland the 1905 season was a very dry one, and at one period of the year matters were in such a critical condition in many places that a wholesale removal of stock appeared inevitable, yet fortunately the more favourable weather which had prevailed in parts in the previous year rendered the condition of the pastures equal to sustaining the stock in most cases for a sufficient length of time to stave off the necessity for this extreme action being adopted to any great extent. All anxiety on this head was removed when the promise of the last months of 1905 had full fruition in the copious rains of the earlier months of the present year.

Although the increases recorded with respect to live stock during 1905 were not so satisfactory as one could have wished, or even as were by many anticipated, yet they proved fairly substantial ones. The following table furnishes information as to the numbers of live stock in the State for each of the past two years:—

A.

Year.	Horses.	Cattle.	Sheep.	Pigs.
1904	413,165	2,722,340	10,843,470	185,141
1905	430,565	2,963,695	12,535,231	164,087
Numerical Increase in 1905	17,400	241,355	1,691,761	...
Numerical Decrease in 1905	...	...	...	21,054
Centesimal Increase in 1905	4·21	8·87	15·60	...
Centesimal Decrease in 1905	...	...	...	11·37

At the end of 1905 there were in Queensland 430,565 horses, 2,963,695 cattle, 12,535,231 sheep, and 164,087 pigs, these numbers being in excess of those returned for the same date in the previous year by 17,400 horses, 241,355 cattle, and 1,691,761 sheep. There were fewer pigs in the State at the end of 1905 than at the end of 1904 by 21,054. These figures represent proportionate increases and decrease respectively of 4, 9, 16, and 11 per cent.

Early in the year, I issued an approximate forecast of the numbers of cattle and sheep. This advanced estimate has of necessity to be framed upon very imperfect data, and proved to be too low in both cases, but was surprisingly close with respect to sheep, the difference between the estimated and actual figures with respect to these amounting to less than 1 per cent. of the latter. The estimate was further afield as regards cattle, the difference being a little in excess of 3 per cent. A question that should not be lost sight of in connection with the increase of live stock after drought is the number put to profit during the year. After the droughts of 1877-8 and 1884-5—it is sometimes remarked—the recovery seemed relatively much more rapid than at present, it being forgotten that the flocks and herds were replenished by importations, and the increase was only kept in check to the extent of the then demands of an even more limited population than at present exists, whilst slaughtering for export was hardly in its infancy. Now large numbers are annually disposed of by export, both alive and in the carcase. It is impossible to both have your cake and eat it.

A comparison of the number of live stock depastured for each of the past ten years is given in the following table:—

A a.

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

Year.	Horses.	Cattle.	Sheep.	Pigs.
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
1905	430,565	2,963,695	12,535,231	164,087

HORSES.—These do not vary to any considerable extent, as there is not at present any great, although an increasing, demand for export, and this and the requirements of the State are fully met by the average existing numbers of four to five hundred thousand. Last year's return of 430,565 showed an increase of 17,400 on the figures for 1904.

Entire Horses.—In 1904 provision was for the first time made on the stock schedules for the collection of the number of stallions in the State. As is invariably the result when any new item is added to a form, for the first year or two, owing to the faulty way in which the public make out the returns, they are not of much use as regards the new particulars. So much was this the case in 1904 that I did not feel justified in publishing the results. The schedules were undoubtedly much better filled in in 1905, and the following figures are probably fairly correct. The returns showed 4,353 entires in the whole State. Districts recording the largest numbers were Rockhampton and Mackay, 218 each; Toowoomba, 130; Bowen, 117; Gladstone, 116; Charters Towers, 199; and Warwick, 92. The question of the exportation of horses will be dealt with under Table Ac further on in the Report.

CATTLE.—Although the 2,963,695 cattle in the State on 31st December last year were rather less than half the number recorded in the earlier years of the decade, yet they amounted to a substantial increase on the figures of the three previous years. Starting in 1894 with 7,012,997, the largest number ever depastured in the State, the number declined through each year of the prolonged drought until the minimum of 2,481,717 was reached in 1903. During the two first years of this period the decrease was contributed to in part by an abnormally large export of animals on the hoof for the southern markets. With the return of more favourable weather in 1904 and 1905, increases of 240,623 and 241,355 were respectively recorded.

SHEEP.—On referring to the figures for the past ten years, it is seen that there were 19,593,696 sheep at the end of the first year of the decade and 12,535,231 at the end of 1905, but the latter figure is an increase of 5,321,246 on the number for 1902, when the lowest record of the decade, or, indeed, since 1880, was registered. The minimum of 1902 was reached by decreases each year from 1896, extreme drops of practically 5,000,000 and 3,000,000 being recorded in 1900 and 1902 respectively.

PIGS.—The fluctuation in the number of pigs possesses no special significance. In 1904 there were 185,141 in Queensland, the most ever returned; last year this fell to 164,087, due to a large increase in the number slaughtered. With so prolific an animal, it would have been easy to replace the numbers required to meet the greatly increased demand; but, owing to the dry season making feed of high value, the profit from pigs was insufficient to induce farmers to go in for breeding for that season, with a consequent decrease in numbers, as recorded.

The following table showing the centesimal ratio of increase or decrease in each kind of live stock for each of the last ten years gives a good idea of the effect of the prolonged drought that has just passed away:—

A b.

Year.	Horses.	Cattle.	Sheep.	Pigs.
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
1905	4·21	8·87	15·60	— 11·37

— Decrease.

The years 1904 and 1905 were the only ones of the decade in which increases were recorded for all three kinds of stock, horses, cattle, and sheep.

Reference has already been made as to the extent of the export trade in horses. Although in no way commensurate with the possibilities of Queensland, seeing how well adapted the climate and the pastures are to the successful breeding and rearing of horses, yet the value of horses sent away in excess

of those introduced last year exceeded £200,000, thus contributing very substantially to the revenue of the pastoral industry. Particulars as to the trade in horses are furnished in the following table:—

A c.

HORSES IMPORTED DURING 1905.

—	Number.		Value.	
			£	£
Oversea—				
New South Wales	160	...	13,129	
Victoria	19	...	1,794	
South Australia	4	...	156	
Tasmania	5	...	290	
		188		15,369
Borderwise—				
New South Wales	669	...	8,843	
South Australia	381	...	2,461	
		1,050		11,304
Total	...	1,238	...	26,673

HORSES EXPORTED DURING 1905.

Oversea—				
United Kingdom	1	...	25	
Natal	8	...	100	
Hong Kong	6,342	...	75,413	
India	2,905	...	40,248	
British New Guinea	3	...	20	
Straits Settlements	43	...	442	
New Pommern	2	...	34	
Philippines	582	...	7,036	
Java	59	...	990	
Portuguese East Africa	1	...	50	
		9,946		124,358
Interstate—				
New South Wales	6,628	...	94,021	
Victoria	6	...	466	
South Australia	2,230	...	18,174	
Western Australia	145	...	1,975	
		9,009		114,636
Total	...	18,955	...	238,994

The imports last year numbered 1,238, valued at £26,673, against 2,262, worth £30,704, in the previous year. For 1905 they consisted of interstate transfers only, whilst in 1904 two horses were also received from New Zealand. The imports principally consist of pedigree horses and racers and a few returned drovers' outfits, and would naturally comprise many horses of considerable value. The average per head for imports last year was about double that of the exports. There were 18,955 horses sent out of Queensland last year, worth £238,994, or of an average value of £12 12s. each; 9,009 of these were interstate, of an aggregate value of £114,636, and an average value of £12 14s. 6d.; and 9,946 were sent oversea, of the value of £124,358, equal to £12 10s. per head. The interstate export of horses, unlike the import, is beginning to possess a special significance; the excess over the imports is partly due to the fact that drovers taking cattle and sheep for the southern States, on reaching their destination frequently also sell their horses so as to save time by returning to Queensland by sea, and a proportion of the net export to New South Wales is no doubt attributable to this cause, but an important share in the excess export is contributed by a direct trade for sale of horses to South Australia, a leading Australian pastoralist having established large yards at Kapunda, where a number of Queensland horses were disposed of last year at auction at a satisfactory figure, a consignment of ninety-six from one station realising an average of £26 10s. 6d. per head. Nearly all the oversea export was to Hongkong and India, these two countries absorbing 64 and 29 per cent. respectively of the total number. Five hundred and eighty-two horses were also sent to the Philippines. Both Hongkong and Manilla are centres of export only recently opened up.

A comparison of each kind of live stock with both the area and population of Queensland is afforded by 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	0·64	4·43	18·75	69·53	...	...
Per Capita of Population	0 82	5·61	23·74	88·02	0·31	88·33

There was at the end of 1905 rather over one sheep or its equivalent, grazing to each 10 acres throughout the State. Even allowing for unavailable areas, there is no doubt that in normal seasons even the natural herbage is capable of sustaining a much larger number; but in view of the liability of the recurrence of drought, not only must the conservation of water be persevered in, but provision for

such periods must be made by the production and storage of artificial feed, if disastrous loss of stock is to be avoided. The pastoral character of the country and its industries is well illustrated by the second line of the foregoing table. There were 0·82 of a horse, 5·61 cattle, and 23·74 sheep depastured in Queensland to each inhabitant last year, an equivalent of eighty-eight sheep.

The following table shows how the 2,963,695 cattle returned in 1905 were distributed amongst their owners. There is a small amount of duplication of owners in this table, as all herds held and returned on separate holdings count as an owner; on the other hand, cattle held in partnership count as one owner only:—

A e.

SIZES OF HERDS OF CATTLE.

Petty Sessions District.	1 to 100.		101 to 300.		301 to 1,000.		1,001 and upwards.		Totals.	
	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.
Bowen	175	3,611	14	3,012	15	8,710	18	62,117	222	77,450
Burke	8	312	3	695	6	3,325	15	122,209	32	126,541
Charters Towers ...	264	5,353	19	31,72	3	1,895	21	77,905	307	88,325
Cloncurry ...	35	761	6	837	2	700	9	92,517	52	94,815
Etheridge ...	47	1,602	20	3,575	11	5,670	11	94,477	89	105,324
Gladstone ...	304	7,156	38	7,219	38	21,213	19	49,728	399	85,316
Norman ...	14	432	1	120	3	1,800	24	184,911	42	187,263
Richmond ...	52	1,539	12	2,012	1	434	11	72,185	76	76,170
Rockhampton ...	805	17,347	91	16,420	41	23,534	30	64,816	967	122,117
All other Districts	21,473	455,264	1,257	216,708	426	239,061	351	1,089,341	23,507	2,000,374
Totals ...	23,177	493,377	1,461	253,770	546	306,342	509	1,910,206	25,693	2,963,695

There were 25,693 persons who owned cattle to a greater or less extent, of these 23,177 held 493,377 in herds of less than 100, so that 2,516 persons owned 2,470,318 head, or 83 per cent. of the total number, but 509 persons only held nearly two-thirds—64 per cent.—of all the cattle depastured.

The average size of each herd has greatly decreased during the past ten years, as may be seen from the following table:—

A f.

Year.	Number of Owners.	Number of Cattle.	Average Size of Herd.
1896	22,702	6,507,377	287
1897	23,442	6,089,013	260
1898	24,244	5,571,292	230
1899	24,689	5,053,836	205
1900	25,180	4,078,191	162
1901	25,650	3,772,707	147
1902	24,399	2,543,471	104
1903	23,610	2,481,717	105
1904	24,615	2,722,340	111
1905	25,693	2,963,695	115

Although this condition has been largely contributed to by the drought so largely reducing the total number, yet the figures point to a somewhat wider distribution than formerly obtained.

The ownership of sheep is much more restricted than that of cattle.

A g.

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	1	40	...	...	2	8,000	2	25,313	5	307,396	10	340,749
Alpha	6	116	9	2,730	9	28,382	11	102,540	1	21,573	36	155,341
Aramac	4	29	3	865	6	15,475	8	78,424	5	170,236	26	265,029
Augathella	5	104	3	758	3	7,750	3	34,377	2	157,586	16	200,575
Barcaldine	6	95	14	7,917	14	38,199	13	124,779	7	432,232	54	603,222
Blackall	5	119	6	1,495	9	26,204	11	125,855	8	413,084	39	566,757
Bollon	5	98	5	2,278	4	11,300	13	116,534	7	290,924	34	421,134
Charleville	10	218	15	7,131	13	40,225	12	119,446	4	167,449	54	334,469
Clermont	18	475	13	3,597	9	30,162	2	24,230	7	317,747	49	376,211
Cloncurry	4	56	2	310	1	3,883	3	28,897	5	246,033	15	279,179
Cunnamulla	6	110	4	2,495	26	81,346	20	182,515	11	602,121	67	868,587
Dalby	17	361	101	46,466	55	120,252	8	65,409	7	329,400	188	561,888
Eulo	1	11	5	2,340	3	5,100	7	52,180	3	92,748	19	152,379
Goondiwindi ...	6	79	13	6,883	15	41,388	9	92,472	3	159,071	46	299,893
Hughenden	1	22	7	4,010	11	28,383	10	111,592	7	262,374	36	406,381
Isisford	4	73	7	3,861	3	9,684	1	9,000	6	297,892	21	320,510
Jundah	1	34	1	950	6	12,060	2	15,000	2	127,600	12	155,644
Longreach	9	153	16	9,869	23	70,742	12	107,001	9	573,857	69	761,622
Muttaburra	1	20	2	740	17	54,670	22	237,666	14	693,115	56	986,211
Richmond	2	40	3	1,436	15	48,204	14	160,354	6	327,666	40	537,700
Roma	15	402	26	9,050	14	31,741	3	45,017	2	93,918	60	180,128
St. George	4	118	13	5,692	13	49,187	26	252,903	8	391,169	64	699,069
Springsure	6	171	11	5,411	10	21,772	4	29,800	4	154,327	35	211,481
Surat	4	155	8	4,966	22	59,238	7	48,350	4	150,213	45	262,922
Tambo	3	60	3	2,012	4	7,450	7	84,497	6	277,269	23	371,288
Toowoomba	20	526	131	61,266	44	108,776	9	95,435	6	288,249	210	554,252
Winton	6	177	4	552	8	24,780	8	67,600	8	275,728	34	368,837
All other Districts	342	7,353	408	124,892	106	262,128	40	466,200	15	433,200	911	1,293,773
Totals	512	11,215	833	319,972	465	1,246,481	287	2,903,386	172	8,054,177	2,269	12,535,231

There were in 1905 only 2,269 persons who owned any sheep in Queensland. Of these 1,345 only held 331,187 in flocks of less than 1,000, so that 924 owners possessed 12,204,044 sheep, or an average of 13,208 each.

For a number of years past a change in the management of sheep stations has been evolving. Commencing with paddocking in place of shepherding, it has gradually extended in the more settled areas to the more rational method of combining grazing with true agriculture, thus initiating an ever extending system of artificial feeding. The export of frozen meat to Europe has developed a branch of grazing the expansion of which tends to a like result. The carcases of lambs of a large type bring in the markets of the United Kingdom most satisfactory returns. To economically produce these, close paddocking, combined with hand-feeding, is essential, and much attention, especially on the Downs, is now being given to rearing them. Not only is it being from year to year demonstrated that such methods will pay in normal seasons, but it has time and again been proved that herein lies the only hope of preventing disastrous losses in time of drought. This change, in progress prior to the recent dry cycle, was no doubt hastened thereby, and has resulted of necessity in a wider distribution of sheep and in a reduction in the numbers held by individual owners. This will be readily seen from the following table:—

A h.

Year.	No. of Owners.	No. of Sheep.	Average Size of Flocks.
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
1905	2,269	12.535,231	5,525

Whilst in 1896 there were 1,664 persons owning between them 19,593,696 sheep, an average of 11,775 to each, last year the average amounted to 5,525 only, or less than one-half the average number of ten years previously.

As already referred to, there are now a great many more methods of putting live stock to profit than formerly obtained, and most fortunate has it been for Australia that this is so; but these very causes operate to retard a rapid increase in the numbers depastured. One of the means of disposal is that of export alive out of the State. The following table gives the numbers of cattle and sheep both imported and exported for each of the last ten years:—

A i.

Year.	Cattle.		Sheep.	
	Inwards.	Outwards.	Inwards.	Outwards.
	Number.	Number.	Number.	Number.
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	641,412
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
1905	25,099	75,044	148,163	529,602

Last year there were 49,945 head of cattle and 381,439 sheep sent out of Queensland in excess of those brought in. The number of sheep exported during 1905—namely, 529,602—has only been exceeded on three occasions during the last decade, the last being in 1898.

If all the various methods of disposal are considered and the numbers summarised, it will be seen to what extent the natural increase is thus trenched upon:—

A k.

—	Cattle.		Sheep.	
	1904.	1905.	1904.	1905.
Preserved, frozen, and boiled down	70,753	80,759	101,034	287,499
Exported, less number imported	98,659	49,945	200,379	381,439
Estimated number killed for food for home consumption*	143,002	134,257	310,413	306,289
Totals put to profit	312,414	264,961	611,826	975,227

* N.B.—Based on Slaughter-house returns.

More than a quarter of a million cattle and nearly one million sheep were disposed of during 1905. In 1904, there was a larger output of cattle for profit than in 1905, but the converse was the case as regards sheep. In the latter year, 80,759 cattle were preserved frozen and chiefly for foreign markets;

49,945 were exported alive in excess of import; and 134,257 were consumed for food within the State. Of sheep, 287,499 were preserved frozen, &c., 381,439 were exported (net), and 306,289 were used for home consumption. By a reference to Appendix Tables III., IV., V. of this Report, further details may be gathered respecting the utilisation of live stock. Amongst the exports was an item of £140,000 to the Philippines, which form a portion of £171,000 of Queensland produce sent to that country. There were fifteen factories engaged in the killing of live stock and converting the carcases into marketable commodities. Summaries of the particulars contained in the abovementioned tables are as follow:—

A l.

No. of Establishments.	Kind of Establishments.	No. of Hands Employed.	Value of Machinery and Plant.	Value of Land and Premises.	Value of Output.
			£	£	£
4	Bacon Curing	173	45,492	7,318	176,642
11	Meat Preserving	1,343	317,356	363,338	1,103,547
15		1,516	362,848	370,656	1,280,189

Eleven of the fifteen were engaged in handling cattle and sheep, and four of them were for the slaughter of pigs alone; 1,516 hands were employed in the industry, in which a capital of £763,504 was invested, and an output for 1905, valued at £1,280,189, was secured. Of the 80,759 cattle slaughtered, 66,288 were preserved by freezing, 14,315 by boiling, and 156 only passed through the boilers for tallow. Frozen beef weighed 47,846,259 lb., or 11,000,000 more than in the previous year; whilst there were also 9,982,659 lb. preserved in tin, and 57,421 lb. salted; from the former process a proportion of the extract and essence made was obtained. Sheep slaughtered for freezing last year numbered 267,248, against 190,828 in 1904, and furnished 12,381,958 lb. of frozen mutton; 20,186 were fresh preserved, returning 779,122 lb.; whilst from beef and mutton combined, 58,803 lb. of extract and essence, and 4,179 tons of tallow were obtained.

Hogs.—The slaughter and preservation of the pig is almost a distinct industry, the export of the frozen carcase has also been added within recent years, 15,248 pigs having been frozen last year, yielding 1,139,997 lb. of fresh pork. As Great Britain imports annually about £20,000,000 of pork and bacon, it will be seen that a wide field exists there for the sale of these products, and besides the question of export the demand within the State has become greatly augmented.

There were nearly 50 per cent. more pigs slaughtered last year than in 1904—153,136 against 106,633. A large quantity of pork, bacon, and ham is made outside of the four factories specially engaged in the industry. The chief centres of production and their respective outputs are shown in the following table:—

A m.

Petty Sessions District.	Hogs Slaughtered.	Fresh Pork.	Salt Pork.	Bacon and Hams.
	Number.	lb.	lb.	lb.
Beaudesert	545	9,050	1,620	50,840
Brisbane	88,810	666,692	101,553	6,360,374
Bundaberg	1,624	24,888	44,378	48,474
Childers	711	7,072	17,045	33,541
Clifton	574	30	45,433	24,653
Crow's Nest	629	450	1,662	68,826
Dalby	875	15,245	4,852	60,941
Gatton	6,768	6,773	9,877	807,822
Gin Gin	526	2,479	26,729	9,450
Gympie	715	5,251	8,346	39,378
Highfields	813	936	1,140	106,250
Ipswich	695	21,730	18,486	16,154
Laidley	931	13,137	21,613	77,063
Logan	758	22,240	66,731	17,410
Mackay	624	10,139	14,813	27,285
Maroochy	682	2,497	21,229	41,798
Maryborough	733	7,089	24,984	30,862
Nanango	887	3,560	4,913	65,910
Rockhampton	6,987	254,029	107,267	180,839
Roma	918	14,281	8,572	52,795
South Brisbane	24,902	190,230	45,200	1,550,614
Tiaro	625	9,558	16,014	27,565
Toowoomba	1,880	24,328	26,428	137,065
Warwick	1,140	5,327	10,420	110,666
All Other Districts	8,784	149,621	166,944	553,760
Total, 1905	153,136	1,466,632	816,249	10,500,335
„ 1904	106,633	1,753,236	378,411	6,514,852

N.B.—Returns received from Inspectors of Slaughter-houses for 1905 account for 32,653 pigs killed, producing 2,523,105 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.

Of all pigs killed, 113,712, or 74 per cent., were slaughtered within the metropolitan district, Rockhampton and Gatton were the only other two districts where any considerable number were handled, they between them absorbing an additional 10 per cent. of the whole. From all the pigs killed, 1,466,632 lb. of fresh pork, 816,249 lb. of salt pork, and 10,500,335 lb. of bacon and hams were obtained, giving an average of 83 lb. of dressed meat to each pig slaughtered.

HOME CONSUMPTION OF MEAT.

Information on this head, furnished in Table Ak, is based on actual experience with respect to nineteen-twentieths of the population, as supplied by returns from inspectors of slaughter-houses, with *pro rata* allowances for population not embraced in the returns. The results of the actual returns are shown in Table IV. in the Appendix. Covering the actual consumption of 508,000 of the total population it shows that the per capita demand for 1905 was 168 lb. of beef, 28 lb. mutton, and 6 lb. of pork, veal, and lamb, giving a total average meat consumption for the year of 202 lb. This was some 6 lb. per capita less than that for 1904, of which about 5 lb. consisted of beef, and when taken in conjunction with the greater weight per head of cattle last year resulted in a reduction of 3,177 in the number of cattle required for home consumption, notwithstanding that some 4,500 more persons had to be fed. In comparing these ratios with those of countries where there are great differences as to climate, standard of living, or price, due allowance must be made for the quantity wasted in Queensland, which is included, of course, in the "consumption." The same table furnishes interesting information as to the average dressed weight of live stock of all kinds slaughtered for home consumption, cattle averaging 662 lb., sheep 48 lb., calves 62 lb., lambs 34 lb., and hogs at 77 lb.

BY-PRODUCTS.

With but slight exception the slaughter of all stock is conducted with great care as regards the conservation of by-products. Only three—and these are very insignificant ones—of the factories engaged in this industry failed to give a full return of by-products. Full particulars respecting the others are given in Table V. in the Appendix. The aggregate value of all these for last year was £208,729, exclusive of tallow and lard, which are not considered as by-products. The contents of the table comprise the following items:—Hides, No. 90,184; value, £92,405. Skins, No. 308,917; value, £63,937. Edible fats, 1,036,602 lb.; value, £15,727. Manure, 1,566 tons, £8,466. Horns and hoofs, £3,717. Bones, 167 tons, £1,033; and hair oils, &c., &c., £23,444.

MEAT AND DAIRY PRODUCE ENCOURAGEMENT ACT.

There are still thirteen establishments working under this statute, but it is satisfactory to note a reduced indebtedness. The following statement furnishes full particulars:—

A n.

"MEAT AND DAIRY PRODUCE ENCOURAGEMENT ACT."

Number of works to which advances have been made		13	
	£	*s.*	*d.*
Amount advanced to 31st December, 1905	100,437	5	0
Indebtedness (including interest on 31st December, 1905)	63,231	4	10
Number of works in operation under Act on 31st December, 1905	10		
	£	*s.*	*d.*
Amount advanced on the said works	95,305	5	0
Balance owing on the said works on 31st December, 1905	61,075	3	5
Interest accrued but not due to 31st December, 1905	603	17	8
Interest due by three companies but not yet paid	1,552	3	9

WOOL.

It has always been the practice to take the quantity of wool exported as representing the production, but now that there is no State Customs Department, and it is possible that at no distant date interstate transfers will no longer be recorded, it will be necessary to devise some method of collecting the actual production. In the meantime, the export must be accepted, and this for 1905 was as follows:—

A o.

Exports.	Quantity.			Value.		
	Interstate.	Oversea.	Total.	Interstate.	Oversea.	Total.
	lb.	lb.	lb.	£	£	£
Wool (scoured)	8,872,333	8,223,920	17,096,253	623,506	594,908	1,218,414
Wool (greasy)	17,101,100	18,875,374	35,976,474	698,629	732,708	1,431,337
Total, 1905	25,973,433	27,099,294	53,072,727	1,322,135	1,327,616	2,649,751
Total, 1904	18,302,087	27,756,395	46,058,482	970,555	1,310,369	2,280,924
Increase, 1905	7,671,346	...	7,014,245	351,580	17,247	368,827
Decrease, 1905	...	657,101	...	...	...	...

The total export was 53,072,727 lb., of a value of £2,649,751, against 46,058,482 lb., of a value of £2,280,924 in 1904, or an increase in the former year of 7,014,245 lb. Of the total, 17,096,253 lb. were scoured and 35,976,474 lb. were shipped in the grease. Rather more than half the shipment, 27,099,294 lb., were sent oversea, the remaining 25,973,433 being sent interstate, no doubt in the end, however, being transmitted to Europe.

The average export value of wool per lb., as declared at the Customs for each of the last five years, was as follows:—

A p.

—	1901.	1902.	1903.	1904.	1905.
Greasy wool (average)	7$\frac{3}{4}$d. per lb.	8d. per lb.	8$\frac{1}{2}$d. per lb.	8$\frac{5}{8}$d. per lb.	9$\frac{1}{2}$d. per lb.
Clean „ „	13$\frac{3}{4}$d. „	14$\frac{1}{4}$d. „	16$\frac{1}{2}$d. „	16$\frac{1}{8}$d. „	17d. „

The value for 1905 was in advance of anything secured for many years, being $\frac{7}{8}$ of a penny for greasy and $\frac{5}{6}$ of a penny for scoured above the quotation for 1904.

Although the amount of wool utilised in Queensland is limited in the extreme, there was a slightly enhanced demand in 1905.

A q.

—	1901.	1902.	1903.	1904.	1905.
	lb.	lb.	lb.	lb.	lb.
Wool used in manufacture	156,000	109,646	84,117	92,901	112,430

The 112,430 lb. used last year being in excess of the quantity in any year since 1901.

EXPORT—QUEENSLAND PRIMARY PRODUCTS.

Although only relating in parts to the products of pastoral pursuits, the following table may not be without interest:—

A r.

—	1904.		1905.	
	—	Percentage, Total Exports (Home Produce).	—	Percentage, Total Exports (Home Produce).
	£		£	
Agricultural	2,019,049	18·60	2,488,998	21·31
Pastoral	4,842,407	44·62	5,096,350	43·62
Mineral	3,404,772	31·37	3,564,718	30·51
Other	587,708	5·41	532,220	4·56
Total	£10,853,936	100·00	£11,682,286	100·00

The output of all included production in Queensland last year may be approximately estimated as worth £11,682,286, of this £5,096,350, or 44 per cent., was the result of the pastoral industry. The latter is a slightly lower ratio to the whole than obtained in 1904, but this was not in any way due to a decline in the products of grazing, but to the great advance in the output of agriculture proper.

A comparison of these exports is contained in the following table:—

A s.

—	1904.	1905.	Increase or — Decrease, 1905.
Pastoral—	£	£	£
Wool	2,280,924	2,649,751	368,827
Live stock	1,404,419	1,132,081	— 272,338
*Meat (all kinds, including Extract)	656,722	711,831	55,109
Tallow	183,372	202,258	18,886
Hides and skins	242,919	304,642	61,723
All other	74,051	95,787	21,736

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

ANGORA GOATS.

As an industry, the breeding and browsing of Angora goats does not make any large amount of progress. For the purpose of obtaining mohair for export it is practically non-existent, although several owners speak in strong terms of the value of the animal as a standby for the poor man for meat and milk. For clearing land of scrub and undergrowth, there is little doubt that a flock of goats should prove a valuable adjunct to any grazing proprietor. There appears to be no sufficient reason why under suitable conditions hair-yielding goats should not prove a profitable investment. Their rearing presents no special difficulties. The climate in many parts of the State is well adapted to the animal, good mohair will always find a ready sale at a good price, and land of least use for sheep or cattle is best adapted for the goat. It is, perhaps, in this direction that failure has sometimes resulted. Goats are not grazing animals; they are browsers; and, although they will live on grass, yet will not thrive unless their natural condition of feeding is provided for.

It has not been found possible to ascertain the number of purebred Angoras in the State, but the returns for 1905 show that thirty-five persons owned 2,855 purebred and grade animals, against thirty-three owners and about 2,000 goats in the previous year. In both years the mohair brought on an average 8d. to 9d. per lb., although there was a wide range of price in individual cases. The quantities returned as produced were:—1905, 992 lb.; and 1904, 1,216 lb. Skins also find a ready sale at from 1s. 9d. to 2s. each.

DAIRYING, Etc.

Although dairying during 1905 failed to make the remarkable progress over the experience of the previous year, which so characterised the industry during 1904, yet a substantial advance was recorded. The great expansion exhibited in 1904, when the output considerably more than doubled in the twelve months, could not, of course, be maintained; but, as last year the production of butter increased by 16 per cent., the season's experience can only be considered a most satisfactory one.

The chief drawback to this industry is the ever-recurring and monotonous labour in connection with milking. The securing of some mechanical device to modify, if not obviate, this demand on the time and patience of the farmer's staff has claimed the attention of many inventors, with varying results. The contrivance, to be effective, must not be injurious to the cow, must be reasonably simple in its application, and moderate in cost. Several of the implements first employed failed to meet the primary condition, and were, of course, worse than useless, and created a very natural prejudice against subsequent efforts; but mechanism has now been practically applied for prolonged periods with results declared by persons using them to be entirely satisfactory, and some have given undeniable evidence of their belief by adding to their plant. Others have been less successful, but failure on the part of some would in such a new departure be inevitable. The weight of evidence seems to point to the solution of a problem, which by the drudgery involved has undoubtedly deterred many from entering upon the dairying industry.

The export trade with the United Kingdom has now been well established, and the reputation secured by Queensland butter has resulted in good prices being obtained. It deeply concerns all that this reputation should be maintained; it is, therefore, to be hoped that only butter of the best quality will be allowed to reach the home market from Queensland, and that the system of Government inspection be rigidly carried out to secure this result.

There were 9,132 establishments handling cream and butter during 1905, against 8,343 in the previous year, an increase of 789, there being a reduction of 88 in the number of establishments making butter, and an increase of 877 creameries. The following table furnishes full information as to the ouput of these establishments, and the number in operation in each of the more important districts of the State:—

B.

RETURN of BUTTER and CHEESE FACTORIES and the RESULTS OBTAINED therefrom during the Year 1905; also PRODUCTION by PRIVATE MAKERS.

DISTRICT.	ESTABLISHMENTS HANDLING		MILK, CREAM, AND BUTTER.					CHEESE.		
					BUTTER MADE.					
	Cream Only.	Cream and Butter.	*Milk dealt with.	*Cream Produced.	At Central Factories.	By Farmers.	Total.	Producers.	Milk Dealt with.	Cheese.
			Gallons.	Lb.	Lb.	Lb.	Lb.		Gallons.	Lb.
Allora	112	99	1,304,792	1,017,467	...	39,959	39,959	...	...	...
Beaudesert	8	298	3,272,672	2,772,182	1,668,237	74,073	1,742,310	...	...	...
Brisbane	103	92	750,784	526,155	3,903,029	51,652	3,954,681	...	...	...
Bundaberg	35	270	901,334	735,687	267,434	98,640	366,074	1	168	168
Clifton	89	13	812,325	767,907	43,120	10,412	53,532	3	560,691	530,855
Crow's Nest	77	234	1,169,741	962,231	385,155	28,722	413,877	2	9,420	9,420
Dalby	117	134	800,085	709,783	86,464	19,524	105,988	...	...	...
Dugandan	134	185	2,111,650	2,090,395	704,465	12,689	717,154	...	...	...
Esk	182	43	1,644,151	1,448,970	435,147	7,709	442,856	...	...	...
Gatton	404	196	3,247,621	2,671,858	348,832	25,294	374,126	1	1,720	1,720
Gympie	56	176	966,860	686,376	486,808	42,113	528,921	...	...	...
Harrisville	253	11	2,117,287	1,640,196	38,962	4,885	43,847	1	30,143	26,000
Highfields	332	33	1,641,092	1,157,074	...	4,900	4,900	1	86,850	95,154
Ipswich	209	48	1,791,247	1,489,045	2,554,789	9,056	2,563,845	...	...	...
Laidley	356	2	1,702,815	1,555,450	...	7,038	7,038	...	...	...
Logan	199	108	1,049,086	891,135	...	23,698	23,698	...	...	...
Marburg	209	...	2,237,900	1,983,121	588,642	...	588,642	...	...	...
Maryborough	90	217	800,657	606,356	495,575	46,891	542,466	...	...	...
Nanango	10	175	854,717	595,347	...	29,076	29,076	...	...	...
Nerang	20	156	1,232,108	1,066,898	...	33,557	33,557	...	...	...
Redcliffe	193	22	1,054,587	1,054,587	445,396	27,225	472,621	...	...	...
Rockhampton	69	188	1,615,784	1,128,886	468,241	121,207	589,448	...	...	...
Rosewood	218	27	1,814,577	1,635,407	...	25,120	25,120	...	...	...
South Brisbane	22	73	251,521	212,670	841,069	39,571	880,640	...	...	...
Tiaro	47	155	1,594,900	1,107,118	612,318	28,353	640,671	1	2,352	2,352
Toowoomba	347	347	2,669,242	2,554,100	3,401,804	55,890	3,457,694	6	930,049	1,000,068
Warwick	113	214	1,691,392	1,544,310	948,542	62,171	1,010,713	4	724,478	732,722
Woodford	120	32	745,781	731,287	...	6,319	6,319	1	11,000	11,000
All other Districts	413	1,047	4,136,615	3,246,156	186,426	473,777	660,203	7	269,500	272,630
Totals 1905	4,537	4,595	45,983,323	38,588,154	18,910,455	1,409,521	20,319,976	28	2,626,371	2,682,089
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
Increase 1905	877	...	5,745,783	7,848,844	2,921,324	...	2,781,503	...	...	74,614
Decrease 1905	...	88	...	...	...	139,821	...	19	28,100	...

* 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, from the place of production, for manufacture.

The milk handled in connection with the production of butter amounted in 1905 to 45,983,323 gallons, or 5,745,783 gallons more than in 1904. This does not, of course, include milk used as such for domestic consumption. From the above quantity of milk 38,588,154 lb. of cream were obtained, or an average to each gallon of milk of 0·84 lb. The butter manufactured amounted to 20,319,976 lb., or 0·53 lb. to each lb. of cream. Of the total butter, 18,910,455 lb. were made at central factories, against 15,989,131 in 1904, an increase of 2,921,324 lb., and 1,409,521 lb. by farmers, or a decrease of 139,821 lb., as compared with the previous year, so that 93 per cent. of the total output was factory butter. The following statement compares the average yields for the past five years:—

	1901.	1902.	1903.	1904.	1905.
1 gallon of milk yielded lb. cream	0·73	0·72	0·73	0·76	0·84
1 gallon of milk yielded lb. butter	0·37	0·35	0·41	0·40	0·44
1 lb. cream yielded lb. butter	0·51	0·49	0·56	0·57	0·53
1 lb. butter was made from gallons milk	2·70	2·84	2·43	2·50	2·26
1 lb. butter was made from lb. cream	1·97	2·05	1·78	1·75	1·90

Confining attention to the averages for the two years last past, it would appear that the average quality of the milk was slightly better in 1905 than in 1904, as shown by the larger quantity of butter obtained from a given measurement of milk—namely, 0·44 lb. of butter in each gallon in the former and 0·40 in the latter year; but the separation of the cream does not seem to have been so closely carried out in 1905, as although a larger quantity was obtained from each gallon—namely, 0·84 lb. in place of 0·76 lb.—yet each lb. of cream contained less butter, returning only 0·53 lb. instead of 0·57 lb.

On referring to the records of the principal dairying districts, as shown in the foregoing table, it is necessary to reiterate what has so often been stated, that there is no relation whatever between the milk and the butter produced in any individual district, and there is even a considerable disturbance of the connection between the milk and the cream.

Milk obtained in one district is sometimes separated in another, whilst the cream is most generally carried out of its district of origin either as milk or cream for the extraction of the butter. Thus Beaudesert and Gatton are the premier districts in the order named for milk production, each recording over 3,000,000 gallons, followed by Toowoomba, Marburg, Harrisville, and Dugandan, with aggregates ranging from 2,000,000 to 3,000,000 gallons. The three districts first named, it is true, retained their respective stations as regards cream output with—Beaudesert, 2,772,182 lb.; Gatton, 2,671,858 lb.; and Toowoomba, 2,554,100 lb.; but the figures for Marburg, Harrisville, and Dugandan show clearly that much of the separation took place out of the district of production, the disparity between milk and cream being too great to admit of any other explanation. The disturbance is, of course, much greater as regards butter, most of the cream being transferred to the larger centres for conversion. The production of the five principal manufacturing districts of the State was as follows:—Brisbane, 3,954,681 lb.; Toowoomba, 3,457,694 lb.; Ipswich, 2,563,845 lb.; Beaudesert, 1,742,310 lb.; and Warwick, 1,010,713 lb., or an aggregate between them of 12,729,243 lb., equal to 63 per cent. of the total production of the State.

The export of butter has advanced by leaps and bounds during the past two years, as may be seen from the following statement:—

B a.

—	1900.	1901.	1902.	1903.	1904.	1905.
Quantity (lb.)	1,389,250	2,085,998	552,625	1,223,414	9,520,921	11,773,182
Value	£51,729	£86,171	£24,610	£49,804	£344,943	£455,863

Commencing in 1900, before which date the export was insignificant, 1,389,250 lb. were despatched, followed in 1901 by an advance to a little over 2,000,000, falling in consequence of drought to 552,625 lb. in 1902, rising to double that quantity in 1903, and then jumping to 9,500,000 in the following year, and 11,750,000 in 1905, the value of which was £455,863. The advances made in aid of butter factories under the provisions of the Meat and Dairy Encouragement Act are shown in the following statement:—

B b.

—	Number.	Amount.
		£ s. d.
Number of works to which advances have been made	14	...
Number of works now in operation	7	...
Amount advanced up to 31st December, 1905	...	12,366 12 6
Amount advanced to works now in operation to 31st December, 1905	...	6,257 0 3
Indebtedness to State on 31st December, 1905	...	5,878 15 1
Including interest due, but not paid	...	20 6 10
And interest accrued, but not due	...	397 15 4

Altogether a sum of £12,367 has been lent, of which £6,488 has been repaid, the capital indebtedness to the State at the end of 1905 being £5,879. This fact, combined with the small amount of interest due, which was still unpaid—namely, £20—is satisfactory evidence of the prosperity of the industry.

Loans to creameries have been of a less extensive character, but the liabilities incurred have been met in a still more satisfactory manner:—

B c.

—	Number.	Amount.
		£ s. d.
Number of factories to which advances have been made	19	...
Number of factories now in operation	3	...
Amount advanced up to 31st December, 1905	...	1,909 16 2
Amount advanced to works now in operation to 31st December, 1905	...	252 0 0
Indebtedness to State on 31st December, 1905	...	321 3 1
Including interest due, but not paid	...	25 0 0
And interest accrued, but not yet due	...	Nil

No less than nineteen establishments have been helped to success by the advance of so small a sum as £1,910; all but three of these have paid off their indebtedness, and the amount still unpaid, including interest, is but little in excess of one-sixth of the original sum lent.

Cheese.—The most marked circumstances in connection with this branch of the dairying industry last year was the reduction of establishments by nearly one-half, a slight decrease in the amount of milk handled, and, at the same time, an increase in the output of cheese.

It becomes necessary to refer back to Table B, where the totals for the two years are as follow:—

	Producers. No.	Milk dealt with. Gallons.	Cheese produced. lb.
1904 ...	47	2,654,471	2,607,475
1905 ...	28	2,626,371	2,682,089

The chief sites of production were Toowoomba, Clifton, and Warwick, ten factories manufacturing 1,732,790 lb. of cheese. The average quantity of milk required to make each lb. of cheese was 0·94 gallons in 1903, 1·02 gallons in 1904, and 0·98 gallons in 1905.

Advances made by the State to assist cheese manufacturing have been as successful in their object as those made to the kindred industries:—

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, 1905	...	1,525	0	0
Amount advanced to works now in operation to 31st December, 1905	...	700	0	0
Indebtedness to State on 31st December, 1905	...	548	5	0
Including interest due, but not paid	...	Nil		
And interest accrued, but not due	...	Nil		

Of the four original recipients of loans only one now remains on the Treasury books, and the indebtedness on account of the establishment was £548 only.

Preserved Milk.—The concentration of milk for tinning has now become established as a permanent industry; but, as the establishments engaged in the production are in the hands of less than three proprietaries, it is not permissible, under the recognised covenant to respect the secrecy of individual returns, to make the figures public. There was, however, an increase of output for 1905 as compared with the previous year, whilst from the information available, it is reasonable to anticipate a still further advance in the production of the current year.

This industry has also been assisted under the Meat and Dairy Encouragement Act, as shown by the following statement:—

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, 1905	...	2,175	0	0
Amount advanced to works now in operation to 31st December, 1905	...	2,175	0	0
Indebtedness to State on 31st December, 1905	...	2,336	12	7
Including interest due, but not paid	...	...		
And interest accrued, but not due	...	259	14	11

The financial position disclosed is hardly so satisfactory as that experienced with the allied industries of butter, cream, and cheese production.

POULTRY.

This industry, which has attained such astounding proportions in some countries, notably the United States, does not appear to progress so rapidly as a few years ago seemed probable. The number declined last year, mainly due to poultry farmers reducing their stocks in consequence of the high price of feed, especially was this the case during the later months of the year. The relative decrease in ducks was very pronounced. Particulars are contained in the following statement:—

B f.

Petty Sessions District.	Fowls. No.	Ducks. No.	Geese. No.	Turkeys. No.	Other. No.	Eggs. Doz.
Allora	11,916	146	33	188	...	40,675
Beaudesert	14,885	640	133	648	...	31,350
Brisbane	20,635	1,206	32	76	21	69,420
Bundaberg	17,560	393	36	206	46	52,438
Cairns	14,788	244	44	37	...	72,108
Clifton	20,393	395	59	617	...	39,551
Crow's Nest	13,794	158	268	26	11	24,024
Dalby	14,879	634	124	1,504	...	29,250
Dugandan	29,226	1,416	474	253	20	114,262
Esk	11,875	673	381	1,114	...	62,130
Gatton	40,007	1,522	850	570	...	162,666
Gympie	14,402	716	83	185	42	47,842
Harrisville	18,395	936	219	426	19	62,891
Highfields	18,417	158	103	115	...	63,856
Ipswich	12,635	631	86	88	...	41,487
Laidley	22,371	1,700	1,297	569	6	77,343
Logan	17,674	854	224	18	11	56,362
Mackay	20,548	1,678	187	250	72	50,980
Marburg	16,765	778	557	108	...	56,762
Maroochy	14,061	425	44	71	24	40,621
Nanango	10,614	73	47	181	...	21,820
Nerang	10,557	816	60	40	10	34,374
Redcliffe	12,103	788	158	40	30	39,642
Rockhampton	16,985	993	169	258	29	75,996
Roma	10,786	374	...	591	1	37,968
Rosewood	14,372	489	141	302	...	43,237
Toowoomba	52,786	659	129	1,399	2	157,369
Warwick	29,205	1,057	389	2,972	4	68,667
All other Districts	161,175	8,135	1,215	5,260	507	534,507
Total, 1905	683,809	28,687	7,542	18,112	855	2,209,598
Total, 1904	777,186	48,647	8,092	23,742	1,157	2,580,507
Increase, 1905	...	...	...	...	...	...
Decrease, 1905	93,377	19,960	550	5,630	302	370,909

The export of frozen poultry has not yet reached very considerable proportions: 10,632 pairs were sent out of the State during 1905, valued at £2,160; of these, 7,475 pairs, worth £1,328, were shipped to the United Kingdom, and 2,277 pairs, worth £572, to the Straits Settlements.

Poultry of all kinds numbered 739,005 against 858,824 in the previous year, a decrease of 119,819 head, or a proportionate decline of 14 per cent. With a decrease of poultry there were, of course, fewer eggs obtained; the number returned was 2,209,598 in 1905, and 2,580,597 in 1904.

APICULTURE.

This industry exhibits great fluctuations; although there are several large apiaries in operation, the production of honey for export has not been systemised in such a manner as to secure regularity of supply. This is the difficulty in connection with so many enterprises in their initial stages. A foreign market after much effort and many disappointments is finally secured, and then the supply frequently collapses from climatic or other causes, or the good quality of the article is not maintained, either through the folly of the original producer or the intrusion of another with less principle, and the demand is killed, and can only then be resuscitated by patient and persistent effort.

Last year the dry weather, which was so pronounced in the spring, resulted in the loss of many hives, and the stocks existing at the end of the year, and the annual output of honey and wax, showed a large diminution on the figures for 1904:—

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.
Allora	65	53	2,912	45	93	Mackay	81	28	4,480	55	280
Beaudesert ...	131	27	6,222	48	101	Marburg	16	93	575	36	20
Brisbane	422	225	13,533	32	370	Maroochy ...	887	232	29,483	33	498
Bundaberg... ...	151	172	7,045	47	489	Maryborough ...	184	148	8,555	46	140
Caboolture ...	938	245	37,780	40	540	Nerang	724	95	58,704	81	889
Cleveland	28	78	792	28	127	Redcliffe	120	39	6,250	52	138
Clifton	75	29	2,340	31	250	Rockhampton ...	783	142	71,198	91	1,031
Cook	257	40	5,921	23	360	Rosewood ...	130	208	6,976	54	162
Crow's Nest ...	312	144	11,254	36	70	South Brisbane ...	514	106	15,610	30	368
Dugandan	114	130	1,751	15	92	Tenningering ...	20	88	576	29	...
Esk	66	35	1,800	27	59	Tiaro	185	34	9,300	50	178
Gatton	280	190	7,313	26	83	Toowoomba ...	333	223	19,031	57	418
Gayndah	80	360	310	4	20	Townsville ...	90	18	1,300	14	20
Goodna	197	49	10,605	54	177	Warwick	334	154	44,236	132	510
Gympie	535	157	15,308	29	825	Woodford ...	95	69	3,924	41	179
Harrisville ...	208	45	8,250	40	222	All other Districts	493	227	16,011	32	610
Herberton	122	1	1,550	13	30						
Highfields	108	...	9,458	88	120	Total for 1905 ...	11,029	4,524	559,886	51	12,694
Ipswich	172	76	4,450	26	195	Total for 1904 ...	15,598	3,497	783,264	50	15,883
Killarney	649	68	65,322	101	1,600						
Laidley	152	64	4,375	29	152	Increase for 1905	...	1,027	...	1	...
Logan	978	432	45,386	46	1,278	Decrease for 1905	4,569	...	223,378	...	3,189

There were 11,029 productive and 4,524 non-productive hives in the State on 31st December, and the honey and wax obtained during the year amounted to 559,886 lb. and 12,694 lb. respectively, so that there was a decrease of 19 per cent. in hives, 29 per cent. in honey, and 20 per cent. in wax. The following table furnishes information as to honey exported during each of the past four years:—

B h.

HONEY EXPORTED.

Country.	1902.		1903.		1904.		1905.	
	Lb.	£	Lb.	£	Lb.	£	Lb.	£
United Kingdom	224	2	648	5	15,730	143	6,116	40
Australasia	208,504	2,398	140,011	1,556	346,032	3,509	184,628	1,967
Elsewhere	7,560	74	346	13	2,937	42	11,464	97
Total	216,288	2,474	141,005	1,574	364,699	3,694	202,208	2,104

The quantity of honey shipped to the United Kingdom was very small.

IMPORT OF PRODUCTS OF AGRICULTURE.

A consideration of this subject affords valuable food for reflection. Whilst it is quite understandable that in time of drought many agricultural products must of necessity be imported, why, in favourable seasons in a country so eminently adapted for agriculture as Queensland is, we should introduce products of the soil to the value of nearly £2 per head of the population is not so easily explained.

Information on this question for each of the past five years is appended:—

C.

Value of—	1901.	1902.	1903.	1904.	1905.
	£	£	£	£	£
Grain, &c., and various Products thereof	457,044	846,621	829,232	380,627	394,463
Fruit, and various Products thereof	160,413	186,521	318,667	221,582	351,840
Vegetables, Fresh and Preserved	124,296	203,640			
Other Products of Agriculture	170,388	628,531	403,632	210,701	222,699
Total	912,141	1,865,313	1,551,531	812,910	969,002

Upwards of three-eighths of the import of these commodities comprised grain and products thereof, whilst an approximately similar value was represented by fruits and vegetables.

The summaries of imports and exports contained in the following table furnishes interesting information in connection with agricultural production;—

C a.

WHERE IMPORTS EXCEED EXPORTS.

PRINCIPAL ITEMS OF FOODSTUFFS.	IMPORTS.		EXPORTS.		NET IMPORTS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		£		£		£
Barley (Pearl)	41,436 lb.	225	...	...	41,436 lb.	225
Biscuits	710,788 ,,	22,766	161,738 lb.	2,431	549,050 ,,	20,335
Coffee (all kinds)	219,315 ,,	7,284	37,899 ,,	1,505	181,416 ,,	5,779
Flour	486,556 centals	199,262	75,330 centals	29,759	411,226 centals	169,503
Hay and Chaff	211,760 cwt.	25,953	33,890 cwt.	3,413	177,870 cwt.	22,540
Maizena and Cornflour ...	179,498 lb.	1,980	6,934 lb.	75	172,564 lb.	1,905
Malt	31,665 centals	24,449	3,314 centals	1,993	28,351 centals	22,456
Milk and Cream (Preserved)... ...	1,281,823 lb.	23,407	301,547 lb.	5,628	980,276 lb.	17,779
Oatmeal	3,201,448 ,,	22,328	4,640 ,,	41	3,196,808 ,,	22,287
Oats	50,184 centals	14,374	4,003 centals	961	46,181 centals	13,413
Onions	62,495 cwt.	32,627	614 cwt.	374	61,881 cwt.	32,253
Potatoes	293,443 ,,	97,708	5,764 ,,	2,219	287,679 ,,	95,489
Preserves	5,209,102 lb.	66,880	243,543 lb.	3,281	4,965,559 lb.	63,599
Rice	91,404 centals	46,636	978 centals	404	90,426 centals	46,232
Total Values	...	585,879	...	52,084	...	533,795

WHERE EXPORTS EXCEED IMPORTS.

PRINCIPAL ITEMS OF FOODSTUFFS.	IMPORTS.		EXPORTS.		NET EXPORTS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		£		£		£
Arrowroot	2,240 lb.	12	597,325 lb.	5,439	595,085 lb.	5,427
Bacon and Hams	42,490 ,,	1,120	4,360,541 ,,	99,267	4,318,051 ,,	98,147
Barley	1,756 centals	591	93,540 centals	22,179	91,784 centals	21,588
Butter	21,408 lb.	778	11,773,182 lb.	455,863	11,751,774 lb.	455,085
Cattle, Sheep, and Pigs	...	313,630	...	893,184	...	579,554
Cheese	28,369 lb.	986	605,059 lb.	15,332	576,690 lb.	14,346
Eggs	7,833 doz.	282	421,534 doz.	10,704	413,701 doz.	10,422
Fruit and Vegetables	...	143,583	...	222,216	...	78,633
Honey	6,466 lb.	73	202,208 lb.	2,104	195,742 lb.	2,031
Lard and Refined Animal Fats ...	34,763 ,,	549	1,354,611 ,,	22,404	1,319,848 ,,	21,855
Maize	43,387 centals	10,929	108,130 centals	31,824	64,743 centals	20,895
Meat (all kinds, including Extract)	...	10,297	...	743,426	...	733,129
Molasses	94 cwt.	112	18,875 cwt.	12,277	18,781 cwt.	12,165
Oysters	...	...	33,696 ,,	17,530	33,696 ,,	17,530
Sugar	2,400 cwt.	2,190	2,468,347 ,,	1,448,885	2,465,947 ,,	1,446,695
Wheat	68,343 centals	20,195	175,540 centals	48,248	107,197 centals	28,053
Total Values	...	505,327	...	4,050,882	...	3,545,555

It is useful to note, though scarcely satisfactory, that 411,226 centals of flour, 3,196,808 lb. of oatmeal, 287,679 cwt. of potatoes, and 4,965,559 lb. of preserves were imported in excess of exports, and that on these four items alone £350,878 left the State; although, of course, the reverse of the medal, as shown in the second half of the table under the heads "Sugar," "Meat," "Live Stock," and "Butter," affords consolatory reading.

LABOUR AND MACHINERY ON FARMS.

There was a very substantial increase in the numbers engaged in the agricultural industry during 1905, especially in connection with the dairying branch. This may be seen from the following table:—

C b.

District.	Labour.				Value of Machinery and Implements.			
	Farming.		Dairying.		Farming.	Dairying.	Irrigation.	Total.
	Males.	Females.	Males.	Females.	£	£	£	£
Allora	309	15	182	296	25,584	2,751	360	28,695
Ayr	886	18	31	2	10,290	343	21,283	31,916
Beaudesert	349	2	301	239	9,214	5,589	280	15,083
Brisbane	885	18	162	120	9,880	2,801	170	12,851
Bundaberg	2,797	18	85	101	38,987	3,469	49,587	92,043
Cairns	1,586	54	8	1	9,639	159	480	10,278
Childers	1,364	5	17	44	12,800	663	80	13,543
Clifton	777	91	227	180	46,770	2,420	...	49,190
Dalby	691	12	110	61	30,682	3,200	...	33,882
Dugandan	660	70	455	363	14,438	6,306	...	20,744
Gatton	1,337	222	461	375	37,238	11,153	550	48,941
Gympie	444	38	201	117	12,113	3,452	587	16,152
Harrisville	587	35	507	275	11,698	6,526	105	18,329
Highfields	700	111	329	377	14,638	5,607	...	20,245
Ingham	1,213	6	1	4	11,878	40	120	12,038
Killarney	384	...	38	40	21,667	1,650	25	23,342
Laidley	891	250	296	366	24,365	6,683	...	31,048
Logan	922	59	35	286	8,320	3,312	100	11,732
Mackay	3,206	96	55	61	41,639	967	698	43,304
Marburg	429	65	118	311	11,474	3,984	...	15,458
Maroochy	845	13	99	156	5,191	1,708	120	7,019
Mourilyan	1,309	27	...	...	6,019	...	...	6,019
Redcliffe	386	2	33	285	10,572	4,363	150	15,085
Rockhampton	482	56	316	164	13,899	4,774	2,273	20,946
Roma	535	123	12	91	34,816	947	17	35,780
Toowoomba	1,770	133	437	521	90,813	10,654	313	101,780
Warwick	981	17	290	169	65,308	4,705	780	70,793
All other Districts	8,619	434	1,951	2,080	152,221	48,703	20,853	221,777
Total 1905 ...	35,344	1,990	6,757	7,085	782,153	146,929	98,931	1,028,013
Total 1904 ...	33,957	1,992	5,007	5,930	744,441	124,309	100,859	969,069
Increase in 1905 ...	1,387	...	1,750	1,155	37,712	22,620	...	58,944
Decrease in 1905 ...	...	2	...	...	...	...	1,928	...

There were 37,334 employed in general farming last year, against 35,949 in 1904, or an increase of 1,385. Of the former, 35,344 were males and 1,990 females, the latter numbering 2 less than in the previous year, when 1,992 were returned. In dairying, during 1905, 6,757 males and 7,085 females were occupied against 5,007 and 5,930 in 1904—numerical increases in the former year of 1,750 and 1,155 and proportionate increases of 35 and 19 per cent. each respectively—so that in this industry at least women are not increasing their already preponderating representation.

Of the eight districts giving employment to the largest number of persons, sugar areas take all but the third and fourth places, namely:—Mackay, 3,418; Bundaberg, 3,061; Cairns, 1,649; Childers, 1,430; Mourilyan, 1,336; Ingham, 1,224. The grain and dairying districts of Toowoomba and Gatton employed 2,861 and 2,395 respectively.

Machinery increased in value by £58,944, made up of farming £37,712, dairying £22,620, and a decrease in irrigation plant of £1,928. The total value of machinery and implements on farms last year was £1,028,013, consisting of farming £782,153, dairying £146,929, and irrigation £98,931.

FORESTRY.

It has always appeared to me that this subject comes quite legitimately within the sphere of agricultural statistics, although at the first glance it might appear as somewhat extraneous. No system of forestry is scientific or complete in which husbandry fails to form a conspicuous part; moreover, although disputed by some, many people are strongly of opinion that the absence or existence of forests has a marked effect on the climatic conditions of the locality, and, therefore, from this cause the question is one of deep import to the agricultural interest. Amongst those holding the latter opinion may be claimed so high an authority as Mr. Maiden, the Government Botanist of New South Wales, who recently expressed the opinion that if her forest were not conserved New South Wales would ultimately become a desert. In New Zealand, prison labour has been employed in forestry; and, as the work is not of a directly competitive character, it hardly appears open to objection, as might be the case with more immediately remunerative undertakings. The recent appointment of an officer to take charge of the Department of Forests, unhampered by other official duties, should imply a more extended interest in the question, and recently the reforesting of some of our denuded Northern scrubs with young cedars has been taken in hand.

AGRICULTURE PROPER.

Once again the later months of the year failed to fulfil the expectations raised by the experience of the earlier ones, a very dry spring resulting in most unsatisfactory returns respecting farming interests. Frost did much mischief to the fruit, especially in the important districts of Roma and Stanthorpe; whilst

hail destroyed both wheat and fruit, heavy storms being experienced at Inglewood, Laidley, Roma, and Warwick. Owing to the absence of rain, wheat was a failure throughout the whole of the Maranoa, whilst a number of selectors on the Upper Burnett from the same cause suspended cultivation and sought work for the time elsewhere. Fruit fly and grasshoppers were also reported as having worked much havoc.

Sugar, at present the chief staple of Queensland, fortunately yielded very satisfactory results, and by the importance of its contribution to agricultural production, in a measure, counterbalanced the poorer yields of other crops, whilst tobacco gave the best return hitherto recorded for that crop. A slight revival in cotton cultivation was also exhibited, and great hopes are held by some that with improved varieties and the changed condition as to price, together with the value now attached to the seed, that this product will again take a prominent place in agriculture here. If a mechanical contrivance for picking were invented, the position would indeed be hopeful, but the prospect of success with the payment of wages for handpicking has not yet been assuringly demonstrated.

The most satisfactory circumstance in connection with agriculture is the continuous increase in the area of farming land taken up. The acreage of Crown lands selected as agricultural farms and homesteads and as unconditional selections for each of the past five years was as follows:—

	1901.	1902.	1903.	1904.	1905.
Acres	340,638	302,555	223,512	224,555	362,246

The areas under cultivation and under crop for each of the years 1901-1905 were as under:—

	1901. Acres.	1902. Acres.	1903. Acres.	1904. Acres	1905. Acres.
Under cultivation	507,317	478,121	621,693	577,896	622,987
Under crop ...	483,460	275,383	566,589	539,216	522,748

The area under cultivation was the largest ever recorded; but the area under crop was less than in either 1904 or 1903, as, with considerable acreages of land sown with grain, the seed failed to germinate, and, following the usual practice, these were tabulated as fallow land.

SIZE OF CULTIVATED AREAS.

Information on this subject is furnished in the following table:—

C c.

Petty Sessions District.	Acres under Cultivation.									
	Under 5 Acres.		5 and under 20 Acres.		20 and under 50 Acres.		50 Acres and Over.		Totals.	
	Owners.	Acres.	Owners.	Acres.	Owners.	Acres.	Owners.	Acres.	Owners.	Acres.
Allora	5	12	6	49	46	1,504	177	25,568	234	27,133
Ayr	5	12	20	237	21	745	31	6,353	77	7,347
Beaudesert	33	95	175	2,028	96	2,748	8	694	312	5,565
Biggenden	15	43	82	974	58	1,687	3	232	158	2,936
Bowen	20	66	79	826	64	2,070	18	1,315	181	4,277
Brisbane	183	514	320	3,131	47	1,316	2	214	552	5,175
Bundaberg	49	132	175	2,005	177	5,522	100	19,489	501	27,148
Cairns	29	93	124	1,344	51	1,648	72	12,349	276	15,434
Childers	13	40	65	731	95	3,103	113	12,448	286	16,322
Clifton	...	...	10	126	47	1,695	329	43,589	386	45,410
Crow's Nest	19	60	152	1,909	157	4,805	28	1,901	356	8,675
Dalby	14	34	107	1,203	117	3,641	143	21,510	381	26,388
Douglas	7	15	29	351	31	1,004	57	6,718	124	8,088
Dugandan	4	9	124	1,621	245	7,667	18	1,113	391	10,400
Esk	32	94	108	1,053	69	1,816	20	1,160	229	4,123
Gatton	31	79	291	3,912	361	12,291	95	6,647	778	22,929
Gin Gin	4	12	51	642	76	2,373	49	3,819	180	6,846
Gympie	63	182	148	1,589	58	1,835	14	875	283	4,481
Harrisville	18	45	125	1,666	143	4,604	22	1,628	308	7,943
Herberton	38	99	35	358	39	1,265	55	5,293	167	7,015
Highfields	19	54	137	1,729	205	6,694	75	6,081	436	14,558
Inglewood	15	44	53	550	18	542	10	977	96	2,113
Ingham	8	20	13	203	33	1,073	100	14,816	154	16,112
Ipswich	50	137	124	1,358	72	1,994	8	833	254	4,322
Killarney	17	45	35	367	53	1,619	119	14,415	224	16,446
Laidley	16	39	119	1,661	336	10,758	83	5,913	554	18,371
Logan	109	328	298	3,590	71	1,865	1	71	479	5,854
Mackay	99	253	381	4,264	373	11,787	144	14,876	997	31,180
Marburg	25	71	73	933	199	5,849	21	1,457	318	8,310
Maroochy	191	479	327	3,306	73	2,057	6	450	597	6,292
Maryborough	129	242	247	1,895	66	1,359	4	260	446	3,756
Mitchell	2	4	7	96	15	448	44	8,339	68	8,887
Mourilyan	7	13	50	713	69	2,035	56	9,187	182	11,948
Nanango	36	112	140	1,610	98	3,058	27	2,154	301	6,934
Nerang	46	143	95	964	69	1,968	14	1,029	224	4,104
Redcliffe	69	197	164	1,787	49	1,288	4	246	286	3,518
Rockhampton	111	292	156	1,611	57	1,544	7	503	331	3,950
Roma	8	23	25	335	93	2,951	272	37,036	398	40,345
Rosewood	11	26	132	1,705	148	4,482	14	828	305	7,041
South Brisbane	75	217	122	1,228	29	786	2	139	228	2,370
Tiaro	55	120	103	1,349	79	2,320	8	668	245	4,457
Toowoomba	265	525	332	3,595	320	10,677	485	59,116	1,402	73,913
Warwick	23	58	87	886	168	5,243	331	35,532	609	41,719
Yeulba	...	...	3	33	9	330	20	2,189	32	2,552
Other Districts	616	1,523	689	6,726	225	6,294	58	5,747	1,598	20,300
Totals, 1905	2,584	6,601	6,138	68,249	4,925	152,360	3,267	395,777	16,914	622,987
,, 1904	2,534	6,570	5,857	64,613	5,025	154,416	3,047	352,297	16,463	577,896
Increase, 1905 ...	50	31	281	3,636	...	...	220	43,480	451	45,091
Decrease, 1905 ...	...	...	...	...	100	2,056	...	...	...	...

This table represents the actual area cultivated on the individual farm, without any reference to the size of the farm, and, except so far as there is duplication by the same person owning more than one farm, represents individual proprietary cultivators of the soil, so that for practical purposes it may be assumed that there were 16,914 persons engaged on their own account in general farming operations, cultivating between them 622,987 acres, or an average of 36·8 acres each. Only 3,267 cultivators, or 19 per cent. of the total, cultivated upwards of 50 acres having between them 395,777 acres, or 64 per cent., of the total area cultivated, an average of 121 acres each.

IRRIGATION.

Although, as is invariably the case when the droughty conditions pass and the need for water is no longer pressing, there has been no increase in the efforts to provide irrigation, yet most of those who have adopted this aid to cultivation have been sufficiently impressed with its advantages not to quickly dispense with it. The area treated with the artificial application of water was in 1905 slightly in excess of that of the previous year, although less by some 700 to 1,000 acres than in 1902 and 1903. The acreage cultivated with the aid of irrigation for each of the past ten years was as follows:—

D.

Year.	Acres Irrigated.	Year.	Acres Irrigated.
1896	6,395	1901	6,526
1897	5,647	1902	14,344
1898	9,648	1903	14,786
1899	6,311	1904	13,360
1900	6,969	1905	13,693

Several new plants for the artificial conservation and distribution of water to arable land appeared on the returns last year. In a few instances it was reported that plants already existing were not utilised during that period, some because they were not needed, and in one or two cases because water was not available just at the time that it was required. Full particulars as to the use made of irrigation during 1905 are contained 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.
Allora	1	120	Dalrymple Creek	Steam pumps, gravitation	Wheat, vegetables, orchard
Ayr	35	4,678	Lagoons, Burdekin River	do.	Sugar-cane, potatoes
Barcaldine	19	278	Bore	Drains	Mostly market gardens
Bowen	46	278	Wells, creek, and river	Steam pumps, windmills, &c.	Mostly fruits
Brisbane	16	66	Creeks and wells	Pumps, windmills, &c.	Mostly vegetables
Bundaberg	13	5,854	River and wells	Steam pumps, windmills, &c.	Sugar-cane and fruit
Charters Towers	17	58	Various	Windmills, &c.	Mostly market gardens
Cunnamulla	1	55	Bore	Drains	Wheat for hay
Gatton	5	203	Creeks and wells	Steam pumps, windmills, &c.	Oats, potatoes, lucerne, fruit
Hungerford	1	70	Bore	Drains	Wheat for hay
Ingham	2	206	River	Steam pumps	Sugar-cane
Laidley	1	50	Creek	Steam pump	Lucerne, corn, potatoes
Mackay	5	125	River and creeks	Steam pumps, windmill	Sugar-cane and fruit
Maryborough	8	47	Artesian wells	Hot air engines, &c.	Fruit
Rockhampton	26	400	Wells, river, creeks, &c.	Oil and steam engines, horse pumps, &c.	All crops mostly mixed gardens
Townsville	44	395	do.	do.	do.
Warwick	6	94	Creeks	Steam pumps, windmills	Market gardens, lucerne
All other Districts (48)	146	716	Various	Various	Largely market gardens
Total	392	13,693			

From this it will be seen that 392 persons irrigated 13,693 acres. Of these, 13 at Bundaberg watered 5,884 acres and 35 at Ayr 4,678 acres, these two districts thus embracing 77 per cent. of the total area.

GRAIN CROPS.

The dry weather, which in 1905 prevailed during winter and spring, adversely affected wheat, and proved almost equally disastrous to all grain crops. In the case of barley and oats, which are chiefly cultivated in the same localities as wheat, the results were as seriously affected; but, with regard to maize, which is grown over a much wider range of country, and generally admits of two plantings each year, only the second planting, harvested at the latter end of the year, was stricken by the drought and heat wave.

WHEAT.

The experiences of the wheat campaign last year were most unfortunate, and well illustrated the advisableness of providing for a systematic system of irrigation.

The promise of the earlier months of 1905 was not fulfilled, for when the time for sowing arrived dry weather prevailed. Farmers, induced by the satisfactory harvests of the two immediately preceding years, placed a larger area under wheat than in 1904, or, indeed, than in any previous year. Much of the seed, however, through want of sufficient moisture, failed to germinate, and consequently this acreage was not counted as area under wheat, but classed as fallow land. Again, a proportion at an early stage of growth afforded such little prospect of a satisfactory return, either as hay or grain, that it was utilised for grazing stock, to be thus converted into milk or meat, and these areas, although sown with wheat, appear under the category of green forage crops, and to that extent reduce the area that originally was intended to produce the cereal.

There were approximately 177,000 acres sown with wheat in 1905, of which 40,000 failed completely, 15,000 were cut or grazed as green forage, and 3,000 acres were converted into hay, leaving 119,000 acres, or 67 per cent. of the area sown, to be reaped. The exact areas reaped in 1903, 1904, and 1905 were 138,096 acres, 150,958 acres, and 119,356 acres respectively, the figures for the first two years being in excess of those for 1905.

It is much to be regretted that, owing either to apathy or to direct antagonism on the part of farmers, attempts to obtain advance estimates of wheat and other crops have proved abortive. In my last report I stated that "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." As only one such association, and that one representing only a comparatively small proportion of the wheat area, afforded me any promise of support in the matter, I did not feel justified in attempting to secure data for an advance estimate for the 1905 crop.

Notwithstanding pessimistic views indulged in by some, the future of the grain industry in Queensland is assured, and although the unsatisfactory results of the last dry season, combined with the attractions of dairying, may retard progress, Queensland must, in the near future, become a grain-producing country, especially of wheat, largely in excess of home requirements, when it will be imperative that the present outside control with respect to freights and conditions of shipment be removed, or so far modified as to secure equitable treatment for the producers of this State.

The following table compares the wheat crops for each year of the last decade:—

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.
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
1905	119,141	1,135,410	9·53	215	1,911	8·89	119,356	1,137,321	9·53
Average of Ten Years	68,369	1,022,380	14·95	8,434	122,443	14·52	76,803	1,144,823	14·91

In 1905 the 119,356 acres reaped yielded 1,137,321 bushels of grain, or an average return of 9·53 bushels to each acre. The corresponding figures for 1904, the best year of the decennium as to the acreage reaped, and for 1903, the best year for both total and average produce, were—1904, 150,958 acres, 2,149,663 bushels; average, 14·24: 1903, 138,096 acres, 2,436,799 bushels; average, 17·65. Rust was but little in evidence last year, and, with respect to this pest, it is interesting to note that on several occasions during the past ten years, in the seasons in which rust was most prevalent, the general results from the areas reaped have been the most satisfactory. From the foregoing table it may be seen that the largest rust-affected areas were returned in 1903, 1897, and 1901, when average yields for the total acreages were 17·65, 17·47, and 19·40, and for the infected areas 14·16, 15·73, and 17·42 each respectively.

It must be borne in mind, however, that the existence of rust has been largely reduced in recent years, mainly by seed selection, and the heavy losses in the yield of grain that used to be consequent on a visitation are now practically done away with; nor is the quality of the grain so much deteriorated as was the case in the early history of the crop in Queensland.

Fuller details respecting the cereal is furnished in the following table:—

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.
Burnett and Wide Bay.									
Biggenden	1	16	16·00	...	...	...	1	16	16·00
Gayndah	1	7	7·00	...	...	...	1	7	7·00
Nanango	1,029	10,042	9·76	60	600	10·00	1,089	10,642	9·77
Tiaro	1	20	20·00	...	...	...	1	20	20·00
Total, Burnett and Wide Bay ...	1,032	10,085	9·77	60	600	10·00	1,092	10,685	9·78
Moreton.									
Crow's Nest	379	5,292	13·96	...	...	...	379	5,292	13·96
Dugandan	3	52	17·33	...	...	...	3	52	17·33
Gatton	4	94	23·50	...	...	...	4	94	23·50
Total, Moreton	386	5,438	14·09	...	...	...	386	5,438	14·09
Downs.									
Allora	11,226	170,767	15·21	15	140	9·33	11,241	170,907	15·20
Clifton	20,639	200,421	9·71	...	...	...	20,639	200,421	9·71
Condamine	5	40	8·00	...	...	...	5	40	8·00
Dalby	9,102	44,238	4·86	...	...	...	9,102	44,238	4·86
Goondiwindi	134	1,007	7·51	...	...	...	134	1,007	7·51
Highfields	2,010	14,978	7·45	60	851	14·18	2,070	15,829	7·65
Inglewood	609	7,190	11·81	...	...	...	609	7,190	11·81
Killarney	9,277	151,061	16·28	...	...	...	9,277	151,061	16·28
Stanthorpe	34	410	12·06	...	...	...	34	410	12·06
Texas	100	649	6·49	...	...	...	100	649	6·49
Toowoomba	15,275	139,586	9·14	80	320	4·00	15,355	139,906	9·11
Warwick	22,112	316,847	14·33	...	...	...	22,112	316,847	14·33
Total Downs	90,523	1,047,194	11·57	155	1,311	8·46	90,678	1,048,505	11·56
Maranoa.									
Mitchell	5,180	13,361	2·58	...	...	...	5,180	13,361	2·58
Roma	20,637	55,475	2·69	...	...	..	20,637	55,475	2·69
St. George	30	252	8·40	...	...	...	30	252	8·40
Surat	30	152	5·07	...	...	...	30	152	5·07
Yeulba	1,269	2,813	2·22	...	...	...	1,269	2,813	2·22
Total, Maranoa	27,146	72,053	2·65	...	...	...	27,146	72,053	2·65
Other Districts.									
Barcaldine	54	640	11·85	...	...	...	54	640	11·85
Total, Other Districts	54	640	11·85	...	...	...	54	640	11·85
Total, State	119,141	1,135,410	9·53	215	1,911	8·89	119,356	1,137,321	9·53

The districts in the Downs division provide 90,678 acres and 1,048,505 bushels, or 76 per cent. and 92 per cent. respectively of the total area reaped and yield obtained; whilst those in the Maranoa division returned 27,146 acres and 72,053 bushels, or 23 per cent. and 6 per cent. respectively; so these two divisions practically comprise the wheat-producing areas of the State. The average yields obtained in these two divisions varied greatly, for whilst the Downs returned an average of 11·56 bushels for each acre, the Maranoa crop was only equal to 2·65 bushels. The latter most unsatisfactory return from so relatively large an area operated very seriously upon the total average of the State. The five petty sessions districts comprising this division gave averages as follow:—St. George, 8·40 bushels; Surat, 5·07 bushels; Roma, 2·69 bushels; Mitchell, 2·58 bushels; and Yeulba, 2·22 bushels. Roma provided the great bulk, both of area and production, of the Maranoa crop.

In the Downs division, Killarney was the district giving the most satisfactory results; from 9,277 acres 151,061 bushels were obtained, or the fair average of 16·28 bushels to each acre. The contiguous districts of Allora and Clifton differed very considerably in results, the figures being 11,241 acres, 170,907 bushels; average, 15·20 bushels: and 20,639 acres, 200,421 bushels; average, 9·71 respectively. The Warwick area of 22,112 acres furnished 316,847 bushels, equal to 14·33 bushels. The fairly satisfactory returns obtained at Killarney, Allora, and Warwick were heavily discounted by indifferent returns from the important districts of Toowoomba and Clifton, and very poor crops from several minor districts.

The 1,500 acres placed under wheat in districts outside the Downs and Maranoa divisions, although distributed over a wide range of country, were more restricted than in some previous years. In the Southern portion of the State none was found further west than St. George; the weather conditions during 1905 totally precluding any attempt at cereal culture on the Warrego, where, on occasions, small areas have been grown. Nearer the coast, small acreages were returned from West Moreton and from the Upper Burnett. From 4 acres at Gatton, 94 bushels were obtained, but 1,089 acres at Nanango only returned 10,642 bushels, or rather less than 10 bushels to each acre. In previous years, in the Central

great division of the State, the cultivation of this cereal was initiated. The intention was to irrigate with artesian bore water, and substantial experimental areas were sown at Barcaldine, with fair results, and the extension of the wheat line eastward round Emerald and Springsure was definitely predicted. The Burnett was an area that, during 1903 and 1904, was big with a promised large production of this cereal, but apparently the greater charms of dairying have, up to the present, operated adversely.

So much was expected from the results of the 1905 season, hopes having been raised by the very satisfactory return obtained in 1903, and the good crop of the following year, that the—for Queensland—low average yield of 9·53 bushels in 1905 proved most disappointing. When some of our farmers, however, talk of abandoning wheat-growing, it is well to remind them that, except as regards Tasmania, this State stands first in the average returns per acre for this cereal. Taken over a period of ten years, the yield for the six States are as follow:—Tasmania, 20 bushels; Queensland, 16 bushels; Western Australia, 11 bushels; New South Wales, 10 bushels; Victoria, 7 bushels; and South Australia, under 5 bushels. It will therefore be seen that the Queensland 1905 crop was double that of the decennial average of South Australia, and approximated very closely to the decennial averages of Western Australia and New South Wales, and considerably exceeded that for Victoria.

It has already been pointed out that the very low returns from the specially drought-visited areas of the West operated so severely against the average of the whole crop. In this connection it is well to note what is being done elsewhere. Much attention is being devoted in the United States to the production of a drought-resisting wheat, and very satisfactory experiments have been conducted. This class of grain, known as the Macaroni Wheat, will thrive with a minimum of moisture. The exception taken to them is that they are a hard milling wheat, and, some say, not suited for a bread flour, although the latter has been disputed with some authority. In any case, such success has attended the efforts made in Queensland to produce a rust-resisting variety of grain that encouragement might be taken to experiment in the direction of evolving a type of wheat that shall not require a larger quantity of moisture than may be, in normal seasons, looked for within the present wheat line. If this were successfully accomplished, then the area in this State that would be available would be practically illimitable.

CONSUMPTION AND EXPORT.

Export can only be a matter of experiment until the demands of the home market have been fully and consistently met. The consumption of wheat in this State for all purposes approximates 3,500,000 bushels, so that even the record crop of 1903 of 2,436,799 bushels fell 1,000,000 bushels below home requirements, whilst the production for last year was equal to just one-third of our own needs.

The following figures give the net imports for 1905:—

E b.

BREADSTUFFS.

ITEM.	IMPORTED.		EXPORTED.		NET IMPORTS.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		£		£		£
Wheat (centals)	68,343	20,195	175,540	48,248	*107,197	*28,053
Flour (centals)	486,556	199,262	75,330	29,759	411,226	169,503
Biscuits (lb.)	710,788	22,766	161,738	2,431	549,050	20,335
Total	...	242,223	...	80,438	...	161,785

* Excess of Exports.

With the crop for 1902 a complete failure, a heavy import for the following year was inevitable, and in 1903 something like £500,000 in excess of the amount required in the two subsequent years had to be found for the purchase of foreign breadstuffs. The net imports for the past three years are given in the following table:—

E c.

—	1903		1904.		1905.	
		£		£		£
Wheat	603,294 centals	= 218,059	*131,388 centals	= *36,857	*107,197 centals	= *28,053
Flour	704,893 „	= 393,571	536,210 „	= 216,359	411,226 „	= 169,503
Biscuits	464,446 lb.	= 16,447	417,474 lb.	= 16,248	549,050 lb.	= 20,335
		628,077		195,750		161,785

* Excess of Exports.

Whilst the question of export is not immediately a pressing one, it is well that it should be borne in mind, as given a few favourable seasons, with the great increased agricultural settlement that is proceeding, a search for foreign markets would speedily become an imperative necessity.

The United Kingdom, of course, at once suggests itself as an outlet, and experimental consignments have shown the feasibleness of transporting grain to Britain at a profit, Queensland's product being considered by experts well adapted for the milling trade. Nearer markets, however, suggest themselves, and in view of the effort now being made to develop what is known as the "Eastern" trade, the following records of imports into Japan, &c., may not be without interest:—

Japan—flour, 2,880,873 centals	£1,101,173
China—flour	378,681
Straits Settlements—wheat, 501,980 cwt.	269,472
Ceylon—grain (not rice), including flour	162,416

The following table gives the demand for wheat and its products in this State for each of the past five years:—

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.
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
1905	849,403	1,137,321	1,986,724

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.

From these figures it has been calculated that during the last quinquennium the consumption of wheat has been equal to rather less than 6·5 bushels per head, which is about the same as for the other States of the Commonwealth.

FLOUR-MILLS.

It is satisfactory to note an increase in the output of the flour-milling industry, although the number of mills in operation shows a diminution. These were three fewer in 1905 than in the previous year, the mills at Dalby and Rockhampton not working, and one at Roma, unfortunately, destroyed by fire at the latter end of 1904, particulars respecting the sixteen establishments working in 1905 being shown 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	118	9	72	1,112,338	22,116	177,712	90	742	1,167,672	36,317
Toowoomba	3	30	...	35	326,929	6,378	50,473	22	173	309,217	11,855
Elsewhere	6	57	7	55	446,141	8,806	67,297	93	757	423,443	18,519
Total, 1905 ...	16	205	16	162	1,885,408	37,300	295,482	205	1,672	1,900,332	66,691
, 1904 ...	19	201	18	156	1,729,637	34,034	263,374	177	1,522	1,673,899	42,155

At some of the above establishments but little wheat is treated, such factories being principally devoted to treating other grain, consequently particulars as to hands and factory do not exactly match with the output. Information respecting Grain Mills will be found in Part VIII. of the Statistical Register.

Information is not furnished as to the extent to which imported wheat finds its way to the mill, but it can be a fractional quantity only. The imports altogether amounted to only some 114,000 bushels, and the demands for seed would have been approximately from 150,000 to 160,000 bushels, a portion of which was no doubt provided from the imported article, so that the 1,885,408 bushels gristed was practically all local wheat.

The average yield of flour to wheat was practically the same in 1905 as in 1904, the figures for each of the last three years being—1903, 49·2 bushels; 1904 and 1905, 50·6 bushels.

In connection with loans to mills under "The Vote for Loans in aid of Co-operative Agricultural Production," it is satisfactory to note a substantial improvement in the financial position of these establishments, for whereas the indebtedness was £3,376 13s. 5d. at the end of 1904, on the 31st December last it amounted to £1,799 14s. 2d. only. The following are the particulars for 1905:—

Number of mills to which advances were made	2		
	£	s.	d.
Amount advanced to 31st December, 1905	3,442	0	0
Indebtedness to 31st December, 1905, including interest ...	1,799	14	2
Included in above interest due, but not paid	69	4	3
Balance owing on account principal	1,730	9	11

The dry weather, which in 1905 so adversely affected wheat, proved almost equally disastrous to all grain crops. In the case of barley and oats, which are chiefly cultivated in the same localities as wheat, the results were as seriously affected; but, with regard to maize, which is grown over a much wider range of country, and generally admits of two plantings each year, only the second planting, harvested at the latter end of the year, was stricken by the drought and heat wave.

BARLEY.

Approximately 18,000 acres were sown last year with this cereal, of which some 3,600 acres failed to germinate and were recorded as fallow. The area sown was, however, at least 4,000 acres below that for 1904. The following table furnishes information as to the disposal of the remaining 14,477 acres:—

F.

—	1904.	1905.
	Acres.	Acres.
Reaped for grain	17,387	5,201
Mown for hay	443	205
Used for green food	4,517	9,071
	22,347	14,477

From this it will be seen that only 5,201 acres were reaped for grain, less than one-third of the area thus available in 1904, when the produce of 17,387 acres was garnered. The crop from 9,071 acres was utilised for forage, being partly cut green and partly fed off by live stock. This was twice as great as the area so used in the previous year.

Unfortunately it was not only in area that the decrease appeared, but the returns obtained were also most unsatisfactory, as will be seen from the following table:—

F a.

Year.	Area for Grain.	Produce.	Average Produce per Acre.
	Acres.	Bushels.	Bushels.
1904	17,387	331,772	19·08
1905	5,201	61,816	11·89
Increase in 1905	...	...	...
Decrease in 1905	12,186	269,956	7·19

In 1904, from the 17,387 acres of barley reaped, 331,772 bushels were secured, or an average of 19·08 bushels to each acre; last year the figures were 5,201 acres, 61,816 bushels, or an average of 11·89 bushels, a decrease in the latter year of 12,186 acres in the area, of 269,956 bushels in the yield, and of 7·19 bushels in the average.

As barley is practically unused as a breadstuff in Queensland, its chief merchantable value is for the production of malt.

The following table shows the extent of the cultivation and production of barley in each principal district, distinguishing between malting and other varieties:—

F b.

District.	Malting Grain.			Other Varieties Grain.		
	Acres.	Bushels.	Average per Acre, Bushels.	Acres.	Bushels.	Average per Acre, Bushels.
Allora	181	2,808	15·51	105	2,133	20·31
Clifton	2,359	24,172	10·25	4	20	5·00
Crow's Nest	113	1,928	17·06	3	40	13·33
Dalby	116	1,071	9·23	10	162	16·20
Highfields	46	320	6·96	29	116	4·00
Killarney	50	1,242	24·84	10	144	14·40
Toowoomba	1,038	8,825	8·50	81	1,017	12·56
Warwick	761	12,854	16·89	255	4,608	18·07
All Other Districts	6	104	17·33	34	252	7·41
Total State	4,670	53,324	11·42	531	8,492	15·99

Of the area reaped in 1905, 4,670 acres, or 90 per cent. of the total, consisted of malting barley. The area planted with other varieties of that grain comprising 531 acres only.

Restricting attention to the former, it is seen that more than half the total area, or 2,359 acres, were reaped at Clifton, 24,172 bushels being obtained from that area, an average to each acre of 10·25 bushels. Toowoomba came next with 1,038 acres and 8,825 bushels, or an average of 8·50 bushels, followed by Warwick and Allora with 761 and 181 acres, 12,854 and 2,808 bushels, and averages of 16·89 and 15·51 bushels each respectively. From 113 acres at Crow's Nest and 50 acres at Killarney averages of 17·06 and 24·84 bushels to each acre were obtained, the lastnamed very satisfactory result being due to favourable rainfall at a critical period of the crop's growth.

The following table furnishes information as to the production of malt in this State for each of the past five years:—

F c.

Year.	Made from Imported Barley.	Made from Queensland Barley.	Total Malt Made.
	Bushels.	Bushels.	Bushels.
1901	1,000	69,000	70,000
1902	9,500	75,500	85,000
1903	67,500	...	67,500
1904	...	113,000	113,000
1905	...	107,521	107,521

It is hardly satisfactory to note the great discrepancy between the quantity of malting barley produced and the quantity converted into malt. Speaking generally, the crop of one year would be malted in the following year, and 1 bushel of barley yields 1 bushel of malt. For five years the results have been as follow:—

	Produced (bushels).		Malted (bushels).
1900	107,910	1901	69,000
1901	193,538	1902	75,500
1902	1,749	1903	..
1903	382,082	1904	113,000
1904	296,446	1905	107,521
1905	53,324		

Taking the five years of barley production, 1900-1904, and the five corresponding years 1901-1905, it will be seen that whilst during the former 981,725 bushels of malting barley were reaped, only 365,021 bushels of malt were produced, or, allowing a bushel of grain to a bushel of malt, only 37 per cent. of the total production of malting barley was put to its legitimate use.

Although with care in the selection of seed, in the cultivation, and in the harvesting and threshing, it is not difficult with reasonably favourable conditions to produce a good malting barley, still a considerable quantity produced fails to attain the required standard. It has, nevertheless, been conclusively proved that Queensland can produce malting barley second to none, for recently a gentleman long connected with the industry, addressing an audience of Downs farmers, pointed out that Downs barley secured the first prize and gold medal at the Brewers' Exhibition held a while ago in London, and stated that he had been commissioned by one of the leading firms in the United Kingdom to secure trial shipments, whilst one buyer alone was prepared to take annually as much as 130,000 bushels if the quality were maintained. With such assurance, there should be no doubt as to the future of the industry. Although there will be a deficiency this year, yet the immediate local demand for barley for malting would seem to have been practically met, judging from the foregoing table Fc. The southern markets, access to which was for a time barred by plague quarantine restrictions, offer as a first field for enterprise, after which at no distant date another staple either as grain or malt will be added to our exports to the United Kingdom. Although during the past two years no imported barley has been malted in Queensland, yet the manufactured article still arrives.

F d.

Year.	Malt made in Queensland.	Year.	Malt Imported.
	Bushels.		Bushels.
1896-97 (financial)	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
1905 ditto	107,521	1905 ... 31,665 ditto =	83,329

The local production, it will be seen, is rapidly displacing the imported article; but in this direction there still remains a margin of the State requirements unsatisfied.

The quantity of beer brewed and of malt thus utilised for each of the past five years is shown in the following table:—

F e.

Year.	Beer.	Malt.
	Gallons.	Bushels.
1901	5,325,314	188,100
1902	* 5,333,202	170,610
1903	† 4,489,958	147,591
1904	‡ 4,455,110	145,778
1905	§ 4,568,916	155,840

* Including waste, 260,038 gallons. † Including waste, 165,622 gallons. ‡ Including waste, 134,872 gallons. § Including waste, 134,731 gallons.

The quantity of beer made in 1905 exceeds that for both 1903 and 1904. It appears that in Queensland 1 bushel of malt is required to produce 30 gallons of beer, the actual quantity for each of the five years quoted being:—1901, 28·3 gallons; 1902, 31·3 gallons; 1903, 30·4 gallons; 1904, 30·6 gallons; and last year, 29·3 gallons.

MAIZE.

The cultivation of this cereal, although affected by the drought, did not suffer quite so severely as wheat and barley. The second of the two crops obtained was, however, most unsatisfactory in its results, but a better return rewarded the earlier planting.

The experience with respect to maize for each of the past five years was as follows:—

G.

Year.	Grain.		Average per Acre.
	Acres.	Bushels.	Bushels.
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
1905	113,720	2,164,674	19·04

There were 113,720 acres under cultivation, yielding 2,164,674 bushels, or an average of 19·04 bushels, against 119,171 acres, 2,542,766 bushels, and an average of 21·34 bushels in the previous year, or decreases in 1905 of 5,451 acres and 378,092 bushels. Each acre thus returning 2·30 bushels less in 1905 than in 1904.

Particulars respecting this crop for 1905 in each of the geographical groups of the State are furnished in the following table:—

G a.

MAIZE GRAIN.

Division or Group.	Acres.	Yield.	Average.	Proportion of Area to whole Area of Maize for Grain.
		Bushels.	Bushels.	
Rockingham	8,107	292,720	36·11	7·13
Edgecumbe	820	15,643	19·08	0·72
Port Curtis	1,331	22,465	16·88	1·17
Burnett and Wide Bay	14,226	247,913	17·43	12·51
Moreton	57,398	1,133,596	19·75	50·47
Downs	30,534	437,870	14·34	26·85
Maranoa	306	1,187	3·88	0·27
Other Districts	998	13,280	13·31	0·88
Total State	113,720	2,164,674	19·04	100·00

It will be seen that Moreton provides one-half, the Downs one-fourth, and the Burnett and Wide Bay district one-eighth of the entire crop, whilst the best average yield was obtained in Rockingham, where from 8,107 acres an average of 36·11 bushels was obtained. On the Downs, where a return of 14·34 bushels to each acre was secured, a good deal of damage was caused by hail, whilst on the Burnett, where much of the farm land is still surrounded by unfelled scrub, bandicoots and other vermin caused considerable loss.

The following table affords a comparison between the maize crops of 1904 and 1905 in each of the principal petty sessions districts:—

G b.

Petty Sessions District.	Area Planted for Grain.			Yield of Grain.			Average Yield per Acre.		
	In 1904.	In 1905.	Increase or Decrease —	In 1904.	In 1905.	Increase or Decrease —	In 1904.	In 1905.	Increase or Decrease —
	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Allora	2,660	2,104	— 556	43,018	25,133	— 17,885	16·17	11·95	— 4·22
Beaudesert	2,830	3,017	187	67,911	83,595	15,684	24·00	27·71	3·71
Biggenden	1,808	1,641	— 167	51,181	27,475	— 23,706	28·31	16·74	—11·57
Bundaberg	3,798	1,966	—1,832	105,586	30,863	— 74,723	27·80	15·70	—12·10
Cairns	1,658	905	— 753	48,082	30,730	— 17,352	29·00	33·96	4·96
Childers	1,135	763	— 372	28,973	13,473	— 15,500	25·53	17·66	— 7·87
Clifton	3,785	4,557	772	51,464	57,747	6,283	13·60	12·67	— 0·93
Crow's Nest	4,788	4,686	— 102	87,502	87,002	— 500	18·28	18·57	0·29
Dalby	1,054	643	— 411	20,810	5,862	— 14,948	19·74	9·12	—10·62
Dugandan	7,455	7,538	83	164,386	161,952	— 2,434	22·05	21·48	— 0·57
Esk	2,012	2,099	87	70,187	42,302	— 27,885	34·88	20·15	—14·73
Gatton	9,488	9,334	— 154	214,500	148,821	— 65,679	22·61	15·94	— 6·67
Gin Gin	1,642	959	— 683	53,920	12,071	— 41,849	32·84	12·59	—20·25
Gympie	1,922	1,856	— 66	57,202	51,989	— 5,213	29·76	28·01	— 1·75
Kilkivan	1,012	999	— 13	16,864	17,307	443	16·66	17·32	0·66
Killarney	3,145	3,484	339	68,613	75,618	7,005	21·82	21·70	— 0·12
Harrisville	4,154	4,412	258	76,316	105,959	29,643	18·37	24·02	5·65
Herberton	5,208	6,476	1,268	171,202	244,466	73,264	32·87	37·75	4·88
Highfields	6,189	6,038	— 151	120,789	78,241	— 42,548	19·52	12·96	— 6·56
Ipswich	1,483	1,453	— 30	24,289	28,845	4,556	16·38	19·85	3·47
Laidley	10,027	10,804	777	195,351	191,073	— 4,278	19·48	17·69	— 1·79
Logan	1,406	1,365	— 41	33,345	31,132	— 2,213	23·72	22·81	— 0·91
Marburg	3,623	3,528	— 95	66,935	56,437	— 10,498	18·48	16·00	— 2·48
Maryborough	1,012	392	— 620	16,864	7,598	— 9,266	16·66	19·38	2·72
Nanango	6,202	3,976	—2,226	93,569	52,229	— 41,340	15·09	13·14	— 1·95
Nerang	2,032	1,684	— 348	53,961	46,377	— 7,584	26·56	27·54	0·98
Redcliffe	1,811	1,735	— 76	32,807	34,037	1,230	18·12	19·62	1·50
Rockhampton	1,262	843	— 419	29,196	12,613	— 16,583	23·13	14·96	— 8·17
Rosewood	2,654	2,742	88	39,896	37,455	— 2,441	15·03	13·66	— 1·37
Tiaro	1,440	1,223	— 217	62,443	30,174	— 32,269	43·36	24·67	—18·69
Toowoomba	7,354	7,264	— 90	111,483	104,775	— 6,708	15·16	14·42	— 0·74
Warwick	4,521	6,044	1,523	67,728	82,341	14,613	14·98	13·62	— 1·36
All other Districts ...	8,601	7,190	— 411	196,393	148,982	— 47,411	22·83	20·72	— 2·11
Total State ...	119,171	113,720	—5,451	2,542,766	2,164,674	—378,092	21·34	19·04	— 2·30

The largest increases in area in 1905 were:—Warwick, 1,523 acres; Herberton, 1,268 acres; Laidley, 777 acres; Clifton, 772 acres; Killarney, 339 acres; and Harrisville, 258 acres. Decreases were recorded at Nanango, 2,226 acres; Bundaberg, 1,832 acres; Cairns, 753 acres; Gin Gin, 683; and Maryborough, 620 acres; thus showing heavy failures in the Burnett and Wide Bay districts. In production the chief increases were:—Herberton, 73,264 bushels; Harrisville, 29,643 bushels; Beaudesert, 15,684 bushels; and Warwick, 14,613 bushels.

The largest average yield per acre was 37·75 bushels at Herberton, followed by Cairns with 33·96 bushels; the rich scrub lands of those northern districts not yet having been depleted by unscientific farming. The other districts in which a yield exceeding 25 bushels was obtained were:—Gympie, 28·01; Beaudesert, 27·71; and Nerang, 27·54 bushels. The following districts cultivating at least 1,000 acres

only returned the following averages per acre:—Allora, 11·95 bushels; Clifton, 12·67 bushels; Highfields, 12·96 bushels; Nanango, 13·14 bushels; Rosewood, 13·66 bushels; Warwick, 13·62 bushels; and Toowoomba, 14·42 bushels.

It is difficult to ascertain quantities of goods exported, because the returns of interstate transfers, as supplied by the Customs authorities, furnish values only.

Maize to the value of £10,929 was imported, and to the value of £31,824 exported during 1905, leaving a balance in favour of exports of £20,895. The bulk, indeed practically all of the export was to New South Wales, whilst strangely enough 31,604 centals, valued at £6,373, was imported from that State. The excess sent out of the State was 115,613 bushels.

OATS.

Fortunately this crop is of much less importance to the farmer than either wheat, barley, or maize, for last season was an extremely unsatisfactory one. The area utilised for oat production as a cereal is very limited indeed, by far the greater proportion of the area sown being mown for hay or cut green. A comparison of this crop for each of the past five years is furnished in the following table:—

H.

Oats.	1901.	1902.	1903.	1904.	1905.
	Acres.	Acres.	Acres.	Acres.	Acres.
Reaped for grain	1,535	78	2,808	643	533
Mown for hay	17,167	2,619	19,523	9,076	4,446
Cut for green fodder	4,561	1,462	1,897	3,354	4,733
Total	23,263	4,159	24,228	13,073	9,712

It will be seen at a glance that oats are scarcely worth attention in a report on grain crops, and that in 1905 even the area given to hay and green forage was a greatly reduced one.

Comparing the area reaped during the past two years, as is done in the following table:—

H a.

Year.	Area for Grain.	Produce.	Average Produce per Acre.
	Acres.	Bushels.	Bushels.
1904	643	15,137	23·54
1905	533	5,858	10·99
Increase in 1905	...	...	...
Decrease in 1905	110	9,279	12·55

Last year there was approximately a decrease in area of one-sixth, of production of two-thirds, and in average yield of considerably over one-half. In view of the demand for oats and their products, it seems unaccountable that sufficient grain is not grown to at least meet the home consumption, whereas the greatest quantity produced in any year of the last decade—namely, in 1903—was only 70,713 bushels, the demand being greatly in excess of this, as shown by the following table:—

H b.

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

—	1901.	1902.	1903.	1904.	1905.	Average of the Quinquennium.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Net Imports { Oats (Grain) ...	135,365	266,463	134,443	81,618	115,452	146,668
Net Imports { Products of Oats ...	102,800	139,059	93,200	123,895	142,715	120,334
Production, Oats (Grain)	42,208	520	70,713	15,137	5,858	26,887
Total	280,373	406,042	298,356	220,650	264,025	293,889

* Oatmeal converted into Oats on the basis of 1 ton Avoirdupois to each 100 bushels of Oats.

The average annual demand on a five years' basis is 293,889 bushels, of which during 1901-5 less than one-tenth was produced in the State, and the remaining nine-tenths were imported. Of this latter about five-ninths came in as grain and four-ninths in the form of some one or other of the products of that cereal.

RICE.

This grain has practically gone out of cultivation. Last year there were only 33 acres planted, from which 885 bushels were garnered, an average to each acre of 26·82 bushels. The results of this crop for each of the past eight years have been as follow:—

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
1905	33	885	26·82

The gradual decline in the cultivation of rice is here at once seen.

RYE.

Although a breadstuff in some of the continental countries of Europe, rye hardly counts as a cereal in Queensland. The acreage and yield for the past five years are shown in the subjoined table:—

J.

Year.	Acres.	Yield.	Average per Acre.
		Bushels.	Bushels.
1901	246	5,000	20·33
1902	22	238	10·82
1903	315	6,482	20·58
1904	151	1,729	11·45
1905	60	562	9·37

Cultivated to some extent for hay and green forage, of course a certain quantity of grain is required for seed, and this demand, together with a small consumption for feeding poultry, accounts for the total production.

POTATOES (ENGLISH).

Although the average yield per acre in Queensland is somewhat less than that obtained in the other States, the difference is hardly sufficient to account for the comparatively small area devoted to their culture, the result being that a large amount of money is sent out of the country to enrich the farmers of the southern States. A reference to the statement below shows the extent to which Queensland has been dependent on other countries for the commodity:—

K.

Year.	Weight.	Value.
	Tons.	£
1901	14,621	81,800
1902	27,848	152,560
1903	26,734	89,605
1904	9,936	20,265
1905	14,672	97,708

There were 7,170 acres under potatoes last year, which is 2,601 acres less than 1904; the yield also in 1905 was considerably below that of the previous year—viz., 11,308 tons, as against 19,231 tons. The yield per acre was also poor, being only 1·58 tons, the average for 1904 being 1·97 tons, and the mean for twenty years 2·19 tons.

SWEET POTATOES.

The sweet potato will not stand frost, so that its cultivation is practically excluded from the Downs and Maranoa districts. It forms a good substitute for the English potato, but is not used for the table to so great an extent; prejudice, doubtless, partly contributing to the limitation of utilisation. There were 3,229 acres returned last year, yielding 14,974 tons, or an average return per acre of 4·64.

SUGAR.

The year 1905 witnessed the second best season, as regards the output of sugar, ever experienced in this State, whilst as to area, both cultivated and cut for crushing, the year was a record one. There were 134,107 acres under cane, and 96,093 acres crushed; from the latter there was obtained 1,415,745 tons of cane and 152,722 tons of sugar of a standard of 94 N.T. These returns were both exceeded in 1898, when 1,542,090 tons of cane and 163,734 tons of sugar were secured from 82,391 acres of cane crushed.

In comparing, however, the 1898 crop with those for 1904 and 1905, it is necessary to remember that for the past two years, at the instigation of Dr. Maxwell, the tonnage of sugar has not been given at its avoirdupois weight, but its equivalent weight at an average standard of 94 net titre.

A comparison of each of the five years 1901-1905 is furnished in the following table:—

L.

Year.	Acres Cultivated.	Acres Crushed.	YIELD.	
			Tons Cane.	Tons Sugar.
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
1905	134,107	96,093	1,415,745	*152,722

* 94 per cent. net titre.

The area as cultivated and crushed last year exceeded the acreages so treated for 1904 by 13,790 acres and 13,352 acres respectively; and, whilst in the latter year 1,326,989 tons of cane were obtained, in 1905 that output was exceeded by 88,756 tons.

With the greatly increased area crushed in 1905, had the conditions prevailing been as satisfactory as in 1904, both as regards the average quantity of cane and also as to its quality, the yield for the record year of output—1898—would have been considerably exceeded even without considering the difference in the standard.

The notable feature about the 1898 campaign was the large average tonnage of cane secured to each acre crushed—namely, 18·72 tons. The average returns obtained during each of the last five years were as follow:—

La.

Year.	TO EACH ACRE CRUSHED.		Tons of Cane to One Ton of Sugar.
	Tons of Cane.	Tons of Sugar.	
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
1905	14·73	1·59	9·27

Taking the figures of the second column, it is seen that of the five years reviewed the best average return of cane per acre was in 1904—namely, 16·04 tons—followed by 15·10 tons in 1901, then 14·73 tons in 1905, or 3·99 tons less cane than was obtained in 1898. The quality of the cane is best gauged by the figures in the fourth column of the table, where the tonnage of cane required to make each ton of sugar is given, from which it will be seen that the results in 1905 were less satisfactory than in any year, except 1901, of the quinquennium.

It is in these two directions of increasing the productiveness of land, both as to the quantity of cane produced and also as to its quality, that the future of the sugar industry mainly depends.

The machinery and skill now available for the manufacture of sugar is of a character to leave little scope for advance in economic productiveness after the cane has left the field, except perhaps with regard to the utilisation of by-products, but plenty of room remains there for improvement by the adoption of a careful selection of plants, thorough and scientific cultivation, including the use of fertilisers, and in irrigation.

Particulars respecting the 1905 crop are shown in greater detail in the following table:—

Lb.

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.
Rockingham—							
Cairns and Douglas	368	4,026	15,301	19,695	233,505	26,334	736,549
Ingham and Mourilyan	350	5,164	17,683	23,197	221,923	27,605	989,247
Total	718	9,190	32,984	42,892	455,428	53,939	1,725,796
Edgecumbe—							
Ayr	94	2,066	4,423	6,583	85,066	10,337	222,712
Bowen	6	1,085	2,211	3,302	26,424	2,741	18,000
Mackay	281	9,285	20,762	30,328	285,545	32,380	820,580
Total	381	12,436	27,396	40,213	397,035	45,458	1,061,292
Port Curtis—							
Gladstone	...	4	24	28	152	*	...
Burnett and Wide Bay—							
Bundaberg and Gin Gin	174	7,791	18,371	26,336	244,619	26,645	1,112,073
Childers, Maryborough, and Tiaro	82	5,022	12,414	17,518	234,783	19,728	976,504
Gympie	...	78	136	214	2,279	†	...
Total	256	12,891	30,921	44,068	481,681	46,373	2,088,577
Moreton—							
Logan	6	616	1,869	2,491	29,355	2,124	74,000
Marburg	5	288	250	543	1,949	173	12,000
Maroochy	33	1,039	2,013	3,085	39,789	3,945	115,200
Nerang	10	141	636	787	10,356	710	30,000
Total	54	2,084	4,768	6,906	81,449	6,952	231,200
TOTAL STATE	1,409	36,605	96,093	134,107	1,415,745	152,722	5,106,865

* Crushed in Bundaberg.

† Crushed in Maroochy and Maryborough.

Of the 134,107 acres under cane the produce of 1,409 were used for plants, 36,605 acres were held over or newly planted, and 96,093 acres were crushed. Of the area held over, 9,190 acres or 25 per cent. were in the Rockingham group, 12,436 acres or 34 per cent. in the Edgecumbe group, 9,285 acres of it at Mackay, and 12,891 acres or 35 per cent. in the Burnett and Wide Bay group.

Of the acreage crushed, 15,301 acres were contributed by Cairns-Douglas; 17,683 acres by Ingham-Mourilyan; 4,423 by Ayr; 2,211 acres by Bowen; 20,762 acres by Mackay; 18,371 acres by Bundaberg-Gin Gin; and 12,414 acres by Childers-Maryborough-Tiaro; whilst the four districts of Logan, Marburg, Maroochy, and Nerang in the South together crushed 4,768 acres.

Of the 1,415,745 tons of cane obtained, 32 per cent. was obtained by the Rockingham division, 28 per cent. by Edgecumbe, 34 per cent. by Burnett-Wide Bay, and 6 per cent. by Moreton.

On comparing the ratios of contributions of sugar manufactured, these proportions are slightly departed from, Rockingham providing 35 per cent. of the total production, Edgecumbe 30 per cent., Wide Bay-Burnett 30 per cent., and Moreton 5 per cent., the quality of the crop proving much less satisfactory in Wide Bay-Burnett than in the other groups.

Molasses.—Utilisation of by-products is an axiom in all manufacture, and in this respect perhaps the most has not been accomplished in the process of sugar production. The burning of the trash, a course still largely in vogue, is hardly the best use to which it could be put, although the simplicity of this method of disposal is well calculated to encourage its adoption. Less excuse exists, perhaps, for the failure to utilise to a greater extent two by-products of the mill—viz., the megass, or bagass as it is sometimes called, and the molasses.

The possibilities existing in these articles have in the past in this State been largely ignored, and their disposal looked upon at times as a difficulty to be overcome. The megass, of course, when dry can be and is employed as fuel; the molasses also will readily burn, but special provision is desirable for its use in the furnace. Possessing great value as a food product, these methods of disposal leave much to be desired, and as by combining the two articles a valuable saccharine cake can be produced well adapted for feeding all classes of live stock it is well worthy of consideration whether the past waste in this direction should be continued. Many years ago a planter on the Logan placed such a product on the market, but in those days artificial feeding of cattle was but little practised, and a few severe winters wiped out for a time the plantations in that part of Queensland, rapidly maturing canes being then but little known.

It has recently been proved in the West Indies and the Sandwich Islands that a marketable product can be manufactured by mixing one-fifth of ground megass with four-fifths of molasses.

In the case of four factories, two of them important ones, no record of the molasses obtained was kept; the output from the others was 5,106,865 gallons, or, say, from 75 to 80 million pounds weight. Of this considerably less than half was put to profit.

In addition to the returned production for 1905, there was on hand from the previous season 797,653 gallons, making to account for 5,904,518 gallons. The quantity sold was 1,327,446 gallons; 591,732 gallons were used as feed chiefly for live stock; 27,680 gallons were employed as manure; and 977,812 were returned as in stock. Thus besides the produce of the four factories who kept no record, there was an evident waste of 2,979,848 gallons. On referring to the last table—Lb—it will be seen that the relation between the quantity of sugar made and the resulting molasses varies greatly. In Rockingham, for each ton of sugar manufactured, 32 gallons of molasses were returned; in Edgecumbe, 28 gallons to each ton; in Burnett-Wide Bay, 45 gallons; and in Moreton, 33 gallons. In the Wide Bay-Burnett alone, it will be noted, the proportion of molasses was high, a great deal of the low-lying cane having been severely cut with frost. It is, however, probable that a considerable quantity of molasses produced escapes record.

The following table shows the averages obtained in each of the cane districts last year:—

Lc.

Sugar Averages, 1905.

Divisions or Groups and Districts.	Tons of Cane per Acre Crushed.	Tons of Sugar per Acre Crushed.	Tons of Cane per Ton of Sugar.
Rockingham—			
Cairns and Douglas	15·26	1·72	8·87
Ingham and Mourilyan	12·55	1·56	8·04
Total	13·81	1·64	8·44
Edgecumbe—			
Ayr	19·23	2·34	8·23
Bowen	11·95	1·24	9·64
Mackay	13·75	1·56	8·82
Total	14·49	1·66	8·73
Port Curtis—			
Gladstone	6·33	*	*
Total	6·33	...	...
Burnett and Wide Bay—			
Bundaberg and Gin Gin	13·32	1·50	10·39
Childers, Maryborough, and Tiaro	18·91		
Gympie	16·76	†	†
Total	15·58	1·50	10·39
Moreton—			
Logan	15·71	1·14	13·82
Marburg	7·80	0·69	11·27
Maroochy	19·77	1·96	10·09
Nerang	16·28	1·12	14·59
Total	17·08	1·46	11·72
Total State	14·73	1·59	9·27

* Crushed in Bundaberg.

† Crushed in Maroochy and Maryborough.

The average yield of cane to each acre for 1905 was for the whole State 14·73 tons, against 16·04 tons in the previous year. The greatest average yield in any district was in the southern district of Maroochy, where 19·77 tons were obtained, and followed by 19·23 tons at Ayr, where irrigation is adopted; 18·91 tons at Childers-Maryborough-Tiaro; Gympie, on a small area, 16·76 tons; 16·28 tons at Nerang; 15·71 at the Logan; and 15·26 tons at Cairns-Douglas. These averages are all above the average for the whole State.

The average tonnage of sugar obtained to each acre cut for crushing was for the whole State 1·59 tons in 1905 and 1·78 tons in 1904. The maximum of yield for 1905 was secured at Ayr—namely, 2·34 tons—followed by Maroochy 1·96 tons. The only other district in which the State average was exceeded was Cairns-Douglas, where 1·72 tons was secured to each acre cut. Mackay and Ingham-Mourilyan both just fell short of the general average, having yields of 1·56 tons per acre each, whilst the Burnett-Wide Bay group returned 1·50 exactly.

The quantity of cane required on an average to make a ton of sugar varies considerably, the quality of the cane retrograding as the locality recedes from the equator. In Rockingham, the most northerly division, 1 ton of sugar was obtained from 8·44 tons of cane. In Edgecumbe the average was 8·73 tons; in Burnett-Wide Bay, 10·39; and in Moreton, 11·72.

A comparison of the crops for 1904-1905 in each district is afforded in the following table:—

L d.

Petty Sessions Districts.	Cultivation.			Production.					
	Area in 1904.	Area in 1905.	Increase or —Decrease in 1905.	1904.		1905.		Increase or —Decrease in 1905.	
				Area Crushed.	Sugar.	Area Crushed.	Sugar.	Area Crushed.	Sugar.
	Acres.	Acres.	Acres.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Ayr	6,227	6,583	356	4,242	10,994	4,423	10,337	181	— 657
Bowen	3,271	3,302	31	2,504	3,931	2,211	2,741	— 293	— 1,190
Bundaberg, Gin Gin, and Gladstone	23,308	26,364	3,056	16,382	47,881	18,395	46,373	2,013	— 1,508
Childers, Maryborough, and Tiaro	16,632	17,518	886	10,650		12,414		1,764	
Cairns and Douglas	17,028	19,695	2,667	13,108	26,563	15,301	26,334	2,193	— 229
Ingham and Mourilyan	19,544	23,197	3,653	15,189	26,089	17,683	27,605	2,494	1,516
Logan	2,174	2,491	317	1,142	980	1,869	2,124	727	1,144
Mackay	28,182	30,328	2,146	17,622	28,305	20,762	32,380	3,140	4,075
Marburg	410	543	133	191	120	250	173	59	53
Maroochy and Gympie	2,866	3,299	433	1,292	2,345	2,149	3,945	857	1,600
Nerang	675	787	112	419	480	636	710	217	230
Totals, 1904	120,317	...	...	82,741	147,688	...	...	...	...
Totals, 1905	...	134,107	...	...	...	96,093	152,722	...	...
Increase in certain Districts, 1905			13,790	...	...	...	...	13,645	8,618
Decrease in certain Districts, 1905			...	...	...	...	...	293	3,584
Net Increase in 1905			13,790	...	...	...	...	13,352	5,034
Net Decrease in 1905			...	...	...	...	...	...	...

In area under cultivation with sugar-cane there was an increase in every district, increases which exceeded 1,000 acres being Ingham-Mourilyan, 3,653 acres; Bundaberg-Gin Gin, 3,056 acres; Cairns-Douglas, 2,667 acres; and Mackay, 2,146 acres. With respect to area, the crop from which was cut for crushing—except for a small decrease at Bowen—every district also showed an increase, the chief increases being Mackay, 3,140 acres; Ingham-Mourilyan, 2,494 acres; Cairns-Douglas, 2,193 acres; Bundaberg-Gin Gin, 2,013 acres; and Childers-Maryborough-Tiaro 1,764 acres. Regarding sugar produced, six districts recorded increases and four districts decreases last year. The principal of the former were:—Mackay, 4,075 tons; Maroochy, 1,600 tons; Ingham-Mourilyan, 1,516 tons; and Logan, 1,144 tons; and, of the latter, Burnett-Wide Bay, 1,508 tons; and Bowen, 1,190 tons.

The following table furnishes for 1904 and 1905 information as to average yields in each sugar-producing division in the State:—

L e.

Division.	TO EACH ACRE CRUSHED.				TON CANE TO EACH TON SUGAR.	
	Tons of Cane.		Tons of Sugar.		1904.	1905.
	1904.	1905.	1904.	1905.		
Rockingham	15·42	13·81	1·86	1·64	8·29	8·44
Edgecumbe	15·76	14·49	1·77	1·66	8·88	8·73
Port Curtis	3·75	6·33	*	*	*	*
Burnett and Wide Bay...	17·14	15·58	1·77	1·50	9·71	10·39
Moreton	14·24	17·08	1·29	1·46	11·04	11·72
State	16·04	14·73	1·79	1·59	8·99	9·27

* Crushed in Bundaberg. From a small area only.

This table illustrates to what extent the 1905 crop was, as regards average, less satisfactory than that for 1904, and shows that the increased output for the former year was simply due to the increased area cut for crushing.

White-grown Cane.—Information gathered by the agricultural collectors as to the acreage and tonnage of white-grown cane differed considerably from that returned to the Excise Department. After investigation, I consider that whilst with regard to tonnage the excise figures are the more reliable, yet

the position is reversed with regard to acreage; the estimates contained in the following table have therefore been adjusted on those bases:—

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	714	10,898
	Ingham and Mourilyan	1,957	24,562
	Total	2,671	35,460
No. 2 at 4s. 8d.	Ayr	710	13,660
	Bowen	1,591	19,010
	Mackay	10,130	139,296
	Total	12,431	171,966
No. 3 at 4s. 4d.	Bundaberg, Gin Gin, Gladstone	7,353	97,846
	Childers, Maryborough, and Tiaro	6,316	119,454
	Total	13,669	217,300
No. 4 at 4s.	Logan	1,861	29,233
	Maroochy and Gympie	1,887	36,776
	Nerang	580	9,447
	Marburg	71	728
	Total	4,399	76,184
	Grand Total	33,170	500,910

For whilst an excise officer would closely scrutinise returns as regards weight of cane, for on the figures contained in them bounty would be paid, yet so long as he was satisfied that the cane in question came from a field upon which no coloured labour had been employed, he would not be greatly exercised as to the exact dimensions of that field.

Last year the produce of 33,170 acres were returned as having been grown without the intervention of coloured alien labour, from which 500,910 tons of cane were obtained, or an average yield of 15·10 tons to each acre. Thus the proportion of white grown to total cane was 34·5 per cent. of the acreage, and 35·4 per cent. of the tonnage. The ratios for the two immeditaely preceding years were:—Acreage, 1903, 28 per cent.; 1904, 31 per cent. Tonnage, 1903, 26 per cent.; 1904, 29 per cent.

North of Mackay the employment of coloured labour still greatly predominates, whilst in the Moreton division the opposite condition prevails. Between the districts of Ingham and Douglas, inclusive, 8 per cent. only of the area crushed there was white-grown. At Ayr the proportion was 16 per cent., at Bowen 72 per cent., at Mackay 49 per cent., in the Wide Bay-Burnett 44 per cent., and in the Moreton 92 per cent.

The amount of bonus paid for each of three bounty years is shown in the following table:—

L g.

—	1903.		1904.		1905.	
	Tonnage of Cane.	Amount of Bonus.	Tonnage of Cane.	Amount of Bonus.	Tonnage of Cane.	Amount of Bonus.
		£		£		£
1st District ...	37,660	9,415	32,131	8,002	35,459	8,850
2nd „ ...	106,333	24,811	166,441	38,620	171,967	40,256
3rd „ ...	40,283	8,728	143,421	31,055	217,300	47,105
4th „ ...	37,500	7,500	37,891	7,534	76,184	15,339
Total ...	221,776	50,454	379,884	85,211	500,910	111,550

Starting with a payment of £50,454 in 1903, the sum of £85,211 was required in the following year, an increase of 69 per cent.; whilst the amount paid last year, £111,550, showed a centesimal increase of 31 on the bonus for 1904.

During 1905 there were fifty-seven factories engaged in the conversions of sugar-cane into sugar. Particulars respecting these are furnished in the following statement:—

L h.

—	Works.	Hands Employed.	VALUE.	
			Machinery.	Land and Premises.
	No.	No.	£	£
Refineries } In operation, 1905	2	286	211,425	95,000
Juice Mills } In operation, 1905	6	36	13,500	530
Sugar Mills } In operation, 1905	49	2,003	1,441,947	209,193
Total	57	2,325	1,666,872	304,723

Besides forty-nine mills employed in the crushing of cane and the manufacture of raw sugar, there were six subsidiary mills crushing the cane only, the resulting juice being treated elsewhere. There were also two refineries for the manufacture of the refined article from the raw sugar produced. These establishments gave employment to 2,325 hands, and the capital invested in the industry amounted to £1,971,595.

Assistance to the sugar industry is given under the Sugar Works Guarantee Act, by facilitating the establishment of central sugar-mills worked on a kind of co-operative principle. Public funds are advanced by way of loan to be expended in the erection of necessary factories in suitable localities. Security for repayment of the advance comprises a lien over the mill and machinery and first mortgages over sugar farms in the benefited area.

Particulars respecting the condition of these loans kindly furnished by the Comptroller of Central Sugar-mills are as follow:—

	1904.			1905.		
Number of sugar-mills to which advances have been made under the Sugar Works Guarantee Act	11			11		
Under other conditions	2			2		
Number of Tramway Companies under the Sugar Works Guarantee Act	1			1		
	£	*s.*	*d.*	£	*s.*	*d.*
Total amount of advance up to 31st December under the Sugar Works Guarantee Act	532,786	0	6	532,786	0	6
Under other conditions	52,500	0	0	52,500	0	0
Indebtedness to 31st December under the Sugar Works Guarantee Act, including temporary advances	560,864	4	3	530,584	4	11
Under other conditions	22,914	2	8	18,566	17	7

Sugar Consumption.—The per capita consumption of sugar based on the average for a number of years of the production plus import minus export has been shown to be 114 lb., and this ratio is reasonably confirmed by the excise figures, and it has been decided, therefore, to retain this basis for the present. A comparison of the total and the per capita amount of sugar consumed in each State of the Commonwealth is given in the following table:—

Li.

Return showing the Annual Consumption of Sugar for the Year 1905, 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 1905—Tons	26,756	69,309	51,965	16,897	11,505	7,362	183,794	40,393	224,187
Average Annual Consumption per Capita for a Series of Years. To the nearest lb.	114	105	96	101	103	92	102	104	103

It might be assumed that the greatly reduced quantity of jam manufactured in the State must have resulted in a corresponding decrease in the sugar consumed, but as there is no evidence that any less quantity of Australian jam entered into consumption, the place of the Queensland jam being taken by the product of the other States, this hardly affects the question, and this assumption is confirmed by the fact that the quantity of sugar upon which excise was paid remains fairly constant, this tax on the sugar contained in southern jam used in Queensland being credited to this State. It must also be noted that considerably more sugar was used in 1905 in connection with tinned pineapples, confectionery, and temperance beverages.

The sugar consumption for the Commonwealth is approximately 185,000 tons, whilst the sugar output of New South Wales, the only other sugar-producing State, is about 20,000 tons per annum, so that for Australia the supply last year was still some 10,000 tons below the demand.

The following table furnishes information as to the import and export of sugar from and to places outside the Commonwealth:—

Lj.

Imports and Exports of Sugar during 1904 for each Australian State from and to Places beyond the Commonwealth.

State.	Imports.	Exports.	Net Imports.
	Tons.	Tons.	Tons.
Queensland	24	17	7
New South Wales	7,201	1,622	5,579
Victoria	27,167	1,307	25,860
South Australia	3,669	...	3,669
Western Australia	18	...	18
Tasmania	7	...	7
Total Commonwealth	38,086	2,946	35,140

From this it will be seen that the net imports during 1904—figures for 1905 are not available—amounted to 35,140 tons, against 89,229 tons in 1903 and 89,922 tons in 1902, the two satisfactory sugar crops of the last two years having resulted in a restricted import.

COTTON.

There was a marked increase in the cultivation of cotton during the year, when 171 acres, yielding 113,098 lb., were grown, as against 30 acres, yielding 25,832 lb., in 1904. The principal centre was the Moreton division, from which 112 acres, yielding 78,283 lb., were returned, whilst the remainder was

located in the Rockingham, Port Curtis, Burnett, and Downs divisions, with a small area in the Cook district, showing that the cultivation was distributed over the greater part of the coastal districts of the State. Most of the crop was ginned at Ipswich, where 93,000 lb. were treated. It has been ascertained that this figure has been slightly swelled by cotton actually grown in 1904, although ginned in 1905; but is more largely affected by the inclusion of the produce of numerous cultivated patches, which were individually too small to be recorded by agricultural collectors.

ARROWROOT.

The production of this commodity does not seem likely to expand. Local requirements and a small export being met, the industry remains stationary. Whether the requirements of the English Adulteration Act still prevent the introduction of the Queensland article to the home market under the name "Arrowroot," I am not sure; but some years ago it was decided in the United Kingdom that only the farina of *Maranta arundinacea* could be sold simply as arrowroot, and that the Queensland product must be clearly expressed as "Queensland Arrowroot," the starch of the *Canna edulis*.

It is generally admitted that the Queensland article is in no way inferior to the other, but, naturally, in competition this has to be proved, and in the old country the prejudice in favour of the well-established product would be difficult to overcome. It is deserving of consideration whether it might not be worth the farmers' while to cultivate the approved plant, so as to endeavour to secure a share of the British consumption without the handicap of a special label. The difficulty that presents itself is that the Canna is about twice as productive as the Maranta, so that there is a great inducement to plant the former, particularly as the product is quite as good. The alternatives that present themselves to enable growers to secure a footing in the home market are either to cultivate the Maranta and sell "arrowroot," or to endeavour to establish the "Queensland arrowroot" by offering at price materially below that of the West Indian article, which the greater yield per acre should permit of.

There were only 393 acres planted with arrowroot tuber in 1905. Particulars of the crop for the last two years were as follow:—

M.

District.	1904.		1905.		Increase or Decrease —	
	Area.	Production.	Area.	Production.	Area.	Production.
Rockingham—	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Herberton	2	30	4	8	2	— 22
Mourilyan	35	350	26	320	— 9	— 30
Total Rockingham ...	37	380	30	328	— 7	— 52
Moreton—						
Beaudesert	...	...	1	10	1	10
Brisbane	...	...	1	4	1	4
Caboolture	1	2	...	...	— 1	— 2
Cleveland	4	45	...	...	— 4	— 45
Logan	96	741	93	957	— 3	216
Marburg	2	5	1	2	— 1	— 3
Maroochy	15	202	18	238	3	36
Nerang	267	2,640	243	2,848	— 24	208
Redcliffe	1	7	...	...	— 1	— 7
Rosewood	2	7	3	50	1	43
Woodford	11	64	3	9	— 8	— 55
Total Moreton	399	3,713	363	4,118	— 36	405
Other Districts—						
Cook	1	1	...	...	— 1	— 1
Total State	437	4,094	393	4,446	— 44	352

There was a decrease of 44 acres in the area, and an increase in the yield of 352 tons last year, as compared with 1904. The centre of production is Nerang, where 243 acres, or 62 per cent., of the total area was planted in 1905. The adjoining district of Logan also contributed 93 acres.

The bulk of the crop was converted into commercial arrowroot, about one-tenth or 433 tons of tuber being used for pig feed. The following table furnishes particulars as to the manufacture of the starch from the root last year:—

Ma.

District.	Hands Employed.	Tuber.	Arrowroot.
		Tons.	Lb.
Mourilyan	3	300	67,200
Logan	8	757	156,800
Nerang	29	2,949	532,620
Others	...	7	1,900
Total	40	4,013	758,520

From this it will be seen that 758,520 lb. of arrowroot was obtained from 4,013 tons of tuber; and, as 4,446 tons were returned from 393 acres, it follows that 2,138 lb. of the manufactured product would be yielded by each acre.

The import, export, and production for each of the last five years is shown in the following table:—

M b.

ARROWROOT.

Year.	IMPORTS.		EXPORTS.		PRODUCTION.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Manufacturers' Value.
	Lb.	£	Lb.	£	Lb.	£
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	331,454	4,417	740,715	4,082
1905	2,240	12	597,325	5,439	758,520	4,028

The value of exports are returned at a rate considerably in excess of manufacturers' values, but much of the exported article is packeted, the cost of which, added to freights, &c., explains the difference.

TOBACCO.

The satisfactory average crop of 1904 was considerably improved upon last year, and that upon an extended acreage.

A comparison of the two crops is afforded in the following table:—

N.

District.	1904.		1905.		Increase or Decrease —	
	Area.	Produce Dried Leaf.	Area.	Produce Dried Leaf.		
	Acres.	Cwt.	Acres.	Cwt.	Acres.	Cwt.
Rockingham.						
Cardwell	...	...	2	20	2	20
Moreton.						
Nerang	...	...	5	53	5	53
Downs.						
Goondiwindi	2	8	4	29	2	21
Inglewood	95	861	162	2,089	67	1,228
Killarney	8	121	4	63	— 4	— 58
Texas	679	6,135	752	7,946	73	1,811
Warwick	...	...	4	30	4	30
Total Downs	784	7,125	926	10,157	142	3,032
Total State	784	7,125	933	10,230	149	3,105

There were 784 acres under tobacco in 1904, and 933 in 1905, or a numerical increase of 149 acres and a centesimal continued increase of 19 in the latter year. Against the 7,125 cwt. of dried leaf gathered in 1904, there were 10,230 cwt. in the following year, and the average yields obtained were 9·09 cwt. and 10·96 cwt. per acre respectively in each, an increased average production of 1·87 cwt. per acre in 1905. The cultivation of this crop is practically restricted to the districts of Texas and Inglewood, 914 of the total of 933 acres in 1905 being found in those districts. Killarney, where at one time much tobacco was produced, has practically gone out of the industry. In Texas, there were increases of 73 acres in area and of 1,811 cwt. in production, and in Inglewood of 67 acres and 1,228 cwt. last year as compared with 1904.

The quantity of tobacco imported and entered for home consumption during each of the last two years were as follow:—

N a.

Year.	Tobacco, &c.	Imported.	Entered for Home Consumption.*
		Lb.	Lb.
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
1905	Manufactured	1,178,092	1,157,950
	Unmanufactured	19,780	19,780
	Cigars	43,636	42,667
	Cigarettes	132,671	99,663
	Snuff	693	662
	Total	1,374,872	1,320,722

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

The manufacture of tobacco in Queensland, as a consequence of the operations of the tobacco trust, has greatly decreased, there being only one establishment engaged in this industry in the State.

Ignoring the quantity manufactured in Queensland, and taking that entered for home consumption, and assuming that three-fourths of all males twenty years of age and upwards are smokers, the average annual quantity used by each would be just short of 8 lb.

COFFEE.

Unfortunately the market for this crop is a limited one and already over-supplied. In Brazil, the chief source of supply, efforts are constantly being exercised to restrict production. The demand for this beverage is very small when compared with tea, and its greater costliness militates against its acquiring a more extended use; this has recently been further accentuated in Australia by the lowered price of the manufactured beverage consequent on tariff changes. The results attending its production during 1905 were not very satisfactory, as may be seen from the following table, where the experiences for 1904 and 1905 are portrayed:—

O.

District.	Not Bearing.		Bearing.				Average Yield per acre (Bearing).		1905. Increase or Decrease — Bearing Area.	1905. Increase or Decrease —
	1904.	1905.	1904.		1905.		1904.	1905.		
	Acres.	Acres.	Acres.	Lb.	Acres.	Lb.	Lb.	Lb.	Acres.	Lb.
Rockingham—										
Cairns	3	2	146	35,549	106	24,499	243	231	— 40	— 11,050
Douglas	...	...	16	8,800	10	5,016	550	502	— 6	— 3,784
Herberton	...	...	6	10,980	6	4,480	1,830	747	...	— 6,500
Mareeba	...	8	6	700	2	120	117	60	— 4	— 580
Mourilyan	...	...	26	16,000	33	18,640	615	565	7	2,640
Total Rockingham ...	3	10	200	72,029	157	52,755	360	336	— 43	— 19,274
Edgecumbe—										
Mackay...	5	11	44	27,070	32	9,516	615	297	— 12	— 17,554
Port Curtis—										
Rockhampton	14	14	3	560	3	800	187	267	...	240
Wide Bay and Burnett—										
Maryborough	5	...	7	4,704	5	1,500	672	300	— 2	— 3,204
Moreton—										
Maroochy	13	9	38	28,191	38	17,659	742	465	...	— 10,532
Other Districts—										
Cook	10	...	...	...	...	...	...	...	...	...
Total State	50	44	292	132,554	235	82,230	454	350	— 57	— 50,324

Both the area, the production, and the average yield show reductions in the latter year. Coffee-planting is pursued from Maroochy in the south to Douglas in the north, all up the eastern seaboard. The tree is unable to resist severe frosts; but, if protected from the west wind, thrives well around Brisbane wherever the soil is sufficiently rich. Of the 235 acres under crop in 1905, 157, or 67 per cent., were found north of Ingham; 38 acres, or 16 per cent., at Maroochy; and 32 acres, or 14 per cent., at Mackay. The average return per acre on the bearing area for the whole State was 350 lb. in 1905, against 454 lb. in the previous year. The best average to each acre was obtained at Herberton, where a return of 747 lb. was secured, followed by Mourilyan 565 lb., Douglas 502 lb., and Maroochy 465 lb. It is, however, only fair to state that the crops at Herberton and Douglas were from limited areas of 6 and 10 acres respectively.

The most important decrease in the productive area in 1905, as compared with 1904, was that of 40 acres at Cairns, whilst there was a slight increase of 7 acres at Mourilyan, in yield, decreases of 17,554 lb. at Mackay, 11,050 lb. at Cairns, and 10,532 lb. at Maroochy. In the latter case the area was the same in both years, but whilst in 1904 a return of 742 lb. to each acre was secured, last year as already stated, the crop was only 465 lb.

PUMPKINS AND MELONS.

As might be expected with the failure of the summer crop of maize, pumpkins also failed to show much improvement on the figures of the previous year. A slightly increased area was planted—viz., 10,606 acres, against 8,991 acres in the previous year; and the yield was 37,079 tons, compared with 30,970 in 1904. The production falls far short of that for 1901 and 1903, when 56,297 tons and 62,102 tons were returned.

FRUIT.

The year 1905 proved far from satisfactory to the orchardist; much of the fruit was so badly affected by the fly that it was valueless either for sale or home use.

Vines, as has not infrequently been the case, suffered severely from hail shortly before maturity, and the later crop of strawberries was ruined by the dry weather, which, followed by extremely heavy rain, closed the fruiting season prematurely. It is satisfactory to note the expansion of the culture of both apples and pineapples, and that although in neither case were the returns so large as has been recorded on many previous occasions, yet as the extension must consist of plantations yet to mature, the future prospect is hopeful.

VINES, GRAPES, AND WINE.

The experience with respect to this crop was not quite so satisfactory as in 1904, but considerably better than that for 1903. Although the area of bearing vines has slightly increased, the total area planted is rather less than in 1904, some vineyards having been ploughed out on exhibiting signs of disease. A comparison of the crops for 1904 and 1905 is afforded by the following table:—

Q.

Year.	VINEYARD.			Grapes Gathered.	Average Yield.
	Acres Bearing.	Acres not Bearing.	Total.		
				Lb.	Lb.
1904	1,647	547	2,194	3,087,835	1,875
1905	1,717	327	2,044	3,017,743	1,758

The yield has, of course, to be given in the form in which the farmer obtains his crop—namely, grapes—and the subsequent manufacture of some of these into wine treated as a separate industry. Of the total area under grapes in 1905, 1,717 acres, or 84 per cent., were bearing, yielding 3,017,743 lb. of grapes, or an average return to each acre of 1,758 lb. The average return to each vine were—1904, 2·68 lb.; and 1905, 2·51.

The crops for the past two years are compared in the following table:—

Q a.

Petty Sessions District.	AREA UNDER VINES.								
	1904.			1905.			Increase or Decrease—in Latter Year.	1904.	1905.
	Bearing.	Not Bearing.	Total Area.	Bearing.	Not Bearing.	Total Area.		Grapes Gathered.	Grapes Gathered.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Lb.	Lb.
Brisbane	223	67	300	268	28	296	— 4	410,148	349,313
Gatton	91	23	114	96	10	106	— 8	249,562	204,150
Gympie	32	17	49	31	12	43	— 6	37,345	34,551
Highfields	40	3	43	29	5	34	— 9	105,606	100,566
Logan	73	18	91	60	10	70	— 21	109,457	99,374
Maryborough	45	14	59	36	5	41	— 18	73,588	79,615
Rockhampton	69	2	71	62	9	71	...	114,560	78,507
Roma	216	206	422	296	119	415	— 7	322,626	289,040
Rosewood	59	29	88	52	...	52	— 36	48,490	5,900
South Brisbane	125	12	137	126	4	130	— 7	247,061	269,412
Stanthorpe	26	41	67	33	48	81	14	50,832	51,080
Toowoomba	201	10	211	192	6	198	— 13	391,401	492,192
Warwick	44	4	48	57	6	63	15	66,250	102,714
All other Districts	393	101	494	379	65	444	— 50	860,909	861,329
Total	1,647	547	2,194	1,717	327	2,044	— 150	3,087,835	3,017,743

Outside the metropolitan districts the principal centres of viticulture were Roma and Toowoomba. Taking the petty sessions districts of Brisbane and South Brisbane together, there were 426 acres under vines, of which 394 were bearing in 1905, yielding a return of 618,725 lb. of grapes, or an average to each acre of 1,570 lb. The production and average yield for the same districts in 1904 were 657,209 lb. and 1,835 lb. respectively. Roma had an area of 415 acres under vines in 1905, a decrease of 7 acres on that of the previous year. Of this only 296 acres were bearing, returning 289,040, or an average of 976 lb. In Toowoomba, there were 198 acres, of which all but 6 acres were bearing, yielding 492,192 lb., an average of 2,564 lb. to each acre. A relatively large reduction in both acreage and production took place at Rosewood, where portions of two important vineyards were so badly damaged by hail as to involve the necessity of ploughing out.

The average yield obtained for five years in the four most important vine districts are shown in the following table:—

Q b.

—	1901. Average per Acre.	1902. Average per Acre.	1903. Average per Acre.	1904. Average per Acre.	1905. Average per Acre.
	Lb.	Lb.	Lb.	Lb.	Lb.
Brisbane	3,002	2,536	2,310	1,761	1,303
Roma...	1,936	1,358	1,872	1,494	976
South Brisbane	2,699	1,827	1,961	1,976	2,138
Toowoomba	4,213	2,601	1,666	1,947	2,564
Total State	2,403	1,755	1,590	1,875	1,758

The best year of the quinquennium was 1901, when the average for the whole State was 2,403 lb., and for Toowoomba 4,213 lb., and for Brisbane 3,002.

As an industry, the chief object of the vineyard is the production of wine. No great progress in this direction has been recorded for a long time. The following table shows the quantity of wine made and brandy distilled during each of the past five years:—

Q c.

Years.	Number of Makers.	Quantity of Wine Made.	Quantity of Brandy Distilled.
		Gallons.	Gallons
1901	538	148,835	1,112
1902	391	100,852	2,199
1903	251	38,558	692
1904	309	60,433	574
1905	320	66,926	1,194

Consequent on the introduction of the uniform Commonwealth tariff, the production in 1903 fell off greatly, owing to the importation of wines from the southern States. The experience of the last two years, however, seem to point to a definite, if only an inconsiderable, recovery. It must be borne in mind that even with a substantial protection, the wine industry failed to flourish long prior to federation. The year of maximum output was 1895, when 238,208 gallons were made; but this declined to but little more than one-half three years later. The sites of production for the wine made is shown in the following table:—

Q d.

1905.

Petty Sessions District.	Number of Makers.	Quantity of Wine Made.	Quantity of Brandy Distilled.
		Gallons.	Gallons.
Brisbane	24	8,039	344
Clifton	5	9,374	...
Gatton	17	2,139	...
Highfields	40	3,989	...
Logan	31	2,225	...
Roma	6	10,950	500
South Brisbane	19	4,597	...
Toowoomba	90	12,485	...
All other Districts	88	13,128	350
Total	320	66,926	1,194

The largest output was at Toowoomba, where a large number of small growers make wine, chiefly for their own consumption; 90 persons turned out 12,485 gallons, or only 138 gallons to each maker. Roma would appear to be the only district in which the production of wine partakes of the character of an industry. There 6 makers turned out 10,950 gallons of wine, equal to an average per maker of 1,825 gallons, itself a comparatively insignificant quantity.

BANANAS.

Although there was a reduced area under bananas in 1905, as compared with 1904, yet a much more satisfactory return was obtained in the former year. The following table furnishes particulars as to the two crops:—

R.

District.	Area.		Production.		Increase or Decrease —	
	1904.	1905.	1904.	1905.	Area.	Quantity.
	Acres.	Acres.	Bunches.	Bunches.	Acres.	Bunches.
Brisbane	264	353	51,885	48,025	89	— 3,860
Cairns	1,481	1,399	267,036	307,369	— 82	40,333
Cardwell	521	610	167,620	243,200	89	75,580
Logan	155	86	19,516	15,476	— 69	— 4,040
Maroochy	583	448	82,889	127,726	— 135	44,837
Maryborough	159	118	19,827	22,070	— 41	2,243
Mourilyan	2,848	2,632	1,287,528	1,643,447	— 216	355,919
Redcliffe	160	150	33,300	39,658	— 10	6,358
All other Districts	509	402	47,205	62,297	— 107	15,092
Total	6,680	6,198	1,976,806	2,509,268	— 482	532,462

The fruit fly was, as in former years, productive of much mischief. Whilst all are agreed as to the advisableness of reducing, if it is impossible to eradicate, this pest, considerable diversity exists as to the best method of doing so. It is, however, quite certain that concerted action is indispensable to obtain any adequate result, and, judging by past experience in similar matters, coercive measures will prove the only way of securing this.

There were 6,198 acres of banana plantations in 1905, against 6,680 in the previous year, a decrease of area of 482 acres; the yield obtained was 2,509,268 bunches, against 1,976,806 bunches, an increase of 532,462 bunches. Mourilyan is still the chief centre of production, contributing 42 per cent. of the area per acre, and 65 per cent. of the output. The average returns in bunches obtained during

1905 throughout the State and in the eight most important districts were:—State, 405; Mourilyan, 624; Cardwell, 399; Maroochy, 285; Redcliffe, 264; Cairns, 220; Maryborough, 187; Logan, 180; and Brisbane, 136.

PINEAPPLES.

This fruit also was more largely grown in 1905. Figures for the past two years are furnished in the following table:—

S.

District.	1904.		1905.		Increase or Decrease —	
	Area.	Production.	Area.	Production.	Area.	Production.
	Acres.	Dozen.	Acres.	Dozen.	Acres.	Dozen.
Brisbane	731	230,155	776	238,867	45	8,712
Caboolture	49	6,890	55	6,347	6	— 543
Cairns	60	24,420	71	46,560	11	22,140
Cleveland	215	36,647	291	58,791	76	22,144
Logan	243	67,701	189	58,993	— 54	— 8,708
Maroochy	158	18,617	171	22,266	13	3,649
Maryborough	87	27,205	82	24,302	— 5	— 2,903
Redcliffe	35	5,160	28	9,740	— 7	4,580
Rockhampton	36	6,109	44	6,650	8	541
South Brisbane	38	7,652	43	11,027	5	3,375
All other Districts	129	23,243	95	23,340	— 34	97
Total	1,781	453,799	1,845	506,883	64	530,084

In 1904, there were 1,781 acres under pineapples, against 1,845 in the following year, or an increase of 64 acres in 1905, whilst the production increased from 453,799 to 506,883 dozen. The greater portion of the land under pineapples is found within 100 miles of Brisbane. The area embracing 1,558 acres, and the yield 406,755 dozen, or 84 per cent. and 80 per cent. respectively of the total acreage and production.

The canning of pineapples has recently progressed to an important extent. During 1905, there were 1,411,296 lb. of this fruit preserved, of a total value of £12,687.

The quality of the Queensland fruit is exceptionally good, and with care in selection and preserving an export trade already of considerable importance will rapidly expand. The output for the current year is likely to greatly exceed that for 1905, as it is known that there was considerable activity amongst manufacturers during the early part of this year. The average yield for the State to each acre during 1905 was 275 dozen, against 255 dozen in the previous year.

ORANGES.

Last year's season for the crop was not particularly favourable; it is, therefore, satisfactory to note that the crop maturing for the current year is likely to be a record one, both with regard to quantity and quality.

The following table compares the results for 1904 and 1905:—

T.

Petty Sessions District.	Area.		Bearing. 1905.	Not yet bearing 1905.	Production.		Increase, or Decrease —	
	1904.	1905.	Area.	Area.	1904.	1905.	Area.	Production.
	Acres.	Acres.	Acres.	Acres.	Dozen.	Dozen.	Acres.	Dozen.
Beaudesert ...	26	22	18	4	21,702	18,980	— 4	— 2,722
Bowen	153	161	102	59	140,268	93,816	8	— 46,452
Brisbane	57	53	45	8	58,589	15,153	— 4	— 43,436
Bundaberg ...	46	39	29	10	27,039	12,116	— 7	— 14,923
Caboolture... ...	62	62	32	30	56,418	47,241	...	— 9,177
Cairns	97	114	55	59	65,391	117,179	17	51,788
Cardwell	179	201	83	118	115,421	159,070	22	43,649
Charters Towers ...	29	28	19	9	48,872	40,740	— 1	— 8,132
Cleveland	37	32	16	16	8,898	16,899	— 5	8,001
Cook	49	51	45	6	40,060	51,955	2	11,895
Douglas	76	68	52	16	42,520	57,972	— 8	15,452
Esk	29	30	17	13	40,937	23,927	1	— 17,010
Gatton	183	189	170	19	494,968	217,208	6	— 277,760
Gympie	60	58	37	21	41,802	36,951	— 2	— 4,851
Herberton	32	31	22	9	63,339	40,808	— 1	— 22,531
Logan	135	129	93	36	97,523	114,631	— 6	17,108
Mackay	36	44	31	13	43,448	32,685	8	— 10,763
Maroochy	713	730	318	412	441,852	579,856	17	138,004
Maryborough ...	312	302	180	122	345,071	214,189	— 10	— 130,882
Mourilyan	31	34	29	5	24,347	33,749	3	9,402
Nerang	142	129	69	60	159,807	15,592	— 13	— 144,215
Redcliffe	24	29	24	5	18,920	14,795	5	— 4,125
Rockhampton ...	97	70	38	32	68,949	31,190	— 27	— 37,759
South Brisbane ...	51	38	24	14	36,013	8,443	— 13	— 27,570
Tiaro	47	46	32	14	35,221	25,282	— 1	— 9,939
Toowoomba ...	46	52	48	4	38,076	73,588	6	35,512
All other Districts...	357	335	221	114	244,218	241,932	— 22	— 2,286
Total	3,106	3,077	1,849	1,228	2,819,669	2,335,947	— 29	— 483,722

It will be seen that the area of orchard was nearly the same in both years, 1905 showing 29 acres less than 1904. The position was reversed with regard to area in bearing, there being 1,790 acres in 1904 and 1,849 acres in the following year, or an increase of 59 acres in the latter. Notwithstanding the greater area yielding fruit in 1905, there was a decreased production in 1905 of 483,722 dozen, the returns being 2,819,669 dozen in 1904 and 2,335,947 dozen in 1905. The district of Maroochy is the chief site of production, the output for 1905, 579,856 dozen, more than doubling that of any other district. Gatton—where, however, there was a great decline on the return for 1904—furnished the next best yield, 217,208 dozen, followed by Maryborough, 214,189 dozen—also a great reduction on the previous year. The districts next in order were Cardwell, 159,070 dozen; Cairns, 117,179 dozen; and Logan, 114,631 dozen. In 1905, the total bearing area yielded an average return of 1,263 dozen to each acre, the average for the State over a period of twenty years being 1,908 dozen. The average yield obtained from each bearing tree was 14·01 dozen, against 17·52 dozen in the previous year.

MANGOES.

This fruit is increasing in favour with the consumer. One of those highly-flavoured tropical products, the taste for which has to be acquired, the demand was of slow growth. A few years ago in Brisbane it was exceptional to meet persons who cared for mangoes, but now they meet with general acceptance. There are so many varieties of the fruit that a wide margin of choice as to type and flavour is available. The acreage and production for the two years last past were as follow:—

U.

District.	Area.		Bearing, 1905.	Not yet Bearing, 1905.	Production.		Increase or Decrease — 1905.	
	1904.	1905.			1904.	1905.		
	Acres.	Acres.	Acres.	Acres.	Dozen.	Dozen.	Acres.	Dozen.
Bowen	31	24	19	5	47,678	58,807	– 7	11,129
Brisbane	16	18	10	8	6,223	7,300	2	1,077
Bundaberg	28	28	26	2	49,130	52,090	...	2,960
Cairns	7	10	8	2	12,918	49,334	3	36,416
Cleveland	15	13	6	7	1,237	5,169	– 2	3,932
Cook	15	16	15	1	78,610	116,600	1	37,990
Douglas	11	11	5	6	79,730	43,310	...	– 36,420
Ingham	10	13	12	1	18,590	54,075	3	35,485
Logan	30	22	18	4	2,565	12,752	– 8	10,187
Mackay	29	46	43	3	215,526	151,004	17	64,522
Maroochy	9	10	5	5	3,314	3,735	1	421
Maryborough	36	33	25	8	48,344	60,100	– 3	11,756
Mourilyan	13	13	13	...	1,862	61,226	...	59,364
Rockhampton	25	28	21	7	30,986	41,594	3	10,608
South Brisbane	14	10	7	3	5,537	5,807	– 4	270
Tiaro	11	10	7	3	1,015	8,973	– 1	7,958
Townsville	17	15	13	2	73,158	46,612	– 2	– 26,546
All other Districts	65	54	42	12	185,169	132,260	– 11	– 52,909
Total	382	374	295	79	861,592	910,748	– 8	49,156

There were 382 acres in 1904, against 374 acres in 1905, a small decrease of 8 acres. Last year 295 acres were bearing, and yielded a return of 910,748 dozen. The bearing area and production for 1904 were 292 acres and 861,592 dozen, an increase for last year in output of 49,156 dozen.

All fruit is at its best gathered ripe from the tree, but this rule is especially applicable to the mango. It, therefore, loses much of its quality when picked green enough to carry considerable distances; but, notwithstanding this, mangoes are exported with success to the southern States, and this trade is likely to extend. The tree, under favourable conditions, bears most prolifically, the fruit thinning out naturally during the maturing season. The more advanced of these windfalls are in demand for the manufacture of chutney, being at times peeled, sliced, and evaporated, to supply the manufacturer throughout the year.

STRAWBERRIES.

The dry weather proved very disastrous to this fruit during 1905; and, although not the complete failure that it was in 1902, only about one-half of an average crop was secured. From the following table the experience of each of the past two years may be obtained:—

V.

Petty Sessions District.	Area.		Production.		Increase or Decrease —	
	1904.	1905.	1904.	1905.	1904.	1905.
	Acres.	Acres.	Quarts.	Quarts.	Acres.	Quarts.
Brisbane	9	12	7,928	7,312	3	– 616
Bundaberg	5	6	3,652	4,917	1	1,265
Cleveland	44	70	68,499	60,293	26	– 8,206
Gympie	3	5	719	810	2	91
Maroochy	78	59	86,311	55,536	– 19	– 30,775
South Brisbane	14	16	15,722	6,876	2	– 8,846
All other Districts	8	5	4,695	2,484	– 3	– 2,211
Total	161	173	187,526	138,228	12	– 49,298

In 1904, from 161 acres 187,526 quarts were gathered, against 138,228 quarts from 173 acres in the following year, so that, with an increase of 12 acres in the area, the production proved less by 49,298 quarts. There were 26 more acres planted at Cleveland, but 8,206 fewer quarts of fruit marketed. At

Maroochy, the chief source of supply, there was a reduction in area and output amounting to 19 acres and 30,775 quarts. The average yield for the State last year was 799; those for Cleveland and Maroochy, which districts contributed 75 per cent. of the total area and 84 per cent. of the total production, being 861 and 941 quarts respectively; very unsatisfactory returns from other districts reducing the total average.

APPLES.

The cultivation of this fruit tree is gradually assuming larger proportions, which is a matter of congratulation, as the apple is a fruit well adapted for export, and even for local consumption, its good keeping qualities render it a most desirable addition to the items of production.

The following table furnishes information as to the crop of this fruit during the past two years:—

W.

District.	Area.		Increase or Decrease—1905.	Bearing, 1905.	Not Bearing, 1905.	Production.		Increase or Decrease—1905.
	1904.	1905.				1904.	1905.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Allora	5	7	2	4	3	397	196	– 201
Beaudesert	6	5	– 1	3	2	309	135	– 174
Clifton	9	9	...	6	3	462	462	...
Crow's Nest	4	9	5	7	2	99	348	249
Dalby	6	7	1	3	4	202	208	6
Herberton	5	4	– 1	2	2	165	138	– 27
Highfields	6	5	– 1	4	1	571	382	– 189
Killarney	6	2	– 4	2	...	207	157	– 50
Stanthorpe	403	429	26	201	228	12,870	11,463	– 1,407
Toowoomba	27	31	4	27	4	2,619	2,794	175
Warwick	12	11	– 1	9	2	203	482	279
All other Districts	27	18	– 9	14	4	1,058	597	– 461
Total	516	537	21	282	255	19,162	17,362	– 1,800

The area of apple orchard increased from 516 acres in 1904 to 537 acres in 1905, the former figure being an increase of 73 acres over the area for 1903. From 280 acres in 1904 there were gathered 19,162 bushels of fruit, whilst last year only 17,362 bushels were obtained from 282 acres. Out of the total area under apples, 429 acres or 80 per cent. of the whole area were grown at Stanthorpe, 31 acres at Toowoomba, and 11 acres at Warwick. Stanthorpe contributed 11,463 bushels, or 66 per cent. of the total production. The average yield per acre for each of the last two years was—1904, 68 bushels, and 1905, 62 bushels, the returns secured last year at Stanthorpe, Toowoomba, and Warwick being 57 bushels, 103 bushels, and 54 bushels respectively. The average yield obtained at Toowoomba being practically double those of Stanthorpe and Warwick.

OTHER FRUITS.

Full details respecting these can be obtained by a reference to Table XI. of the Appendix.
Totals for 1905 respecting a few of the more important kinds are summarised below:—

	Acres.	
Cocoanuts	523	6,015 dozen.
Peaches	389	20,070 bushels.
Plums	229	12,849 „
Apricots	57	4,399 „
Pears	41	2,052 „
Lemons	39	23,792 dozen.

Cocoanuts.—The area with respect to cocoanuts is not very reliable. The palms are planted in a desultory manner, are necessarily much scattered, and in many instances receive little or no attention, consequently it is a little difficult to determine the area occupied, which is probably over estimated. The figures for 1905 show a slight increase in area and decrease in production as compared with the previous year.

Peaches.—This fruit will bear after a fashion without any cultivation, and for the most part is allowed to do so. With slight exception, no attempt is made with the peach to secure the best results, although under proper conditions one of the choicest of fruits. As at present treated, it is a real danger to the fruit industry, and the drastic treatment by extermination of all trees not properly attended to and deserving of cultivation would prove most beneficial. There is little doubt the foregoing figures by no means comprise the total output, a number of small areas being undoubtedly covered under the return of garden and orchard.

Plums.—The area under this useful fruit is rapidly assuming important dimensions. The chief sites of production are comprised in the Downs and Moreton divisions. The climate and soil of Stanthorpe and its neighbourhood seem well adapted to nearly all the many varieties of plum.

Apricots.—There was an additional 10 acres under this fruit last year, and considerably more than a corresponding increase in production. The cultivation of this fruit is almost entirely confined to the Downs, from whence 52 of the total of 57 acres were returned.

Pears.—Of the 41 acres, 36 were found on the Downs and 5 in the Moreton divisions, the latter area, however, proving the much more prolific. In 1904, there were 36 acres under this fruit, yielding 1,914 bushels, or an average per acre of 53 bushels, against that of 50 bushels last year.

Lemons.—Seeing that all citrus fruits give most satisfactory results in Queensland, when proper attention is bestowed upon their cultivation, it is difficult to understand why this fruit should still figure

so largely amongst imports from abroad. There was a reduced area returned as under lemons in 1905 to that shown in 1904. This was partly due to a small area so returned in the latter year, really proving to be under limes, and partly to a few small areas having been abandoned.

In addition to the foregoing, the following fruits were also included in the agricultural books:—Passion fruit 34 acres, 3,679 bushels; cherries, 32 acres, 173 bushels; custard apples, 26 acres, 1,450 bushels; persimmons, 11 acres, 1,164 bushels; nectarines, 9 acres, 146 bushels; pawpaw, 8 acres, 1,138 dozen; figs, 7 acres, 504 bushels; quinces, 7 acres, 655 bushels; Cape gooseberries, 6 acres, 7,204 quarts. It is impossible to include headed columns in the collection books for every variety of crop. Subsidiary crops, therefore, are supposed to be entered in one of a few blank columns provided for that purpose. Under these circumstances it will be readilly understood that the completeness of these for each district is dependent upon the care and scrutiny of the collector. It is very probable that the foregoing returns of other fruit are short of the actual production.

OTHER VEGETABLES.

Particulars respecting these will be found in the special table in the Appendix. A summary of the chief items is given in the following table:—

X.

—	1904.		1905.	
	Acres.	Produce.	Acres.	Produce.
Beans	72	6,366 bushels	107	10,106 bushels
Cabbages and Cauliflowers ...	459	177,461 dozen	444	150,703 dozen
Cucumbers	257	101,139 dozen	223	85,873 dozen
Onions	55	3,611 cwt.	96	4,565 cwt.
Peas	76	6,233 bushels	89	5,597 bushels
Tomatoes	318	34,882 bushels	402	45,868 bushels
Turnips	172	1,245 tons	148	733 tons
Yams	87	73 tons	65	43 tons

A large quantity of vegetables that can quite well be grown in Queensland are still imported from the southern States. In the aggregate, there was a considerably greater area under the eight crops above recorded in 1905 than in 1904, but the total area of 1,574 acres in the former year is itself a very inconsiderable one. Onions and tomatoes showed substantial increases of area, but the firstnamed, unfortunately, did not return a relatively increased production.

MISCELLANEOUS CROPS.

Table XI. in the Appendix furnishes full information as to crops not specially returned in the principal tables, but being there included under the head of "Other Crops" only.

Broom Millet.—This is among the most important of the miscellaneous crops. Last year the area sown exceeded that for 1904 by 21 per cent. The following table compares the crops for the two years in question:—

X a.

Division and District.	BROOM.				Increase or Decrease. —	Increase or Decrease. —	AVERAGE YIELD PER ACRE.	
	1904.		1905.				1904.	1905.
	Acres.	Lb.	Acres.	Lb.	Acres.	Lb.	Lb.	Lb.
Rockingham—								
Herberton	15	4,500	2	2,300	— 13	— 2,200	300	1,150
Edgecumbe—								
Bowen	1	672	1	600	...	— 72	672	600
Burnett and Wide Bay—								
Bundaberg	4	3,330	3	2,000	— 1	— 1,330	833	667
Moreton—								
Beaudesert	15	7,220	24	16,592	9	9,372	481	691
Brisbane	...	...	2	1,000	2	1,000	...	500
Dugandan	48	31,220	30	21,048	— 18	— 10,172	650	702
Gatton	14	9,438	39	22,867	25	13,429	674	586
Ipswich	...	...	8	20,000	8	20,000	...	2,500
Laidley	57	32,364	116	55,016	59	22,652	568	474
Logan	58	52,945	45	31,108	— 13	— 21,837	913	691
Nerang	11	5,500	5	2,450	— 6	— 3,050	500	490
Rosewood	...	...	1	800	1	800	...	800
Downs—								
Allora	...	...	1	1,792	1	1,792	...	1,792
Killarney	3	2,240	3	11,000	...	8,760	747	3,667
Toowoomba	9	6,720	15	7,142	6	422	737	476
Warwick	6	2,000	...	...	— 6	— 2,000	333	...
Other Districts—								
Springsure	2	800	...	...	— 2	— 800	400	...
Total	243	158,949	295	195,715	52	36,766	654	663

From 243 acres in 1904, 158,949 lb. of broom millet were obtained, the corresponding figures for 1905 being 295 acres, 195,715 lb.; the average yields for the two years being—1904, 654 lb.; 1905, 663 lb. to each acre. Broom millet is principally cultivated in the Moreton division, the focus being around Laidley.

There was a great advance last year both in the quantity of broom millet worked up into brooms, and also as to the proportion of it that was Queensland grown. This may be seen from the following table:—

X b.

Year.	Total.	Queensland Grown.	Grown Elsewhere.
	Lb.	Lb.	Lb.
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
1905	202,869	186,672	16,197
Mean of Five Years	142,909	75,492	67,417

In 1905 there were 202,869 lb. of millet used in the various broom factories of the State, or 30,742 lb. more than in 1902, the year of next greatest consumption; but whilst in 1902 only 34,828 lb., or 20 per cent. of the total, was Queensland grown, in 1905, 186,672 lb., or 92 per cent. of the whole, was produced in the State.

Other Miscellaneous Crops.—Lucerne left to seed for sowing the large areas of this plant, for cutting as green forage or for mowing for hay, occupied 1,017 acres in 1905, from which 247,700 lb. of seed were obtained. This is not a large return, but lucerne is frequently left for seeding, only after some years of continuous growth for fodder, and in the later stage of its growth would not be so luxurious as if reserved specially for seed at an earlier period of its existence.

Canary Seed.—A great extension was shown in the area under this crop—viz., from 254 acres in 1904 to 617 acres in 1905. The yield, however, was comparatively poor, only 186,736 lb. being obtained. This crop is confined to the Downs division.

Mangel Wurzel.—There were 148 acres planted with this valuable root crop last year, from which 1,124 tons were obtained. In 1904, there were 197 acres planted, yielding 1,914 tons, or average returns of 7·6 tons and 9·7 tons respectively to each acre.

Other crops recorded were—peanuts, 57 acres, 79,484 lb.; grass seed, 44 acres, 20,624 lb.; sisal hemp and ramie, 26 acres, no return yet; cow pea, 22 acres, 397 bushels; and cassava, 6 acres, 60 tons.

HAY CROPS.

These are fully dealt with in detail in Appendix Tables Nos. VI., VII., and XII., a summary from which, with respect to the principal varieties of hay crops, is furnished in the following table:—

Y.

—	Area.		Increase or Decrease—	Production.		Increase or Decrease—
	1904.	1905.		1904.	1905.	
	Acres.	Acres.	Acres.	Tons.	Tons.	Tons.
Wheat	3,137	2,856	– 281	3,608	2,295	– 1,313
Oats	9,076	4,446	– 4,630	11,549	4,983	– 6,566
Lucerne	35,009	28,564	– 6,445	62,970	47,017	– 15,953
Other	1,518	1,559	41	2,535	2,534	– 1
Total	48,740	37,425	– 11,315	80,662	56,829	– 23,833

Last year lucerne occupied more than three-fourths of the whole of the land under hay; in 1904 the ratio was not quite so large. In 1905 there were 37,425 acres mown for hay of all kinds, against 48,740 acres in the previous year, a decrease of 11,315 acres. The hay harvested amounting to 56,829 tons in the former and 80,662 tons in the latter year, or a decrease of 23,833 tons. The average yields to each acre for the two years for hay of all kinds was—1904, 1·65 tons; and 1905, 1·52 tons respectively. In 1905, of the total area of 37,425 acres, 28,564 acres were under lucerne, 4,446 were under oats, 2,856 under wheat, leaving only 1,559 acres for all other kinds of hay crops. The average return per acre for each of the three crops mentioned were—lucerne, 1·65 tons; oats, 1·12 tons; and wheat, 0·80 tons.

GREEN FORAGE CROPS.

As might be expected with the expansion of the dairying industry, the culture of forage increases. In 1905, 30,322 more acres than in 1904 were so treated, wheat being accountable for 13,281 acres; lucerne, 6,846 acres; oats, 1,379 acres; and other kinds which would include barley, 8,816 acres of the increase. It is probable that, with respect to wheat and barley, the figures would not have been so large except for climatic reasons, the crops in question having been cut green in despair of it ever reaching maturity; attention has been called to these points under their respective headings.

ARTIFICIALLY SOWN PASTURE.

This valuable adjunct to the business of the farmer is finding increased favour. Corresponding to the meadow land of the old country, it is in like manner utilised now for grazing and then shut up for a while for the purpose of taking off a crop of hay. It naturally follows that, depending on the will of the owner, the fluctuations in the areas so treated are greater than with annually sown crops; moreover, as land

utilised in this manner is not included in the cultivated area, the determination of the farmer affects also the total area tabulated as under cultivation. In 1905, there were 40,802 acres so described, the area in 1904 being 35,589 acres, and in 1903 only 15,639 acres, the greater portion being laid down in lucerne; the effect on the cultivated area, following on the manner in which the crop was utilised, can be readily understood. The following table furnishes information as to the areas returned as under artificial pasture for each of the past two years:—

Z.

District.	1904.	1905.	Increase, 1905.	Decrease, 1905.
	Acres.	Acres.	Acres.	Acres.
Allora	1,047	935	...	112
Beaudesert	335	368	33	...
Clifton	3,845	7,645	3,800	...
Crow's Nest	5,303	4,407	...	896
Dalby	888	1,841	953	...
Dugandan	315	73	...	242
Esk	991	429	...	562
Gatton	2,348	2,267	...	81
Herberton	1,406	1,511	105	...
Highfields	963	205	...	758
Ipswich	480	45	...	435
Killarney	278	271	...	7
Maroochy	2,602	3,203	601	...
Nanango	1,305	1,476	171	...
Nerang	695	1,486	791	...
Toowoomba	8,334	7,738	...	596
Warwick	2,685	5,024	2,339	...
Woodford	766	789	23	...
All other Districts	1,003	1,089	86	...
Total State	35,589	40,802	5,213	...

ENSILAGE.

The silo is not much in use as a method of preserving fodder, and declined by 30 per cent. last year. Particulars for 1904 and 1905 will be found in the following table:—

Z a.

District.	1904.	1905.	Increase, 1905.	Decrease, 1905.
	Tons.	Tons.	Tons.	Tons.
Allora	250	400	150	...
Brisbane	15	...	...	15
Cairns	60	80	20	...
Clifton	13	...	...	13
Crow's Nest	28	...	...	28
Dalby	...	30	30	...
Esk	2	...	...	2
Gatton	...	32	32	...
Gladstone	2	...	...	2
Inglewood	27	5	...	22
Ipswich	...	20	20	...
Laidley	10	...	...	10
Nerang	...	100	100	...
Rockhampton	1,100	...	...	1,100
Springsure	...	30	30	...
Toowoomba	193	230	37	...
Warwick	...	272	272	...
Roma	35	...	...	35
Total	1,735	1,199	...	536

Three-fourths of the total quantity of ensilage was contributed by the Downs farmers.

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, 26th July, 1906.

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, 1905.

Petty Sessions District.	Horses.	Cattle.				Sheep.				Pigs.
		1904.	1905.	1905.		1904.	1905.	1905.		
	1905.			Increase.	Decrease.			Increase.	Decrease.	1905.
Adavale	1,884	11,523	8,371	...	3,152	346,039	340,749	...	5,290	32
Allora...	2,566	8,302	9,726	1,424	...	16,584	23,276	6,692	...	3,359
Alpha	2,677	5,653	6,560	907	...	30,098	155,341	125,243	...	335
Aramac	1,158	2,702	2,250	...	452	123,986	265,029	141,043	...	51
Augathella	1,642	8,165	10,728	2,563	...	151,383	200,575	49,192	...	86
Ayr ...	4,566	27,382	20,231	...	7,151	307	351	44	...	900
Banana	2,449	20,231	26,679	6,448	...	14,752	30,559	15,807	...	152
Barcaldine	2,639	5,423	5,423	...	...	494,157	603,222	109,065	...	195
Beaudesert	4,459	45,853	53,601	7,748	...	643	708	65	..	7,212
Biggenden	1,642	6,106	5,699	...	407	603	2,234	1,631	...	1,265
Blackall	3,299	6,836	4,216	...	2,620	445,567	566,757	121,190	...	236
Bollon	3,239	19,875	22,834	2,959	...	343,108	421,134	78,026	...	123
Boulia	5,657	76,062	69,331	...	6,731	84,188	70,889	...	13,299	22
Bowen	10,554	66,345	77,450	11,105	...	4,436	5,547	1,111	...	915
Brisbane	8,017	11,888	13,406	1,518	...	322	548	226	...	3,569
Bundaberg	6,352	19,448	20,919	1,471	..	199	143	...	56	3,297
Burke	6,789	108,593	126,541	17,948	...	953	997	44	...	156
Caboolture	963	5,662	6,389	727	...	136	195	59	...	1,009
Cairns	2,877	3,452	3,719	267	...	280	167	...	113	1,190
Camooweal	2,498	35,763	41,175	5,412	...	15,000	18,927	3,927	...	9
Cape River	4,271	30,506	40,307	9,801	...	20	25,320	25,300	...	329
Cardwell	1,200	5,683	6,294	611	...	...	...	...	...	58
Charleville	4,473	21,775	34,808	13,033	...	227,267	334,469	107,202	..	327
Charters Towers	12,882	84,258	88,325	4,067	...	1,967	538	...	1,429	1,174
Childers	2,457	4,552	5,609	1,057	...	14	714	700	...	2,169
Clermont	5,683	20,931	32,761	11,830	...	283,780	376,211	92,431	...	757
Cleveland	514	829	1,013	184	...	1	...	...	1	341
Clifton	4,430	8,202	11,486	3,284	...	49,385	57,731	8,346	....	3,555
Cloncurry	7,594	106,988	94,815	...	12,173	242,350	279,179	36,829	...	187
Coen ...	2,200	6,866	7,642	776	...	...	...	...	...	91
Condamine	1,340	8,823	10,717	1,894	...	5,739	22,817	17,078	...	438
Cook ...	3,923	25,724	22,507	...	3,217	...	...	...	...	492
Crow's Nest	3,098	16,091	18,790	2,699	...	546	920	374	...	5,046
Croydon	2,434	24,643	21,604	...	3,039	...	...	...	..	229
Cunnamulla	3,015	6,120	8,042	1,922	...	785,993	868,587	82,594	...	229
Dalby ...	8,898	28,419	35,478	7,059	...	439,454	561,888	122,434	...	4,777
Diamantina	2,264	32,006	23,791	...	8,215	1,463	4,375	2,912	...	...
Douglas	847	544	404	...	140	...	...	...	...	82
Dugandan	3,348	24,469	27,439	2,970	...	285	289	4	...	6,239
Eidsvold	3,994	42,264	45,037	2,773	...	15,510	20,758	5,248	...	226
Emerald	1,521	2,597	5,222	2,625	...	6,036	17,226	11,190	...	513
Esk ...	5,745	61,421	66,608	5,187	...	1,237	1,348	111	...	4,348
Etheridge	7,196	106,372	105,324	...	1,048	...	...	...	...	131
Eulo ...	619	3,769	6,988	3,219	...	130,635	152,379	21,744	...	70
Gatton	5,834	28,788	32,135	3,347	...	401	377	...	24	8,388
Gayndah	4,351	44,424	53,853	9,429	...	1,220	2,305	1,085	...	703
Gin Gin	3,533	26,211	31,075	4,864	...	400	522	122	...	1,191
Gladstone	10,215	76,778	85,316	8,538	...	3,594	4,766	1,172	...	2,049
Goodna	589	1,621	1,958	337	...	40	97	57	...	368
Goondiwindi	2,239	10,921	19,284	8,363	...	231,092	299,893	68,801	...	486
Gympie	5,320	31,931	36,076	4,145	...	118	186	68	...	3,301
Harrisville	2,392	17,055	18,590	1,535	...	166	368	202	...	4,375
Herberton	9,238	54,937	53,324	...	1,613	84	170	86	...	1,074
Highfields	2,409	10,631	11,578	947	...	3,545	5,353	1,808	...	3,363
Hughenden	4,512	39,186	40,203	1,017	...	274,554	406,381	131,827	...	257
Hungerford	609	587	774	187	...	98,795	108,514	9,719	...	24
Ingham	6,281	22,218	24,488	2,270	...	151	173	22	...	2,846
Inglewood	1,871	13,548	19,095	5,547	...	106,787	134,508	27,721	...	852
Ipswich	4,844	18,821	21,074	2,253	...	597	535	...	62	3,665
Isisford	2,863	4,473	1,495	...	2,978	368,944	320,510	...	48,434	33
Jundah	1,036	8,289	7,467	...	822	163,890	155,644	...	8,246	21
Kilkivan	3,600	39,030	47,179	8,149	...	2,767	3,093	326	...	1,295
Killarney	1,992	5,137	6,842	1,705	...	1,972	2,080	108	...	1,500
Laidley	3,776	12,342	16,279	3,937	...	383	600	217	...	6,724
Logan ...	2,597	9,931	11,507	1,576	...	104	109	5	...	1,861
Longreach	4,950	9,095	9,172	77	...	949,597	761,622	...	187,975	185
Mackay	17,586	50,168	56,549	6,381	...	14,195	17,181	2,986	...	2,125
Marburg	1,671	8,871	9,105	234	...	...	...	...	...	4,493
Mareeba	1,102	1,490	1,457	...	33	20	35	15	...	89
Maroochy	1,872	6,612	8,023	1,411	...	212	277	65	...	1,505
Maryborough...	4,881	14,497	17,122	2,625	...	364	453	89	...	1,963
Mitchell	4,335	32,467	42,104	9,637	...	91,810	125,989	34,179	...	836
Mount Morgan	4,003	6,610	7,658	1,048	...	220	231	11	...	499
Mourilyan	893	1,259	1,293	34	...	68	48	...	20	735
Muttaburra	4,286	13,770	14,429	659	...	806,248	986,211	179,963	...	77
Nanango	5,995	41,856	48,622	6,766	...	8,569	7,108	...	1,461	3,309
Nerang	2,318	11,651	13,189	1,538	...	248	351	103	...	2,958
Norman	6,722	210,186	187,263	...	22,923	200	....	...	200	212
Palmer	1,144	2,332	3,301	969	..	...	...	...	...	16
Ravenswaod...	2,651	8,297	6,565	...	1,732	30	50	20	...	288
Redcliffe	1,950	10,880	11,905	1,025	...	11	11	...	...	2,635
Richmond	4,951	87,787	76,170	...	11,617	516,363	537,700	21,337	...	1208
Rockhampton	20,974	104,331	122,117	17,786	...	10,012	11,655	1,643	...	6,822

Table No. I.—*continued.*

Petty Sessions District.	Horses.	Cattle.				Sheep.				Pigs.
		1904.	1905.	1905.		1904.	1905.	1905.		
	1905.			Increase.	Decrease.			Increase.	Decrease.	1905.
Roma	4,999	27,457	32,900	5,443	...	196,134	180,128	...	16,006	1,501
Rosewood	2,709	16,680	20,242	3,562	...	286	392	106	...	4,485
St. George	3,315	10,738	13,806	3,068	...	372,671	699,069	326,398	...	296
St. Lawrence	4,554	24,587	32,673	8,086	...	299	992	693	...	278
Somerset	163	627	656	29	...	11	...	...	11	223
South Brisbane	4,133	6,957	7,765	808	...	370	387	17	...	2,761
Southwood	412	1,882	3,064	1,182	...	31,713	42,636	10,923	...	68
Springsure	4,250	27,983	39,981	11,998	...	131,181	211,481	80,300	...	646
Stanthorpe	2,232	16,196	18,298	2,102	...	56,762	90,759	33,997	...	604
Surat	1,544	5,477	9,712	4,235	...	210,971	262,922	51,951	...	148
Tambo	1,852	5,823	6,325	502	...	272,476	371,288	98,812	...	61
Taroom	2,529	27,905	34,417	6,512	...	20,702	47,303	26,601	...	166
Tenningering	1,815	12,708	13,127	419	...	115	173	58	...	335
Texas	1,283	7,887	9,440	1,553	...	4,835	7,262	2,427	...	306
Thargomindah	4,792	40,968	40,497	...	471	123,484	141,456	17,972	...	71
Thornborough	3,817	37,147	36,714	...	433	...	...	...	...	339
Tiaro	4,980	30,487	35,323	4,836	...	364	519	155	...	2,284
Toowoomba	13,332	45,262	53,062	7,800	...	456,113	554,252	98,139	...	11,110
Townsville	7,745	16,357	19,821	3,464	...	42	98	56	...	1,485
Warwick	7,705	34,016	40,527	6,511	...	129,965	148,813	18,848	...	5,586
Windorah	1,636	10,682	13,981	3,299	...	70,519	72,008	1,489	...	24
Winton	4,993	22,121	23,928	1,807	...	839,160	368,837	...	470,323	81
Woodford	2,842	19,571	21,461	1,890	...	592	566	...	26	1,698
Yeulba	675	4,688	4,080	...	608	2,511	6,687	4,176	...	279
Total in State in 1905 ...	430,565	...	2,963,695	...	...	...	12,535,231	...	...	164,087
Total in State in 1904 ...	413,165	2,722,340	...	...	...	10,843,470	...	...	...	185,141
Increase in 1905	17,400	...	...	241,355		...	...	1,691,761		...
Decrease in 1905	...	...	...	...		...	...	...		21,054
Centesimal Increase in 1905 ...	4·21	...	...	8·87		...	...	15·60		...
Centesimal Decrease in 1905...	...	...	...	...		...	...	...		11·27

Table No. II.

RETURN OF THE NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN THE VARIOUS PASTORAL DISTRICTS OF THE STATE FOR THE YEARS 1904 AND 1905, 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 ...	1904	34,176	554,723	1,000,517	1,446	...	...	...	...	...	...	...	...
	1905	33,412	531,552	1,118,573	1,258	— 764	— 23,171	118,056	— 188	— 2·24	— 4·18	11·80	—13·00
Burnett ...	1904	19,088	174,880.	26,026	8,455	...	...	...	...	...	...	...	...
	1905	19,953	200,054	33,221	6,624	865	25,174	7,195	— 1,831	4·53	14·40	27·65	—21·66
Cook ...	1904	31,578	247,205	379	4,737	...	...	...	...	...	...	...	...
	1905	32,213	238,450	250	4,462	635	— 8,755	— 129	— 275	2·01	— 3·54	— 34·04	— 5·81
Darling Downs	1904	47,172	200,329	1,533,996	41,853	...	...	...	...	...	...	...	...
	1095	50,741	249,791	1,951,325	36,026	3,569	49,462	417,329	—5,827	7·57	24·69	27·21	—13·92
Gregory North	1904	13,754	117,746	947,586	141	...	...	...	...	...	...	...	...
	1905	12,327	109,815	465,917	111	— 1,427	— 7,931	—481,669	— 30	— 10·38	— 6·74	— 50·83	—21·28
Gregory South	1904	4,985	47,917	146,211	204	...	...	...	...	...	...	...	...
	1905	5,209	45,157	161,648	85	224	— 2,760	15,437	— 119	4·49	— 5·76	10·56	—58·33
Leichhardt ...	1904	28,970	191,762	257,861	7,105	...	...	...	...	...	...	...	...
	1905	30,680	234,550	403,809	6,548	1,710	42,788	145,948	— 557	5·90	22·31	56·60	— 7·84
Maranoa ...	1904	14,585	83,236	1,216,040	4,960	...	...	...	...	...	...	...	...
	1905	17,363	103,557	1,694,487	3,149	2,778	20,321	478,447	— 1,811	19·05	24·41	39·34	—36·51
Mitchell ...	1904	22,652	77,684	3,582,770	1,069	...	...	...	...	...	...	...	...
	1905	23,059	73,162	4,009,347	813	407	— 4,522	426,577	— 256	1·80	— 5·82	11·91	—23·95
Moreton ...	1904	62,381	341,336	8,958	74,211	...	...	...	...	...	...	...	...
	1905	64,132	386,014	10,128	73,809	1,751	44,678	1,170	— 402	2·81	13·09	13·06	— 0·54
North Kennedy	1904	48,651	257,890	6,563	8,762	...	...	...	...	...	...	...	...
	1905	49,840	277,812	22,807	7,929	1,189	19,922	16,244	— 833	2·44	7·72	247·51	— 9·51
Port Curtis ...	1904	23,226	139,964	9,776	6,564	...	...	...	...	...	...	...	...
	1905	24,424	173,229	9,567	4,734	1,198	— 33,265	— 209	— 1,830	5·16	23·77	— 2·14	—27·88
South Kennedy	1904	22,326	90,234	222,223	4,148	...	...	...	...	...	...	...	...
	1905	23,986	102,610	389,039	3,131	1,660	12,376	166,816	— 1,017	7·44	13·72	75·07	—24·52
Warrego ...	1904	12,459	64,143	1,882,725	795	...	...	...	...	...	...	...	...
	1905	14,720	83,890	2,262,176	823	2,261	19,747	379,451	28	18·15	30·79	20·15	3·52
Wide Bay ...	1904	27,162	133,291	1,839	20,691	...	...	...	...	...	...	...	...
	1905	28,506	154,052	2,937	14,585	1,344	20,761	1,098	— 6,106	4·95	15·58	59·71	—29·51

Table No. III.

RETURN of LIVE STOCK SLAUGHTERED for PRESERVATION as Food, or FREEZING, or for TALLOW, in the STATE, during the YEARS 1896-1905, 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.							Extract and Essence of Meat Produced.	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.		Frozen.	Fresh Preserved.	Salted.	Frozen.	Preserved.						
									No.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	tons.	lb.	£
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	1,220,034	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	2,355,030	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	2,285.758	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
1905 (Metropolitan 7, Bowen 1, Charters Towers 1, Gatton 1, Gladstone 1, Goodna 1, Rockhampton 1, Townsville 1, Warwick 1)	15	1,516	66,288	14,315	156	267,248	20,186	65	153,136	47,846,259	9,982,659	57,421	12,381,958	779,122	10,500,335	2,282,881	58,803	4,179	522,190	1,132,226

* 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, 1905 (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.
							lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
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	0·18	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	0·17	4·65	207·58
1905	508,123	129,191	294,732	4,512	5,175	32,653	662	48	62	34	77	168	28	0·55	0·35	4·97	201·87

* 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.	£	£	lb.	£	Gallons.	£		£
1896	35	7,321	13,627	597,000	1,950	239,305	141,559	770,482	119,370	683	2,808	2,288	39,220	1,238	23,782	2,350	...	285,190
1897	38	10,738	24,654	673,385	8,455	259,160	161,979	928,330	125,043	954	3,696	3,307	76,539	1,848	18,478	1,819	...	330,801
1898	46	15,072	36,133	1,083,523	14,189	325,933	227,175	275,824	39,736	991	4,685	5,615	72,358	1,871	27,678	2,899	...	332,303
1899	47	17,347	56,446	985,121	13,163	395,929	337,931	524,215	97,016	1,265	6,363	10,819	92,487	2,359	26,000	2,831	...	526,928
1900	27	9,519	31,518	1,362,786	19,792	265,051	235,239	191,445	28,850	655	3,739	12,900	39,089	2,001	17,590	2,022	9,073	345,134
1901	18	4,937	21,999	1,382,080	21,244	182,708	180,673	187,126	14,847	522	2,873	5,321	34,670	1,820	16,916	2,218	8,668	259,663
1902	18	3,654	14,274	1,191,572	21,572	178,090	170,874	275,176	26,311	578	3,824	3,649	16,310	860	18,769	2,283	6,613	243,647
1903	12	2,215	9,973	1,033,491	16,807	130,639	135,518	150,900	21,466	625	3,660	4,667	17,819	797	10,540	1,296	15,019	209,123
1904	12	1,763	8,667	377,105	5,109	76,677	86,505	124,251	19,023	159	1,001	3,069	28,933	813	7,242	753	20,912	145,852
1905	12	1,566	8,466	1,036,602	15,727	90,184	92,405	308,017	63,937	167	1,033	3,717	41,142	894	7,144	826	21,724	208,729

* Not compiled prior to 1900.

Table No. VI

RETURN showing the TOTAL EXTENT of LAND under CULTIVATION, and the AREA under each DESCRIPTION of CROP, in the several PETTY SESSIONS DISTRICTS of the STATE during the YEAR 1905.

DIVISIONS AND PETTY SESSIONS DISTRICTS.	Total Extent of Land under permanent Pasture with Artificially Sown Grasses.	Total Extent of Land under Cultivation.	Land in Fallow and Totally Unproductive.	Total Extent of Land under Crop.	GRAIN CROPS.							POTATOES.		Pumpkins and Melons.	Cotton.	Sugar-cane.	Arrowroot.	Tobacco.	COFFEE.		Hay (All Kinds).	Green Fodder.	VINES.		Bananas.	Pineapples.	Oranges.	Other Crops.	Gardens and Orchards.
					Wheat.	Oats.	Barley. Malting.	Barley. Other.	Maize.	Rye.	Rice.	English.	Sweet.						Bearing.	Not yet Bearing.			Bearing.	Not yet Bearing.						
Moreton Division.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Beaudesert	368	5,565	514	5,051	...	...	...	...	3,017	...	...	140	21	248	2	...	1	...	...	...	693	790	3	...	1	...	22	59	54
Brisbane	40	5,175	291	4,884	...	2	...	...	555	...	...	201	249	173	...	...	1	...	...	...	327	1,216	268	28	353	776	53	458	224
Caboolture	25	1,602	266	1,336	...	...	...	...	593	...	...	100	101	11	...	...	...	...	...	...	47	171	4	3	5	55	62	29	155
Cleveland	...	899	51	848	...	...	3	...	6	...	...	5	24	9	...	...	...	...	...	...	12	49	12	2	68	291	32	237	98
Crow's Nest	4,407	8,675	828	7,847	379	...	113	3	4,686	1	...	536	7	392	...	...	...	...	...	...	154	1,492	10	2	...	...	17	47	8
Dugandan	73	10,400	20	10,380	3	...	...	...	7,538	...	...	89	9	1,094	24	...	...	...	...	...	586	923	12	...	13	2	12	53	22
Esk	429	4,123	141	3,982	...	...	...	...	2,099	...	...	82	124	594	...	...	...	...	...	...	314	684	19	1	...	...	30	21	14
Gatton	2,267	22,929	1,705	21,224	4	22	...	9	9,334	10	...	1,413	215	1,836	26	...	...	...	...	...	3,715	4,138	96	10	...	...	189	158	49
Goodna	...	543	28	515	...	...	...	...	223	...	...	19	1	42	17	...	...	...	...	...	123	59	8	1	...	...	13	1	8
Harrisville	38	7,943	518	7,425	...	...	...	...	4,412	...	...	63	60	291	31	...	...	...	...	...	1,266	1,227	16	2	1	...	15	31	10
Ipswich	45	4,322	316	4,006	...	...	...	...	1,453	...	...	80	45	112	8	...	...	...	...	...	603	1,578	18	3	6	1	13	39	47
Laidley	74	18,371	355	18,016	...	...	...	...	10,804	...	...	698	195	1,278	...	...	...	...	...	...	3,382	1,413	25	3	...	1	15	146	56
Logan	...	5,854	46	5,808	...	...	...	...	1,365	...	2	365	194	6	...	2,491	93	...	...	...	130	489	60	10	86	189	129	163	36
Marburg	60	8,310	126	8,184	...	...	...	...	3,528	...	...	51	126	533	...	543	1	...	...	...	51	3,052	22	10	12	...	11	56	188
Maroochy	3,203	6,292	174	6,118	...	...	...	...	812	...	...	53	69	15	...	3,085	18	...	38	9	30	200	10	4	448	171	730	142	284
Nerang	1,486	4,104	88	4,016	...	...	...	...	1,684	...	...	331	33	12	...	787	243	5	...	...	196	545	6	1	3	1	129	29	11
Redcliffe	...	3,518	25	3,493	...	...	...	...	1,735	...	...	228	138	18	...	...	...	...	...	...	299	820	26	...	150	28	29	16	6
Rosewood	11	7,041	794	6,247	...	...	...	...	2,742	4	...	57	46	201	...	...	3	...	...	...	622	2,487	52	...	...	...	1	16	16
South Brisbane ...	15	2,370	198	2,172	...	...	...	...	210	...	...	99	175	26	4	...	...	...	...	...	543	591	126	4	...	43	38	98	215
Woodford	789	1,021	21	1,000	...	1	...	...	602	...	...	41	32	56	...	...	3	...	...	...	37	129	8	...	...	...	18	16	57
Total Moreton ...	13,330	129,057	6,505	122,552	386	25	116	12	57,398	15	2	4,651	1,864	6,947	112	6,906	363	5	38	9	13,130	22,053	801	84	1,146	1,558	1,558	1,815	1,558
Downs Division.																													
Allora	935	27,133	4,524	22,609	11,241	...	181	105	2,104	2	...	122	...	596	7	...	...	...	...	...	2,159	5,930	10	3	...	...	14	50	85
Clifton	7,645	45,410	9,079	36,331	20,639	63	2,359	4	4,557	...	...	36	...	...	...	...	...	...	...	...	5,828	2,514	22	1	...	...	2	272	34
Condamine	...	430	329	101	5	...	...	...	23	...	...	...	...	6	...	...	...	...	...	...	1	61	5	...	...	...	...	...	...
Dalby	1,841	26,388	9,156	17,232	9,102	268	116	10	643	...	...	13	2	133	5	...	...	...	...	...	133	6,703	14	3	...	...	9	56	22
Goondiwindi	...	567	74	493	134	2	...	...	16	4	...	2	1	39	...	...	...	4	...	...	225	21	1	1	...	...	4	24	15
Highfields	205	14,558	2,818	11,740	2,070	23	46	29	6,038	1	...	271	...	126	...	...	...	...	...	...	583	2,408	29	5	...	...	11	75	25
Inglewood	8	2,113	532	1,581	609	26	...	4	212	...	...	27	...	69	...	...	...	162	...	...	290	169	2	1	...	...	...	1	9
Killarney	271	16,446	171	16,275	9,277	...	50	10	3,484	...	...	122	...	108	...	...	...	4	...	...	619	2,522	3	...	...	...	1	40	35
Southwood	...	20	...	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20	...	...	...	...	...	...	...	...
Stanthorpe	30	1,287	15	1,272	34	...	...	...	51	...	...	87	1	34	...	...	...	...	...	...	156	37	33	48	...	...	...	741	50
Texas	...	1,308	106	1,202	100	...	...	20	98	...	...	1	...	38	...	...	...	752	...	...	107	86	...	...	...	...	...	...	...
Toowoomba	7,738	73,913	29,388	44,525	15,355	74	1,038	81	7,264	14	...	111	1	358	...	...	...	...	...	...	4,308	14,773	192	6	...	...	52	679	219
Warwick	5,024	41,719	2,775	38,944	22,112	52	761	255	6,044	21	...	315	4	731	...	...	...	4	...	...	4,403	3,004	57	6	...	...	1	1,036	138
Total Downs ...	23,697	251,292	58,967	192,325	90,678	508	4,551	518	30,534	42	...	1,107	9	2,238	12	...	...	926	...	...	18,832	38,228	368	74	...	...	94	2,974	632
Maranoa Division.																													
Bollon	...	5	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
Mitchell	...	8,887	3,477	5,410	5,180	...	...	...	14	...	...	5	...	...	...	...	...	...	...	...	164	31	13	...	...	...	...	...	3
Roma	...	40,345	16,402	23,943	20,637	...	2	...	253	1	...	19	2	13	...	...	...	...	...	...	190	2,321	296	119	...	...	8	16	66
St. George	...	288	53	235	30	...	...	...	30	...	...	7	3	12	...	...	...	...	...	...	118	1	3	1	...	...	5	3	22
Surat	...	1,033	1,003	30	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yeulba	...	2,552	1,191	1,361	1,269	...	...	...	9	...	...	3	...	...	...	...	...	...	...	...	19	59	1	...	...	...	...	1	...
Total Maranoa ..	...	53,110	22,126	30,984	27,146	...	2	...	306	1	...	34	5	25	...	...	...	...	...	...	491	2,412	313	120	...	...	13	20	96

Table No. VI.—*continued.*

DIVISIONS AND PETTY SESSIONS DISTRICTS.	Total Extent of Land under permanent Pasture with Artificially Sown Grasses.	Total Extent of Land under Cultivation.	Land in Fallow and Totally Unproductive.	Total Extent of Land under Crop.	GRAIN CROPS.							POTATOES.		Pumpkins and Melons.	Cotton.	Sugar-cane.	Arrowroot.	Tobacco.	COFFEE.		Hay (All Kinds).	Green Fodder.	VINES.		Bananas.	Pineapples.	Oranges.	Other Crops.	Gardens and Orchards.
					Wheat.	Oats.	Barley.		Maize.	Rye.	Rice.	English.	Sweet.						Bearing.	Not yet Bearing.			Bearing.	Not yet Bearing.						
							Malting.	Other.																					
Rockingham Division.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Cairns	27	15,434	680	14,754	...	...	...	...	905	...	18	6	59	3	15	11,908	...	...	106	2	...	76	...	...	1,399	71	114	50	22
Cardwell	...	919	...	919	...	...	...	...	79	...	...	... 5	5	...	5	...	...	2	...	...	...	...	...	...	610	1	201	16	...
Douglas	41	8,088	3	8,085	...	...	...	...	164	...	1	1	17	...	...	7,787	...	...	10	...	...	...	...	...	21	2	68	13	1
Herberton	1,511	7,015	19	6,996	...	...	...	...	6,476	...	2	39	43	17	4	...	4	...	6	...	206	38	1	...	7	3	31	30	89
Ingham	1	16,112	847	15,265	...	...	...	...	115	...	...	16	82	...	...	14,954	...	...	...	...	...	31	...	...	2	1	8	14	42
Mareeba	1	350	61	289	...	...	...	...	216	...	...	21	14	1	...	...	...	...	2	8	3	2	...	...	2	...	9	6	5
Mourilyan	...*	11,948	695	11,253	...	...	...	...	152	...	...	8	54	...	...	8,243	26	...	33	...	4	38	...	...	2,632	6	34	23	...
Total Rockingham	1,581	59,866	2,305	57,561	...	...	...	...	8,107	...	21	91	274	21	24	42,892	30	2	157	10	213	185	1	...	4,673	84	465	152	159
Edgecumbe Division.																													
Ayr	...	7,347	287	7,060	...	...	...	...	242	...	...	10	53	...	...	6,583	...	...	...	...	...	149	...	...	2	1	6	9	5
Bowen	41	4,277	72	4,205	...	...	...	...	436	...	...	42	23	28	...	3,302	...	...	...	...	1	10	...	...	...	4	161	193	5
Mackay	...	31,180	265	30,915	...	...	...	...	109	...	...	41	77	16	...	30,328	...	...	32	11	18	111	7	...	28	7	44	70	16
Townsville	...	664	27	637	...	...	...	...	33	...	...	221	43	137	...	...	...	...	...	...	28	13	4	...	3	2	13	77	63
Total Edgecumbe	41	43,468	651	42,817	...	...	...	...	820	...	...	314	196	181	...	40,213	...	...	32	11	47	283	11	...	33	14	224	349	89
Port Curtis Division.																													
Gladstone	...	1,249	515	734	...	...	...	...	487	...	...	65	7	10	...	28	...	...	...	...	69	12	2	1	10	7	16	8	12
Mount Morgan	...	64	...	64	...	...	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	15	...	...	...	1	1	1	43
Rockhampton	36	3,950	943	3,007	...	...	...	1	843	1	1	105	154	168	11	...	...	...	3	14	1,140	188	62	9	19	44	70	109	65
Total Port Curtis	36	5,263	1,458	3,805	...	...	...	1	1,331	1	1	171	162	178	11	28	...	...	3	14	1,209	215	64	10	29	52	87	118	120
Burnett and Wide Bay Division.																													
Biggenden	39	2,936	632	2,304	1	...	...	...	1,641	...	...	55	63	319	6	...	...	...	...	...	51	135	4	...	...	...	6	3	20
Bundaberg	42	27,148	1,978	25,170	...	...	...	...	1,966	...	...	46	106	87	...	21,680	...	...	...	...	446	421	30	7	17	24	39	50	251
Childers	30	16,322	967	15,355	...	...	...	...	763	...	...	20	56	16	...	14,207	...	...	...	...	114	86	3	...	6	6	11	19	48
Eidsvold	5	393	48	345	...	...	...	...	233	...	...	8	4	9	...	...	...	...	...	...	52	15	3	...	...	...	2	4	15
Gayndah	...	604	279	325	1	...	...	...	187	...	...	6	24	34	...	...	...	...	...	...	39	29	1	1	...	...	3	...	...
Gin Gin	...	6,846	985	5,861	...	...	...	...	959	1	...	18	23	52	...	4,656	...	...	...	...	50	79	7	1	...	2	8	2	3
Gympie	227	4,481	622	3,859	...	...	...	...	1,856	...	1	188	44	171	...	214	...	...	...	...	922	207	31	12	5	...	58	19	131
Kilkivan	74	1,735	378	1,357	...	...	...	...	999	...	...	29	9	14	2	...	...	...	...	...	210	60	5	...	...	...	3	5	21
Maryborough	33	3,756	102	3,654	...	...	...	...	392	...	...	99	117	21	...	1,605	...	...	5	...	408	333	36	5	118	82	302	65	66
Nanango	1,476	6,934	465	6,469	1,089	...	1	...	3,976	...	...	53	7	47	...	...	...	...	...	...	265	1,007	4	...	...	...	2	2	16
Tenningering	18	64	6	58	...	...	...	...	31	...	...	1	9	5	...	...	...	...	...	...	5	4	...	...	...	...	1	...	2
Tiaro	113	4,457	413	4,044	1	...	...	...	1,223	...	...	200	21	69	1	1,706	...	...	...	...	390	330	5	1	8	8	46	28	7
Total Burnett and Wide Bay	2,057	75,676	6,875	68,801	1,092	...	1	...	14,226	1	1	723	483	844	9	44,068	...	...	5	...	2,952	2,706	129	27	154	122	481	197	580

Table No. VI.—*continued.*

DIVISIONS AND PETTY SESSIONS DISTRICTS.	Total Extent of Land under permanent Pasture with Artificially Sown Grasses.	Total Extent of Land under Cultivation.	Land in Fallow and Totally Unproductive.	Total Extent of Land under Crop.	GRAIN CROPS.						POTATOES.					COFFEE.		VINES.												Gardens and Orchards.
					Wheat.	Barley.		Oats.	Rye.	Maize.	Rice.	English.		Sweet.		Pumpkins and Melons.	Cotton.	Sugar-cane.	Arrowroot.	Tobacco.	Not yet Bearing.	Bearing.	Not yet Bearing.		Bearing.		Green Fodder.	Hay (All Kinds).	Bananas.	Pineapples.	Oranges.	Other Crops.	
						Malting.	Other.																									
Other Districts.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.		Acres.		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.		Acres.		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Adavale	...	6	54	... 18	...	...	...	...	...	...	...	1		...		...	...	...	...	...	...	1	...		...		...	...	...	...	...	4
Alpha	...	8	3	36	...	...	...	...	...	...	...	4		...		...	...	...	...	...	...	1	...		...		...	...	...	...	...	3
Aramac	...	54	8	3	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	9
Augathella	...	70	3	58	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	6
Banana	...	,,	39	2	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	37
Barcaldine	...	217	12	212	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	7
Blackall	...	71	43	56	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	19
Boulia	...	120	9	120	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	29
Burke	...	443	48	397	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	17
Cairncowal	...	29	9	29	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	42
Cape River	...	53	43	43	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	29
Charleville	...	120	71	56	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	7
Charters Towers	...	120	71	120	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	19
Clermont	...	443	48	397	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	77
Cloncurry	...	29	9	29	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	42
Coen	...	53	39	43	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	29
Cook	...	442	217	59	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	17
Croydon	...	59	59	59	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	29
Cunnamulla	...	107	40	67	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	12
Diamantina	...	...	...	...	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	...
Emerald	...	116	24	92	...	...	...	...	...	17	...	16		2		14	...	...	...	...	...	3	1		...		12	2	...	...	...	23
Etheridge	...	635	370	265	...	...	...	...	...	176	...	3		5		1	...	...	...	...	...	...	...		...		...	1	...	...	...	77
Eulo	...	2	2	...	28	...	...	...	...	...	...	...		...		2	...	...	...	...	...	...	...		...		...	14	...	...	...	9
Hughenden	...	28	...	...	28	...	...	...	...	...	...	...		...		...	...	...	...	...	...	1	1		...		...	...	...	...	...	9
Hungerford	...	148	78	70	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	...
Isisford	...	17	1	16	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	1	...		...		...	...	...	...	...	15
Jundah	...	6	...	5	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	5
Longreach	...	36	...	36	...	...	...	...	...	...	...	1		...		...	...	...	...	...	...	...	...		...		...	3	...	...	...	32
Muttaburra	...	21	...	21	...	...	...	...	...	...	...	5		2		4	...	1	...	...	...	3	...		...		...	1	...	...	...	6
Norman	...	70	36	34	...	...	6	...	...	...	...	2		2		...	...	...	...	...	...	...	...		...		...	1	...	...	...	15
Palmer	...	45	...	45	...	...	23	...	...	...	...	...		15		...	...	...	...	...	...	...	...		...		...	2	1	...	...	2
Ravenswood	...	1	...	1	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	1	...	...	...
Richmond	...	41	13	28	...	...	...	...	...	5	...	4		...		4	...	...	...	...	...	...	...		...		...	...	1	...	...	10
St. Lawrence	...	135	...	135	...	...	...	...	...	71	...	18		7		1	...	...	...	...	...	...	...		...		8	...	...	...	...	24
Somerset	...	854	30	824	...	...	8	...	...	...	...	6		100		15	...	...	...	...	...	...	...		...		...	1	...	584	1	...
Springsure	...	658	544	114	...	...	101	...	...	...	...	...		75		...	...	...	...	...	...	...	...		42		193	1	...	...	...	1
Tambo	...	6	...	6	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	6
Taroom	...	55	34	21	...	...	...	...	...	...	...	2		1		2	...	...	...	...	...	...	1		1		11	...	1	...	...	2
Thargomindah	...	27	...	27	...	...	...	...	...	...	...	...		1		3	...	...	...	...	...	...	...		...		...	2	...	...	...	19
Thornborough	...	198	23	175	...	...	...	...	...	137	...	4		7		3	...	...	...	...	...	...	...		1		9	...	1	6	3	
Windorah	...	...	...	...	29	...	...	...	...	...	...	...		...		3	...	...	...	...	...	...	...		...		...	...	...	...	...	17
Winton	...	29	...	29	...	...	...	...	...	...	...	...		...		...	...	...	...	...	...	...	...		...		...	...	...	...	...	43
Total Other Districts	60	7,265	1,352	3,903	64	...	8	79	236	998	...	172		3		...	...	...	...	...	651		101		30		12	163	15	166	705	620
Grand Total 1905 ...	40,802	622,987	100,289	522,748	119,356	533	4,670	531	8,229	118,720	60	10,606		171		134,107	393	933	285	...	37,425		66,183		1,717		327	6,198	1,845	3,078	6,330	3,854
" 1904 ...	35,589	677,896	38,680	539,216	150,928	643	15,382	2,005	2,983	119,171	151	8,991		30		120,317	437	784	292	...	48,740		35,861		1,647		547	6,680	1,781	3,106	4,982	3,897
Increase in 1905 ...	5,213	45,091	61,569	...	16,468	...	10,712	1,474	...	5,461	91	1,615		141		13,790	44	149	57	...	11,316		30,322		70		220	482	64	28	1,398	43
Decrease in 1905 ...	...	...	...	...	...	110	...	...	2,601	...	27	...		...		...	...	...	...	6	...		...		...		...	...	...	...	...	...

Table No. VII.

RETURN showing the GROSS PRODUCE of PRINCIPAL CROPS Raised in the several PETTY SESSIONS DISTRICTS of the STATE during the YEAR ended 31st DECEMBER, 1905.

DIVISIONS 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.	Rye.	Rice.	English.	Sweet.			Sugar-Cane Crushed.	Sugar-Cane Crushed.					Grapes Gathered.			
			Malting.	Other.																	
Moreton Division.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Tons.	Lb.	Acres.	Tons.	Tons.	Cwt.	Lb.	Tons.	Lb.	Bunches.	Dozens.	Dozens.
Beaudesert	...	...	...	...	83,595	...	...	284	95	1,755	794	...	...	10	...	...	2,758	15,200	20	...	18,980
Brisbane	40	...	...	...	12,868	...	...	286	1,460	703	...	...	...	4	...	...	646	349,313	48,025	238,867	15,153
Caboolture	...	...	...	...	17,820	...	...	201	739	117	...	...	...	...	...	...	89	32,356	900	6,347	47,241
Cleveland	...	80	...	...	188	...	...	7	154	38	...	...	...	...	...	...	12	24,275	18,512	58,791	16,899
Crow's Nest	5,292	...	1,928	40	87,002	40	...	1,026	27	2,308	...	...	...	...	...	...	342	30,824	...	...	11,505
Dugandan	52	...	...	...	161,952	...	...	130	29	3,181	12,779	...	...	...	...	...	1,334	28,734	2,380	196	13,682
Esk	...	...	...	...	42,302	...	...	163	614	1,393	...	...	...	...	...	...	695	65,634	...	...	23,927
Gatton	94	440	...	144	148,821	100	...	1,794	1,148	7,680	21,425	...	...	...	...	...	7,752	204,150	...	...	217,208
Goodna	...	...	...	...	5,053	...	...	23	4	95	7,280	...	...	...	...	...	223	4,950	...	...	1,110
Harrisville	...	...	...	...	105,959	...	...	40	279	1,110	30,201	...	...	...	...	...	2,547	11,630	24	...	6,865
Ipswich	...	...	...	...	28,845	...	...	125	158	458	4,793	...	...	...	...	...	1,898	11,390	...	28	5,434
Laidley	...	...	...	...	191,073	...	...	1,071	753	4,683	...	...	...	...	...	...	8,059	29,246	...	100	4,683
Logan	...	...	...	...	31,132	...	35	461	844	18	...	1,869	29,355	957	...	...	328	99,374	15,476	58,993	114,631
Marburg	...	...	...	...	56,437	...	...	80	535	2,600	...	250	1,949	2	...	...	189	20,480	500	...	1,436
Maroochy	...	...	...	...	22,734	...	...	127	369	86	...	2,013	39,789	238	...	17,659	83	32,564	127,726	22,266	579,856
Nerang	...	...	...	...	48,377	...	...	684	354	73	...	636	10,356	2,848	53	...	378	21,420	94	400	15,592
Redcliffe	...	...	...	...	34,037	...	...	389	643	86	...	...	...	...	...	...	574	48,530	39,658	9,740	14,795
Rosewood	...	...	...	...	37,455	60	...	108	104	284	...	...	...	50	...	...	898	5,900	...	...	410
South Brisbane	...	...	...	...	4,585	...	...	106	1,323	105	1,011	...	...	...	...	...	857	269,412	...	11,027	8,443
Woodford	40	...	...	...	15,361	...	...	100	205	81	...	...	...	9	...	...	82	14,102	...	...	20,222
Total Moreton ...	5,438	520	2,008	184	1,133,596	200	35	7,205	9,837	26,854	78,283	4,768	81,449	4,118	53	17,659	29,744	1,319,484	253,315	406,755	1,138,072
Downs Division.																					
Allora	170,907	...	2,808	2,133	25,133	44	...	207	...	1,231	2,200	...	...	...	...	...	1,834	87,080	...	...	22,868
Clifton	200,421	822	24,172	20	57,747	...	...	43	...	...	...	...	...	...	...	...	5,394	38,470	...	...	3,510
Condamine	40	...	...	...	698	...	...	...	...	20	...	...	...	...	...	...	3	4,990	...	...	...
Dalby	44,238	2,368	1,071	162	5,862	...	...	16	8	277	1,380	...	...	...	...	...	128	22,202	...	...	1,740
Goondiwindi	1,007	10	...	...	118	28	...	2	2	45	...	...	...	...	29	...	122	11,793	...	...	4,069
Highfields	15,829	144	320	116	78,241	5	...	371	...	281	...	...	...	...	...	...	769	100,566	...	...	18,325
Inglewood	7,190	164	...	16	5,510	...	...	48	...	160	...	...	...	...	...	...	478	23,005	...	...	...
Killarney	151,061	...	1,242	144	75,618	...	...	159	...	562	...	...	...	...	2,089	...	902	11,070	...	...	767
Southwood	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	...	4	...	...	...	...
Stanthorpe	410	...	...	...	9	...	...	156	1	84	...	...	...	...	...	...	224	51,080	...	...	...
Texas	649	...	...	80	1,058	...	...	1	...	65	...	...	...	...	7,946	...	160	...	...	...	...
Toowoomba	139,906	878	8,825	1,017	104,775	64	...	152	1	1,029	...	...	...	...	...	...	3,409	492,192	...	...	73,588
Warwick	316,847	952	12,854	4,608	82,341	192	...	431	9	2,494	...	...	...	...	30	...	5,973	102,714	...	...	1,170
Total Downs ...	1,048,505	5,338	51,292	8,296	437,870	333	...	1,586	21	6,248	3,580	...	...	...	10,157	...	19,400	945,162	...	...	126,037
Maranoa Division.																					
Bollon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mitchell	13,361	...	...	...	49	...	...	6	...	...	...	...	...	...	...	...	102	4,700	...	...	...
Roma	55,475	...	20	...	84	6	...	25	3	32	...	...	...	...	...	...	108	289,040	...	...	4,566
St. George	252	...	...	...	190	...	...	6	5	37	...	...	...	...	...	...	80	15,420	...	...	7,300
Surat	152	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yenlba	2,813	...	...	...	100	...	...	2	...	...	...	...	...	...	...	...	17	4,310	...	...	...
Total Maranoa ...	72,053	...	20	...	1,187	6	...	39	8	69	...	...	...	...	...	...	307	313,470	...	...	11,866

Table No. VII.—*continued.*

DIVISIONS 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.	Rye.	Rice.	English.	Sweet.			Sugar-Cane Crushed.	Sugar-Cane Crushed.					Grapes Gathered.			
			Malting.	Other.																	
Rockingham Division.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Tons.	Lb.	Acres.	Tons.	Tons.	Cwt.	Lb.	Tons.	Lb.	Bunches.	Dozens.	Dozens.
Cairns	...	...	...	...	30,730	...	542	9	293	8	15,680	9,160	152,736	...	...	24,499	...	...	307,369	46,560	117,179
Cardwell	...	...	...	...	2,102	...	...	...	100	...	1,120	...	...	...	0	...	...	...	243,200	325	159,070
Douglas	...	...	...	...	5,076	...	40	2	68	...	...	6,141	80,769	...	...	5,016	...	...	3,010	425	57,972
Herberton	...	...	...	...	244,466	...	40	51	193	50	1,200	...	...	8	...	4,480	511	4,726	621	326	40,808
Ingham	...	...	...	...	1,673	...	...	13	409	...	...	11,173	128,273	...	...	...	...	...	380	28	6,142
Mareeba	...	...	...	...	5,860	...	...	28	45	1	...	...	...	...	...	120	4	...	1,200	...	1,220
Mourilyan	...	...	...	...	2,813	...	...	16	366	...	...	6,510	93,650	320	...	18,640	12	...	1,643,447	4,403	33,749
Total Rockingham ...	...	...	...	...	292,720	...	622	119	1,474	59	18,000	32,984	455,428	328	20	52,755	527	4,726	2,199,227	52,067	416,140
Edgecumbe Division.																					
Ayr	...	...	...	...	4,475	...	...	18	199	...	...	4,423	85,066	...	...	...	...	...	110	120	...
Bowen	...	...	...	...	8,055	...	...	71	37	56	...	2,211	26,424	...	...	...	1	...	...	395	93,816
Mackay	...	...	...	...	2,619	...	...	122	272	48	...	20,762	285,545	...	...	9,516	43	16,512	4,308	646	32,685
Townsville	...	...	...	...	494	...	...	578	102	321	...	...	...	...	...	...	28	1,206	265	200	5,293
Total Edgecumbe ...	...	...	...	...	15,643	...	...	789	610	425	...	27,396	397,035	...	...	9,516	72	17,718	4,683	1,361	131,794
Port Curtis Division.																					
Gladstone	...	...	...	...	9,847	...	...	145	20	59	...	24	152	...	...	...	131	6,859	100	1,177	5,850
Mount Morgan	...	...	...	...	5	...	...	1	2	...	...	...	...	...	...	...	...	...	...	150	...
Rockhampton	...	...	...	12	12,613	7	12	128	567	391	1,885	...	...	...	...	800	1,155	78,507	2,825	6,650	31,190
Total Port Curtis ...	...	...	...	12	22,485	7	12	274	589	450	1,885	24	152	...	...	800	1,286	85,366	2,925	7,977	37,040
Burnett and Wide Bay Division.																					
Biggenden	16	...	...	...	27,475	...	...	68	279	768	7,392	...	...	...	...	...	69	7,880	...	...	1,951
Bundaberg	...	...	...	...	30,863	...	...	76	359	306	...	15,197	206,030	...	...	...	1,036	52,840	1,874	7,883	12,116
Childers	...	...	...	...	13,473	...	...	31	321	242	...	10,244	204,031	...	...	...	187	6,900	1,403	818	19,262
Eidsvold	...	...	...	...	1,625	...	...	7	10	24	...	...	...	...	...	...	79	7,832	...	...	978
Gayndah	7	...	...	...	2,175	...	...	4	96	112	...	...	...	...	...	...	29	2,785	...	...	2,960
Gin Gin	...	...	...	...	12,071	16	...	28	134	204	...	3,174	38,589	...	...	...	103	7,478	...	155	2,425
Gympie	...	...	...	...	51,989	...	16	381	168	299	...	136	2,279	...	...	...	1,274	34,551	270	...	36,951
Kilkivan	...	...	...	...	17,307	...	...	46	40	70	2,000	...	...	...	...	...	289	3,690	...	...	2,033
Maryborough	...	...	...	...	7,598	...	...	120	412	63	...	966	15,392	...	...	1,500	662	79,615	22,070	24,302	214,189
Nanango	10,642	...	4	...	52,229	...	...	100	37	308	...	...	...	...	...	...	442	12,988	...	...	7,720
Tenningering	...	...	...	...	934	...	...	1	66	13	...	...	...	...	...	...	6	...	...	...	680
Tiaro	20	...	...	...	33,174	...	...	325	80	263	748	1,204	15,360	...	...	...	690	14,067	880	2,569	25,282
Total Burnett and Wide Bay	10,685	...	4	...	247,913	16	16	1,187	2,002	2,672	10,140	30,921	481,681	...	...	1,500	4,866	230,626	26,497	35,727	326,547

Table No. VII.—*continued.*

DIVISIONS 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.	Rye.	Rice.	English.	Sweet.			Sugar-Cane Crushed.	Sugar-Cane Crushed.					Grapes Gathered.			
			Malting.	Other.																	
Other Districts.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Tons.	Lb.	Acres.	Tons.	Tons.	Cwt.	Lb.	Tons.	Lb.	Bunches.	Dozens.	Dozens.
Adavale	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	405
Alpha	240	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,500	...	...	278
Aramac	...	...	...	...	...	...	...	3	2	2	...	...	...	...	...	...	...	2,656	...	...	...
Augathella	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Banana	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Barcaldine	640	...	...	...	30	...	...	4	1	8	...	...	...	...	...	...	10	...	...	...	...
Blackall	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	121	6,580	...	...	790
Boulia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Burke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Camooweal	...	...	...	...	...	...	...	3	7	6	...	...	...	...	...	...	...	690	500	80	420
Cape River	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Charleville	...	...	...	...	56	...	...	...	4	4	...	...	...	...	...	...	...	4,310	...	...	6,690
Charters Towers	...	...	...	...	30	...	...	...	...	...	...	...	...	...	...	...	...	4,900	...	...	310
Clermont	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	52,710	...	...	40,740
Cloncurry	...	...	...	...	724	...	...	3	13	37	...	...	...	...	...	...	84	2,755	...	...	2,680
Coen	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cook	...	...	...	...	750	...	...	1	37	16	...	...	...	...	...	...	...	...	367	156	...
Croydon	...	...	...	...	5,781	...	200	5	204	54	1,120	...	...	...	...	...	...	...	13,870	1,898	51,955
Cunnamulla	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diamantina	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Emerald	...	...	...	...	156	...	...	24	4	52	...	...	...	...	...	...	137	...	...	...	...
Etheridge	...	...	...	...	216	...	...	5	5	1	...	...	...	...	...	...	4	8,100	...	...	6,000
Eulo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	200	30	...
Hughenden	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1,950	...	...	18,000
Hungerford	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	70	...	...	...	...
Isisford	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4,050	...	...	...
Jundah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Longreach	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1,618
Muttaburra	...	...	...	...	...	...	...	11	5	11	...	...	...	...	...	...	2	...	...	...	600
Norman	...	...	...	...	100	...	...	1	3	...	...	...	...	...	...	...	...	...	77	...	190
Palmer	...	...	...	...	313	...	...	...	24	...	...	...	...	...	...	...	...	...	900	360	11,500
Ravenswood	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Richmond	...	...	...	...	...	...	...	9	6	8	...	...	...	...	...	...	...	...	...	...	...
St. Lawrence	...	...	...	...	1,920	...	...	22	11	6	...	...	...	...	...	...	40	3,240	...	...	...
Somerset	...	...	...	...	60	...	...	2	84	20	...	...	...	...	...	...	...	...	5,541	121	...
Springsure	...	...	...	...	254	...	...	...	...	58	...	...	...	...	...	...	145	...	...	...	3,000
Tambo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Taroom	...	...	...	...	...	...	...	1	1	2	...	...	...	...	...	...	11	2,650	...	...	125
Thargomindah	...	...	...	...	...	...	...	3	1	1	...	...	...	...	...	...	...	3,950	...	...	450
Thornborough	...	...	...	...	2,650	...	...	7	21	4	...	...	...	...	...	...	3	...	1,166	351	1,400
Windorah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Winton	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	1,150	...	...	1,300
Total Other Districts	640	...	...	...	13,280	...	200	109	433	302	1,120	...	...	...	...	...	627	101,191	22,621	2,996	148,451
Grand Total, 1905	1,137,321	5,858	53,324	8,492	2,164,674	562	885	11,308	14,974	37,079	113,008	96,093	1,415,745	4,446	10,230	82,230	56,829	3,017,743	2,509,268	506,883	2,335,947
„ 1904	2,149,663	15,137	296,446	35,326	2,542,766	1,729	1,638	19,231	14,026	30,970	25,832	82,741	1,326,989	4,094	7,125	132,554	80,662	3,087,835	1,976,806	453,799	2,819,669
Increase, 1905	...	...	...	...	...	...	...	...	948	6,109	87,176	13,352	88,756	352	3,105	...	...	...	532,462	53,084	...
Decrease, 1905	1,012,342	9,279	243,122	26,834	378,092	1,167	753	7,923	...	...	...	...	...	...	...	50,324	23,833	70,092	...	...	483,722

Forecast given to Consul General Argentine Rep. Sydney.

Area under crop 1906. 675000 acres.

maize	115000 "	
wheat	120 000 "	17.10.6.

Table No. VIII.

SHOWING the TOTAL EXTENT of LAND under CULTIVATION, and the AREA under each DESCRIPTION of CROP in QUEENSLAND—RETURN for TEN YEARS.

Year.	Total Extent of Land under Cultivation.	Land in Fallow.	Total Extent of Land under Crop.	AREA UNDER EACH DESCRIPTION OF CROP.																														
				GRAIN CROPS.							POTATOES.				SUGAR-CANE.				COFFEE.				VINES.						ORANGES.		MANGOES.			APPLES.				
				Wheat.	Oats.	Barley. Malting*.	Barley. Other.	Maize.	Rye.	Rice.	English.	Sweet.	*Pumpkins and Melons.*	Cotton.	Area Crushed.	Total Area.	Arrowroot.	Tobacco.	*Bearing.	Total Area	Hay (all Kinds.)	Lucerne and Green Forage.	Bearing.	Total Area.	Bananas.	Pineapples.	*Bearing.	Total Area.	*Bearing.	Total Area.	Strawberries.	*Bearing.	Total Area.	Other Crops.	*Market Gardens.	Other Gardens and Orchards.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1896	336,775	14,097	322,678	35,831	1,881	...	1,122	115,715	345	600	7,672	3,131	...	280	66,640	83,093	309	994	26	138	35,764	19,509	1,842	2,020	4,477	823	...	1,791	...	205	27	...	74	3,569	...	3,308
1897	386,259	14,402	371,857	59,875	1,834	...	2,077	109,721	470	445	8,197	3,581	...	48	65,432	98,641	391	755	180	311	48,220	19,903	1,881	2,167	4,828	909	...	2,196	...	235	32	...	86	3,057	...	3,878
1898	409,287	46,033	363,254	46,219	271	1,953	991	102,835	299	863	7,961	3,696	7,604	1	82,391	111,012	455	617	199	432	35,263	26,980	1,727	2,020	5,264	1,130	...	2,272	...	214	75	...	157	1,169	...	3,501
1899	455,645	34,899	420,746	52,527	714	6,011	1,463	110,489	198	319	10,766	3,919	10,167	...	79,435	110,657	431	745	223	495	58,939	35,514	1,746	2,003	5,802	994	...	2,324	...	245	87	...	132	2,044	...	3,761
1900	480,372	22,975	457,397	79,304	385	6,302	1,231	127,974	151	271	11,060	3,614	14,232	...	72,651	108,535	401	665	283	537	42,497	41,445	1,734	2,019	6,215	939	2,045	2,882	349	411	121	140	238	2,381	...	3,587
1901	507,317	23,857	483,460	87,232	1,535	6,818	4,957	116,983	246	295	9,948	3,390	14,448	...	78,160	112,031	399	768	370	547	63,055	39,793	1,691	1,990	5,772	1,020	1,941	3,083	325	383	139	172	278	3,544	2,328	2,568
1902	478,121	202,738	275,383	1,880	78	163	267	89,923	22	38	2,899	1,847	2,573	8	59,102	85,338	296	722	314	396	20,068	51,279	1,302	1,559	5,266	1,101	2,085	3,141	384	420	65	189	353	2,166	2,171	1,344
1903	621,693	55,104	566,589	138,096	2,808	16,750	6,131	133,099	315	49	6,732	3,054	18,833	2	60,375	111,516	363	772	318	394	78,333	26,576	1,486	2,069	6,577	1,493	1,619	2,936	266	377	91	279	443	4,290	2,563	1,867
1904	577,896	38,680	539,216	150,958	643	15,382	2,005	119,171	151	60	9,771	2,983	8,991	30	82,741	120,317	437	784	292	342	48,740	35,861	1,647	2,194	6,680	1,781	1,790	3,106	292	382	161	280	516	3,873	2,099	1,798
1905	622,987	100,239	522,748	119,356	533	4,670	531	113,720	60	33	7,170	3,229	10,606	171	96,093	134,107	393	933	235	279	37,425	66,183	1,717	2,044	6,198	1,845	1,850	3,078	295	374	173	282	537	5,246	2,089	1,765

* Not specially returned in earlier years.

Table No. IX.

SHOWING the GROSS PRODUCE of PRINCIPAL CROPS Raised in QUEENSLAND—RETURN for TEN YEARS.

Year.	QUANTITY OF PRODUCE.																															
	GRAIN CROPS.							POTATOES.				SUGAR-CANE.								VINES.												
	Wheat.	Oats.	Barley. Malting.*	Barley. Other.	Maize.	Rye.	Rice.	English.	Sweet.	*Pumpkins and Melons.	Cotton. †	Weight of Cane.*	Sugar made.	Arrowroot (Tubers.)	Tobacco (Cured Leaf).	Coffee.	Hay (All Kinds).	Ensilage.	Grapes.	Wine.	Bananas.	Pineapples.	Oranges.	Mangoes.	Strawberries.	Apples.	* Market Gardens.	* Other Gardens and Orchards.						
	Bshls.	Bshls.	Bshls.	Bshls.	Bshls.	Bshls.	Bshls.	Tons.	Tons.	Tons.	Lb.	Tons.	Tons.	Tons.	Cwt.	Lb.	Tons.	Tons.	Lb.	Gallons.	Dozens.	Dozens.	Dozens.	Dozens.	Quarts.	Doz.	£	£						
1896	601,254	32,181	...	19,340	3,065,333	7,449	20,528	18,451	14,322	...	141,032	...	100,774	2,603	8,629	9,707	69,695	495	5,122,531	170,733	17,059,124	313,835	1,348,990	252,068	20,565	62,426	...	...						
1897	1,009,293	31,496	...	49,840	2,803,172	8,329	12,990	18,520	17,466	...	19,977	804,815	97,916	2,888	5,703	81,614	94,339	1,197	4,822,991	207,945	16,494,604	351,524	1,628,176	358,315	44,142	43,401	...	...						
1898	607,012	4,047	26,917	7,948	2,252,481	3,874	38,135	16,413	20,069	23,370	50	1,542,090	163,734	6,116	3,276	56,552	70,235	1,620	4,116,218	134,334	46,547,090	462,752	1,527,469	266,444	83,306	60,948	...	...						
1899	614,414	10,712	100,027	18,416	1,965,598	2,391	9,275	22,675	19,899	38,040	...	1,176,466	123,289	4,669	6,551	104,981	103,409	1,554	3,230,627	131,045	36,301,735	401,692	1,420,839	191,074	185,870	Bushels. 3,306	...	...						
1900	1,194,088	7,855	107,910	19,234	2,456,647	1,928	6,870	20,014	18,200	43,740	...	848,328	92,554	4,419	4,032	102,134	78,758	1,276	3,634,949	132,489	Bunches. 2,321,108	424,835	2,041,068	277,444	401,105	5,316	...	...						
1901	1,692,222	42,208	193,538	83,499	2,569,118	5,000	5,222	22,402	17,128	56,297	...	1,180,091	120,858	4,069	5,848	130,293	122,039	888	4,063,109	148,835	2,313,719	359,717	1,880,264	336,925	288,125	7,495	51,342	26,302						
1902	6,165	520	1,749	1,846	1,033,329	238	1,093	3,257	7,165	6,087	1,600	641,927	76,626	1,461	1,818	113,301	23,181	217	2,284,404	100,852	1,160,015	260,444	1,191,242	257,138	12,714	9,165	40,374	11,649						
1903	2,436,799	70,713	382,082	128,475	1,923,623	6,482	1,322	17,649	13,412	62,102	1,500	823,875	91,828	4,735	617	83,632	136,117	1,273	2,362,520	38,558	1,112,578	340,832	1,150,514	326,957	159,940	18,395	46,963	18,640						
1904	2,149,663	15,137	296,446	35,326	2,542,766	1,729	1,638	19,231	14,026	30,970	25,832	1,326,989	147,688	4,094	7,125	132,554	80,662	1,735	3,087,835	60,433	1,976,806	453,799	2,819,669	861,592	187,526	19,162	36,330	14,079						
1905	1,137,321	5,858	53,324	8,492	2,164,674	562	885	11,308	14,974	37,079	113,008	1,415,745	152,722	4,446	10,230	82,230	56,829	1,199	3,017,743	66,926	2,509,268	506,883	2,335, 47	910,748	138,228	17,362	37,572	13,911						

* Not specially returned in earlier years.

† Unginned.

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 per Acre Crushed.	Tons of Sugar per Acre Crushed.													
			*Malting.	Other.																						
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Tons.	Lb.	Tons.	Tons.	Tons.	Cwt.	Lb.	Tons.	Lb.	Doz.	Doz.	Doz.	Doz.	Quarts.	Doz.	£	£
1896 ...	16·78	17·10	...	17·24	26·49	21·59	34·21	2·40	4·57	...	504	...	1·51	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	1·50	7·39	7·55	453	1·96	2,564	3,416	387	§741	§1,525	1,379	§505	...	...
1898 ...	13·13	14·93	13·78	8·02	21·90	12·96	44·19	2·06	5·43	3·07	50	18·72	1·99	13·44	5·31	284	1·99	2,383	8,843	410	§672	§1,245	1,111	§388	...	...
1899 ...	11·70	15·00	16·64	12·59	17·79	12·08	29·08	2·11	5·08	3·74	...	14·81	1·55	10·83	8·79	470	1·75	1,850	6,257	404	§611	§780	2,136	Bushels §25	...	...
1900 ...	15·06	20·40	17·12	15·62	19·20	12·77	25·35	1·81	5·04	3·07	...	11·68	1·28	11·02	6·06	361	1·85	2,096	Bunches. 373	452	998	795	3,315	38	...	...
1901 ...	19·40	27·50	28·39	16·84	21·96	20·33	25·47	2·25	5·05	3·90	...	15·10	1·55	10·20	7·61	352	1·94	2,403	401	353	969	1,037	2,073	44	22	10
1902 ..	3·28	6·67	10·73	6·91	11·49	10·82	28·76	1·12	3·88	2·37	200	10·86	1·30	4·94	2·52	361	1·16	1,755	220	237	571	670	196	48	19	9
1903 ...	17·65	25·18	22·81	20·95	14·45	26·98	20·58	2·62	4·39	3·30	750	13·65	1·52	13·04	0·80	265	1·74	1,590	169	228	711	1,229	1,758	66	18	10
1904 ...	14·24	23·54	19·27	17·62	21·34	11·45	27·30	1·97	4·70	3·44	861	16·04	1·78	9·37	9·09	454	1·65	1,875	296	255	1,575	2,951	1,165	68	17	8
1905 ...	9·53	10·99	11·42	15·99	19·03	9·37	26·82	1·58	4·64	3·50	661	14·73	1·59	11·31	10·96	350	1·52	1,758	405	275	1,263	3,087	799	62	18	8
‡	14·66	19·77	20·02	19·26	21·68	18·58	34·87	2·19	5·15	3·40	427	14·43	1·58	10·02	7·57	368	1·82	2,267	310	385	1,008	1,555	1,547	57	19	9

* Not specially returned in earlier years. † Unginned. ‡ Average for twenty years (or since statistics have been collected). § On total area.

Table No. XI.

RETURN showing the AREA and PRODUCE obtained during the YEAR 1905 from CERTAIN OTHER CROPS, details of which are not included in the GENERAL TABLE.

DIVISION.	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.	Nectarines.	Beans.	Cabbages and Cauliflowers.	Cucumbers.	Onions.	Peas.	Tomatoes.	Turnips.	Yams.	Broom Millet.	Canary Seed.	Cassava, Manioc, or Tapioca (Tubers).	Cow Pea.	Grass Seed.	Mangel-Wurzel.	Pea Nuts.	Sisal Hemp and Ramie.	Lucerne Seed.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Rockingham	...	4	...	...	8	...	...	...	8	59	...	...	4	...	...	...	...	...	...	1	29	2	...	...	3	1	...	2	...	4	...	...	...	27	...	...
Edgecumbe	...	...	...	...	...	1	...	...	...	87	...	1	4	...	...	...	...	...	...	...	33	65	...	2	141	3	...	1	...	...	1	...	...	7	1	...
Port Curtis	...	...	...	...	...	2	...	...	1	33	...	2	5	...	...	...	...	...	...	4	23	1	1	...	5	12	...	...	...	...	8	...	16	1	...	...
Burnett and Wide Bay	...	3	...	...	...	3	1	...	...	75	1	...	21	...	1	15	1	11	...	...	15	1	3	6	2	12	...	3	...	2	...	...	8	...	12	...
Moreton	...	29	4	...	...	20	2	6	19	87	33	5	127	5	9	68	...	161	1	98	176	144	18	78	215	99	...	270	...	...	12	...	109	1	11	...
Downs	2	501	52	32	...	...	4	...	9	4	...	...	216	36	1	144	6	1	8	4	112	5	69	3	30	10	...	19	617	...	...	44	15	8	...	1,017
Maranoa	...	...	1	...	...	...	...	...	...	...	...	...	6	...	...	2	...	...	...	...	4	1	2	...	...	4	...	...	...	...	...	...	...	...	...	...
Other Districts ...	...	...	...	...	515	...	...	...	2	29	...	...	6	...	...	...	...	...	...	...	52	4	3	...	6	7	65	...	...	...	1	...	...	13	2	...
Total Area ...	2	537	57	32	523	26	7	6	39	374	34	8	389	41	11	229	7	173	9	107	444	223	96	89	402	148	65	295	617	6	22	44	148	57	26	1,017
	Bushels.	Bushels.	Bushels.	Bushels.	Dozens.	Bushels.	Bushels.	Quarts.	Dozens.	Dozens.	Bushels.	Dozens.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Quarts.	Bushels.	Bushels.	Dozens.	Dozens.	Cwt.	Bushels.	Bushels.	Tons.	Tons.	Lb.	Lb.	Tons.	Bushels.	Bushels.	Tons.	Lb.	Lb.	Lb.
Rockingham	...	138	...	...	1,000	...	...	...	3,050	297,079	...	...	355	...	...	...	...	...	...	168	12,096	725	...	...	170	11	...	2,300	...	50	...	...	...	47,904	...	...
Edgecumbe	...	...	...	...	...	479	...	...	...	259,091	...	36	289	...	...	...	...	...	...	...	9,441	31,523	...	40	20,920	28	...	600	...	...	25	...	...	5,400	Nil	...
Port Curtis	...	...	...	...	...	80	...	...	626	44,284	...	179	337	...	...	...	...	...	...	180	9,957	130	20	...	140	56	...	...	...	...	90	...	80	650	...	...
Burnett and Wide Bay	...	23	...	...	...	117	38	...	...	124,703	144	...	1,809	...	22	380	12	5,727	...	...	5,372	400	118	155	111	99	...	2,000	...	10	...	...	94	...	Nil	...
Moreton	...	1,057	138	...	...	774	32	7,204	12,111	38,874	3,535	923	8,129	566	1,031	3,424	...	132,201	38	9,084	50,799	48,900	394	5,234	20,071	476	...	170,881	...	...	242	...	935	2,000	Nil	...
Downs	3	16,144	4,216	173	...	...	434	...	5,755	1,575	...	...	8,819	1,486	111	8,991	643	300	108	674	45,815	2,414	3,891	168	4,163	43	...	19,934	186,736	...	...	20624	15	9,480	...	247,700
Maranoa	...	...	45	...	...	...	...	...	...	...	...	...	218	...	...	54	...	...	...	...	406	600	90	...	...	3	...	...	...	...	...	...	...	...	...	...
Other Districts ...	...	...	...	...	5,015	...	...	...	2,250	145,142	...	...	114	...	...	...	...	...	...	...	16,817	1,181	52	...	293	17	43	...	...	...	40	...	...	14,050	Nil	...
Total Produce ...	3	17,362	4,399	173	6,015	1,450	504	7,204	23,792	910,748	3,679	1138	20,070	2,052	1,164	12,849	655	138,228	146	10106	150,703	85,873	4,565	5,597	45,868	733	43	195,715	186,736	60	397	20624	1,124	79,484	Nil	247,700

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 1905.

PETTY SESSIONS DISTRICTS.	HAY.									
	Wheat.		Oats.		Lucerne.		Other.		Total.	
	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Allora	315	268	80	56	1,764	1,510	...	...	2,159	1,834
Beaudesert	2	2	58	63	609	2,659	24	34	693	2,758
Brisbane	...	...	132	174	171	425	24	47	327	646
Clifton	241	239	338	296	5,046	4,683	203	176	5,828	5,394
Dalby	17	16	2	2	114	110	...	...	133	128
Dugandan	...	...	22	28	511	1,202	53	104	586	1,334
Gatton	85	98	153	150	3,235	7,031	242	473	3,715	7,752
Gympie	18	16	573	670	283	512	48	76	922	1,274
Harrisville	...	...	43	38	1,073	2,248	150	261	1,266	2,547
Highfields	85	43	24	21	466	698	8	7	583	769
Ipswich	6	7	30	33	526	1,782	41	76	603	1,898
Killarney	...	...	40	40	579	862	...	...	619	902
Laidley	34	43	64	67	3,218	7,813	66	136	3,382	8,059
Maryborough	1	1	253	354	96	207	58	100	408	662
Nanango	61	42	18	24	168	354	18	22	265	442
Rockhampton	58	40	581	455	385	500	116	160	1,140	1,155
Rosewood	10	18	22	33	512	741	78	106	622	898
South Brisbane	...	..	262	252	222	493	59	112	543	857
Toowoomba	404	237	229	225	3,648	2,904	27	43	4,308	3,409
Warwick	198	159	136	120	4,067	5,689	2	5	4,403	5,973
All other Districts	1,321	1,066	1,386	1,882	1,871	4,594	342	596	4,920	8,138
Grand Total for 1905 ...	2,856	2,295	4,446	4,983	28,564	47,017	1,559	2,534	37,425	56,829
Grand Total for 1904 ...	3,137	3,608	9,076	11,549	35,009	62,970	1,518	2,535	48,740	80,662
Increase in 1905	...	...	...	...	...	...	41	...	...	...
Decrease in 1905	281	1,313	4,630	6,566	6,445	15,953	...	1	11,315	23,833
Average Yield per Acre	0·80		1·12		1·65		1·63		1·52	

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 1905.

PETTY SESSIONS DISTRICTS.	GREEN CROPS.				
	Wheat.	Oats.	Lucerne.	Other.	Total of all Kinds.
	Acres.	Acres.	Acres.	Acres.	Acres.
Allora	1,751	165	2,433	1,581	5,930
Brisbane	14	229	317	656	1,216
Clifton	1,124	28	914	448	2,514
Crow's Nest	485	53	221	733	1,492
Dalby	2,677	82	1,581	2,363	6,703
Gatton	418	249	1,031	2,440	4,138
Harrisville	69	270	507	381	1,227
Highfields	1,350	7	472	579	2,408
Ipswich	55	300	592	631	1,578
Killarney	219	42	884	1,377	2,522
Laidley	265	141	395	612	1,413
Marburg	41	290	446	2,275	3,052
Nanango	363	128	244	272	1,007
Rosewood	63	317	1,120	987	2,487
Roma	2,285	9	...	27	2,321
Toowoomba	2,665	580	8,827	2,701	14,773
Warwick	911	244	631	1,218	3,004
All other Districts	532	1,599	2,255	4,012	8,398
Grand Total ... 1905	15,287	4,733	22,870	23,293	66,183
Grand Total ... 1904	2,006	3,354	16,024	14,477	35,861
Increase in 1905	13,281	1,379	6,846	8,816	30,322
Decrease in 1905	...	...	...	...	...

Table No. XIV.

AVERAGE YIELD PER ACRE OF CROPS IN EACH DIVISION OF THE STATE FOR THE YEAR 1905.

Division.	GRAIN CROPS.							POTATOES.		Sugar-cane (to Acres Crushed)	Cotton.	Arrow-root (Tuber).	Tobacco (Dried Leaf.)	Coffee.	Pump-kins and Melons.	Hay of all Kinds.	Grapes.	Bananas.	Pine-apples.	Oranges
	Wheat.	Oats.	Barley, Malting.	Barley, Other.	Maize.	Rice.	Rye.	English.	Sweet.											
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Tons.	Tons.	Tons.	Lb.	Tons.	Cwt.	Lb.	Tons.	Tons.	Lb.	Bunches.	Dozen.	Dozen.
Rockingham	...	...	...	...	36·11	29·62	...	1·31	5·38	13·81	750	10·93	10·00	336	2·81	2·47	4,726	471	620	1,671
Edgecumbe	...	...	...	...	19·08	...	...	2·51	3·11	14·49	...	...	...	297	2·35	1·53	1,611	142	97	909
Port Curtis	...	...	...	...	16·88	12·00	7·00	1·60	3·64	6·33	171	...	...	267	2·53	1·06	1,334	101	153	805
Burnett and Wide Bay	9·78	...	4·00	...	17·43	16·00	16·00	1·64	4·14	15·58	1,127	...	...	300	3·17	1·65	1,788	172	293	1,085
Moreton	14·09	20·80	17·31	15·33	19·75	13·33	17·50	1·55	5·28	17·08	699	11·34	10·60	465	3·87	2·27	1,647	221	261	1,266
Downs	11·56	10·51	11·27	16·02	14·34	...	7·93	1·43	2·33	...	298	...	10·97	...	2·79	1·03	2,568	...	...	1,595
Maranoa	2·65	...	10·00	...	3·88	...	6·00	1·15	1·60	...	...	...	...	...	2·76	0·63	1,002	...	...	1,318
Other Districts	11·85	...	...	...	13·31	25·00	...	1·38	1·83	...	373	...	...	...	1·76	1·14	3,373	139	200	1,217
TOTAL AVERAGE YIELD FOR 1905	9·53	10·99	11·42	15·99	19·03	26·82	9·37	1·58	4·64	14·73	661	11·31	10·96	350	3·50	1·52	1,758	405	275	1,263
„ „ „ 1904	14·24	23·54	19·27	17·62	21·34	27·30	11·45	1·97	4·70	16·04	861	9·37	9·09	454	3·44	1·65	1,875	296	255	1,575

Price 3*s*. 6*d*.]

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