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QUEENSLAND.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE
AND STOCK

FOR

THE YEAR 1921-1922.

PRESENTED TO PARLIAMENT BY COMMAND.

BRISBANE :

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REPORT OF THE DEPARTMENT OF AGRICULTURE AND STOCK FOR THE YEAR 1921-22.

TO THE HONOURABLE THE SECRETARY FOR AGRICULTURE AND STOCK.

SIR,—I have the honour to submit my Report for the year ending the 30th June, 1922.

During the year steps have been taken to organise the agricultural industry on a satisfactory basis. In speeches at several country centres the Premier announced that the Government recognised the urgent need for greater development of the rural industries of the State, and he indicated that action would be taken towards that end. The movement was definitely launched at an important conference of representatives of butter and cheese factories and milk condensaries, which was held in March last for the purpose of considering methods of improving the unsatisfactory conditions then prevailing in the dairying industry. At this conference a Dairying Industry Advisory Board was appointed to investigate fully the questions affecting the industry and to suggest to what extent the Government could assist in improving the conditions generally. The Premier also outlined a scheme for the complete organisation of the agricultural industry. The scheme met with the general approval of the conference, and the ultimate outcome was the Primary Producers' Organisation Act. This measure is the first of its kind in Australia. The scheme provides for the establishment of one association of primary producers, to be called the Queensland Producers' Association. This association will voice the opinions of the producers and should be a potent factor in advancing the interests of the producers as a whole. The scheme also provides for the establishment of District Councils and Local Producers' Associations. Every *bonâ fide* primary producer in the State is entitled to be a member of the Local Producers' Association in his district, and these local associations will elect a district council to consider questions affecting producers in such district. The district councils will each elect a member for appointment to a central council, which will be the supreme body and be known as the Council of Agriculture. On this council there will also be a small number of Government representatives. The Council of Agriculture will, amongst other matters, give consideration to questions submitted by the local associations and district councils, and will assist in every practical way in the development of the industry and in the solution of its diverse difficulties.

For the purposes of organisation and in order that the more pressing needs of the industries might be dealt with as quickly as possible, a Provisional Council of Agriculture has been

constituted; the representatives of the producers on the Provisional Council were nominated by recognised associations in the several industries. The Provisional Council will hold office until the 24th March, 1923. A provisional organiser for each district has also been appointed.

In the recommendations which it has made the Provisional Council has already given evidence of its energy. Particulars of these recommendations and activities have been widely circulated amongst producers, and local associations where such have been formed. It is now for the producers themselves to determine whether they are ready to accept this opportunity for the organisation of rural industries. If the whole of the producers of the State will unite in one organisation and will send to the Council men of initiative and resource, who know the problems affecting the industries and who will do their best to solve them, the recommendations of the Council will be valuable alike to the Government, the Department, and to all persons or associations who are working in the interests of agricultural development.

Pools came into prominence in Australia during the period of the war, when the various Wheat Pools, Dairy Produce Pools, and others were formed. These pools by their incidence made manifest to the producer his strong position, and he found that it was possible for him to be so situated that he could practically control the local and interstate markets, and at the same time not lose any of his existing hold on the oversea markets. That control meant that he could secure a price for his produce commensurate with the cost of production.

The first pools in Queensland were voluntary pools for dairy produce, but in 1920 there was passed the Wheat Pool Act, and this brought about the first compulsory pool in the State. The Act governing that pool was a distinct step by the Government towards the encouragement of co-operation. Under it the operations of the pool are managed by the farmers, and the results have been that a much better price has been realised for their crops than would have been the case from individual marketing. The last two crops have been good ones and the benefits of the pool have been marked.

The spirit of the Act is co-operation between the Board and growers and Railway authorities whereby the whole of the harvest is handled systematically and expeditiously for local and foreign markets.

It will be remembered that after the first year's operations the Department held a referendum as to whether the pool should be extended for the 1921 crop, and the result of the poll was a thorough endorsement by the growers of their belief in the principle and administration of the Act, as 87½ per cent. of those voting recorded their decision in favour of continuation.

Last year the Government came to the aid of the canary-seed growers, who had found difficulty in securing a profitable market for their crop. Arrangements were made for a pool to be administered by the State Wheat Board, and the Government guaranteed £10,000 to enable advances to be made to them to carry on.

"The Cheese Pool Act of 1921" was the outcome of deputations representing the co-operative cheese factories, and also as a result of a conference of cheese producers which passed a resolution advocating a compulsory cheese pool. After the passing of the Act a ballot was taken as to whether it should be brought into force, with a result that of those who voted 91 per cent. were in favour of the Act being brought into force and 9 per cent. against. Following on this referendum, an election was held for five members to constitute the State Cheese

Board, and that Board has since its appointment carried out the provisions of the Act, in so far as the marketing of cheese is concerned, in a manner satisfactory to the industry.

The Bill for the Queensland Cheese Pool was not prepared until there was an assurance that the suppliers and manufacturers were entirely in agreement with the proposal. The Act has been successful in securing a stabilised price for cheese, and there has been no adverse criticism upon it from producers.

The existing Butter Pool in Queensland is a voluntary one, but its influence has been sufficient to keep the price of butter stabilised.

The tables indicating the proportion of the population engaged in agricultural and pastoral occupations to the total population are continued for the information of those interested in the settlement of people upon the land.

				Number of Owners Engaged in Cultivation.	Proportion to Population.
					%
1917	..	..	..	23,053	3·32
1918	..	..	..	22,098	3·18
1919	..	..	..	22,126	3·00
1920	..	..	..	23,201	3·06
1921	..	..	..	24,558	3·21

CATTLE.

Year.	Number of Persons Owning up to 300 Head.	Proportion to Population.	Number of Persons Owning 301 to 1,000 Head.	Proportion to Population.	Number of Persons Owning over 1,000 Head.	Proportion to Population.
		%		%		%
1915	38,437	5·663	943	·139	671	·098
1916	38,015	5·679	1,010	·150	702	·104
1917	38,720	5·59	1,145	·16	799	·11
1918	40,560	5·84	1,356	·195	819	·117
1919	41,315	5·65	1,411	·191	850	·115
1920	43,634	5·94	1,682	·229	916	·14
1921	45,855	5·99	1,859	·243	1,005	·131

SHEEP.

Year.	Number of Owners up to 1,000.	Proportion to Population.	Number of Owners from 1,001 to 5,000.	Proportion to Population.	Number of Owners from 5,001 to 10,000.	Proportion to Population.	Number of Owners Owning over 10,000.	Proportion to Population.
		%		%		%		%
1915	2,447	·360	934	·137	339	·0499	371	·054
1916	2,428	·362	888	·132	301	·044	369	·055
1917	2,393	·345	898	·129	317	·045	400	·057
1918	2,320	·334	938	·135	327	·047	445	·064
1919	2,408	·327	965	·131	341	·046	416	·056
1920	2,305	·314	961	·130	358	·049	412	·056
1921	2,270	·296	966	·126	426	·056	428	·056

The valuation of the primary industries at first values only, without including anything in a manufactured stage, such as butter, cheese, &c., nor including the value of the products of stock

in the form of meat, fats, oil, lard, tallow, which are excluded because they are in a degree in a manufactured stage, has been estimated thus:—

	1919.	1920.	1921.
	£	£	£
Stock (horses, cattle, sheep, pigs, mules, camels, goats)	43,651,667	41,483,943	41,210,315
Milk	3,143,701	6,977,349	7,554,045
Wool	8,606,747	8,371,560	7,783,818
Crops	6,297,079	10,386,283	10,514,659
Poultry and eggs	354,665	387,933	486,473
Bee products	24,775	32,569	35,337
Hides and skins, bones, hoofs, horns, hair, &c.	880,042	1,238,326	808,657
	£62,958,676	£68,877,963	68,393,304

During the fruit season in the Stanthorpe district the growers there, through the courtesy of the Minister for Agriculture in Tasmania, received the advantages of a series of lessons in the packing of their fruit from Mr. Rowlands, the chief packing officer of that State. The meetings that were organised by the Stanthorpe District Council of Fruitgrowers were well attended; the instruction given was much appreciated and had a noticeable effect upon the manner in which fruit was placed upon the market. There is a general desire among growers in this and other districts for this class of instruction, and it must be admitted that it is needed.

A commencement has been made for the establishment of an experiment plot on Bribie Island, primarily for raising banana plants for distribution free from the diseases that are affecting our plants, but it will also serve as a quarantine station for such plants as arrive here from abroad. The station is yet in its infancy, clearing operations having only now been undertaken, but it is expected that planting will be possible during the present financial year.

A Report of the Bureau of Commerce and Industry states that during the last two years the imports of the following products, all of which could have been produced here, were—

	1919-20.	1920-21.
	£	£
Dates	175,007	131,512
Cocoa beans	512,769	336,730
Coffee	143,205	91,405
Tea	3,674,282	1,455,359
Spices (unground)	212,910	120,102
	£4,718,173	£2,135,108

It is admitted that these articles have been introduced from countries where the standard of living does not compare with Australia, and which consequently are able to lay down their goods at lower prices than those at which local production could be placed upon the market; but if Australia is to be self-supporting in food-stuffs, some encouragement should be given to those who are willing to enter upon these industries. The Commonwealth Government, by the Bounties Act of 1907, prescribed certain bounties for differing numbers of years on various products, but, in the list of products benefiting by those bounties, dates and coffee only are included of the articles mentioned. So far as is known the Bounties Act has not been renewed, and it is thought that the need for so doing might well be worth consideration.

Excepting tea, for which there has been no campaign of instruction, the Department has at one time or another experimented with and advocated the other products mentioned, but there has not been any success, probably because, these being tropical products, the glamour of sugar-cane cultivation has overshadowed them, and also because, at the prices offering in the market, growers could not compete with the

imported article. It is the latter cause that raises the question of help to encourage people, and the value of such help has been fully manifested by the result of the encouragement given for the cultivation of cotton.

Apart from the value of these industries to Australia, it may be mentioned that the United Kingdom last year imported raw cocoa to the value of £10,000,000, coffee to the value of £4,500,000, tea £27,000,000, and spices to the value of £1,000,000; so that the market on fair terms is practically unlimited.

Thirty-four towns and places were visited in connection with the Pure Seeds and the Stock Foods Acts, and 481 official samples of agricultural seeds and 31 under the Stock Foods Act were investigated by the officer in charge (Mr. Coleman), with the result that 6 prosecutions were successfully undertaken. Large quantities of seed are sold for sowing by firms, by storekeepers, and others who have no cleaning machinery of even the most primitive kind, with the result that much foreign matter that does not improve the resulting crop is spread through the land. A safeguard to this might be found by an amendment to the Pure Seeds Act requiring registration of all sellers of seeds for sowing. Nowadays there are many tradesmen, other than those whose main business is that of a nurseryman and seedsman, who sell seeds as a side-line to their business, principally in packets done up in fancy form. It is impossible, without registration of sellers, with the limited staff available, to keep a proper oversight over the whole of the trade, and the main danger lies with these occasional sellers. The Pure Seeds Act was distinctly designed to give security to growers in relation to seeds obtained by them for sowing, and vendors are required to give an invoice stating that the seeds are of a given quality, but it is feared that this provision is more often honoured in the breach than in the observance in so far as the correctness of the statement in the invoice is concerned.

Many of the meals and calf-foods investigated have not been up to the guarantee of the vendors, who were required to correct the figures given. This is considered a most important item of the Stock Foods Act, for the reason that many men accept the advertised statement of vendors of foods for young stock, and, if these foods are not of the quality they are stated to be, loss of life might easily follow from want of proper feeding.

Several complaints with following investigations were made into the differing of consignments of feedstuffs with the samples upon which the purchase had been made. All these cases related to trade with the Southern States, and in one case the sample was found to contain 11 per cent. of weed-seeds, another over 6 per cent. of weed-seeds and nearly 5 per cent. of other foreign matter. Another instance that

may be mentioned was a fairly large consignment of chaff that, so far as this Department is aware, was distributed in Brisbane, Toowoomba, and Maryborough, and it may have been distributed in other places also. The chaff came from the South and was found, luckily in time to prevent the consummation of the sale, to contain a large quantity of *Datura stramonium* seeds, a dangerous ingredient in chaff and which causes death to the horses eating it.

The Agricultural College has now apparently passed through the period of depression which all the colleges in Australia experienced during the war and the immediate years following, owing to the lack of students, and the Principal points out in his report herewith that the enrolment during the session ending June last has been the greatest for the past ten years. At present the College has a fairly full complement of students, and those from the country districts exceeded those from towns by rather more than two to one. The winter school for farmers' sons was abandoned during last year, the cause being in reality the absence of any concessions upon the railways for those who wished to attend, which resulted in such a small number of applicants that the expense to the Department of holding the school was not justifiable. The policy of the Principal in relation to the storage of fodder sufficient for the needs of the stock during periods of drought is approaching fulfilment, but more shedding accommodation is needed, the cost of which would soon be covered by the saving of loss that must be expected with stacks thatched and in the open. Thatching is of course an essential part of education, but for the bulk shedding is desirable and economical.

The accommodation for the people employed upon the farm is still sadly in need of enlargement and improvement in order that there may be even decent accommodation. The need for this has been pressed for several years, and attention should be given without delay. The Principal pleads for more laboratory space, a need that has become pressing through the increased number of students; and particularly so for the housing of valuable apparatus and stores which now have to be kept in the main laboratory.

The number of people who have received instruction at the College since its opening, including short courses for special subjects, now stands at 1,530. The area under cultivation during the year, including 139 acres which was under crop at 30th June, 1921, was 643 acres, the produce of which was mainly used for College purposes or is in reserve against times of stress. In the small dairy factory some £4,700 was distributed amongst farmers in the neighbourhood for cream, and from a total disbursement of £5,484 a profit of £1,406 was obtained, but this did not include any allowance for capital invested, rent, rates, or taxes.

The analytical work by the Agricultural Chemist, as indicated in his report herewith, during the year has been very similar in quantity to that of the two preceding years, excepting with regard to the testing of glassware for dairy purposes, the tests not being so numerous as in 1921. In all 2,338 analyses were made of 24 specified and unspecified subjects, and 4,991 tests of glassware were made; and of the analyses soils, butters, stock foods, and canned fruits showed a marked increase. Dipping fluids fell nearly 50 per cent., and upon this matter the Agricultural Chemist is very emphatic upon the point that if there is any real desire to abate the tick pest some more effective means must be adopted than those now in force. He points out that dipping has now been practised for twenty-five years and no real advance has been made in eradication. The custom of only dipping to prevent gross infestation and so to leave a few ticks on the beast in order to avoid tick fever is an entirely fallacious one, and will never help eradication. It is mentioned by him that in America in 1906, when eradication was first taken in hand, the area placed in quarantine was 741,515 square miles, or about double the infested area in Queensland, and now 500,000 square miles have been declared clean, and this on practically the same formula for dipping as we have here.

The analyses of the soils from the proposed irrigation areas of the Dawson and Severn rivers have been particularly interesting, and these appear to be of great fertility and of good physical condition, but, on the other hand, the soils from the Coominya Soldiers' Settlement are the reverse and very poor. The trial shipment during the year of Queensland arrowroot (*Canna edulis*) was subjected to analysis before shipping and an average sample of the consignment was found to be of good quality. The activity of the State Enterprises Department and of manufacturers with canned fruits, jams, &c., involved much work, and the result, so far as the pineapples were concerned, showed a good pack. An interesting inquiry was made by the Agricultural Chemist into a concentrated pineapple syrup made from the waste of the pineapple in the factories, and the product showed a clear amber colour and had a pleasant flavour. Dried bananas or banana figs and dehydrated apples were also subjects of investigation.

Sixty-four firms were registered under the Fertilisers Act, and apparently farmers were satisfied with what they received, because but few samples were sent in for what may be termed a check analysis.

The most uncommon investigation of the year was that of ant-bed from North Queensland, which is greedily eaten by horses, and which was found to have a fair feeding value.

The Director of Fruit Culture in his reports mentions that last year will be memorable as marking the first serious attempt among

fruitgrowers towards utilising their surplus fruits upon business lines, excepting always dried fruits, the marketing of which has been under control for some years past. The success arising from dealing with dried fruits no doubt pointed the way to the producers of other kinds of fruit which are suitable for the fresh fruit trade, canning, or preserving otherwise than by drying. In Queensland the Fruit Pool was concerned with pineapples only, and the canning of the surplus stock was on the whole very satisfactory, but growers have yet to learn thoroughly that a business once entered upon must be carried through, and learn that it is not good business to give irregular delivery because for a time values for green fruit travel higher than for canning purposes. No factory can continue operations upon intermittent supplies, and the obvious result, if the business is to succeed, will be compulsion; otherwise there will of necessity be a return to the old order. The marketing of green fruit, particularly in the Southern markets, has improved very considerably, mainly through the activities of the Southern Queensland Fruitgrowers' Society, which now includes over 100 local associations and by its organisation has found profitable markets for many growers who, without the advantages of the Association, would have had difficulty in placing the result of their work so well as they are now able to do.

Mr. Benson reiterates the opinion, expressed by him during the many years he has been in the State, that the best method for fighting the fruit-fly is to be found in a combined effort among growers for the compulsory gathering and destruction of all fly-infested fruits. He points out also that the fly is not equally destructive in all seasons, and that its incidence is largely climatic. In 1921 the citrus crop was badly attacked, but this year it is a difficult matter to find an infested fruit, and perhaps the same set of circumstances may obtain in the Stanthorpe district, which suffered so severely last year. The experiment work of the year included an investigation of the so-called pineapple disease that attacks the smooth-leaved pineapple. The Entomologist (Mr. Tryon) discovered a mealy bug feeding on and destroying the root terminals and so preventing the plant from obtaining nourishment. The remedy is the application of dry sulphur to the ground surrounding the affected roots, and if this be given in time the plant is saved.

The banana manurial experiments which have been referred to in former reports were discontinued, because the object of them, which was to prove that exhausted banana lands could be brought back to profit, had been attained. To replace the work upon exhausted banana lands a series of experiments has been undertaken to find out whether it is possible to improve citrus orchards that have shown signs of deterioration through the attack of various insect and fungus pests and so have become unprofitable.

The experiment vineyard at Coominya has been closed down, the knowledge desired when the work was started, to gain information relative to varieties suitable for the coastal area, having been attained. Such of the varieties as have been retained have been planted elsewhere for distribution next year, and in the meantime will be kept under close supervision so that the cuttings distributed may be absolutely free from disease and suitable for the locality where they are to be planted.

A return of the fruit and vegetables inspected during the year is appended to the Report of the Director of Fruit Culture, and shows a large increase in trade. The production of citrus fruits has increased by 277,630 bushels over 1920, of pineapples by 876,101 dozens, of bananas by 1,742,786 dozens, apples by 117,223 bushels, and peaches by 50,000 bushels. It is also expected that given a normal season the production for 1922 of citrus fruits will further increase by 100 per cent., pineapples by 50 per cent., bananas by 100 per cent., apples by 50 per cent., and peaches by 100 per cent.

The Director of Agriculture is of opinion that the agricultural outlook is most encouraging, and especially so with regard to cotton, as evidenced by the enormous number of inquiries that have been received from people wishing to undertake the cultivation of it. The seed that has been introduced under the quarantine laws for the improvement of the quality of the cotton here has been grown in quarantine plots, and on one of them a bacterial disease developed which was dealt with by the destruction of the whole crop by fire—a necessary procedure if we are to keep our crops clean, and the danger is so great owing to the diseases in other countries that the Quarantine Service of the Commonwealth will not allow in future any seed for planting to enter at any port but Brisbane, and this has been so determined because the officers of this Department have greater knowledge and are more able to deal with the matter than elsewhere.

The maize crop was not so satisfactory as it might have been, owing to the season being somewhat capricious in some parts, but where rains were favourable good crops were secured. The scheme of the Department for the improvement of the maize grown here was added to by the introduction of new seed from America, and there were plots covering 91½ acres planted prior to selection for distribution. Three good varieties have been obtained from those imported—Funk's Ninety-day, Funk's Yellow Dent, and Eureka—and of these the firstnamed gave a return of 55 bushels to the acre, which return will no doubt be improved by acclimatisation. Of the varieties that may be termed departmental maize, Reid's Yellow Dent returned 70 bushels, Golden Beauty 85 bushels, and Improved Yellow Dent 90 bushels to the acre.

The quality of wheat last season was better than in 1920, and but a small proportion proved

to be under f.a.q. standard. The Director during the year evolved a scheme for working with the State Wheat Board for the improvement of our wheat, which briefly is that the scientific and technical work in connection therewith is to still be carried out by the officers of the Department, and who will recommend also the seed for planting; the Board in its turn will purchase the seed and place it in suitable and picked localities. The Board later will secure the wheat from these areas, clean, grade, and store for the following plantings, the principle governing the scheme being that, with the help of the Board, the wheat-growing areas will gradually be covered with wheat adapted to the several localities according to the classification made in that respect instead of continuing the haphazard selection of varieties now in vogue. Full details of the scheme, which is now in operation, are given in the Director's report herewith. Ten varieties of wheat produced at the Roma State Farm were tried in different localities under field conditions, covering 46½ acres, the highest yield being recorded at Inglewood with Cedric, which produced 30 bushels to the acre. Comparative trials of 130 varieties of wheat, principally crossbred, permitted the selection of a limited number as exhibiting improved field characteristics and ability to resist rust, and these have again been sown this year for further trial.

A very interesting pamphlet has this year been issued, compiled by Mr. G. B. Brooks, the Agricultural Instructor in the Central District, from experiments made by him with the sweet potato. In his trials yields of over 30 tons to the acre were obtained, and in consequence of his investigations over 10,000 cuttings were distributed through the State.

Interesting trials were also made, particulars of which are included in the Director's report, to ascertain the yields of fodder for dairy purposes with crops that are not usually found on our farms. The trials included wheat and peas, wheat and vetches, rye and peas, rye and vetches, barley and peas, barley and vetches, oats and peas, oats and vetches. Similarly fodder for pig-keeping was also under investigation, and the range covered mangels of different kinds, beet, Scotch kale, rape, swedes, carrots, and cabbages.

At the State Farm, Gindie, the improvement of the shorthorn cattle (beef) and the draught horses was the main work. The silos were kept filled for the use of the stock, and the cattle entered for the three shows that were attended were very successful; at Rockhampton the champion prize for the bull was obtained.

At the State Farm, Kairi, a further 50 acres of scrub were felled, but the heavy rains have given much work in keeping down undergrowth and weeds. The plot for the cultivation of sugar-cane to provide sets for planting upon the coast lands has been very successful, a large demand for cane plants having been received. The extension of the dairy industry upon the

tableland has now reached a stage when herd-testing of the herds in the district should be encouraged by the presence of an official tester with headquarters at the State Farm. The dairy cattle there are regularly tested, but for the benefit of the industry generally the instruction should be at the service of the community generally, and this cannot be accomplished with the staff now available, and a herd tester should be appointed for that area.

At the State Farm, Warren, instructional work, in addition to the ordinary work of a State Farm, has been given to the pupils of the local school, the method being by lectures and by practical demonstrations, and it is proposed to extend this form of instruction. Arrowroot has proved successful here, and, though for the present it has been used for pig-feed, the interest of the neighbouring farmers has been aroused, and the result of this experiment has formed an interesting feature of the year.

At Hermitage the usual practice of testing the wheats produced at the Roma State Farm under other conditions was followed, and the farm was also utilised for demonstration plots of cereals.

Encouraging reports have been received of several of the new varieties of wheats bred at the Roma Wheat Farm, and a distinct objective has been gained in the work to which Mr. Soutter has devoted himself. The trials with fertilisers that have been carried on for some years have shown that, though improvement has been effected by the use of them, fertilising will not pay unless the quantity and cost can be reduced to a minimum. The milling tests by the Agricultural Chemist of the new crossbred wheats have proved that the Queensland-grown grain is equal in quality to that of the other States, and in some instances to the advantage of this State. With the report of the Director of Agriculture is an excellent diagram showing the different qualities of the wheat grown here and of their behaviour in different districts.

The Chief Dairy Expert mentions that during part of the autumn of last year the dry weather affected the supply of green feed, the customary feeding off of young crops on the Downs did not take place, and that the dairy-men on the coast were in a similar predicament, with the result that the supply of dairy produce was considerably affected towards the end of the year, but nevertheless the production exceeded that of 1920-21. There was no change in the use to which milk is placed, butter, however, claiming the larger proportion of the milk raised, but Mr. Graham is of opinion that the standard of quality was well maintained and that improvement was effected, particularly where pasteurisers had been installed. It is calculated that at least 95 per cent. of the butter made in factories in Queensland is subjected to neutralisation and pasteurisation before churning. Several experiments were made for testing

the efficiency of pasteurisation towards arresting the deterioration in the quality of butter for cold storage over long periods, and each of them supported former tests, which were in favour of pasteurisation. The butters coming forward indicate generally that the factories are giving closer attention to details in manufacture than was the case during the war. The reversion to open markets for dairy produce in Europe brought with it a return to the older and more established systems, but the position at the outset was hampered by the large quantities of dairy produce for war purposes that had accumulated in Great Britain, and for a time it was most difficult to effect sales at remunerative prices. This unsatisfactory state of affairs continued until the British Government decided to unload its stocks, with the result that the market collapsed and the dairying industry here received a severe shaking. Companies were unable to gauge the demand in the markets, and the industry fell into such a state that manufacturers could see no other way to even matters excepting by the reduction of cream values. This method secured the companies, but it fell hardly upon the producers who, owing to their position in the industry, had to bear the brunt, but fortunately the slump did not last long, and recovery has been more rapid than was expected. The shortage of cold storage for dairy produce is still a matter of great anxiety, and if a good spring and summer happen the production will be in advance of the record of last year. The opening of a portion of the cold stores at the Hamilton will, however, relieve the anxiety somewhat. Our market with Victoria was disturbed for a time by the importation of New Zealand butter into that State at a lower price than Queensland butter could be placed on the market, but the enterprise did not make much headway, and but a limited quantity passed into consumption in Victoria. Cheese manufacture, like butter, continues to progress, but the people in this State, in comparison with the Southern States, are not great cheese-eaters, and so the greater proportion of the manufacture is for export, and this State occupies the premier position in that respect. The industry has now reached the point at which, Mr. Graham is of opinion, careful consideration should be given towards the lines upon which development should be directed and that principally pasteurisation should be encouraged, as being a main need in the equipment of all cheese factories, in the use of which equipment improvement in the standard of quality is attained, material increase in the yield secured, and the production of cheese that will stand transport to a higher degree than now.

Herd testing, the importance of which to the industry has been emphasised from year to year, has been continued, but sufficient is not yet being done in this direction. The appearance of dairy cows is not a reliable indication of value, but the Babcock test does not fail, and

evidence is forthcoming in the fact that no owner has yet been successful in correctly indicating to the herd tester, prior to a test, a correct relative order of merit of his cows, nor has any owner been successful in selecting the animal in his herd yielding the highest butter-fat, immediately before the commencement of testing operations. These facts are convincing and every dairyman should educate himself in this system, which is the keystone of his industry.

The prosecutions for evasions of the provisions of the Diseases in Stock Acts during the year numbered 62 with 61 convictions, and under the Slaughtering Act there were 25 cases, all of which were successfully conducted. In the former instances the greater number of offences were for travelling stock without permit or way-bill and in the latter for illegal slaughtering and for feeding swine on uncooked offal. The export trade in horses still shows an unfair proportion of mares, and this notwithstanding the many protests that have been made, but without avail, with regard to restrictions on export. The number of mares sent overseas from Queensland, and possibly in a similar proportion from other States, was 282 out of a total of 876 horses.

The Conference of Chief Veterinarians and Stock Officials held in Sydney, as an adjunct of the conference of Ministers for Agriculture which was held in Perth in April last, covered many subjects in relation to the administration of stock matters, details of which will be found in the report of the Chief Inspector of Stock. The complaint is again repeated that the local authorities throughout the State, with isolated exceptions, do not exhibit the sympathy that is to be expected of them in relation to the suppression of the tick pest, and unless there is more co-operation and help, the hopes of the Tick Board will be badly hampered. The cleansing work in the Helidon area progressed so favourably that the Tick Board were able in January last to declare a portion of it to be clean, and the restrictions were removed within that area; and this being accomplished, a further infested district was added to the cleansing area. In the South Burnett cleansing area, sporadic outbreaks were brought about by travelling stock, and, though every precaution was taken, unfortunately without avail, it has now become necessary to station an inspector at Wondai to prevent the introduction of infested stock from the northwards. A considerable portion of the Miles-Chinchilla cleansing area was released during the year, and it is hoped that no further infestation will prevent the release shortly of the south-east portion of that area. The dips registered number 4,163 and 1,150 samples of dipping fluids were analysed by the Agricultural Chemist. The portable testers supplied to stock inspectors have given satisfaction to the Chief Inspector of Stock and have been found to be very useful for field testing, more particularly in isolated districts. The testing of

dairy stock for tuberculosis was continued, free of cost, but subject to an agreement with the owners that animals which reacted were to be destroyed. The health of cattle has been generally good, and no outbreaks of any new infectious diseases have been met with. Seventy cases of pleuro-pneumonia were reported as against sixty-six in the previous year, and in all cases the usual quarantine was enforced, the term of which, in accordance with the recommendation of the Conference of Chief Inspectors of Stock, will be reduced to two months. The Chief Inspector enters into details regarding the several diseases that have come under his observation, the so-called caterpillar plague and the affection of cattle by it, the reported gidyea poisoning, contagious abortion, tuberculosis, swine fever, diseases of sheep, &c.

The number of cattle, sheep, and pigs slaughtered in the State for home consumption for the year ending the 30th June last was 618,842 as against 494,665 in the previous year, and indicates that the consumption of meat products for each head of population is again rising; and that business is improving is shown by the erection of 106 slaughter-houses in accordance with the regulations under the Act and of the reconstruction of three in order to comply with the Act. The average prices of stock sold through the yards at Newmarket for the year to the 30th June last was—Cattle, £5 14s. a head; calves, £3 7s. 6d.; sheep, 12s. 6d.; and lambs, 10s. a head.

Since the Brands Acts have been in operation 139,895 brands and earmarks of the different kinds permitted under the Acts have been registered and 6,400 brands have been cancelled; and of those remaining on the register many are not in actual use by those who registered them. There was a noticeable decrease in the transfers of cattle and sheep brands and ear marks and particularly so in the case of applications for new cattle brands and ear marks, the reason for which is to be found in the state of the meat trade for export. Illegalities in relation to the Brands Act are still to be met with, and during the year the fines by the courts amounted to £197.

The interest of the stockowners in the work of the Stock Experiment Station, Yeerongpilly, continues, and notwithstanding the uncertainty of the market eighty-five head of stud stock were received there for inoculation with but one death, and the cause of it was pneumonia. Since 1910 the inoculations at this station of stud stock have numbered 1,122 head, and the deaths have only numbered fourteen animals or 1.24 per cent. of the whole; and at the Townsville station, from 1913 to 1917, during which time Mr. Tucker, M.R.C.V.S., was in charge, 238 head were inoculated with but four deaths or 1.68 per cent. of the whole. At Yeerongpilly during the year 391 specimens were received for examination, and they covered many subjects, such as blood for various organisms, fowls and eggs,

morbid specimens for tubercle, actinomycosis and general pathological characters, parasites (external and internal), pickling brine, water, butter, cheese, &c., &c. Blackleg vaccines were distributed for the treatment of about 3,500 calves, principally in the region south and west of Maryborough. An important investigation was made into bacillary white diarrhoea in young chickens, which occurred at the Returned Soldiers' Settlement at Enoggera, and so important was the trouble that Mr. Pound called the settlers together and delivered a lecture accompanied with lantern slides, showing the different phases of the disease. A full description of the investigations and suggestions regarding remedies will be found in the report of the Government Bacteriologist herewith. Milk from twenty-six animals suspected of being affected with contagious mammitis was received for examination, and in seventeen cases the specific streptococci were detected. An investigation of importance to the cotton-growing industry was made into a disease known as bacterial blight, or angular leaf spot, which occurred at Beaudesert and elsewhere. This disease has a wide distribution in America, and probably the first infestation came from that country. The Bacteriologist expresses the opinion that the trouble becomes more pronounced when the conditions of environment, particularly an excessive rainfall, are unfavourable to young growing plants.

There has been much written concerning the trend of the population to the cities, and an examination of figures shows the contention to be correct. In 1871 Queensland had a population of 125,000 people, and there were 59,970 acres under crop, or, roughly, about half an acre to each member of the community. In 1921 the population was 764,665, with an area under crop of 804,507 acres, which gives a little over 1 acre to each head of population; therefore, it will be seen that in fifty years, though the population has increased six times, the area under crop has only been doubled for each head of population. The year 1921 held the largest area under cultivation in any one year since 1912, excepting in 1916, when the area was 885,259 acres under crop, the largest increases in comparison with 1920 being the areas under maize, pumpkins, cotton, sugar-cane, hay, and green feed. Maize increased by 19,229 acres, pumpkins by 6,151 acres, cotton by 2,636 acres, sugar-cane by 21,894 acres, and hay and green feed by 18,524 acres. On the other hand, there was a reduction in the area under wheat of 12,650 acres. In fruits, vines do not show much change, nor do pineapples, oranges, mangoes, or strawberries; apples increased slightly in area, about 240 acres, and bananas by about 900 acres.

The area under cultivation was somewhat over 1,045,000 acres, an increase of about 27,000 acres over 1920, and to handle that area there were 3,153 owners of under 5 acres, 7,755 of 5 acres and under 20 acres, 6,935 of 20 acres and under 50 acres, and 6,715 of 50 acres and over.

The labour employed by the owners mentioned numbered 35,000 males and 942 females for general farming, and 20,000 males and 15,000 females for dairying, the total value of machinery and implements used in farming, dairying, irrigation work, and travelling machinery being £3,294,533, an increase of more than £400,000 over 1920. The area under cultivation showed an increase of 80.89 per cent. over similar figures for 1904, and 2.64 per cent. over 1921. The number of holdings had also advanced by 57.51 per cent. in comparison with 1904, and 4.46 per cent. in comparison with 1920.

Irrigation does not seem to receive the attention it should do in a climate such as this, and, apart from the work of the Government in the Burdekin Delta, there is apparently a falling off in the area treated. The largest area treated during the last ten years was in 1913, with 11,904 acres, and from that year until 1917 the area steadily decreased to 4,467 acres. An upward move then began, and last year 11,264 acres were irrigated, of which 7,915 acres were in the Ayr district, in which the Burdekin delta is included. The nearest approach to Ayr are the Townsville and Bowen districts with 518 and 541 acres respectively. According to the returns received by the Registrar-General, the area under bananas during 1921 was 9,873 acres, an increase in area of 892 acres, and the production was estimated to be 1,742,786 bunches, the average return from the thirteen principal banana districts being about 168 bunches to the acre, the highest return being in the Brisbane district, on the north side of the river, with 255 bunches, Rockhampton being second with 236 bunches. An inquiry has lately been made of the growers of 1 acre or more as to whether they favoured a pool for this fruit, but the inclination of the industry was against the establishment of it. The investigations into the diseases affecting the banana have been continued during the year, and the result of this work has been regularly made public in the Press and in the "Agricultural Journal," and to prevent the spread of disease it has been necessary to bring the provisions of the Diseases in Plants Act into operation and prohibit the removal of plants from affected areas to clean areas. It is proposed also to undertake the cultivation of clean stocks at the Quarantine Station now being established on Bribie Island for distribution to growers.

The sister industry of pineapple cultivation does not show a similar advance in area to that of bananas, the net increased area being only 46 acres in comparison with 1920. The total area for 1921 was 3,956 acres with a production of 876,101 dozens, the principal acreage being in the Maroochy Petty Sessions District, where there are 1,229 acres under crop; the Cleveland District has 971 acres; and the nearest approach to these figures is in the Brisbane North area with 394 acres. It is somewhat peculiar that such a crop as the pineapple should not find more favour with growers in the warmer parts of the State, but it is not so, for of the total

acreage the country south of Gympie accounts for 3,181 acres, and the remainder of the State holds but 775 acres under pineapples. The problem of exporting pineapples in the green state to overseas markets has not yet been solved, but there are still enthusiasts endeavouring to find out some method that will enable growers to have export opportunities.

The area under apples is about 3,586 acres, of which 3,288 acres are in the Stanthorpe District and 248 acres in the Warwick District, the increase in area in the former being 187 acres and in the latter 67 acres. Beyond these two districts the cultivation of the apple is a negligible quantity and is decreasing generally excepting in Atherton, which shows a tendency to enlarge its area under crop. Of peaches there are 1,973 acres under crop, of apricots 110 acres, of plums 907 acres, but of the fruit crops which the fruitgrowing industry generally favours there does not seem to have been in reality any advance worth mentioning. Vines have been increased by 25 acres, but oranges have decreased by 63 acres. Market gardens have fallen in area by 53 acres, but other gardens and orchards show an advance of 42 acres.

Arrowroot in Queensland is produced from *Canna edulis*, and the arrowroot used in Great Britain from *Maranta arundinacea*, the tuber that is principally if not wholly cultivated in the West Indies. Several years ago an attempt was made to place Queensland-grown arrowroot upon the London market, but though there is no difference in alimentary value the authorities in Great Britain, while not directly objecting to the sale of it, required that it be placed upon the market as Queensland arrowroot to distinguish it from arrowroot the product obtained from the West Indies. No sound reason was given for the ruling, the only reason announced being that arrowroot as proclaimed is the product of *Maranta arundinacea*, and that there must be a differentiation in any other arrowroot. This decision, of course, killed any hope of building up an export trade, because the very fact of having to differentiate in the title would arouse suspicion and lower values would result.

Lately, owing to good seasons and other causes, growers revived the idea that an oversea market should be sought, and that perhaps trade could be done with Belgium, France, and elsewhere on the Continent. Nine of the growers and manufacturers subscribed a bag each of manufactured arrowroot. This quantity was received by the Department, placed in 1,400 cartons each one pound weight, and the consignment was sent to the Agent-General, in the hope that by seeking a market outside Great Britain an export trade would be set up, and, if so, incidentally increase the area under crop.

The Department has handled the commodity entirely on account of the growers and manufacturers, and any returns received will be passed to them, less actual cost of packing and despatching.

The industry of late years has been—

							Area.	Production.	Hands Employed in Manufacture.	Tubers Handled.	Arrowroot Produced.
							Acres.	Tons.		Tons.	Lb.
1919	..	..	..	..	..	..	469	5,098	..	..	..
1920	..	..	..	..	..	..	639	7,302	70	7,040	1,536,784
1921	..	..	..	..	..	..	968	14,619	86	12,636	2,688,460

Practically the whole of the industry lies in the Logan and Nerang Petty Sessions District, the other districts in which it is grown covering but very few acres in each, which seems to indicate that the growers there are feeling their way.

COTTON.

Apart from the effect of the scheme for the organisation of the agricultural industry, the most noticeable feature of the year has been the marvellous interest that has been shown in the cultivation of cotton, mainly as a result of the encouragement of the industry by the fixed advance of 5½d. a pound for seed cotton of good quality free from disease. Though this advance is commercially too high to permit any margin of that sum being exceeded in the market, and can only be looked upon as a method for encouraging the growers, the interest that has been adduced by the action of the Government attracted the attention of an association of merchants who formed a company under the title of the Australian (Queensland) Cotton Growing Association, and who have erected, under agreement with the Government, ginning works in Brisbane and Rockhampton, with the intention of increasing their plant as the area under cotton demands. The advance of 5½d. a pound for seed cotton of good quality was granted for the first time for the crop of 1920 and will be continued until the 31st July, 1923, to include the planting of this year. After the conclusion of that harvest an advance will be given for the succeeding years upon a sliding scale according to the length of staple, the highest advance being for cotton of 1¼-inch staple, or grade that commands the highest figure in the European market for Upland cotton. Before 1920, to encourage the industry, advances were given by the Government, the first year in which this was done being in 1913 when an advance of 1½d. a pound was given, and the operations were so small that the value of the crop harvested did not exceed £65. Succeeding years saw the advance gradually increased, generally by about ¼d. a pound a year until 1920, and even then the value of the crop was under £1,000. For the harvest of 1922, at 5½d. a pound, the value has reached £86,000.

During the war there was no difficulty in selling the resulting cotton lint at a satisfactory figure within Australia, because the principal users of this commodity were precluded from obtaining supplies from Asia, the usual source, and there was no difficulty met with for a year

or so after the war, but now that sea traffic has been resumed they are not willing to pay a price that will maintain the standard of living for the growers. The consequence has been that it has been necessary to send our cotton to Liverpool for sale by the British Cotton Growing Association, with which body the Government has an agreement for that purpose. The value of the business that should belong to the growers of Queensland can be gauged by the following imports:—

	1919-20.	1920-21.
	Value, £.	Value, £.
Raw cotton (lint)	55,307	24,781
Cotton wick	17,462	25,173
Cotton wool	12,465	27,117
Cotton-seed oil	11,312	26,399
Cotton yarn	33,028	99,391
Cotton, n.e.i.	91,258	282,757

Of the foregoing, cotton wick, cotton wool, and cotton yarn may be classed as manufactured goods, but the making of them is the simplest form of the textile trade, and they should be made here.

The main obstacle now that the industry has reached the commercial stage is the discovery that the seed that has been used, and which was originally imported from America as being of the kinds most favoured in the market, is not of the length of staple that commands the highest price to-day. This is being overcome by the planting of nursery plots in different parts, but it will not be until 1924 that there will be sufficient seed for general distribution to replace the whole of the seed now used for planting. The magnitude of the cotton industry is indicated by the fact that annually the area under this crop in the cotton-growing countries is about 60,000,000 acres, and the output can be generally taken as 17,495,309 bales, which, at 450 lb. to the bale, gives the world's output at 7,875,000,000 lb. of raw cotton lint—probably more. Some of the by-products of cotton are oil, feed-cake for stock, flour for human consumption and soap-making, all of which could be manufactured here, and it is reasonable to imagine that now the industry has become established the time is not far distant when yarn mills will be established in Queensland, and later the manufacture of piece goods will be established. The quantity of cotton lint won this year can be taken at 1,333,333 lb., and at a similar rate of expansion for next year it may be estimated that the lint for sale will be at least equal to 6,500,000 lb., with double that quantity for 1924—that is, if no unforeseen climatic difficulties occur.

COTTON STATISTICS, 1907-1922.

Year.	Acreage.	Yield.	Net Returns Paid to Farmers.	Total Value of Crop.
		Lb.		£
1907	300	109,294	1½d.	683
1908	540	117,521	1½d.	734
1909	509	129,245	1½d.	808
1910	460	151,438	1½d.	946
1911	605	186,894	1½d.	1,168
1912	441	150,414	1½d.	940
1913	214	10,338	1½d.	64
1914	134	9,445	1·65d.	65
1915	72	11,363	2·537d.	120
1916	75	17,867	2·537d.	189
1917	133	118,229	3·58d.	1,764
1918	203	166,458	4·35d.	3,017
1919	73	37,238	5·5d.	853
1920	166	45,581	5·5d.	1,038
1921	1,967	922,778	5·5d.	21,145
1922	7,000	*3,755,526	5·5d.	86,064

* To the 31st August, 1922.

MAIZE.

Though Queensland does not lead Australia in maize cultivation, it being beaten by New South Wales in area and production, it is grown here on a very wide area; indeed, it may be described as being the most universal crop in the State. In thirty-four petty sessions districts the crop is worthy of a separate record, and during the past five years the harvest has been—

	Bushels.
1917	4,188,586
1918	4,105,974
1919	1,830,664
1920	2,012,864
1921	2,907,754

the average return for the last five years being 21·83 bushels to the acre.

Two factors have disturbed the growers of late—the price obtained in the local and the Southern markets, to which latter a large quantity is annually supplied; and, as a necessary corollary, a greater protection against importation from foreign countries. Upon the question of prices, the average values were in 1916 at 4s. 4¾d. a bushel, in 1917 at 3s. 1½d., in 1918 at 5s. 0¾d., in 1919 at 8s. 1¼d., in 1920 at 8s. 4½d., and in 1921 at 4s. 5½d. a bushel, the highest values during the first half of the year. The highest values were obtained in April and May 1920, when maize was about 10s. 5d. a bushel, and the lowest during March and April 1917, when it stood at 2s. 3d. a bushel. It is obvious that, if the standard of living that has been set up is to be maintained, the prices of our commodities must be set to hold that standard, and it is upon this point that growers base their desire for a firmer foundation and for a sounder market. The present protection is 2s. a cental with a preference of 1s. a cental in favour of South Africa, and should prices rise above a certain figure there is a fear that consignments will be drawn by the merchants from countries which likewise are large growers of maize, but where the standard of living is not the same as here.

Maize being so widely cultivated here, and, excepting in the closely settled districts, in proximity to large markets, in small areas, and with sales in small quantities, there may be some difficulty in arranging a pool satisfactory to all. The position with regard to wheat is entirely different, because the cultivation of that crop is confined to one portion of the State, and metaphorically the farms on which it is grown are contiguous.

For the 1921 crop the Atherton District showed the largest production with 445,175 bushels, followed by the Petty Sessions District of Wienholt with 425,111 bushels, the third being Nanango with 256,981 bushels. A comparison of production with other States indicates that Queensland should improve its production to the acre. Taking ten seasons for a comparison, the average production in this State is 22·13 bushels to the acre; in New South Wales, 27·23 bushels; and in Victoria, 44·33 bushels. The question of drying the grain before marketing, which is a much-needed procedure, has not yet been commercially solved, the main trouble lying in the cost of the establishments and the scattered districts where maize cultivation and production reach large figures. For instance, there are only three districts—Atherton, Wienholt, and Nanango—where the area under cultivation exceeds 10,000 acres. Maize from subtropical and tropical districts is usually associated with high temperatures and excessive moisture, which give rise to conditions causing rapid deterioration, and investigations by Mr. Coleman have proved that it is highly advisable to dry our maize before marketing, and he recommends the moisture in the grain should be reduced to the following percentages to be safe—12 per cent. of moisture for a good merchantable quality, 13 per cent. and 14 per cent. for local requirements.

There has been a feeling among growers that they would be better served were a pool established on similar lines to the Wheat Pools, and inquiries have been made among the growers

as to their inclinations, with the following results:—

The roll for the referendum was compiled from all farmers in Queensland who had returned themselves as maizegrowers for the year 1921, but any grower who was growing maize in 1922 was given an opportunity to vote, provided he made application to the Department for a ballot-paper.

In all, 9,291 growers were supplied with voting forms, and to date 3,694 replies have been received. Of these, 1,589 have voted in favour of a pool and 1,326 against a pool, 779 returned the form but did not exercise the vote, while 121 were returned by the post office as unclaimed.

In compiling the roll, the State was divided—mainly according to railway lines—into nine districts, and the information elicited in the process will be of interest.

No. 1 District was taken from Roma street to Dayboro, Pinkenba, Sandgate, Redcliffe, Caboolture, Kilcoy. In this there are 334 growers with a total acreage of 1,551 acres.

No. 2 District is from South Brisbane to Tweed Heads, Beaudesert, Rathdowney, Canungra, Belmont, and Cleveland. Here there are 655 maizegrowers with a total acreage of 3,749 acres.

No. 3 District is from Roma Street to Boonah, Jurrupa, Yarraman, Rosewood, Mulgowie, Marburg, Toowoomba, and Mount Pleasant. Here there are 2,963 growers with a total acreage of 37,080 acres. This is the biggest maizegrowing area in the State.

No. 4 District is from Toowoomba to Harristown, Crow's Nest, Haden, Cecil Plains, Bell, Jandowae, Tara, Juandah, Charleville, and Orallo. Here there are 1,089 growers with an acreage of 13,520 acres.

No. 5 District is from Harristown to Pittsworth, Mary Valley, Dirranbandi, Killarney, Wallangarra, and Goomburra. Here there are 910 growers with an acreage of 18,187 acres.

No. 6 District is from Elimbah to Antigua, Brooloo, Tarong, and Nanango. Here there are 1,634 growers with a total acreage of 35,610 acres.

No. 7 District is from Pilerwa to Mundubera, Urangan, Dallarnil, Mount Perry, Walla-ville, and Gladstone. Here there are 838 growers with an acreage of 6,030 acres.

No. 8 District comprises practically the whole of Central Queensland and the district west of Townsville. Here there are 308 growers with an acreage of 2,383 acres.

No. 9 District is that around Cairns, Ather-ton, and Cooktown. Here there are 413 growers with a total acreage of 15,175 acres.

MAIZE STATISTICS, 1907-1922.

Year.	Acres under Cultivation.	Production.	Average Yield per Acre.	Average Value per Bushel.	Value of Crop.
	Bushels.	Bushels.		s. d.	£
1907	127,119	3,093,789	24.34	2 6	386,724
1908	127,655	2,767,600	21.68	4 4	599,647
1909	132,313	2,508,761	18.96	4 0	501,752
1910	180,862	4,460,306	24.66	3 0	669,046
1911	153,916	3,637,562	23.63	2 3	454,695
1912	117,993	2,524,371	21.39	5 0	631,093
1913	156,775	3,915,376	24.97	5 0	978,844
1914	176,372	4,260,673	24.16	3 6	798,876
1915	146,474	2,003,463	13.68	5 0	525,909
1916	181,405	3,018,934	16.64	4 4 $\frac{3}{4}$	654,102
1917	165,124	4,188,586	25.37	3 1	645,740
1918	149,505	4,105,974	27.46	5 0 $\frac{3}{4}$	1,026,494
1919	105,260	1,830,664	17.38	8 1 $\frac{1}{4}$	732,266
1920	115,805	2,012,864	17.38	8 5	863,864
1921	135,034	2,907,754	21.53	4 5 $\frac{1}{2}$	654,245

SUGAR.

The yield of sugar last year was the best since 1917 and actually was the second largest crop on record, amounting to 282,198 tons. The sugar areas generally received an adequate rainfall, though in the case of Innisfail and Babinda there was too much rain. The effect of this beneficial season was to greatly increase the crop over that of 1920 and, combined with the increased area put under cultivation, accounted for the fine harvest. The year 1920 was the first under the Sugar Agreement, and farmers did not benefit to any great extent owing to the drought. But 1921 was a prosperous year to both grower and miller. The effect of the guaranteed price was to induce sugar-mill owners to make considerable additions to their plants

and so increase the efficiency of their mills, while farmers in nearly every district put new areas under cane, using in many cases land that had lain unproductive for years. New districts were also opened up, such as Carmila, near Mackay, and the Maria Creek Soldiers' Settlement, south of Innisfail.

The yield of sugar in 1921 amounted to 282,198 tons, or 114,797 tons more than was manufactured in 1920. The record year of 1917 produced 307,714 tons, but this was largely accounted for by the large area of standover cane left from the 1916 crushing. The present yield was highly satisfactory and was accounted for by the factors set out in the first paragraph. With the New South Wales production of some 17,000 tons of sugar there was no necessity to

import sugar; in fact, the crop was in excess of consumption and necessitated a carry-over.

The total acreage under cane in 1921 was estimated by the Government Statistician to be 184,513 acres, the largest acreage ever under sugar-cane in Queensland, being an increase of 21,894 acres above that of 1920. Of this area, 122,956 acres of cane were crushed, this being also the largest area of cane ever cut, exceeding by 33,814 the acreage crushed in 1920.

This left a balance of 61,557 acres, which included cane allowed to stand over till 1922, cane cut for plants, and cane planted for 1922. The yield of cane per acre amounted to 18.60, which is the best figure since 1917 and 3.57 tons per acre better than the preceding year. The total tonnage of cane harvested was 2,287,416 tons, an increase of 947,961 tons over 1920. The tonnage of sugar per acre was 2.30, also the best yield since 1917, and exceedingly good.

The tonnage of cane taken to make 1 ton of sugar has improved considerably of recent years. In the year under review it took 8.11 tons of cane as against 8.0 in 1920. The average from 1909 to 1918 was 8.68. It is apparent that during the past few years this figure has gradually been getting less owing to the better varieties of cane now being introduced and improved methods of cultivation used, as the direct outcome of the work of the Bureau of Sugar Experiment Stations combined with more efficient work in the mills and the work of the Cane Prices Board.

At the commencement of the present season there was every indication of a crop approaching the 1917 record. The rains towards the end of 1921 were entirely satisfactory, as was also the growing season. During the wet season period, however—viz., January to April, 1922—the usual precipitation did not take place, and the rainfall in the South was particularly low. This, however, was made up to some extent by good falls in June and July, which considerably improved a crop which had gone a good deal

backward. In the North, however, where much more rain fell, the crop was good and improved right through this year up to the present. It is now anticipated that this year's crop will be quite equal to 1921, probably somewhat better, if favourable conditions continue, the present estimate being 283,000 tons of sugar.

The effect of the last agreement is plainly seen in the increased acreage and tonnage of the present season, and it is sincerely to be hoped that it will be renewed for a term of years, so as to afford that stability to the industry which is so vitally essential if it is to continue satisfactory.

The work of the Sugar Experiment Station, a branch of this Department, is still increasing, owing to the general expansion of the industry. The last number of foreign importations of new canes have now been commercially tested, and a number of these, free from disease, high sugar content, and good croppers, have been distributed to growers. Arrangements are now being made with other canegrowing countries for new supplies of good varieties.

In addition to this, over 200 seedling canes have been raised at the South Johnstone Sugar Experiment Station, and these have been planted out in the field. Fresh seedlings are being raised this year.

Highly successful field days have been held at the Bundaberg and Mackay Sugar Experiment Stations during the year, the attendance of farmers showing a large increase. Growers were taken over the experiments and addresses given on the practical side of cane cultivation.

The entomological work at Meringa is proceeding satisfactorily under the charge of Mr. E. Jarvis, who appears to be on the eve of an important discovery in relation to the checking of the cane grub menace.

Full reports upon the work of the Sugar Experiment Stations in all branches will appear in the Annual Report of the Bureau later in the year.

SUGAR STATISTICS, 1907-1922.

Year.	Tonnage of Cane Produced.	Area under Cultivation.	Number of Growers.	Number of Mills Operating.	Sugar Tonnage.	Average Price of Sugar per Ton.	Average Price of Cane per Ton.	Value of Sugar Output.
		Acres.				£ s. d.	£ s. d.	£
1907	1,665,028	126,810	..	54	188,307	10 9 1	0 17 6	1,968,593
1908	1,433,315	123,902	..	53	151,098	11 3 5	0 13 0	1,687,891
1909	1,163,494	128,178	..	48	134,584	12 2 5	0 14 3	1,631,270
1910	1,840,447	141,779	..	50	210,756	11 7 7	0 13 9	2,398,728
1911	1,534,451	130,376	4,238	49	173,296	13 8 6	0 14 5	2,326,499
1912	994,212	141,652	3,901	47	113,060	12 17 2	0 15 0	1,453,764
1913	2,085,588	147,743	3,982	48	242,837	15 17 0 ¹ / ₂	1 3 7	3,848,966
1914	1,922,633	161,195	4,130	47	225,847	14 15 6 ¹ / ₂	1 3 0	3,331,493
1915	1,152,516	153,027	3,977	45	140,496	18 0 0	1 6 5	2,528,928
1916	1,579,514	167,221	4,211	41	176,973	18 0 0	1 6 5	3,185,514
1917	2,704,211	175,762	4,401	45	307,714	21 0 0	1 12 0	6,461,994
1918	1,674,839	160,534	4,148	43	189,978	21 0 0	1 12 7	3,989,538
1919	1,258,760	148,469	3,634	33	162,136	21 0 0	1 17 2	3,404,856
1920	1,339,455	162,619	3,930	34	167,401	30 6 8	2 10 6	5,077,830
1921	2,270,075	184,513	4,465	40	282,198	30 6 8	2 10 0	8,560,003
1922	2,276,000	..	..	40	283,000	30 6 8	2 10 0	8,584,333

From 1907 to 1912 the growers of white-grown cane received from the Commonwealth Government an additional payment of approximately 6s. to 7s. 6d. a ton in the shape of a bounty.

WHEAT.

The average return to the acre of wheat was 18.37 bushels, and, excepting Tasmania, with 20 bushels, this State headed the averages for Australia, and it is in a similar position with regard to the average for the past ten years. It has been the same throughout, and the position it holds in wheatgrowing extinguishes the cry that is made by pessimists that Queensland is not a wheatgrowing State. The highest average was obtained in the Yeulba district, if a small area of 2 acres in the Port Curtis district, which returned 30 bushels, be excluded. The Downs still continues the home of wheat, and the harvest in that district was gathered from 148,453 acres out of the total of 164,670 acres under crop, and the average yield there was equal to 18.79 bushels in comparison with an average yield of 18.37 bushels for the State. The total production, including feed and chick wheat, amounted to 3,025,786 bushels, and the quantity treated in the mills was over 2,652,000 bushels, out of which 54,694 tons of flour, 281 tons of meal, and 2,553,984 bushels of bran and pollard were produced. But the whole of the wheat which passed through the mills was not Queensland wheat; large quantities were brought from the South, with the consequence that the Wheat Board had to resort to exportation in order to clear their stocks and so keep faith with those people who had entrusted their wheat to them. In addition to the importation of wheat for gristing in Queensland mills, the whole of the trade in flour from Rockhampton northwards is in the hands of millers in the Southern States, who last year did not keep to the custom of former years, but instead pushed their trade south of the recognised area. This is not as it should be, but with the law of interstate freetrade it cannot be prevented excepting by the usual custom of the market by selling at a lesser price.

The returns received by the Registrar-General cover the year to the 31st December, and consequently differ somewhat from the total of the operations of the Wheat Board, which deals with the harvest as a whole in accordance with the actual weight of the wheat received by the Board. For the year 1920-21 harvest, the Board received 3,745,053 bushels of wheat, which was classified thus, excluding wheat retained by growers for planting and feed:—

	Bushels.	Percentage.
F.A.Q.	2,855,830	
No. 1 Red Wheat ..	3,947	
	<hr/>	
	2,859,777	76.36
No. 2 Milling ..	143,735	3.84
No. 3 Milling ..	198,966	5.32
No. 1 Feed	122,500	3.27
Scented	21,624	.57
No. 2 Feed	122,500	3.27
No. 2 Red Wheat ..	5,590	.14
	<hr/>	
	3,745,053	100.00

over which 909,774 bushels, or 24.29 per cent., were exported.

For the 1921-22 harvest the figures have been—

	Bushels.	Percentage.
No. 1 Milling ..	2,536,959	88.29
No. 2 Milling ..	154,502	5.38
No. 3 Milling ..	66,062	2.29
No. 1 Feed	104,754	3.65
No. 2 Feed	7,120	.25
Chick Wheat	4,061	.14
	<hr/>	
	2,873,460	100.00

of which 998,243 bushels were exported; and it is worth noticing that in the two complete seasons here recorded the Board have had in each season to export close on 1,000,000 bushels, yet the mills in operation buy wheat from the Southern States, and the Northern towns buy their flour from Southern mills.

The Chairman of the State Wheat Board has been good enough to furnish a report for publication for general information, and setting forth the transactions of the Board in brief:—

The Board having perfected its machinery through the experience gained during the previous year found itself ready to take rapid delivery of an early harvest.

The 1921-22 crop showed a marked improvement in quality compared with the wheat of the previous harvest, the percentages of classifications of wheat taken into the pool being as under:—

	Per cent.
No. 1 Milling	88.20
No. 2 Milling	5.42
No. 3 Milling	2.30
No. 1 Feed	3.68
Inferior wheats .. ..	.40

Wheat shipped overseas created a most favourable impression owing to its excellent milling quality, and overseas millers have expressed themselves as being highly pleased and have made inquiry for further supplies of Queensland wheat.

SUMMARY OF OPERATIONS, SEASON 1921-22 TO 30TH JUNE, 1922.

The wheat delivered to the pool to this date was 2,873,807 bushels 51 lb.

A certain quantity was retained by growers for seed purposes and for feeding stock. The quantity retained was very small, however, as the Board dealt largely in seed wheat, extensive grading operations being carried out at the Board's maltings and granum depôts.

Stocks are accounted for as follows:—

Shipped	988,243 bushels 05 lb.
Local sales	1,375,319 bushels 42 lb.
On hand	510,245 bushels 04 lb.
	<hr/>
	2,873,807 bushels 51 lb.

INCOME.—SALES.

The total amount received on account of local sales was	£331,796
On account of overseas sales (incomplete) ..	38,366

Local sales averaged 5s. 4.97d. per bushel, while overseas sales, based on cable advices and with an allowance of 1.063d. per bushel for overseas charges, averaged 5s. 5.25d. per bushel f.o.b., equalling 5s. 7.42d. f.o.b. for the whole crop.

The amount estimated as balance due on shipments is £224,898.

EXPENDITURE

To the 30th June, to be deducted from realisations, is as follows:—

	£
Administration (indoor)	10,064
General expenses	2,905
Administration (outdoor)	11,452
Sundry wheat sales expenses	501
Insurance (general)	33
Insurance (wheat)	5,080
Workers' compensation	110
	<hr/>
	5,223
Insurance (marine)	1,118
Railage (general)	2,445
Railage (on shipment)	16,179
	<hr/>
	18,624
Shipping expenses, including freight	69,124
Estimated overseas charges at 1.063d. per bushel	4,375
	<hr/>
	£123,386

The above expenditure represents a total charge of 10.31d. per bushel on the whole crop, or approximately 3.36d. per bushel on f.o.b. realisations (excluding railage).

ADVANCES.

Total advances made to growers to 30th June, 1922, based on a first advance of 3s. per bushel and a second advance of 1s. per bushel on f.a.q. wheat, is £561,866, averaging 3s. 10.92d. per bushel.

Since the 30th June a third payment of 6d. per bushel has been made to the growers; this involves approximately £72,000.

WHEAT HARVEST, 1920-21.

The finalisation of the 1920-21 pool has been delayed owing to the difficulty experienced in securing account sales for wheat sold on our account through the Australian Wheat Board.

The Australian Wheat Board advises that it is due to no lack of effort on their part that this delay has occurred. They have agreed to do everything possible to expedite the matter, so that the Board may be in a position to declare a final dividend and wind up the pool.

The Australian Wheat Board had control of all wheat exported during the 1920-21 harvest, and were the sole charterers of the necessary tonnage.

B

Had it not been for the delay in the finalisation of our London returns, the pool would have been wound up several months ago.

The figures given hereunder briefly disclose the position of accounts of the pool as at 30th June, 1922:—

SUMMARY OF OPERATIONS, SEASON 1920-21 TO 30TH JUNE, 1922.

Wheat delivered to the pool was 3,755,736 bushels 32 lb., the classification averages being as under:—

Milling wheats	85.10
Inferior wheats	14.90

Stocks are accounted for as follows:—

Local sales .. 2,797,371 bushels 08 lb.	74.5 per cent.
Shipped 912,171 bushels 12 lb.	24.3 per cent.
Stock on hand .. 20,569 bushels 53 lb.	.5 per cent.
Weight losses .. 25,624 bushels 19 lb.	.7 per cent.
	<hr/>
	100 per cent.

SALES.

Total amount received on account of local sales was	£1,174,273
Account of overseas sales (incomplete) ..	234,804
The amount due on shipments based on <i>pro forma</i> invoices is	72,131

But owing to the delay in forwarding account sales by the Australian Wheat Committee, London, and the absence of any further remittance over and above the amount drawn for (£234,804), we are unable at this stage to state with any accuracy the total balance due on shipments.

Local sales averaged 8s. 4.7d. per bushel, including all classes of milling and inferior wheats.

EXPENDITURE

To be deducted from realisations as follows:—

	£
Administration (indoor) including general expenses	28,121
Administration outdoor)	54,136
Insurance (wheat)	8,411
Railages and demurrage	65,244
Sundry charges	2,659
Shipping expenses	77,140

The above expenditure represents a total charge of 13.36d. per bushel, including railage 4.17d., shipping charges, freight, marine insurance 4.93d., and without allowing for an estimate of overseas charges.

ADVANCES

Total of advances made to growers was ..	£1,213,062
Being 6s. 11.4d. per bushel on milling wheats and 3s. 9d. per bushel on inferior wheats, averaging 6s. 5.5d. per bushel on the whole crop. A further advance will be made to the growers as soon as overseas account sales are to hand.	

WHEAT STATISTICS, 1907-1922.

Year.	Area Cultivated.	Average Yield per Acre.	Total Production.	Average Value per Bushel.	Value of Crop.
	Acres.	Bushels.	Bushels.	s. d.	£
1907	82,461	8.41	693,527	..	121,367
1908	80,898	14.87	1,202,799	..	300,700
1909	117,160	13.41	1,571,589	..	379,801
1910	106,718	9.58	1,022,373	..	204,475
1911	42,962	6.64	785,109	..	49,894
1912	124,963	15.81	1,975,505	..	493,876
1913	132,655	13.34	1,769,432	3 1½	442,358
1914	127,015	12.48	1,585,087	3 9½	290,599
1915	93,703	4.42	414,438	6 9½	113,970
1916	227,778	10.81	2,463,141	..	656,838
1917	127,815	8.10	1,035,268	4 6¾	196,123
1918	21,637	4.83	104,509	4 6	23,515
1919	46,478	6.71	311,638	7 1	101,282
1920	177,320	20.91	3,707,357	7 1	1,745,547
1921	164,670	18.37	3,025,786	5 8	857,306

DAIRYING.

The Travelling Dairy of this Department commenced operations in 1889, and in 1890 the production, as then estimated, of butter was 2,000,000 lb. and of cheese 170,240 lb., but now, after a lapse of only thirty-one years, the result of that education is shown by the production in 1921 of practically 61,000,000 lb. of butter and over 15,000,000 lb. of cheese and more than 15,000,000 lb. weight of condensed milk, the production having increased by 20,000,000 lb. of the former commodity and nearly 4,000,000 lb. of cheese and nearly 2,000,000 lb. of condensed milk in comparison with 1920. It was not until 1909 that any note was taken of the dairy stock of the State apart from the stock generally, and then

there were 333,839 dairy cows; now there are 554,208 head, and the keeping of them has created work for 21,695 dairies, 47 butter factories, and 83 cheese factories. Statistics of the export overseas trade are available from the Commonwealth, and as their system of collecting figures is parallel with the financial year the export figures do not agree with the statistics of production in the State, which are governed by the lunar year, but during 1920-21 the exports amounted to 26,067,478 lb., of the total value of £2,964,204 or at an average value of 2s. 3¼d. per lb. Some 35,684 people—male and female—stated that their occupations during 1921 were in relation to dairying, and it has been ascertained that the value of machinery used in dairying was £672,088.

DAIRY STATISTICS, 1907-1922.

Year.	Number of Dairy Establishments.	Area under Artificial Grasses.	Butter Manufactured.	Cheese Manufactured.	Condensed Milk Manufactured.	Average Wholesale Price of Butter (Lb.)	Average Wholesale Price of Cheese (Lb.)	Value of Industry.
		Acres.	Lb.	Lb.	Lb.	s. d.	s. d.	£
1907	13,291	76,913	22,789,158	2,684,588	..	0 10½	..	..
1908	14,038	82,784	23,838,357	3,199,510	..	0 11¼	..	..
1909	15,279	108,438	24,592,711	3,662,497	7,038,202	0 11	..	..
1910	16,079	140,196	31,258,333	4,146,661	7,843,670	0 11¼	..	..
1911	16,225	166,175	27,858,535	3,718,257	6,227,519	0 11½	..	..
1912	16,579	205,363	30,307,339	3,947,615	7,923,381	1 1	..	..
1913	17,866	236,582	35,199,387	5,395,050	8,059,051	1 0	0 6	2,207,746
1914	18,029	290,147	37,230,240	7,931,869	6,967,486	1 0¼	0 7½	2,393,402
1915	17,876	305,186	25,456,714	4,383,410	5,368,510	1 0½	0 9½	2,041,666
1916	18,410	363,871	28,967,279	8,495,825	6,584,272	1 4½	0 9½	2,850,949
1917	19,404	406,094	38,930,690	11,142,114	9,409,059	1 5¾	0 9¼	3,986,984
1918	19,313	418,467	32,371,575	8,636,700	6,845,610	1 6	0 10½	3,458,086
1919	18,952	449,019	26,213,514	8,296,318	9,170,034	1 8	0 11½	3,701,975
1920	20,457	450,780	40,751,373	11,512,262	13,362,464	2 4½	1 2	6,038,528
1921	21,695	459,914	60,923,194	15,200,527	15,168,652	1 11	0 11½	7,259,891

POULTRY AND BEES.

The Poultry Instructor has found during his travels that, excepting in one or two districts, the industry is in a flourishing condition; but this does not mean that we are on the verge of organising an export trade in eggs to Europe as is from time to time advocated. So long as the Australian trade is good—and it is so now—there is no need, with the high cost of freight and charges, to talk about an export trade in eggs. Our production is not yet large enough and the present charges for freight, &c., are equal to 7½d. a dozen or 15s. 6d. a case, and as the local price is about 1s. 1d. a dozen it means that without making allowances for losses, insurage, breakage, &c., the price to be realised in London must be about 1s. 9d. a dozen before an advantage can be obtained over the local market. There are advocates also of an export trade in poultry, but, excepting at certain seasons, such as Christmas, Easter, &c., the demand at the prices at which poultry can be laid down in London at a profitable rate is very limited. Another obstacle lies in the fact that, according to the estimate of the Poultry Instructor, fully 80 per cent. of the fowls in this State are of the Leghorn breed, which does not command the highest figure in the English market. The quality of the poultry has improved, the number of the breeders has increased, and with this advance the demand from Southern markets for eggs has been very satisfactory at a profitable figure. For the two weeks ending with the last days of August over 750,000 eggs were consigned to Southern ports, and for that month the number can be set down at 1,250,000. The total number of eggs of all kinds produced in 1921 was 3,324,569 dozens, an increase of over 500,000 over 1920. The number of birds of all ages returned to the Registrar-General were—of fowls, 835,094; of ducks, 42,107; of geese, 7,902; of turkeys, 19,626; and of undescribed birds, 4,623, the total of which is 919,352 birds, or less than 1¼ birds of all ages to each head of population. It is obvious, therefore, that the time has not yet arrived to seriously consider an export trade, though probably a consignment landed at the exact time would be profitable; but the large markets of the world give but scant attention to occasional consignments when a regular trade can be commanded elsewhere.

Beekeeping, which is an allied industry to poultry-keeping, shows an increase in productive hives and a decrease in non-productive hives, and upon the whole the figures do not indicate any advance of moment in the industry. About 600,000 lb. of honey was produced from 12,000 hives, with an average of 50 lb. to the hive; and in addition 8,231 lb. of wax were produced. The largest number of hives in any one district is in Gympie, with 1,199, followed by Caboolture with 1,061 hives and by Warwick with 1,049 hives.

STOCK.

The value of the stock, including in that term horses, cattle, sheep, pigs, camels, mules, goats (angora and otherwise), was reduced in comparison with the preceding years by £273,628; the total value for 1921 being, as has been shown in the table at the commencement of this report, to have been £4,210,315, but under each kind of stock there was an increase in numbers. Horses were added to by .72 per cent., cattle by 9.18 per cent., sheep by 5.73 per cent., swine by 39.01 per cent. There was also an addition of 196 camels, 82 mules, 1,038 angora goats, and 11,184 common goats. From the angora goats 2,895 lb. of mohair were obtained and 517 skins were placed upon the market, and from the common goats 11,630 skins were sold. The improvement of horses by importations direct from the United Kingdom did not receive much attention during the year, only one horse of the value of £500 being recorded as having been imported direct to Queensland, but as there are no interstate statistics now kept the number that were brought here from the Southern States is not known, though they were but few. The deterioration of our stock, particularly draught horses, has now been going on for many years, brought about, without doubt, by the use of entires at cheap rates—and this state of affairs has become so notorious in effect that at a meeting of the Chamber of Agricultural Societies a resolution was adopted asking the Minister to provide draught entires of good breeding for use in the farming districts. Before, however, any effective improvement could be attained by acceding to the resolution, it would seem that there must be adopted some means whereby the use of animals that do not come up to standard can be prevented from being used, otherwise they will still be able to travel the country and continue the course of deterioration. The importations by sea and land for the year were valued at £67,482, the number of animals being 8,746, and the exports by the same medium numbered 22,464, of the value of £175,177. The number of cattle in 1921 was 7,047,370, held by 48,719 owners, with an average to each of 145 head, the increase in the number of owners being 5.38 per cent., and the number of calves returned to the Registrar-General as having been branded was 1,519,824. The number of stock killed for consumption here or for export was less by 5,235 in comparison with 1920, but the value of the meat produced advanced by £587,978, and this notwithstanding the bad state of the market here and abroad. The number of cattle killed for consumption in 1920 was 749,412, and in 1921 the number dropped to 744,177. In 1914 the consumption of meat of different kinds by each head of population had reached the high figure of 263.69 lb.; during the year, but from that time until 1919 there was a marked decline in each year. During 1919, however, there was a sharp rise with a fall in 1920, but for 1921 the consump-

tion rose to 203.54 lb. for each head of population, and the cause of this variation is probably to be traced to high prices, because during the progress of the war, when the price of meat was high, people denied themselves, but now that meat is cheaper there is more consumed. Australia is the largest meat-eating nation in the world, and in that respect followed by New Zealand, the United States of America, and Great Britain in rotation. The largest number of sheep held in any one year was in 1914, when the number exceeded 23,000,000, and in the two following years the number was reduced by over 7,500,000, since when, however, an increase set in, and in 1921 there were 18,402,399, held by 4,090 owners, with an average number for each owner of 4,499 head, and the owners increased in number by 1.34 per cent. The system of classing farmers' wool up to holdings of 1,500 sheep is developing gradually, and is evidence that the carrying of sheep on small areas on the coast is increasing. Since the system was commenced the value of wool sold at the wool sales for farmers amounted to £17,258, and it would have been much higher had it not been for the decline during two years in the value of cross-bred wools. The number of bales of classified wool that have been sold is 1,029, and 200 farmers have taken advantage of the opportunity offered to them, the limit of the privilege being 1,500 sheep on a holding. Instances of the value of wool derived from the sheep on the coast are to be found in the prices obtained—wool from Burketown averaged nearly 15d. per lb., and from the Percy Islands, near Bowen, 14½d. per lb.

Though the Commonwealth Government now has control of the research work for blowfly, the basis of the investigations and the system of research arise from the discoveries made by Mr. Brown, the Instructor in Wool, during his experiments at the State Farm, Gindie, before the Federal Government assumed control. The weak points in the Gindie methods have been eliminated during the experiments at Dalmally by the Science and Industry Bureau, and it would seem that if owners will make themselves acquainted with those investigations and practice what is taught by them, the effects of the blowfly pest will be much diminished.

The estimated value of the production from the sheep industry during 1921 was £7,783,818, and of that amount the sum of £6,416,848 is to be credited to the export of wool overseas—for which the values were upon an average 15d. for greasy and 28½d. per lb. for scoured wool. The losses in sheep from dingoes still are high, and the number reported to the Registrar-General stood at 231,906 for the year, but these depredations amount to less than one-half of the number killed by the blowfly, the losses through that insect having numbered 562,417, many of which

could have been saved had the owners taken fair precautions.

The pig population in 1921 was 145,083 head, and excepting during 1917 and 1919 the number has not materially altered during each of the last ten years, notwithstanding that the demand from the factories is greater than the supplies, and the manufacturers have to go elsewhere to maintain their business. In 1919 we had 172,699 pigs, and in 1919 the number had dropped to less than 100,000 head. The slaughtering for the year covered 27,273 head for consumption in the State, and 160,205 head for export, and the total exceeds the total of the whole number in the State, including stud breeders and pigs too young for the market; but that the industry is flourishing and capable of expansion is shown by the fact that there are six bacon factories in operation employing 400 people, and that the output was valued at £1,093,292. The expansion of the industry as much as possible is manifest because of the demand for pigs; but that expansion is dependent to a great extent upon the supply of milk for the young stock, and this again, owing to general practice of dairymen depending upon the natural grasses for food for their stock, is limited to the question of good or bad seasons, hence the cause for no great alteration in the pig population, and until hand-feeding of dairy stock becomes general it is doubtful whether the number of pigs held in Queensland will materially increase.

The total exports overseas of pastoral products for 1921 from Queensland were of the value of £10,435,807, a decrease of £2,478,739 in comparison with the preceding year.

“THE ANIMALS AND BIRDS ACT OF 1921.”

The amalgamation of the Native Birds Protection Act, the Native Animals Protection Act, and the Game and Fishes Acclimatisation Act into one measure has helped administration greatly, and consistent help has been given to the Department in furthering the objects of the new Act by the ornithological societies in Brisbane, Rockhampton, and elsewhere. Public sentiment for the protection of our native birds and animals is developing, and people are beginning to realise that a stand must be made to prevent further depletion if we are to preserve the beautiful and useful fauna we possess. The difference between the wild bird and animal population within the region of settlement, now and before close settlement, is plainly remarkable to those who are interested in the subject, and though a migration before settlement is natural to a certain degree, there is no doubt that the use of poisons for agricultural, pastoral, and other purposes, added to indiscriminate and wanton slaughter, has caused the loss of many birds and animals that could have been spared.

"The Animals and Birds Act of 1921" imposes very few additional restrictions in connection with our native fauna that were not provided for by the statutes that it supersedes. The provisions of those Acts have, however, been made applicable to present-day conditions, while objectionable features and provisions that are not now needed have been omitted. Power is now given for a reserve for native birds and animals to be made a real sanctuary. Eggs, skins, and feathers now come within the scope of the law, which was quite necessary, because the bird population, and even the animals also (for instance, the platypus), have suffered much from collectors, scientific or otherwise. The licensing of dealers in skins, live birds, and animals is now provided for, and this was necessary for any effective enforcement of the law. The penalties may be regarded by some as severe, but they are essential because of the difficulty of control of so wide an area as Queensland without a fully equipped staff, and for such control the help of societies and unofficial persons is necessary. Anyone who buys or sells any protected animal or bird, or plumage or untanned skin, taken during the close season is liable to a penalty of ten pounds. Provision is made for the proper control of the trapping of animals, and particularly so with regard to the use of poisons.

A new restriction has been the prohibition of the use of flare and other lights by shooters of opossums. It is true pastoralists had always objected to these lights on the ground that the exposure of a flare of sudden light is very liable to cause stampeding and injury to cattle quietly camping, but beyond that there was the question of the unnecessary slaughter of opossums and native bears. The flare system had been developed with disastrous results. In some districts a flash lamp was to be found in almost every homestead. Anything that came in the flare was shot at, whether old or young, and altogether acetylene and similar lamps were responsible for the almost total extinction of the opossum in many districts. In America there are stringent laws against the use of the jack or pit or any other artificial lamp. Even the homely hurricane lamp is prohibited in the pursuit of game. The prohibition came into force for the first time in 1922 season, and it must be admitted that it was not everywhere observed; but the next time the season is opened, however, it is hoped the flare will have become obsolete, and to this end the Department knows it will have the hearty co-operation of the professional trapper, who is keenly alive to the danger of the

possible extinction of his industry. Several prosecutions were instituted with success against persons using flashlights. It is satisfactory to know that all the other States have recently tightened up their native bird and animal legislation, and altogether there are indications that the irreparable damage that was likely to be done to our splendid native fauna has been averted.

"THE CO-OPERATIVE AGRICULTURAL PRODUCTION AND ADVANCES TO FARMERS ACTS, 1914 TO 1919."

The Amended Co-operative Agricultural Production Act, which came into effective operation in May 1920, has been the means of helping many farmers to become established on their properties, more particularly in the dairying industry. But for the unfavourable seasons and marketing conditions existing for the last eight or nine months, the number of advances made during the last financial year would, without doubt, have been considerably increased. A survey of the position shows that during the first three months of the year under review a total of 122 applications were received out of the total for the year of 236, which is a reflex of the unfavourable condition of the industry for the last nine months.

Out of the total of 615 applications received, since the Act came into operation, 349 have been approved, 105 withdrawn, and 161 declined. Of those withdrawn, 34 were approved but applicants decided not to continue with the advance. Those rejected were in the majority of cases not beginners, and thus ineligible under the Act.

It has been found that the advances for cattle and pigs have been much more sought after than those for sheep or silos. This can be accounted for by the inadequacy of the amounts and the terms specified for these latter purposes. The advances made for the purchase of pigs have to a great extent fallen short of what was anticipated. The absence of any near standard market to many of the districts where large numbers of advances have been made, more particularly Roma, Dalby, Gayndah, and Rockhampton, and the consequent limitation to local supply, would account for the comparatively small number of applications for pigs.

The repayments of these advances can be considered very satisfactory, taking into consideration the unfavourable conditions which have prevailed for the last nine months.

The following table indicates in detail the operations of the Act from its inception, in relation to advances to farmers:—

Details.	To 30th June, 1921.	During 1921-22.	Total, 30th June, 1922.
Total number of applications received	379	236	615
Number approved for advance	216	102	318
Number declined	95	76	171
Number withdrawn	47	57	104
Number in action	86	22	22
Number actually advanced	176	102	278
Amount advanced (excluding fees)	£24,540 7s. 1d.	£12,455 11s. 3d.	£36,995 18s. 4d.
Particulars of Advance—			
Cows and calves	2,629	1,832	4,461
Bulls	21	7	28
Pigs	59	32	91
Sheep	672	458	1,130
Silo	2	1	3

—	Advances.	Fees.	Interest.	Total.	BALANCE OUTSTANDING.	
					30th June, 1921.	30th June, 1922.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
To 30th June, 1921	24,540 7 1	128 18 6	601 11 4	25,270 16 11	..	..
Repayments 1920-21	788 5 6	135 13 6	257 7 2	1,181 6 2	24,089 10 9	..
To 30th June, 1922	12,455 11 3	87 3 6	1,471 19 11	14,014 14 8	..	..
Repayments 1921-22	3,336 11 10	73 1 0	1,506 5 8	4,915 18 6	..	33,188 6 11

“BRANDS ACTS, 1915 TO 1916.”

Details of registration of brands and ear-marks are as follows:—

—	YEAR 1921-22.		Number since Inception of Legislation.
	Number.	Fees Received.	
		£ s. d.	
Three-piece brands registered	1,722	861 0 0	74,786
Cancelled brands registered	20	30 0 0	6,400
Transfers	1,221	305 5 0	31,704
Brands cancelled	{ 22 }	..	..
*714			
Marks cancelled	165	..	..
Alteration of address	554	..	..
Symbols registered	34	170 0 0	1,164
Cattle marks registered	860	430 0 0	20,915
Distinctive brands registered	73	..	652
Sheep brands and marks registered	192	64 0 0	7,868
Sheep brands and marks transferred	116	14 10 0	2,806
	..	£1,874 15 0	..

* Special cancellation under section 19, Brands Act.

A decided decrease in volume of registrations and transfers of cattle and sheep brands and earmarks is shown on figures for the previous year. This is especially noticeable in the record of cattle brands and earmarks registered. The number of symbol brands allotted also shows a big decrease on figures for previous years, and it is becoming increasingly difficult to secure suitable designs which are dissimilar to those already registered. A considerable number of disused brands were cancelled during the year under the provisions of section 19 of “The

Brands Act of 1915,” but will, of course, not be available for reallocation until a period of five years has elapsed since they were cancelled or last in regular use.

It is obvious that at present a large percentage of registered brands are not in use, and some effective method should be adopted to cancel these disused brands.

Provision is made under section 18 of the Act for an annual return of registered brands and earmarks, but apart from the fact that large

numbers of owners do not furnish this information with their stock returns, the work involved in classifying the information supplied annually on postcards is very heavy. It is possible that some more economical and simpler method could be adopted whereby the information required could be included in the stock return.

Illegalities are still rife, especially in the north-western portion of the State, and the fines imposed for breaches of "*The Brands Act of 1915*" and regulations totalled £197.

CHEESE POOL ACT.

The "*Cheese Pool Act of 1921*" is the outcome of deputations representing the co-operative cheese factories, and as a result of a conference of cheese producers, held in Toowoomba in March 1921, which passed a resolution advocating a compulsory cheese pool.

The scheme of the Act is that factory managers must furnish weekly returns of all classes manufactured, and agents must furnish a return of all cheese sold. From the particulars supplied, the Board appointed under the Act can ascertain what each company has available for export, so that each company should have a fair share of local sales. Should a local company have been able to sell well on the local market and not have sufficient for its export quota, that company is advised of whence it can obtain sufficient to supply its share. This arrangement does not, however, limit any company with regard to the quantity it may export, the main point being to equalise the local market sales. Another provision of the Act is, as an alternative to the foregoing, that all cheese shall be delivered to the Board for sale.

A ballot was taken as to whether the Act should be brought into force and upon the two proposals before mentioned, and of those who voted 91.1 per cent. were in favour of the Act being brought into force, and 8.9 per cent. were against such action. Of the total number who voted, 72 per cent. stated that they approved the allotment by the Board to each producer of a fair quota of the home and overseas markets; 18 per cent. of the total stated that they approved the delivery of all cheese to the Board for sale.

Following on this referendum, an election was held for five members to constitute the State Cheese Board. This closed on the 8th April, 1922, with the result that Messrs. H. Keefer, W. Purcell, H. T. Anderson, J. E. Dean, and H. L. Pentecost were elected and duly became the State Cheese Board until the 20th January, 1923.

The Board has, since its appointment, carried out the provisions of the Act, in so far as the marketing of cheese is concerned, in a manner satisfactory to the industry.

DINGO AND MARSUPIAL DESTRUCTION ACT.

The intention of Parliament was undoubtedly that the permits to be issued under the Act should allow the holder to follow his occupation upon the holdings named on the permit, and that he should do so without any restrictions other than those imposed by the Act. But certain Dingo Boards are requiring an applicant for a permit to first obtain the approval of the occupier of the holding upon which the applicant desires to destroy dingoes, and though this custom is within the law it is giving great dissatisfaction in the districts where it is practised. One baneful effect is that an occupier of a holding, if he wishes, can, with the consent of the Dingo Board concerned, make his holding a preserve for the people employed by him, or, what is worse, practically evade the intentions of the Act by being apathetic towards the destruction of dingoes. It would seem that a remedy for such a position is needed, and it is suggested that, if any real progress is to be made towards the destruction of the dingo and fox, the first step to take is to make destruction compulsory and with no reservations with regard to the issue of a permit by a Board if the applicant is of good character. But there are some people following the calling of trapper who think it a fair thing to take advantage of Boards in order to obtain the bonus; for instance, it has come to the knowledge of the Department that people have been caught breeding foxes in order to obtain the bonus for scalps. For such offences there should be a high penalty.

An inconvenience felt by scalpers is the limit of thirty days in which to deliver scalps to the receiver in order to obtain a certificate for bonus, it being averred that the time is too short for the scalper who is distant from a receiver and that a time limit interferes with his power to obtain a living.

The Boards whose territory abuts on other States frequently fear that they are subject to imposition through scalps being brought from other States where the bonus is lower than in Queensland, and this difficulty is hard to overcome, even if the Boards were to challenge the origin of the scalp.

Complaint is also made by Boards that for their purposes the payment of full assessment is evaded by people who divide their stock amongst their families and relatives in order to evade payment, but as the law stands the assessment is payable by the owner of the stock, and therefore it lies with the Board interested to determine that fact. Nevertheless, there is a good deal in the complaint, not only for Dingo Boards, but also in relation to assessments for the different funds for the benefit of the pastoral industry, such as the Stock Fund, and it would seem that when an amendment is made in the laws the difficulty might be surmounted by making the

buyers and sellers may be able to judge the market price, require a purity analysis and germination test.

Table III. gives the purity and germination of the principal imported seeds, with the countries from which they were shipped. It does not always follow that the port of shipment is in the country of origin. From the table it will be observed that the purity and germination is, on the whole, satisfactory.

It is proposed to make a similar Table for vegetable seeds sold by the various vendors in small packets. If time permits, an article dealing with the subject will appear in the "Queensland Agricultural Journal" early in 1923. Many complaints were received as to the poor germination of vegetable seeds purchased by market gardeners, several samples of cabbage growing less than 20 per cent., carrots less than 29 per cent., and cucumbers less than 20 per cent. The vendors of such seeds would therefore be well advised to destroy their old stocks and rely on the freshly imported seeds referred to in Table III.

In addition to the vegetable seeds above mentioned, 177 consignments were imported by parcels post. These contained hundreds of small

commercial quantities, the quality of which were not up to the bulk seeds, and many small lots imported by private persons contained weed seeds. All such packages when large enough were re-cleaned in quarantine.

Attention has been directed to the misuse of certificates relating to samples sent in by vendors, which certificates are not a guarantee by the Department as to the quality of the bulk that the sample is supposed to represent, but a plain statement of facts revealed by a purity analysis and germination test of the sample received. Both buyers and sellers are encouraged to send in samples for analysis, the report in most cases being in the form of a certificate, for which a fee of 2s. 6d. is charged. It is of the utmost importance that the samples be drawn from the actual seed in the sender's possession and that they be truly representative of the bulk. Instructions as to sampling, &c., have been issued in leaflet form; nevertheless, every month brings many samples of both seeds and stock foods without the name or address of sender. Over 200 of such samples came in during the last six months. Nearly as many were too small for any determination to be made. Unless proper care is exercised by senders, delays in the issue of reports will continually occur.

TABLE I.
GERMINATING CAPACITY OF AGRICULTURAL SEEDS, 1921-1922.

	PERCENTAGE OF SAMPLES GERMINATING BETWEEN—										Standards of Germination prescribed by the Pure Seeds Acts.	
	100-90	89-80	79-70	69-60	59-50	49-40	39-30	29-20	19-10	9-0	A Grade.	B Grade.
Barley, Cape	100.0	..	..	..	..	..	..	..	..	..	90	75
Barley, Skinless	30.8	53.9	7.6	7.7	..	..	..	..	..	..	90	75
Canary	22.3	55.5	11.1	..	11.1	..	..	..	..	..	75	60
Cowpea*	34.5	17.2	17.2	10.3	3.5	6.9	6.9	3.5	..	..	75	65
Lucerne*	8.3	18.7	20.8	31.3	14.6	2.1	2.1	3.5	..	..	80	60
Millet, Foxtail (Setaria) ..	51.9	29.6	7.4	..	..	7.4	..	3.7	..	..	75	60
Millet, Japanese	65.3	10.2	6.1	6.1	2.1	2.1	2.0	4.1	2.0	..	75	60
Oats	77.3	15.9	4.5	..	..	..	..	..	..	2.3	85	70
Panicum, White	16.0	32.0	20.0	16.0	4.0	..	4.0	8.0	..	..	75	60
Paspalum .. .. .	..	..	..	..	..	10.9	5.5	16.4	21.8	45.4	25	10
Prairie Grass	4.2	12.5	12.5	29.1	12.5	8.2	4.2	8.4	..	8.4	60	40
Rhodes Grass .. .. .	..	..	1.1	7.4	15.8	19.5	21.6	14.2	14.6	5.8	35	20
Rye	20.0	..	40.0	..	..	20.0	20.0	..	..	..	90	75
Sorghum	20.0	30.0	35.0	10.0	5.0	..	..	..	..	..	75	60
Sudan Grass	26.4	36.1	16.6	6.9	7.0	4.2	1.4	..	..	..	75	60
Tares	100.0	..	..	..	..	..	..	..	..	1.4	75	60
Beans, Canadian Wonder	70.6	17.6	..	..	..	11.8	..	..	..	..	80	65
Peas	61.1	22.2	5.6	..	..	5.6	..	5.5	..	..	75	65
											80	65

* Lucerne and Black Cowpea Seeds of Queensland growth frequently contain a large amount of Hard Seeds, which are seeds with seed coats so impervious to water as to delay germination. The figures appearing below give the average plus amount in the samples germinating between the percentages at the top of the column. When the amount of Hard Seeds present in any sample exceeds 10 per cent., it is obvious that the effective germination is greatly reduced.

	100-90	89-80	79-70	69-60	59-50	49-40	39-30	29-20	19-10	9-0
Percentage of hard seeds in Lucerne	5.0	10.7	13.8	23.6	39.7	48.0	54.0	..	..	..
Percentage of hard seeds in Black Cowpea	..	3.0	12.4	4.0	..	47.0	..	..	..	..

TABLE II.

PURITY ANALYSES OF AGRICULTURAL SEEDS, 1921-1922.

PERCENTAGE OF SAMPLES CONTAINING NOT MORE THAN 1 PER CENT. TO NOT MORE THAN 70 PER CENT. OF INERT MATTER AND WEED SEEDS.

—	1	2	3	4	5	10	20	30	40	50	60	70	Principal Weed Seeds in their order of occurrence.*					
	%	%	%	%	%	%	%	%	%	%	%	%						
Barley, Cape ..	30.7	..	69.3	..	..	..	..	..	..	..	..	..	1	47	48	30	34	2
Barley, Skinless ..	..	..	46.2	..	30.8	23.0	..	..	..	..	..	..	48	58	47	27	39	..
Canary ..	..	..	22.3	..	22.3	55.4	..	..	..	..	..	..	27	19	45	30	41	7
Cowpea ..	37.9	13.8	20.7	3.5	6.9	10.3	6.9	..	..	..	..	..	35	49	..	..	..	..
Lucerne ..	12.5	12.5	45.9	6.3	6.2	8.3	8.3	..	..	..	..	..	11	42	45	3	50	34
Millet, Foxtail (Setaria) ..	14.8	3.7	48.2	3.7	25.9	3.7	..	..	..	..	..	..	28	12	36	3	19	50
Millet, Japanese ..	18.4	16.3	38.8	10.2	12.2	2.1	..	2.0	..	..	..	..	39	3	41	45	19	58
Oats ..	8.0	12.0	34.0	8.0	18.0	16.0	4.0	..	..	..	..	..	1	30	8	34	45	19
Panicum, White ..	20.0	8.0	56.0	..	8.0	8.0	..	..	..	..	..	..	39	22	50	61	49	11
Paspalum ..	20.3	18.6	37.3	5.1	13.6	3.4	1.7	..	..	..	..	..	39	22	45	23	61	49
Prairie Grass ..	12.5	8.4	29.1	4.2	29.1	4.2	4.2	8.3	..	..	..	..	1	47	2	37	31	32
Rhodes Grass ..	3.7	14.6	22.7	13.2	14.2	17.9	10.0	0.5	..	1.1	1.6	0.5	13	24	39	59	11	60
Rye ..	20.0	..	80.0	..	..	..	..	..	..	..	..	..	8	1	62	..	..	..
Sorghum ..	25.0	..	45.0	5.0	15.0	10.0	cont	ained	inert	mat	ter	..	..	..	..	..	..	..
Sudan Grass ..	5.5	8.3	57.0	5.6	12.5	9.7	1.4	..	..	..	..	..	39	19	28	3	11	16
Tares ..	50.0	..	..	..	50.0	..	..	..	..	..	..	..	7	33	45	11	..	..
Beans (Canadian Wonder) ..	64.7	..	29.4	5.9	cont	ained	inert	mat	ter	..	..	..	..	..	..	..	..	..
Peas ..	55.0	5.0	40.0	cont	ained	inert	mat	ter	..	..	..	..	..	..	..	..	..	..

The Standard of Purity prescribed for A Grade Seeds is not more than 2 per cent. of inert matter, not more than 1 per cent. Weed seeds. For B Grade Seeds not more than 3 per cent. of inert matter, not more than 2 per cent. Weed seeds. These standards apply to all seeds herein mentioned, except Barley, Oats, and Rye, the standards for which are—A Grade not more than 1 per cent. of Inert Matter, 1 per cent. Weed Seeds, and 1 per cent. of any cultivated cereal other than the kind to which the sample belongs. Seeds less in diameter than one-fourteenth of an inch none. The Standard for B Grade gives a greater latitude.

*WEED SEEDS OF FREQUENT OCCURRENCE.

- | | |
|--|---|
| 1 <i>Avena fatua</i> , Wild Oat. | c33 <i>Lepidium campestre</i> , Pepper Grass. |
| c2 <i>Apium</i> sp. | c34 <i>Melilotus parviflora</i> , Hexham Scent. |
| 3 <i>Amarantus</i> sp. | 35 <i>Malvastrum tricuspidatum</i> , False Mallow. |
| 4 <i>Aristida</i> sp., Spear Grass. | c36 <i>Marrubium vulgare</i> , White Horehound. |
| 5 <i>Andropogon</i> sp. | 37 <i>Malva parviflora</i> , Small-flowered Mallow. |
| a6 <i>Anagallis arvensis</i> , Common Pimpernel. | c38 <i>Medicago denticulata</i> , Medic Burr. |
| c7 <i>Brassica</i> sp. | 39 <i>Panicum sanguinale</i> , Summer Grass. |
| 8 <i>Bromus maximus</i> , Great Brome. | 40 <i>Panicum decompositum</i> , Barley Grass. |
| 9 <i>Bromus mollis</i> , Soft Brome Grass. | 41 <i>Polygonum convolvulus</i> , Climbing Buckwheat. |
| 10 <i>Bidens pilosa</i> , Cobbler's Pegs. | 42 <i>Polygonum aviculare</i> , Wireweed. |
| c11 <i>Chenopodium</i> sp. | 43 <i>Plantago lanceolata</i> , Rib Grass. |
| c12 <i>Centaurea Melitensis</i> , Star Thistle. | 44 <i>Portulaca oleracea</i> , Pig Weed. |
| 13 <i>Chloris divaricata</i> . | 45 <i>Rumex</i> sp., Dock. |
| 14 <i>Chloris barbata</i> . | c46 <i>Raphanus Raphanistrum</i> , Wild Radish. |
| 15 <i>Chloris truncata</i> . | 47 <i>Sonchus</i> sp., Sow Thistle. |
| 16 <i>Cnicus lanceolatus</i> , The Common Thistle. | 48 <i>Silybum marianum</i> , Virgin Mary's Thistle. |
| 17 <i>Cuscuta</i> sp., Dodder. | 49 <i>Sida rhombifolia</i> , Sida Weed. |
| 18 <i>Caucalis</i> sp. | b50 <i>Stachys arvensis</i> , Stagger Weed. |
| a19 <i>Datura stramonium</i> , Thorn Apple. | b51 <i>Solanum nigrum</i> , Black Nightshade. |
| 20 <i>Diplachne parviflora</i> . | 52 <i>Salvia Verbenaca</i> , Wild Sage. |
| c21 <i>Daucus brachiatus</i> . | 53 <i>Stellaria media</i> , Common Chickweed. |
| 22 <i>Eleusine indica</i> , Crow's Foot. | 54 <i>Silene Gallica</i> , French Catchfly. |
| 23 <i>Erichloa punctata</i> , Early Spring Grass. | c55 <i>Sisymbrium orientale</i> , Oriental Rocket. |
| 24 <i>Erigeron linifolius</i> . | 56 <i>Spergula arvensis</i> , Corn Spurry. |
| 25 <i>Eragrostis</i> sp. | 57 <i>Stipa</i> sp. |
| 26 <i>Festuca</i> sp., Fescue. | 58 <i>Tribulus terrestris</i> , Bulls Head, Caltrop. |
| c27 <i>Geranium dissectum</i> , Cut-leaved Geranium. | 59 <i>Tricholæna Teneriffæ</i> , Red Natal Grass. |
| 28 <i>Hibiscus trionum</i> , Bladder Ketmia. | c60 <i>Tagetes glandulifera</i> , Stinking Rodger. |
| c29 <i>Hypochaeris</i> , sp., Cat's Ear. | 61 <i>Verbena</i> sp., Purple Top. |
| b30 <i>Lolium temulentum</i> , Darnel. | 62 <i>Vicia</i> sp., Wild Tare. |
| c31 <i>Lepidium ruderales</i> , Waste-places Cress. | 63 <i>Xanthium spinosum</i> , Bathurst Burr. |
| 32 <i>Lithospermum arvense</i> , Corn Gromwell. | |
- a Poisonous. b Suspected poisonous. c Impart a bad flavour to butter.

TABLE III.

GERMINATING CAPACITY AND PURITY OF THE PRINCIPAL SEEDS IMPORTED INTO QUEENSLAND DURING 1921-1922.

	Imported from—	PERCENTAGE OF SAMPLES GERMINATING BETWEEN—								Standard of Germination prescribed by the Pure Seeds Acts.	Standard of Purity not more than 2 per cent. Inert Matter, 1 per cent. Weed Seeds. Percentage of Samples up to prescribed Standard.
		100-90.	89-80.	79-70.	69-60.	59-50.	49-40.	39-30.	29-0.		
Beet ..	Holland, England, U.S.A. . .	%	%	%	%	%	%	%	%	%	%
Beans, Lima ..	U.S.A. . .	60.0	8.8	38.2	35.3	11.8	5.9	..	..	55	100
Beans, Broad ..	New Zealand, Holland ..	100.0	40.0	..	..	..	..	..	..	75	100
Beans, French	U.S.A., New Zealand, Holland	84.2	10.5	5.3	..	..	..	..	..	75	100
Beans, Mauritius	Fiji ..	100.0	..	..	..	..	..	..	..	75	100
Cabbage ..	Holland, England, U.S.A. . .	27.6	57.6	12.7	..	2.1	..	..	..	75	100
Cauliflower ..	Holland, Italy, England ..	35.7	21.5	35.7	..	7.1	..	..	..	65	100
Carrot ..	Holland, England, U.S.A. . .	..	17.2	13.8	34.5	20.7	6.9	..	6.9	60	100
Cucumber ..	U.S.A., England, Italy ..	58.8	29.4	5.9	..	5.9	..	..	..	55	100
Leek ..	U.S.A. . .	..	..	66.7	..	..	33.3	..	..	70	100
Lettuce ..	U.S.A., Holland, England ..	70.8	16.7	8.4	..	4.1	..	..	..	50	100
Mangel ..	Holland, England ..	14.3	19.1	9.5	47.6	9.5	..	..	..	65	99
Melon ..	U.S.A. . .	16.7	58.4	13.9	2.8	5.5	2.7	..	..	55	100
Onion ..	New Zealand, England, France, U.S.A.	15.4	46.1	15.4	7.7	7.7	..	..	7.7	65	100
Peas ..	Holland ..	100.0	..	..	..	..	..	..	..	60	100
Parsley ..	Holland, U.S.A. . .	..	..	33.4	33.3	..	..	..	..	80	100
Parsnip ..	Holland ..	..	..	..	..	..	33.3	..	..	50	100
Radish ..	Holland, England, U.S.A. . .	34.8	17.4	34.7	13.1	50.0	..	..	50.0	30	100
Swede ..	Holland, England ..	33.3	40.0	26.7	..	..	..	..	..	60	99
Sweet Corn ..	U.S.A. . .	28.6	57.1	14.3	..	..	..	..	..	65	100
Tomato ..	U.S.A., Italy ..	5.9	47.0	35.3	11.8	..	..	..	..	75	100
Turnip ..	Holland, England, U.S.A. . .	65.4	26.9	..	..	7.7	..	..	..	65	100
Tobacco ..	U.S.A. . .	..	..	50.0	..	50.0	..	..	..	65	100
Hemp ..	Japan ..	..	..	..	..	..	..	..	..	50	100
Linseed ..	New Zealand, Japan ..	..	..	..	..	..	..	..	..	..	..
Millet, Red	Japan ..	..	..	..	..	..	..	..	..	..	..
Millet, French	..	..	..	..	..	..	..	..	..	..	..
Millet, White	Japan ..	..	..	..	..	..	..	..	..	..	..
Millet, French	..	..	..	..	..	..	..	..	..	..	..
Rape ..	Japan ..	..	..	..	..	..	..	..	..	..	..

Imported for feeding purposes—Purity ranging from 95 to 98 per cent.

THE STOCK FOODS ACT.

Under section 3 of the Act every wholesale seller of such foods as bran, pollard, calf meal, poultry meal, or other mixed, concentrated, or prepared stock foods is required to send in each year, before the 31st of January, a sample, statutory declaration, specimen invoice, and label which is to be affixed to every package. To explain the requirements of the Act, circulars were mailed last December to every known wholesale seller within the State. Unfortunately, too little attention was given to the instructions, with the result that the labels, statutory declarations, and samples sent in many cases do not agree with each other. To overcome this difficulty, it is proposed to issue printed forms during the coming December, so that the various sellers of stock foods may be fully instructed as to both the statutory declarations and the printed

labels that are required. There is a general reluctance to get labels printed or to put the name and address of the vendor on them. Many labels received are obviously written or typed out for the occasion and do not represent the labels attached to the food.

During the first six months of the year the staff is too busy with seeds to do much in the way of taking stock food samples. It is, however, proposed to obtain what samples time permits during the next few months. A report on such samples will appear in an article to be published in the "Queensland Agricultural Journal."

Since January, sixty-seven samples of bran and pollard were taken from the various vendors or delivered in accordance with section 3 of the Act, a portion of each sample being sent to the Agricultural Chemist for chemical analysis.

For purposes of comparison, the following table gives the chemical analyses of the Queensland and Southern products:—

	MANUFACTURED IN					
	QUEENSLAND.			SOUTHERN STATES.		
	Crude Protein.	Crude Fat.	Crude Fibre.	Crude Protein.	Crude Fat.	Crude Fibre.
	%	%	%	%	%	%
Bran—						
Average	16.2	4.2	10.0	15.0	3.0	10.4
Maximum	18.1	4.6	10.6	16.6	4.0	12.4
Minimum	14.8	3.8	9.2	14.4	2.0	8.3
Pollard—						
Average	16.1	3.6	5.6	14.9	3.3	7.9
Maximum	17.3	4.1	7.2	16.2	4.4	10.3
Minimum	15.4	2.6	4.3	14.3	2.7	4.5

Time has not permitted of a thorough microscopical examination of the samples. Traces, however, of *Lolium temulentum*, *Avena fatua*, *Brassica sinapis*, and other weeds were found in many of the brans, and in several instances the so-called pollards were not true pollards within the definition of the regulations. These remarks apply to both Southern and Queensland products; the latter, it will be noted from the above table, are of better average quality.

In many instances both meals and calf foods have not been up to the vendor's guarantee. In most cases the manufacturer has altered the label and reduced the figures given for protein or fat and increased that of fibre. The regulations under the Act do not prescribe a standard, but it is compulsory on the vendor to attach a label stating the minimum amount of crude protein and crude fat, with the maximum amount of crude fibre. The vendor therefore makes his own standard, and it is but reasonable to expect the vendor's goods to be up to his own guarantee.

The farmer is not only the producer of the wheat or other grain, but the largest consumer of the various by-products; it therefore follows that he should have more than a passing interest in the quality of the foods purchased, the feeding value of which will improve as the buyers become more critical. Millers and other manufacturers are not wholly responsible for the weed-seeds and foreign matter of like nature that is found in stock foods; the root of the trouble is the farm where the grain or chaff was grown.

Several complaints were received from merchants regarding oats purchased from the Southern States. One sample contained over 11

per cent. of weed-seeds; another over 6 per cent. of weed-seeds and nearly 5 per cent. of other foreign matter. It is to be regretted that both buyers and sellers base the so-called grades on general opinion, which is influenced by a rising or falling market. The same remarks apply to chaff; the words "prime" or "good and sound" are absolutely meaningless unless based on an exact definition. The words "reasonably free from foreign matter" do not imply any definite quality unless the amount and kinds of foreign matter are expressed on a percentage basis with the total prohibition of any substance deleterious to life or health of stock, such as *Ricinus communis* (castor-oil beans).

A typical instance of deleterious matter occurred last August, when several trucks of chaff were found at Toowoomba, Brisbane, and Maryborough containing a large amount of *Datura stramonium* seeds. Fortunately the sales were stopped before any serious damage occurred. None of the merchants handling this line could at the time identify *Datura*, the presence of which the grower of the chaff is responsible for.

Every effort has been made to give the fullest possible information to any produce merchants or storekeepers desirous of obtaining a fuller knowledge of these impurities. The majority of vendors, however, are inclined to trust to their luck and ready wit when an officer makes an occasional visit to their store.

Until a larger staff of trained men are available, it is impossible to keep in touch with Roma-street markets or take samples from the various dealers situated all over the State.

Any increase to the present staff would not at once add to its efficiency, as considerable time must elapse to train even the best of men to that degree of accuracy so essential to the taking of a truly representative sample of the goods being offered for sale by the vendor.

To keep pace with the ever-increasing activities of the Pure Seeds and Stock Foods Acts, additional apparatus and a larger and more convenient laboratory are required.

Appended are reports from the Principal of the Queensland Agricultural College, the Agri-

cultural Chemist, the Director of Fruit Culture, the Director of Agriculture, the Chief Dairy Expert, the Chief Inspector of Stock, the Government Bacteriologist, the Director, Stock Experiment Station, Townsville, the Government Botanist, and the Curator of the Botanic Gardens.

With this report also are statistics upon rural matters compiled by the Registrar-General, and in them will be found much interesting and valuable information.

ERNEST G. E. SCRIVEN,
Under Secretary.

ANNUAL REPORT ON THE QUEENSLAND AGRICULTURAL COLLEGE.

SIR,—I have the honour to present to you the annual report on the Queensland Agricultural College for the year ended 30th June, 1922.

Before proceeding to the details as submitted by the various officers of the College, I would draw your attention to several salient points:—

1. There has been a marked improvement in the number of students attending the College. The enrolment for the last session, January to June, has been the greatest for the past ten years. There seems every prospect of a still further improvement.

2. Coupled with this, and of even greater importance, is the marked improvement in the standard reached by those sitting for their annual examinations. This feature is most encouraging to all members of the staff.

3. As forecasted in my last annual report, it was found necessary this year to abandon the winter school for farmers and their sons. Two years ago the railway concessions which previously had been granted to those attending these schools were withdrawn; the effect on the enrolment at the 1921 school, reducing the number to a mere sixteen, was so disastrous that every effort was made to have the railway concession re-established. This, however, could not be granted. As a result, so few inquiries for attendance to the school were received that it was reluctantly decided to abandon the winter school this year.

4. The persistent efforts which have been made since 1915 to conserve ample fodder for College stock, as against possible droughts, would seem to be in a fair way towards full realisation. The year 1920-21 was good and the past year fairly favourable, with the result that there are numerous well-built stacks of wheaten, oaten, lucerne, and other hays distributed over the property. In the majority of cases these stacks are thatched, but, even so, some loss results, and extra hayshed accommodation is an urgent necessity if we are to reap the full benefit from the policy of consistent fodder conservation. The saving of hay which would result from having adequate shed accommodation in place of stacks—a saving which would be easily an average annual amount of from 20 to 30 tons—would soon pay for the sheds, besides which the cost of the thatching would be cut out. In one other respect the farm equipment is deficient: there is no corn-crib or adequate arrangement for the storage of shelled maize. It is hoped to correct these defects during the coming year.

5. The accommodation for the farm hands at the College is totally unfit, and would not be permitted on any private property. This matter has been brought forward continuously for the past seven years. At the end of the 1919-20 financial year plans and specifications were drawn up to correct this matter and to improve the students' dormitories. It was anticipated that this work would be carried out during the year 1920-21, but the whole matter was deferred, with the result that the quarters for the farm hands remain a disgrace to the institution. As stated above, alterations in the students' dormitories were included in the scheme for recon-

struction. This important work has also been deferred, and there still exists the entirely unsatisfactory arrangement of two students in a room. This feature of the Gatton College is an undoubted disadvantage, and certainly acts as a distinct preventive to the enrolment of students. I can trust that this matter will receive consideration this year.

6. Another section of the College requires attention: this is the kitchen arrangements and the quarters of the domestic staff. Though the existing arrangements may have been satisfactory twenty years ago, they certainly do not meet the requirements of the present day. Modern award conditions and health regulations have placed the College equipment quite out of date. The kitchen arrangements are so inefficient as to render it practically impossible to carry out our work inside prescribed hours, and increased staff is the only alternative. There is in hand, however, a scheme for alterations in the kitchen, including the installation of a new stove (the present stove has seen twenty-six years' service). It is trusted that this very necessary work will be carried out this year. But the other part of this matter requires urgent consideration. The domestic staff are called on to live and sleep in so close a juxtaposition to the kitchen, pantries, and dining-room as to violate health regulations. Further, there are only three rooms to accommodate seven men, and the required cubic space per man is not available. Still further, there is no adequate laundry equipment, such as is required under award regulations. These conditions would not be tolerated in a private establishment. Should they be permitted to exist in a Government institution?

7. In the matter of relieving the power plant at the College, tenders have been called for the installation of a separate steam plant at the dairy factory. When this is erected, it will remove one of the biggest loads from the existing electric plant, and should give a measure of relief as regards power on the farm, which has been urgently needed for the past eight years.

8. Increased laboratory space is required, as is indicated in the detailed reports of the science master and dairy instructor. For the science work increased space is required for the proper housing of valuable apparatus and instruments, such as chemical balances, microscopes, &c. At present, these have to be kept largely in the main students' laboratory, where they are subject to continual rapid deterioration from the effect of acid fumes liberated during the students' ordinary practical work. Beyond this, separate rooms are required for botanical work, bacteriology, and a veterinary dispensary. For the dairy factory work, a separate small laboratory is required where the senior students of the dairy course can carry out their analyses, and in which experiment and research work may be conducted. Fortunately, this demand can be easily met. Some years ago—1908, I think—a portion of the College laboratory block was converted into bedrooms as a temporary accommodation for surplus students. When the number of students fell to normal, the temporary arrangement was, quite wrongly, allowed to continue, and was rendered semi-permanent by permitting one of the officers of

the College, the herdsman, to occupy it as a residence. Now the herdsman has resigned, and at the expiration of his extended leave, on 30th September, he will have no further claim to these quarters. It is proposed to reconvert these temporary residential quarters back to laboratory accommodation, from which they should never have been allowed to be taken away.

EDUCATION.

The session ending June 1921 closed with 32 students on the rolls. Of these, 3 left in June and 11 more students joined during the session, bringing the total enrolment to 40 at December. After the annual examinations 13 students left, 6 having completed their course of training. At the commencement of the next half-year and during the session 19 new students joined, bringing the total on the rolls up to 46. This is the highest enrolment for the past ten years.

Thus, since the inception of the College in 1897, the numbers who have received direct instruction at the College are as follow:—

College Students	678
Returned Soldiers	139
Teachers' Schools	506
Attending Winter Farmers' Schools ..	175
Dairy Inspectors	20
Crown Land Rangers	12
Total	1,530

This total does not include a number who attended the College for short courses of instruction in special subjects, and of whom no record has been kept in the College register prior to 1920.

At the annual examinations held in December 1921 the following results were obtained:—

Third Year in Agriculture.—D. S. Hall, class average 73.6 per cent.; W. R. Straughan, class average 72.3 per cent.; and McLuckie, class average 71.5 per cent., obtained the third-year certificate and diploma in agriculture.

Second Year in Agriculture.—S. F. Murphy, K. V. Henderson, D. J. Land, T. Y. Bonar, and K. M. Tait passed and secured second-year certificates.

First Year in Agriculture.—W. E. Knust, M. B. Blake, S. E. Pegg, L. C. J. Clifton, E. J. A. Crabtree, R. M. Wallace, E. J. Bateman, A. W. Strachan, and E. A. Compton passed in December, and W. A. G. Diamond, D. Mc. S. Matheson, and D. G. Williams at deferred examinations in June, thus gaining their first-year certificates. G. E. Sampson, W. J. G. Stewart, J. Jordan, A. A. Tyler, J. D. McCarthy, E. Tooth, and T. McCarthy failed to pass.

Second Year in Dairying.—D. V. Ward passed in all subjects with a class average of 72.2 per cent., except dairy factory management, and his certificate is held in abeyance, pending his obtaining further experience in pasteurisation.

First Year in Dairying.—Three students—A. V. Clarkson, C. W. Gillies, and L. S. Hornibrook—sat for this examination, and all of them failed to pass.

The State Milk and Cream Testing Certificate.—S. F. Murphy, K. V. Henderson, J. D. Land, T. Y. Bonar, K. M. Tait, A. V. Clarkson, C. W. Gillies, L. S. Hornibrook, and E. H. Graham passed.

Third-class Engine Drivers' Certificates were secured by S. F. Murphy, K. V. Henderson, J. D. Land, T. Y. Bonar, A. V. Clarkson, C. W. Gillies, E. H. Graham, L. S. Hornibrook, and R. E. Williamson.

Short Dairy Course Certificates were gained by E. H. Graham and B. T. Seymour.

R. E. Williamson attended a special course in orcharding and passed all his examinations.

A. Bray, M. D. Dorman, H. T. Kent, J. McHugh, A. M. Neech, S. L. Sharp, H. van der Sande, and F. J. K. Wheeler completed various practical courses.

At the present time the students enrolled at the College are distributed as follows:—

Third Year in Agriculture	5
Second Year in Agriculture	11
First Year in Agriculture	11
Second Year in Dairying	2
First Year in Dairying	5
Short Practical Courses	12

SECRETARY AND MATHEMATICAL MASTER.

During the period under review I have, as in past years, conducted classes in surveying and bookkeeping, the following being the enrolment for the various lectures:—

	Surveying.	Bookkeeping.
<i>First Term—</i>		
Third Year	3	—
Second Year	5	9
First Year	19	—
<i>Second Term—</i>		
Third Year	5	—
Second Year	12	16
First Year	11	—

The subject of bookkeeping is taken during the second year only.

For the first term my third-year lads in surveying did excellent work with theodolite and level, and formed the strongest class I had had for years. The present third-year students have been receiving instruction during the past session in the use of surveying instruments and the computations connected with the data obtained by means of them, and I am expecting good results from the class during the concluding term of their course. The second-year class has been instructed in computations by means of angular work, how to measure angles in the field by means of simple appliance, and the calculation of volumes of solids. The first-year students have confined their attention to the measurement of areas by means of linear measurement only. Fair work has been done by the classes in farm bookkeeping.

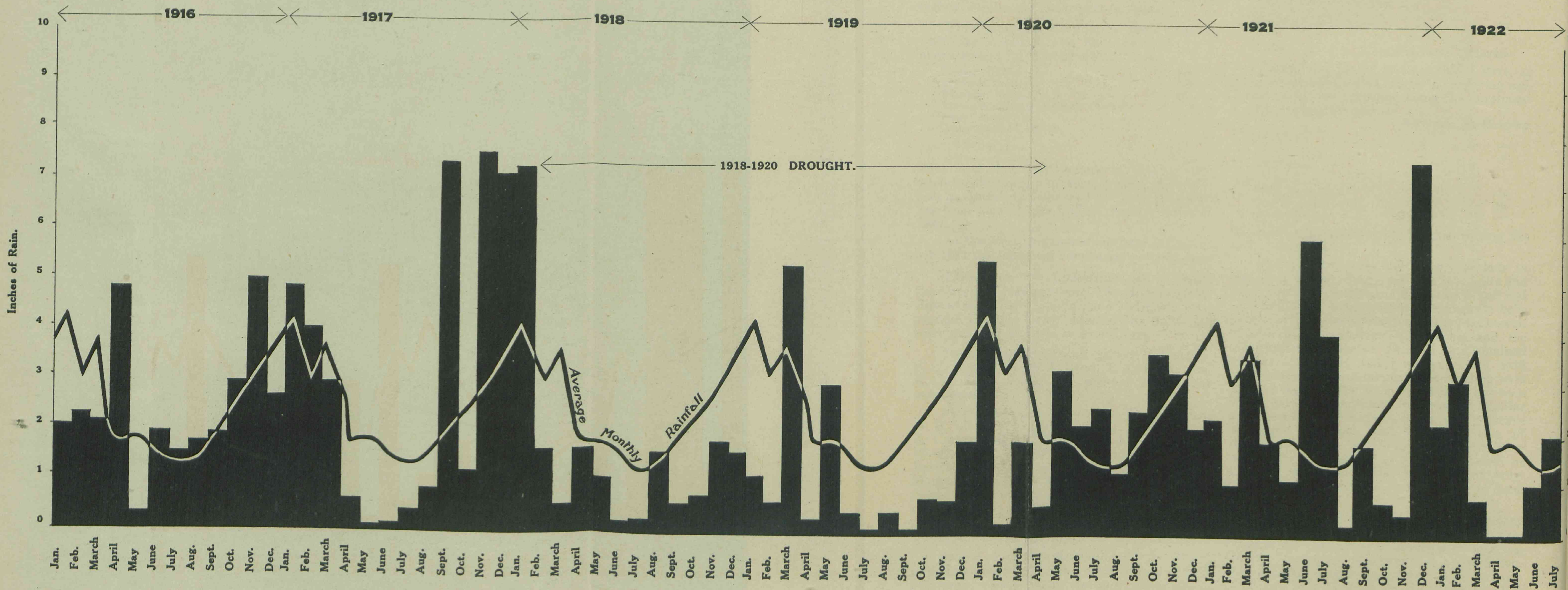
As in past years, the most unsatisfactory feature in all work involving arithmetical processes is the inaccuracy of students in carrying out the necessary operation of computation. Although they may know thoroughly the formulæ to be used and the methods of calculation, they too frequently spoil the whole of the work by some mistake or mistakes in multiplying or dividing.

During the session I have attended on two evenings in each week at the library, for the distribution and return of text-books. The demand for these has been in keeping with that of former years.

In the office I have as usual been kept fully employed in dealing with the large amount of correspondence, accounts, and records of stock. The number of correspondents answered during

RAINFALL CHART.

QUEENSLAND AGRICULTURAL COLLEGE.



the year was 1,662; but as many of them were communicated with on several occasions, the total number of letters written will far exceed 2,000. A great proportion of these letters were in reply to farmers asking for information in respect to various matters connected with agricultural problems.

The total moneys received for the College at this office amounted to £3,324 5s. 5d., while the total collected for College services, here and at Head Office, came to £5,604 7s. 3d.

During the year 157 pedigrees were issued, covering the sale of 178 stud animals.

SCIENCE MASTER.

During the year the supervision of the lecture time-table and the recording of all students' examination marks have been in my hands, and I am pleased to report—

1. That the full schedule of lectures, as prescribed in the College prospectus, was carried out.
2. That at the annual examination in December a decided improvement in standard was noticeable.

I attribute this latter to the introduction of fortnightly examinations in the subjects, to the abolition of Saturday night dances, and to the increased keenness on the part of students in the working of the College.

Since that portion of the laboratory buildings which for some time has been utilised as a private residence has become vacant, owing to the resignation of the herdsman, I would ask that it be added to the science department. Not only is it gravely disturbing to have the domestic operations of a private family separated from the work of the science rooms merely by a thin walling of one-inch pine boards, but further increased laboratory space is required. Another room is necessary for the dairy diploma students, where they can perform extra work in dairy chemistry. This room must be separated from the main students' laboratory so that dairy students can carry out their work uninterrupted and at such times when the work at the dairy factory is finished. It is also desirable that the bacteriological work should be performed in a room separate from the main chemical laboratory. If such a room were granted, the dairy students could obtain further instruction. It would also be desirable if a third room were set apart as a dispensary for the veterinary surgeon. The instruments and drugs are sometimes used during the week when he is not at the College, and in the event of such a room being granted, I could supervise the cleaning of such instruments. The remaining two rooms could be converted into a botanical lecture-room, and this room could also be used by lecturers when both the main lecture hall and the laboratory are in use.

CHIEF STEWARD.

From July 1921 to June 1922, approximately 800 visitors had meals at the College dining-hall. Meals were also served to students and resident officers at a daily average of 150, and to farm hands to a daily average of 80.

During the past year expenditure in this department has been kept as low as possible, and crockery, cutlery, bedding, &c., have become very

reduced. A considerable quantity of new gear will be required.

STUDENTS' DORMITORIES.

The rooms on these dormitories are covered with linoleums. This has been down for many years, and is now showing much wear. Extensive repairs and renewals are required.

The lavatories and bathrooms at the end of each dormitory are not too satisfactory, and I would suggest that they be done away with and a separate lavatory block built.

KITCHEN AND STAFF QUARTERS.

With the alteration to the kitchen and the installation of a new stove in place of the old one, which matter is now under consideration, much improvement will be effected.

With seven on the domestic staff, there is not sufficient accommodation to make them comfortable. There are only three bedrooms available. I would also suggest that a small house be built and equipped in which they can do their washing.

OUTDOOR DEPARTMENTS.

GENERAL.

The following is the table of rainfall from April 1921 to June 1922:—

Month.	Number of Wet Days.	Rainfall.	Average for Month over 23 Years.
1921—		Points.	Points.
April	10	190	166
May	8	111	191
June	7	608	176
July	6	412	142
August	3	22	126
September	8	185	175
October	5	67	225
November	3	48	264
December	11	760	351
1922—			
January	8	229	417
February	11	313	279
March	2	76	358
April	1	2	166
May	1	2	191
June	4	103	176

The rainfall, together with that of several previous years, has been set out in the accompanying chart. Examination of this chart will show clearly the rainfall distribution in comparison with the monthly average. Thus, in March, April, and May of 1921 good rains fell and a splendid planting of all winter crops was possible. This was followed by exceptional rains in June and July, so that the season's growth was assured. From July to the end of December dry conditions prevailed, with the exception of a slight relief in September. In consequence, spring and early summer plantings were greatly retarded. The main planting for summer crops had to be deferred until January 1922. Most of these did fairly well. Following this there was another prolonged dry spell, extending from the middle of February until the end of June, and this has greatly retarded all winter sowings. Notwithstanding this, a fair planting has been made and a reasonable harvest of hay crops can be expected.

Examination of the accompanying chart, together with those published in previous annual reports, brings out an important feature which must have a very great influence on the agricultural methods to be adopted in this district. This is the extreme variability of our rainfall. The yearly average, or even the monthly average, has very little value unless this variability is also taken into account. The way in which this variability in rainfall is likely to influence our methods is in the matter of equipment. This must be heavy, so as to enable a farmer to rapidly prepare his land, which land must be kept in good condition in anticipation of possible rains. To be placed in the position of ploughing or preparing land after the rain is to run an excessive risk of losing the whole season. For this reason I feel certain that the motor tractor must eventually play a very considerable part in the cultivation of the Lockyer Valley. With tractors, ploughing can be done under conditions which are too harsh for the use of horses. Yet it is exactly at such periods that the land should be worked and prepared if it is to be ready to receive and utilise the rainfall that must inevitably follow our long dry spells.

Because I feel certain that the motor tractor is destined to play this important rôle in our system of cultivation, I would strongly urge that a one-man tractor be secured for the College. Not only should our students be trained in the care and management of tractors, but the College should be demonstrating the economic value, or otherwise, of motor tractors as applied to the system of general farming.

FARM SECTION.

THE AGRICULTURIST.

The rainfall during the last three months—March, April, May—has been scanty, amounting to 80 points only. Naturally, so small a fall has been useless for carrying on farm operations, consequently none of the usual crops, such as wheat, oats, rape, mangolds, &c., which should have been planted before now, have been put in, with the exception of a small area of Huguenot wheat, which was dry planted.

During September 1921 185 points of rain fell, and on this fall an area of maize was sown in Railway 3 field. The tilth was only fair in the field, and the two following months being dry, the prospects of the crop cobbing seemed small, so, the cattle being in want of green feed at the time, they were fed with the maize stalks. Just at this time the grasshopper plague was in full swing, and it looked as if the pest would take all before it, but in reality they devoured very little foliage, green maize, under local conditions at least, not being much sought after. The ravages caused by the cut-worm in the wheat crop a year previously were much more disastrous. Potatoes at the College suffered from the grasshoppers more than any other crop, with the exception, perhaps, of grass. Panicum and pig-weed also received some attention.

During December, January, and February good rain fell, totalling 13 inches out of a total of 21.16 to the end of May. On this rainfall areas of maize, pumpkins, sorghums, Sudan and Rhodes grasses, and millets were sown with more or less success. The rain came at rather an awkward time, being during the vacation, when

one-half of the farm hands were on holiday and some could not be got at, the other half carrying on the work of the live stock departments of the College such as piggery, poultry, and dairy herd. Some portions of the farm, being of a heavy clayey nature, became so saturated that horse labour could not be used to check the growth of weeds, thereby causing extra expense by the employment of chipping gangs. One area of 18 acres of sorghum had to be ploughed out, various causes contributing to its poor growth. This area was replanted, but after germination, which was moderate, no rain fell, and it still occupies the ground. The portion not ploughed out, about 12 acres, was put into the silos, together with an area of maize from the same field.

The Sudan grass did fairly well, considering the locality (experiment field 1), which is heavy and in places very poor. This crop was harvested for hay. Sudan grass planted in Gatton 2 paddock nearly two years ago did well, a good deal of fodder being taken off, and the field was for some time grazed with cattle and horses. Later it was allowed to seed and came on again for some time; but I would recommend the ploughing up of the paddock, which has an area of 28 acres.

Pumpkins were planted in the pump paddock in the early part of January, and the crop was satisfactory, all varieties planted doing well and being particularly free from insect and fungus pests.

Three different areas—differing so far as soil texture is concerned—were planted with maize. Along the Lockyer Creek 21 acres of early maize were sown. The soil in that area is of light formation, and could be worked much sooner than the other portions. The maize did well until the dry weather set in, and what promised to be a particularly fine crop was very much knocked about by hard conditions. Notwithstanding the adversity the maize area suffered, a fairly decent crop will result. The second area is in the section paddock, the soil being intermediate between the light formation on the creek bank and the heavy soil of the flats adjoining the railway line, in which the third area of maize was grown. The crop here did pretty well, although considerably overgrown with weeds. A portion of this maize was cut and converted into ensilage. The third area, planted on the heavy black soil, has done the best, notwithstanding the fact that the maize was a long maturing variety. A fair amount of seed maize was selected, nearly all the students having a day at this work. This area includes the lime experiment block and the super and super-dried blood blocks. A comparison of the yields under the different quantities of fertiliser is not yet available for this year.

Mention should be made of a small area of flax. The linseed yield was 11 bushels to the acre.

An endeavour was made on several portions of the farm to establish Rhodes grass, but the results were not satisfactory on the whole. When sown in the maize crop one month after the seed germinated it flourished for a time, but dry weather setting in the whole area perished with the exception of isolated stalks. This sowing was made in February in the light soil of the creek bank. In previous sowings on the sandy ridges of the College the grass has done splendidly, but

the after conditions were much more favourable. In garden paddock 1 it failed completely, but in garden 2 adjoining it has a fair hold. The other place where it was sown was an area in the railway paddock. Here the soil is very tenacious and inclined to sourness, and during heavy rain the land is more or less submerged. The seed germinated fairly well and the plants made fair growth, but the grass, although sending out numerous vigorous runners, never got a good hold of the ground. It was noticed when, later, stock were depastured on it much was pulled out. If rain had fallen, no doubt the grass would have flourished. Small patches of the grass on other portions of the farm having a soil formation very similar to that in which the grass was sown have a strong root hold.

A number of different varieties of panicum, paspalums, &c., have been sown, but without a bushhouse or suitable propagation shed, where water would be available, it is next to impossible to successfully germinate the seed.

Most of the crops harvested towards the end of last year gave good returns. The chief of these were wheat, maize, oats, canary grass, &c. These, with the exception of maize, were grown for the production of hay; so that at the present time a large amount of fodder is available for the stock. A rough estimate of dry fodder will be found at the end of this statement. Some loss has taken place owing to the stacks not being thatched. The hayshed has been full, and the absence of another shed or two has led to loss of hay and expense in thatching.

The prickly-pear, which had a strong hold on the creek bank a few years ago, has been almost completely eradicated.

The lucerne areas have yielded fair cuttings, and at present a good tonnage of this fodder is on hand.

Some new implements have been added to those already in use, viz., a double furrow disc plough of recent design, an Osborne mower, and a set of heavy harrows made in Gatton.

Some new fencing has been erected and the old fences kept in repair. Concrete drinking troughs have been built in some of the paddocks, and these are a type which are invaluable; they have plenty of strength and defy breakage.

The accommodation for storing maize in the rough is very inadequate, consisting of a small iron shed. Tanks were provided some time back, and these have been very useful for keeping the shelled maize free from the attacks of weevils. The total area of maize sown was 70 acres—12 acres were harvested for silage, leaving 58 acres for the production of grain, estimated to yield 1,160 bushels.

The seedroom, where, in addition to the ordinary storage of farm seeds, practical demonstrations on manures, seeds, rope-splicing, chaff samples, &c., are carried out, has been so congested at times that such work has had to be transferred to the upper floor of the barn. This space is very suitable, the room being well lighted, but not being rat-proof, the samples in the case of seeds, sheaves, &c., are much knocked about. Fumigation has been carried out regularly in the seedroom, weevils and other pests being rather prevalent.

Lectures and practical demonstrations have been given regularly to students as set down in

the syllabus. Generally speaking, the examination results have been satisfactory. Some students, having limited education, cannot make much headway in the classroom, but have done very fairly when the same material has been put before them in a practical light.

An innovation was introduced at the last midsummer examinations, the second year in Agriculture students being examined by Mr. Gibson instead of by myself. This method of examination is considered much more satisfactory. Both second and third year students examined by Mr. Gibson acquitted themselves very satisfactorily.

Manurial trials with Huguenot wheat were carried out last year, the object being to obtain results from a hay point of view. The results are not sufficiently long established to come to a definite conclusion.

For educational purposes, varieties of wheat, oats, rye, barley, field peas, vetches, mangolds, turnips, swedes, &c., were grown in small areas fairly handy to the buildings, and students were taken and shown the merits and demerits of each variety from many standpoints, such as resistance to different diseases, habit of growth, variation in different soils.

Careful consideration has been given to the allotment of student labour, so that each may get a chance on the different machines working in the fields, and I think the arrangement has been satisfactory.

The amount of fodder conserved in the form of silage, viz., 143 tons 17 cwt., has not been very large this year. This condition is largely due to the fact that portion of the sorghum crop failed.

The implement shed is regularly lumbered up with conveyances used by different individuals working on the College, but who do not reside on the place. It is not so much that these vehicles take up considerable space, to the detriment of College property, but much manoeuvring is necessary before implements can be conveniently got at.

An area of land remains unploughed at the College at present. This is due to the fact that the black soil in places has become so packed that it is impossible to turn it over in a proper manner. Ploughing is being gone on with where the soil is ploughable. Approximately 100 acres are ready for planting.

Below will be found a general summary of fodder now on the College.

FARM RETURNS, 1ST JULY, 1921, TO 30TH JUNE, 1922.		£	s.	d.	£	s.	d.
Cash Sales and Services	..	..	..	..	192	7	10
Interdepartmental Sales and Services—							
Dairy Herd	..	..	718	9	3		
Piggery	..	..	246	3	7		
Poultry	..	..	125	9	3		
Dining-hall	..	..	37	8	8		
Garden	..	..	25	13	0		
Power-house	..	..	175	8	3		
Dairy Factory	..	..	48	5	6		
Blacksmith	..	..	32	3	1		
Carpenter	..	..	6	10	11		
Wood carting and general	..	..	123	9	6		
						1,539	1 0
Grand Total	..	..	..	..	..	£1,731	8 10

CROPS HARVESTED, 1ST JULY, 1921, TO 30TH JUNE, 1922.

	Tons.	cwt.	qr.
Silage—Maize and Sorghums	143	17	1
Hay—			
Lucerne	333	14	0
Wheaten	162	14	2
Millet	10	0	0
Sudan Grass	7	10	0
Oaten	19	0	0
Green Feed—			
Sorghum	19	18	0
Maize	1	4	0
Mangolds and Potatoes	30	0	0
Pumpkins	72	1	11
Linseed	2	4	0

STANDING CROPS ON 30TH JUNE, 1922.

	Aeres.
Lucerne (planted prior to 30th June, 1921)	139
Wheat (dry planted)	45
Maize (not yet harvested)	58
Sorghum	18
Artificial Grasses	80
Fallow	125
Stubble	178
Total	643

HORSES.

During the year we had the misfortune to lose the old imported stallion Lord Cellus, and later a second aged stallion, Prospero. Fortunately we have a young stallion coming on, but as he is related to many of our mares it will be necessary to secure another sire shortly.

Generally speaking, conditions have been unfavourable to horse-breeding during the past few years. Dry weather, with an absence of green grass at the mating season, has been the chief drawback, but another of almost equal importance has been the irregularity of the seasons, accompanied by a lack of that continuity of paddock feed which is so essential for the regular and rapid development of the foals. As a result we have restricted our breeding, only mating sufficient mares to permit us to replace our own workers. No attempt has been made to breed for outside sales.

RETURNS FROM CLYDESDALE STUD.

	£	s.	d.
Service of mares (six head)	18	18	0
One stallion	78	15	0
Total	£97	13	0

HORSES AT COLLEGE ON 30TH JUNE, 1922.

Mares, mostly Clydesdales	40 head.
Geldings	27 "
Young stock, not yet broken in	12 "
Mules	2 "
Total	81 head.

DAIRY FACTORY SECTION.

THE DAIRY INSTRUCTOR.

The College dairy factory possesses the necessary cream supply and butter-making appliances for the instruction of students desirous of obtaining a first-hand knowledge of dairy factory work. The introduction of a second-grade cream-receiving vat would result in the production of butter of improved quality.

The increased supply of cream of indifferent quality and the production of low-grade butter of poor keeping quality made pasteurisation necessary. This had not previously been carried out consistently, owing to a shortage of brine for cooling purposes. The brine so used rendered ice-making impossible. Provision has since been

made, by the erection of a 1,000-gallon brine tank, for the special purpose of cooling cream after pasteurisation, independent of that used for ice manufacture. The general overhauling of the refrigerative machinery—namely, the compressor and the additional wheel flashing valves—gives sufficient cooling for our factory requirements, together with more efficient instruction and butter of improved keeping quality.

The danger of passing through belting in the engine-room has previously been pointed out. Such a practice, however, cannot be avoided with the present arrangement of machinery.

The general appearance of the factory has been made more impressive by painting, this work having been performed by students on completion of the routine work of the factory.

Owing to the decadent condition of the lower portion of the walls inside the factory, cementing to a height of 4 feet 6 inches will be necessary to make them impervious to water. In addition to this, a room suitable for clerical work should be erected on the dairy premises handy to the receiving platform. The books are at present distributed between the factory and private rooms.

A more hygienic method of storage, pasteurising, and removal of buttermilk has been adopted.

In order to minimise the possibility of error in sampling, all suppliers have been asked to furnish two cans properly labelled with their names, weight of can, and number. A similar number will be represented on the cream sample mugs. All lids will be retained by the suppliers. This method will prevent delay of suppliers at the factory, give ample time for proper cleaning of cans, together with time for discussion and class grading. In addition to this, a more satisfactory method of receiving cream will be brought about.

The wearing parts of the separator have been replaced and it is now working satisfactorily.

In order to improve the cheese section of the dairy course, it would be advisable to install a small Flash pasteuriser, whereby instruction could be given in the latest methods of cheese manufacture, and enable us to compete with outside factories in quality. It is the future cheese-maker that the College is attempting to produce, therefore this method should be introduced. This would mean that outside milk would be obtained sufficient to give the student a practical insight into the commercial process from the reception of the milk to the crating of the cheese.

An improvement in the drainage of the calf-pen has been effected.

The following changes in the staff have taken place during the year:—The Dairy Inspector, Mr. E. F. Youngman, resigned during September, Mr. W. L. Atkinson, H.D.A., H.D.D., taking up duties in December. The Assistant Instructor, Mr. J. Pitceathly, resigned during March, and Mr. W. B. Horneman, Q.D.D., was appointed on the 14th of the same month.

Student D. V. Ward sat for the diploma in dairying, but requires to secure practical experience in pasteurisation before obtaining same. Seven students were successful in securing the Government Milk and Cream Testing Certificate.

It is becoming of more and more importance that a dairy laboratory should be established, giving students an opportunity of conducting dairy research work.

COLLEGE DAIRY FACTORY.

Disbursements.

	£	s.	d.
Purchases from outside cream suppliers ..	4,699	17	3
Supplied by College dairy herd ..	784	9	10
Total ..	£5,484	7	1

Receipts.

	£	s.	d.
Cash sales of butter and cheese (incomplete) ..	6,024	2	3
Supplied to College dining-hall ..	529	18	4
Skim and whole milk fed to calves ..	183	14	5
Skim milk and buttermilk supplied to piggery ..	58	5	11
Refrigeration for butchery ..	94	8	6
Total ..	£6,890	9	5

Showing a balance of £1,406 2s. 4d. to cover working expenses, salaries, &c.

THE DAIRY HERD.

It has always been the practice for the College to test its cattle during each lactation period. The results thus obtained were, however, unofficial. Therefore, this year, and in conformity with the very general move towards consistent herd testing, we have placed our dairy cows under official test, both for the short distance test of forty-eight hours, and also the long-distance test of 273 days. Notwithstanding a somewhat unfavourable season as regards grass and green feed, the results so far obtained have been satisfactory. Thus we have obtained the following completed results:—

Breed.	Name.	Yield of Commercial Butter in 273 days.
		Lb.
Ayrshire ..	Thyra of Myrtleview ..	481.44
Ayrshire ..	Bellona ..	401.53
Ayrshire ..	Miss Security ..	400.08
Jersey ..	Iron Plate ..	415.20
Jersey ..	College Mignon ..	388.10

Of these the first four have qualified for advanced register in their respective herd societies. There is a number of other cows under test, but which have not yet completed the 273 days.

In the short distance test for advanced register, the College has ten Ayrshires, seven Jerseys, and three Friesians recorded. After two or three years of this testing it is hoped that the College herds will contain nothing but advanced register stock, and that each bull in the stud will, through his progeny, be also eligible for advanced registration. At present the imported Ayrshire bull Netherton King George has so qualified.

The sales of stud cattle have been few throughout the year. This is largely accounted for because in the early part of the year there was a shortage of grass, no relief coming until the end of December 1921. After this the prices for butter collapsed, and so dairy farmers were not in a position to buy. Now, however, conditions are becoming more stable and sales should improve.

In April 1922 the College herdsman, Mr. H. Hillier, resigned his position to go to the North to start on his own account. Mr. Hillier had been at the College for some sixteen years and had held various positions, but for the past eleven years had been in charge of the dairy stock. He is now on extended leave, and nothing can be done to permanently fill his position until the end of September next. I trust, however, that the opportunity will now be seized, as already recommended, to appoint an officer of higher qualifications who can take full charge of all the stud stock at the College. Such officer could also undertake the instruction in veterinary science.

As was pointed out in last year's annual report, the College is understaffed, and this opportunity should be taken to strengthen it in this very important direction. As things are at present, it is impossible to conduct feeding experiments, to properly supervise the feeding and mating of the stock, or to give that full measure of instruction which is necessary if true success is to be attained.

SALES OF DAIRY CATTLE—1ST JULY, 1921, TO 30TH JUNE, 1922.

	£	s.	d.
Ayrshires (1 cow) ..	8	8	0
Jerseys (4 bulls) ..	93	10	0
Friesians (1 bull) ..	31	10	0
Total sales for which cash received ..	133	8	0
Killed for College dining-hall (25) ..	181	9	6
Supplies to College dairy factory ..	784	9	10
Total ..	£1,099	7	4

DAIRY CATTLE AT COLLEGE, 30TH JUNE, 1922.

	Stud Bulls.	Stud Cows.	Heifers.	Young Bulls.	Total.
Ayrshires ..	4	28	24	11	67
Shorthorns ..	..	3	2 (grade)	..	5
Jerseys ..	2	22	8	8	40
Guernseys ..	2	8	3	3	16
Friesians ..	2	9	7	3	21
Steers ..	..	..	..	..	3
Totals ..	10	70	44	25	152

THE PIGGERY.

In this section a steady demand for College-bred pigs has been maintained. Even though the price of baconers fell sharply at the beginning of 1922, there was the counteracting influence that there was a large flow of milk, resulting from the good rains from the end of December 1921 and during the succeeding January and February. At the present moment there is somewhat of a lull in the demand, but as prices for baconers are rising, it can be anticipated that there will be a quick revival of demand, especially should the coming spring prove good for milk production.

In April 1921 the College bought one Tamworth boar and two sows. The drop from these was eagerly sought after, so another three sows of this breed were secured during this year. For crossing either with Berkshires, Middle Yorkshires, or the farmers' ordinary sows, the Tamworths have long been recognised as being of sterling quality. It is only latterly, however,

that this knowledge has permeated the ranks of our Queensland farmers.

SALES OF PIGS—1ST JULY, 1921, TO 30TH JUNE, 1922.

For Stud.	Boars.	Sows.	Value.		
			£	s.	d.
Berkshires ..	51	47	272	11	0
Yorkshires ..	28	29	152	2	0
Tamworths ..	3	4	15	5	0
Total for stud ..	82	80	729	9	8
Sold as culls (49 head) ..			179	14	1
Farmers' sows served (76) ..			20	10	0
Keep of sows sent for service ..			4	12	6
Hire of pig crates ..			0	5	0
Sales of empty pollard bags ..			1	0	0
Total sales for which cash received ..			£935	11	3
Killed for College dining-hall (8 head) ..			15	12	2
Total returns from piggery ..			£951	3	5

PIGS AT COLLEGE, 30TH JUNE, 1922.

	Stud Boars.	Stud Sows.	Young Stock and Barrows.	Total.
Berkshires ..	4	25	97	126
Middle Yorkshires ..	4	11	56	71
Tamworths ..	1	5	16	22
Totals ..	9	41	169	219

POULTRY.

Generally speaking, the operations in this section have been satisfactory. A consistent demand for our stud stock has been maintained. But if the College is to continue to hold its high position as a breeder of poultry, it is imperative that we should have accommodation to single-test our stock much on the lines of the single-test pens of the egg-laying competition. In all branches of live stock the move is towards higher individual production, and this cannot be attained unless tested stock are used for mating. In this matter the College has undoubtedly done good work with its annual egg-laying competitions, but it is felt that we should go further and be in a position to declare to each purchaser of College birds the exact production pedigree of the stock sold.

Certainly it is not the objective of the College to endeavour to supply all the stud stock required by the State. Stud breeders have to be encouraged. But it is important that the College should conduct its operations in a manner as will give such an advantage to the purchaser in the matter of high and efficient production that every private breeder will be forced to work on much the same lines.

Increased prosperity on the land is bound up with the increased individual productiveness of the material with which the farmer has to work, whether animal, bird, or seed, more than with any other factor. Artificial high prices

may be a temporary ameliorant, but cannot be a permanent solution of the problem. But to obtain individual increased quality in our stock and seeds requires several generations of careful breeding, basing our selection of stud stock on suitable tests as to production. In this matter we cannot act too quickly, nor can we push the matter too hard.

The eighteenth annual egg-laying competition was completed in March last, and the nineteenth competition began on 3rd April. In this competition there still remains a number of group pens—that is, pens containing six pullets. From what has been said above, it is evident that these group tests are of little value, for under this system it is impossible to record the individual performance of any one of the six pullets. Further group pens have been abandoned at all other College-controlled competitions, and it is not right that Gatton should be behindhand in this respect. A still further argument in favour of an immediate alteration in this regard is the fact that the egg-laying competitions pay their way, as is shown in the sub-joined statement. To bring the College up to the standard of other like institutions, the group pens should be discontinued and a sufficient number of single pens erected to take their place.

SALES OF COLLEGE POULTRY—1ST JULY, 1921, TO 30TH JUNE, 1922.

	Birds.	Settings.	Value.		
			£	s.	d.
White Leghorns	161	82	131	0	6
Brown Leghorns	38	18	27	12	0
Black Orpingtons	112	43½	79	1	0
Rhode Isl. Reds	98	12	56	16	0
S. L. Wyandottes	20	8	14	19	6
Indian Game ..	14	6	8	1	0
Totals ..	443	169½	£423	0	0
Table fowls sold for cash, 32 head ..			4	2	6
Table eggs sold for cash, 189 dozen ..			12	11	7
Total sales for which cash was received ..			£439	14	1
Table fowls supplied to College dining-hall, 273 head ..			32	1	3
Total returns from College poultry ..			£471	15	4

POULTRY AT COLLEGE, 30TH JUNE, 1922.

White Leghorns ..	84	head
Black Orpingtons ..	143	„
Blue Orpingtons ..	12	„
Rhode Island Reds ..	53	„
Silver-laced Wyandottes ..	62	„
Brown Leghorns ..	48	„
Indian Game ..	16	„
Muscovy Ducks ..	14	„
Sundry crossbreds ..	27	„
Total ..	459	head

EGG-LAYING COMPETITION.

STATEMENT OF RECEIPTS AND EXPENDITURE.

Expenditure.

	£	s.	d.	£	s.	d.
Prize money				50	8	0
Food—						
Wheat, 322 bushels	70	5	8			
Pollard, 453 bushels	43	13	9			
Bran, 110 bushels	9	18	6			
Cracked corn, 424 lb.	6	2	1			
Meggitt's meal, 8½ cwt.	7	14	0			
Dried blood, 3½ cwt.	4	8	0			
Hulled oats, 21½ bushels	7	6	6			
Green lucerne, valued at	2	0	0			
Soup meat, valued at	3	0	0			
				154	8	6
Balance				318	13	8
				£523	10	2

Receipts.

	£	s.	d.	£	s.	d.
Entry fees				89	0	0
Sales—						
State Produce Agency, 5,302 ⁷ / ₁₃ doz. ..	309	0	4			
Kyoomba Sanatorium, 192 doz. ..	25	4	0			
College dining-hall, 1,660 doz. ..	100	5	10			
				434	10	2
Total expenditure				£523	10	2

SHEEP.

Up to the present the sheep have had a fair time and are now in good condition. Stomach worms and blowflies were prevalent during spring and autumn respectively, several of this year's lambs dying from the former trouble. The season has not been favourable for fattening, as the rape gave out before the lambs were old enough to fatten, and since then they have been running on pasture, with pickings from cultivated areas from time to time. Several have been butchered for home consumption, and those remaining are in a healthy state, most of them being in good condition.

Two Corriedale rams were purchased during the year, and the old Border Leicester ram died recently.

Owing to the trees in the orchard growing larger, and naturally requiring more time and attention, it makes the sheep work more difficult. I feel that some relief will soon be necessary.

We are still without a shearing-shed, yards, and dip, and this makes the work more difficult and unsatisfactory.

Drenching for stomach worms is necessary at regular intervals during summer and autumn, and this means a considerable amount of yard work. I would, therefore, strongly recommend that the present repairs at the yards be completed or new yards built.

Lectures were delivered to students at regular intervals. Horticultural lectures to first-year students; Wool Classing to second year; and Sheep and Wool to third year. Practical demonstration and instructions in the work were also given. The students have made satisfactory progress.

RETURNS FROM SHEEP AND WOOL FOR THE YEAR ENDED 30TH JUNE, 1922.

	£	s.	d.
Cash sales sheep (77 head)	62	8	5
Killed for College dining-hall (152 head) ..	128	3	9
Cash sales wool	162	16	3
Estimated value of wool unsold	32	12	0
Value of wool reserved for instruction ..	15	0	0
Total returns	£401	0	5

SHEEP ON HAND, 30TH JUNE, 1922.

Merino ewes	75	head.
Lincoln crossbred merino ewes ..	100	"
Border Leicester crossbred merino ewes	100	"
Lambs, crossbred	123	"
Corriedale rams	2	"
Romney Marsh rams	1	"
Dorset horn rams	1	"
Total	402	head.

VEGETABLE GARDEN.

The rainfall during the year has been satisfactory so far as amount was concerned, but, owing to its coming in large quantities in a short period, with long periods of dry conditions between each fall, continuous growth was impossible.

The fungus disease appeared in all early plantings of the cucumber family and the tomatoes, which, although sprayed with Bordeaux mixture, gave light returns. When later sowings were made, irrigation had to be resorted to, with good results from growing crops, but the necessity to irrigate to sow the seed was responsible for slow growth. In order to counteract this effect stable and fowlyard manure were applied, causing a quicker growth, but the response was poor when compared with the effect of natural rain. In November, and again in February, a plague of grasshoppers made their presence felt, especially during February, when they were in the hopping stage. Spraying with Bordeaux mixture as a preventive was most effective against their attack. The most destructive pest was the moth amongst the cabbage family. The larvæ of this moth make their way into the heart of the plant. They make their attack at an early age, and continue to attack at the base of the leaves as the plant grows older. Plants protected in the nursery sheds and showing no signs of attack soon show their presence, even when dipped during transplanting and sprayed a week later. This pest caused the death of thousands of plants during late summer, but the trouble has now eased off, so that later applications have not been fully tried out, owing to the fact that portions of the growing crops not treated (as checks) have kept free. Many plantings in season were successful, but vegetables are very scarce at the present time. This is not entirely due to the dry weather now prevailing, but largely owing to the want of water for irrigation at the critical period, coupled with the pests above named, and want of seed during the proper planting season, this last being due to the late fulfilment of orders placed. Recent plantings are now showing above the ground, and the land is now in good condition.

ORCHARD.

This section has been kept thoroughly cultivated and free from weeds during the year. All trees were sprayed during the winter, and some of them during the summer. Most of the trees have made good growth, but the yield of fruit was light, owing principally to the dry weather being followed by a continued rainfall during Christmas week, which caused a flush of growth resulting in the falling of fruit. The mandarins suffered the heaviest loss in this respect. Fruit fly was in evidence in the summer fruits, and did considerable damage at an exceptionally early stage of growth.

VINEYARD.

During the dormant season the vines were pruned, cleaned, and swabbed with a 10 per cent. solution of sulphuric acid. As the buds were swelling a spraying was made with sulphur lime wash, but, as the vines were flowering, the downy mildew appeared. Immediate action with Bordeaux mixture lessened the effect of the disease, and most of the varieties produced a fair crop. The dry weather we have experienced of late should have a good effect in freeing the vines from the disease. The nut grass is spreading

through the whole of the young vines. Constant cultivation has been practised during the year, with a few ploughings during the winter, which keep the soil in good condition.

ORNAMENTAL GROUNDS.

The work in this section has been chiefly confined to keeping in order and the growing of annuals. The trees and shrubs have suffered from want of water, which at times was due to shortage of supply. Those on the Siding road have made a good growth, and should this winter be mild they should make a good showing next year.

RETURNS FROM GARDEN AND ORCHARD.

	£	s.	d.
Sales vegetables (for cash and to College dining-hall)	156	9	5
Sales fruit (for cash and to College dining-hall)	21	9	11
Total returns	£177	19	4

ENGINEER'S SECTION.

Twice during the year it was necessary to lift the electric motor at the creek to a place of safety on account of the creek flooding. On the first occasion the aerial transport wire and supports carried away, which meant that the motor had to be made secure where it was. Luckily the creek did not rise up as high as where the motor lay. Instead of repairing and replacing the aerial wire and supports, hardwood rails and bearers were laid on sleepers to the creek bank and a sledge made for carrying the motor, which is now easily and safely hauled to the top of the bank by means of a windlass.

The greatest trouble during the year has been to cope with the demand for water on account of the Mather and Platt turbine pump being very badly worn in its interior parts both stationary and moving. A new pump has been installed recently, more than coping with the demand. Also, a patent strainer was fitted to the foot valve, and this has largely overcome the difficulty previously experienced with sand and grit, which, prior to the installation of the strainer, was often drawn through the pump in large quantities, thereby scoring and grinding away the impellers and standing parts.

All the boilers and machinery were up for annual inspection under the Machinery Inspection Department, and they were all passed except the farm portable boiler, which was placed out of commission until repairs were effected. These repairs were carried out, and the engine has been in constant use since.

On 29th August Mr. H. Boyle resigned his position as assistant engineer to take up a position at the Charters Towers Technical College. On 23rd September Mr. R. Thompson took up his duties as assistant engineer. On 15th October Mr. R. Tarrant started on leave, prior to relinquishing his position as second assistant engineer.

From 19th to 21st October, inclusive, the gas engine gave out, owing to the big end bearing heating up. This necessitated sending same to Brisbane to be remetalled; also the piston ring was broken and exhaust valve damaged. During these three days the engine was totally dismantled and given as complete an overhaul as possible. All the main bearings were stripped, examined, and leads taken off, the piston withdrawn, two new rings fitted, &c.

In November the circulating water tanks of gas engine were taken down off the stand,

cleaned out, new tops fitted, and repaired where necessary; also, the gas scrubber was overhauled, cleaned out, and refitted with fresh silver coke and fibre. This was also again carried out on 18th May last.

On 25th November an examination of students took place, under the supervision of Mr. W. Collins, of the Machinery Inspection Department, for certificates of competency as third-class engine drivers. Eleven students presented themselves for this examination, of whom ten passed and gained their certificates.

On 19th December Mr. Budge was appointed relieving engineer whilst I was away on annual leave, but stayed only ten days. On 6th January Mr. Blair was sent from Brisbane to take Mr. Budge's place, but stayed only a few hours. On 8th January Mr. MacPherson took up his duties as second assistant engineer.

From 30th January to 8th June steam plant was used for lighting purposes, and all the students gained a thorough knowledge in regard to the care and management of boiler and engine under steam.

From 4th to 13th April, inclusive, there were no lights, as the old 75 amperes 110 volt dynamo gave out, and a 15 k.w. 110 volt dynamo had to be hired so as to carry on the lights, the motor generator set being in Brisbane undergoing repairs.

On 29th May Mr. R. Thompson relinquished his duties as assistant engineer, and on 7th June Mr. R. E. Mayne was appointed in his place.

The motor generator set was returned from Brisbane on 2nd June, after being repaired by the electrical engineers of the Department of Public Works, and was recommissioned on 9th June, after being tested.

During the year the main dynamo has been very severe on carbon brushes. There is excessive sparking because of overload and an irregular surface on the commutator. This latter has been to some extent overcome by filing down the surface of the commutator, but when time is convenient, it requires to be turned up in a lathe.

The general service water supply tank is leaking badly through fractured bottom plates. To repair this without renewing the plates it will be necessary to have the tank empty for two or three days and have a false cement bottom put in; also, the wooden structure supporting this tank is urgently needing attention, especially by being tar-washed.

In the dormitories the candle power of the electric lamps has been reduced from 32 and 50 to 16 candle power throughout so as to relieve some of the load on the lighting dynamo. There is also the cowshed, where all the lights have been done away with. The stables have been reduced to three lights, as is also the case with the dairy factory and the laboratory.

During the year the interior walls of the power-house have been washed down and painted medium stone colour. This was carried out by the power-house staff; also, provision has been made for giving more daylight to the interior of the building, and windows have been procured for this purpose.

The conduct of students who have come under my supervision during the year has been all that could be desired.

CUTHBERT POTTS, B.A.,
Principal.

REPORT OF THE AGRICULTURAL CHEMIST.

I have the honour to submit to you herewith my twenty-fifth Annual Report of the work of the Chemistry Division of your Department for the year ended 30th June, 1922.

WORK PERFORMED AND STAFF.

	1919-20.	1920-21.	1921-22.
Soils	153	132	192
Waters	153	65	66
Dipping fluids	1,303	1,083	612
Dip concentrates	21	5	7
Milks and creams	204	250	134
Butters	128	124	233
Margarines	29	2	7
Condensed milks	27	28	54
Cheeses	55	32	22
Fertilizers	72	97	80
Wheats and flours .. .. .	..	41	51
Seeds, grasses, plants, &c. ..	34	104	72
Stock foods	65	46	212
Leathers	50	31	35
Viscera, stomach contents, &c. ..	42	56	49
Sugars, molasses, and syrups ..	6	9	53
Sugar-canes .. .. .	..	..	4
Salts and preservatives	6	15	11
Limestones, marls, &c. ..	13	15	16
Rocks .. .. .	..	7	7
Ashes	3	2	4
Jams and preserves	30	50	50
Canned fruits	15	68	214
Sweet potatoes .. .. .	..	37	9
Miscellaneous	51	98	94
Total	2,461	2,403	2,338
Glassware tested	3,275	6,244	4,991

Although the number of analyses is practically the same as last year, the actual work carried out is very much greater, on account of the greatly increased number of samples—like soils, stock foods, &c.—requiring a large number of analytical estimations.

The number of stock foods analysed increased from 46 the previous year to 212, but only a small number of samples were obtained in the open market, as the staff of the seed expert could not find much time to collect such samples, and it would have been quite impossible for us with our present staff to carry out many more stock food analyses. The same applies to the analyses of fertilisers, and for the proper administration of the Act a large number of samples of fertilisers should be collected from the markets and from farmers to keep a proper control of the trade. A great number of officers under various Acts are also inspectors under the Fertilisers Act, but, unfortunately, they find no time to spare to collect such samples, and, as a matter of fact, the collecting of such samples requires a specially trained man, as many little irregularities against the regulations under the Acts are creeping in.

The appointment of a competent officer to collect samples under the Fertilisers Act, Stock Food Act, &c., is strongly recommended, as these Acts are unquestionably of great benefit to the farmers, and the trade under the Acts has already reached a considerable magnitude and is growing every day.

Of course, the appointment of extra assistance for the laboratory work is of equal importance, and at least one cadet should be appointed immediately.

The whole of the staff did good work and the junior assistants made very good progress in their analytical work.

SOILS AND ROCKS.

Of particular interest are the analyses of soils submitted by officers of the Hydraulic Engineer's Department from the proposed irrigation areas, on the Dawson River and Severn River. The soils appear to be of great fertility and good physical condition, as shown by the full mechanical analyses also carried out, but not recorded on the soil sheet (Table I.). The soils compare very favourably with the soils obtained from the Yanco irrigation area (New South Wales) and the Murray River irrigation area (South Australia), the analyses of which are reported at the end of the table of Queensland soils.

Very disappointing is the result of the analyses of the soils from the Coominya Soldiers' Settlement. They are without doubt the poorest soils ever analysed, and the worst feature is the fact that the large amount of insoluble matter in hydrochloric acid, varying from 84 to 96 per cent., contains practically no plant foods, as seen from the following analysis:—

Clay	3.98 %
Potash felspar	trace
Soda felspar	1.10
Lime felspar .. .. .	.08
Mica	nil
Quartz	86.04
Insoluble matter	91.20 %

(average of 7 soils)

Professor Richards submitted some more rocks for analysis, which have importance on soil formation, from the Warwick district, Springsure, Condamine, and Montville, which are recorded on Table II. The Phonolite from Springsure, with over 5 per cent. of potash, is particularly interesting.

DIPPING FLUIDS.

The number of analyses of dipping fluids has been greatly reduced, and considering that the work under existing conditions has not much value, no harm is done.

The percentages of fluids of various strength are as follows:—

.3% (last year 1.7%) containing from 0 to 2 lb.	} Of arsenious acid per 400 gallons.
5.7% (last year 8.1%) containing from 2 to 4 lb.	
21.7% (last year 18.7%) containing from 4 to 6 lb.	
14.4% (last year 18.1%) containing from 6 to 7 lb.	
20.2% (last year 18.1%) containing from 7 to 8 lb.	
15.2% (last year 10.7%) containing from 8 to 9 lb.	
8.8% (last year 5.9%) containing from 9 to 10 lb.	
13.7% (last year 18.7%) containing 10 lb. and over	

It is interesting to note that the ratio of oxidised dipping fluids is practically identical with the values found last year:—

75.8% (last year 75.1%) free from oxidation	} Of arsenious acid per 400 gallons.
7.7% (last year 5.7%) containing from 0 to .5 lb.	
1.0% (last year 2.2%) containing from .5 to 1 lb.	
3.2% (last year 3.4%) containing from 1 to 2 lb.	
3.2% (last year 4.2%) containing from 2 to 3 lb.	
9.1% (last year 9.1%) containing 3 lb. and over	

With regard to the control of the tick pest, it is high time that more effective means should be adopted, because we must acknowledge the fact that during the past twenty-five years, during which time dipping of cattle has been practised, no practical advance has been made

with tick eradication, as the whole area of Queensland liable to tick infestation, due to favourable climatic condition, is more or less heavily infested.

We must ask ourselves: Is it the honest wish of every person concerned that the ticks should be eradicated, bearing in mind that such eradication is only possible by the strictest enforcement of legislative control and the loyal support of all stockowners, who must be ready to bear heavy sacrifice?

The enormous annual loss caused directly and indirectly by ticks and tick fever will amount to several million pounds, and still the policy of drift is allowed to continue. As long as the fallacious method of dipping—"to dip only to prevent gross infestation, but to leave always a few ticks on to protect cattle against tick fever"—is supported and practised, we will never get eradication.

What waste of time and money to carry out further experiments with various dipping fluids of various strengths and preparations, the effect of rain after dipping, &c., &c., when the results of dipping in America and South Africa have been so satisfactory!

Since 1906, when tick eradication was commenced in North America, of an original quarantine area of 741,515 square miles, an area about double the size of the tick-infested area of Queensland, over 500,000 square miles, or 70 per cent., have been absolutely cleared.

In America our own dipping fluid formula, having been found fully effective, was universally adopted and dipping every two weeks rigidly enforced, without losing any time on valueless experiments and inspection of cattle.

As the parasitic stage of the tick is twenty-one days, without much variation, the fortnightly dipping must be enforced to ensure the killing of all ticks, as the first dipping very rarely kills all the ticks, and reinfestation after dipping can take place in a few hours.

It is quite possible that 6 lb. of arsenic per 400 gallons of fluid is nearly as effective as 8 lb., particularly during the summer months; but the difference between a .20 and .15 per cent. solution is so slight that it is not worth running the risk of using the weaker solution, considering the excellent results obtained with a .20 per cent. solution in the United States of America.

TESTING OF DAIRY GLASSWARE, &C.

	Tested.	Approved.	Condemned.	Broken.	Per Cent. Condemned.
Cream bottles	2,880	2,854	20	6	.7
Milk bottles	575	574	1	..	.2
Cream pipettes	281	279	1	1	.4
Milk pipettes	261	233	28	..	10.7
Various pipettes	14	8	6	..	42.9
Thermometers	976	836	134	6	13.7
Lactometers	4	4	..	..	..
Total	4,991	4,788	190	13	3.8

We prepared 193 bottles of $\frac{n}{10}$ alkali, 1 bottle $\frac{n}{10}$ acid, and 134 pints of standard iodine solution.

FODDER CROPS, &C.

A further lot of *sweet potatoes* was tested (Table III.) and showed good amounts of starch and sugars.

A sample of the roots of *Canna edulis* or *Queensland arrowroot* was also analysed, giving a high percentage of starch. An average sample of the starch prepared from *Canna edulis* and exported to England was of very good quality, containing—

	Per cent.
Starch	82.68
Protein .. ..	.07
Ash .. ..	.25
Fibre .. ..	.10
Moisture	16.90

It is interesting to note that *Canna edulis* (leaves, stalks, and roots) was found free from hydrocyanic-yielding glucosides.

A sample of *Scrub yam* (*Vitis opaca*) is too watery to be of much food value.

GRAINS, SEEDS, &C.

Various samples of crossbred wheats from the Roma State Farm were tested (Table IV.) and also a fair average sample of *Canary seed* obtained from the Canary Seed Pool, shows the highly nutritious quality of our Queensland-grown seed.

Twenty-six samples of wheat from various experimental plots were milled and the flours tested (Table V.). Twenty samples of wheat were milled and tested for the Toowoomba show, but I must point out that this work, involving a very large amount of work, could not be carried out in future, more particularly as it has very little practical value. It is quite unfair to judge different varieties of wheat in this manner. The milling test should be used chiefly for judging between wheats of the same class. The usual practical method of judging wheat at shows quite fulfils the purpose.

Four samples of peanuts were submitted by Mr. Pollock, the Northern Instructor in Agriculture, giving the following results:—

	Red Cross.	Spanish.	Bunch.	Red Cross Cleaned.
Kernel	% 78.5	% 72.5	% 71.0	% 83.5
Shell	21.5	27.5	29.0	16.5
Analysis of Kernel—				
Moisture	5.30	5.55	5.77	5.39
Oil	50.20	42.96	44.53	49.32

CANNED FRUITS, JAMS, &C.

A large number of analyses were carried out in connection with the canning industry, and one of the assistants was frequently at the factories to take special samples. As a result, the quality of canned pineapples was much improved and a pack of high grade produced.

In connection with canning of pines, a very good sample of concentrated *Pineapple Syrup* was prepared by a Brisbane lady, from pine-

apple waste, which gave the following analysis:—

	Per cent.
Moisture	25.41
Sucrose	10.37
Reducing sugars	63.19
Other organic matters .. .. .	.69
Ash .. .. .	.34
Acidity .. .. .	.48

The product had a clear amber colour and very pleasant flavour. I have always maintained that the juice which can be obtained from pineapple peelings and waste pieces should be utilised, after purification, for the canning of pines and thereby reduce the amount of sugar necessary for satisfactory canning.

A sample of *Dried Bananas*, or *Banana figs*, made on the Marshall Islands, forming a compact roll, wrapped up in dried banana leaves and surrounded by network, was found to have a pleasant flavour, resembling the flavour of figs and dates, and showed the following composition:—

		Figs.	Dates.
	%	%	%
Moisture	25.06	17.5	20.8
Proteins	2.50	6.1	6.6
Sucrose	7.32	60.5	54.0
Reducing sugars	42.97		
Other organic matters	16.92	5.4	11.3
Fibre	2.28	7.3	5.5
Fat .. .. .	.22	.9	.2
Ash	2.73	2.3	1.6

A very good sample of dehydrated apples contained 22.6 per cent. of moisture, and some samples of dehydrated pineapples from 20 to 25 per cent. of moisture. The dehydrated pines after soaking in water were quite unpalatable,

sour, and very leathery, and I do not believe that pineapples are suitable for dehydration.

FERTILISERS.

Under the Fertilisers Act of 1914 sixty-four firms were registered as dealers, registering 224 fertilisers. The most of the analyses were made for the trade and only a few samples were submitted by farmers, and no samples were obtained by inspectors in the open market.

STOCK FOODS.

As already stated, a greatly increased number of stock foods were analysed as samples obtained by Mr. F. F. Coleman and his staff. A summary of the results of these analyses will be published later on in the "Agricultural Journal."

A sample of *Ant-bed*, obtained from North Queensland, which is greedily eaten by horses, showed the following composition:—

	Per Cent.
Moisture	9.93
Organic Matters	82.16
Containing Nitrogen	1.20
Ash	7.91
Ash containing—	
Insoluble Matter	3.04
Iron and Alumina	3.17
Lime	1.37
Phosphoric Acid	0.15
Salt	0.06

This ant-bed has unquestionably a fair feeding value, but the analysis does not disclose any reason why the horses should rush to eat it as soon as it is spread out in the yard.

I have, &c.,

J. C. BRÜNNICH,

Agricultural Chemist.

TABLE I.—ANALYSES OF QUEENSLAND SOILS—continued.

Laboratory N	Locality.	Description of Soils.	Reaction.	TOTAL ELEMENTS IN THE SOIL, CALCULATED ON SOIL DRIED AT 100° C.										Available Plant Food, Soluble in 1 per cent. Citric Acid.				Total Elements, lb. per Acre, 12" Deep.				Available Plant Food, Soluble in 1 per cent. Citric Acid, lb. per Acre, 12" Deep.			Cwt. of Lime required per Acre, 12" Deep.
				Soluble in Hydrochloric Acid, Sp. Gr. 1.115.					Soluble in 1 per cent. Citric Acid.					Phosphoric Acid.	Lime.	Potash.	Nitrogen.	Phosphoric Acid.	Lime.	Potash.	Phosphoric Acid.	Lime.	Potash.		
				Humus.	Combined Water and Other Organic Matter.	Chlorine.	Nitrogen.	Phosphoric Acid.	Lime.	Magnesia.	Potash.	Total Insoluble Matter.	%											%	
LEICHHARDT—																									
62	Dawson River Irrigation Scheme	Grey clayey loam	Neutral..	2.51	6.22	.009	.188	.13	1.02	.61	.50	77.69	.0256	.2857	.0623	.0224	6,188	4,279	33,570	16,457	843	9,403	737	..	
63	Ditto ..	Black clayey loam	Sl. acid..	2.62	6.91	.013	.177	.14	1.14	.81	.54	72.37	.0154	.2939	.0516	.0092	5,488	4,342	3,550	16,742	477	9,113	285	34.4	
64	Ditto ..	Black clayey loam	Sl. acid..	1.58	5.10	.013	.130	.08	.77	.56	.39	80.06	.0135	.2179	.0484	.0220	4,350	2,677	25,760	13,048	452	7,290	736	18.7	
65	Ditto ..	Black clayey loam	Sl. acid..	2.25	4.76	.009	.155	.10	.76	.66	.46	78.33	.0103	.1893	.0638	.0106	5,060	3,264	24,810	15,013	336	6,179	346	28.1	
817	Ditto ..	Chocolate loam	Acid ..	1.56	5.23	.006	.011	.13	1.08	.59	.36	78.59	.0181	.2047	.0800	.0330	3,650	4,314	35,840	11,945	600	6,793	1,095	9.4	
818	Ditto ..	Chocolate loam	Neutral..	1.19	4.97	.010	.071	.10	1.11	.67	.03	78.14	.0175	.1926	.1236	.0102	2,298	3,237	35,930	971	566	6,233	333	2.3	
PORT CURTIS—																									
1000	Marion Creek ..	Grey sandy soil	Sl. acid..	1.07	3.21	.012	.050	.03	.99	.18	.01	87.34	.0011	.0622	.0323	.0033	1,904	1,142	37,700	381	42	2,369	126	42.2	
1001	Kunwarara ..	Black clay ..	Sl. acid..	2.26	8.08	.006	.097	.01	.71	1.92	.03	67.80	.0015	.1730	.1628	.0017	3,166	326	23,172	979	49	5,646	55	34.4	
1503	Ubobo ..	Light-grey sandy	Neutral..	.30	1.11	.050	.040	.07	.68	.40	.13	91.94	.0125	.0644	.0121	.0120	1,784	3,122	30,300	5,800	558	2,873	535	..	
1504	Ditto ..	Light-grey sandy	Sl. acid..	.14	1.57	.010	.020	.07	.68	.36	.17	91.70	.0125	.0521	.0106	.0093	898	3,142	30,520	7,630	561	2,339	417	..	
1505	Helens Siding ..	Light-grey clayey loam	Sl. acid..	1.72	4.94	.005	.125	.21	1.54	1.24	.48	75.95	.0246	.2486	.0536	.0111	4,284	7,196	52,780	16,420	843	8,520	380	13.3	
1506	Ditto ..	Light-grey clayey loam	Sl. acid..	1.79	5.69	.008	.151	.25	1.50	1.76	.55	75.88	.0334	.2561	.0077	.0183	5,216	8,602	51,820	18,860	1,154	8,847	632	16.4	
1648	Yeppoon ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1649	Ditto ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1650	Ditto ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
WIDE BAY—																									
61	Maroochy River ..	Grey sandy loam	Sl. acid..	2.70	8.42	.012	.057	.04	.20	.83	.20	76.48	.0030	.0262	.0362	.0048	1,861	1,799	6,310	6,310	95	827	151	134.4	

1437	Ditto ..	..	..	..	5.20	10.42	.010	-.035	-.07	-.19	-.44	-.26	.65.02	-.0181	-.0822	-.0639	-.0095	885	1,770	4,807	6,576	457	2,079	240	108.5
1438	Ditto ..	..	..	..	5.10	11.40	-.042	-.040	-.13	-.36	-.33	-.26	.65.32	-.0106	-.0451	-.0450	-.0300	1,001	3,253	9,010	6,506	265	1,128	750	84.3
72	Bauple ..	..	..	..	1.02	6.71	-.095	-.126	-.05	-.30	-.21	-.11	.78.83	-.0013	-.1090	-.0694	-.0108	4,296	17,225	10,135	3,835	445	3,733	3,700	51.0
128	Doonan ..	..	..	..	1.50	1.56	-.010	-.156	-.01	-.15	-.08	-.20	.86.82	-.0008	-.0509	-.0329	-.0068	5,050	324	4,855	6,474	26	1,647	220	31.2
161	Bundaberg Station Experiment Lime Plot Experiments	..	..	..	2.00	11.18	-.012	-.219	-.40	-.49	-.77	-.04	.44.34	-.0025	-.2121	-.1952	-.0047	6,672	12,186	14,928	1,219	46	6,462	143	40.7
162	Ditto ..	..	..	..	1.84	11.23	-.008	-.227	-.38	-.56	-.55	-.04	.44.64	-.0021	-.2410	-.1170	-.0041	6,916	11,576	17,060	1,219	64	7,342	125	25.0
163	Ditto ..	..	..	..	1.91	11.13	-.033	-.187	-.36	-.60	-.65	-.02	.43.78	-.0019	-.2755	-.2158	-.0013	5,697	10,968	18,280	609	58	8,394	40	15.6
164	Ditto ..	..	..	..	1.89	11.12	-.009	-.188	-.36	-.60	-.36	-.03	.43.85	-.0023	-.2611	-.1325	-.0043	5,727	10,968	18,280	914	70	7,955	131	18.0
165	Ditto ..	..	..	..	1.93	11.13	-.034	-.192	-.39	-.66	-.33	-.03	.43.35	-.0021	-.3177	-.1610	-.0035	5,850	11,882	20,108	914	64	9,680	107	12.5
166	Ditto ..	..	..	..	1.49	12.22	-.070	-.163	-.33	-.62	-.36	-.05	.43.59	-.0019	-.3258	-.2380	-.0067	4,788	9,694	18,210	1,469	56	9,570	197	10.9
167	Ditto ..	..	..	..	1.54	12.22	-.038	-.170	-.34	-.69	-.66	-.03	.43.33	-.0020	-.3584	-.2281	-.0050	4,902	9,804	19,894	865	58	10,533	144	7.8
217	Bundaberg	..	..	..	1.48	12.70	-.021	-.199	-.30	-.40	-.07	-.02	.45.26	-.0016	-.2239	-.0279	-.0039	6,388	9,630	12,840	642	51	7,187	125	12.5
218	Ditto ..	..	..	..	.89	12.35	-.028	-.174	-.35	-.66	-.13	-.03	.44.11	-.0029	-.3815	-.0359	-.0032	6,058	12,185	22,980	1,044	101	13,280	111	..
421	Ditto ..	..	..	..	.63	5.08	-.003	-.079	-.04	-.15	-.06	-.01	.79.78	-.0008	-.0074	-.0297	-.0053	2,729	1,416	5,147	242	28	256	183	16.4
422	Ditto ..	..	..	..	.91	5.05	-.003	-.079	-.04	-.33	-.06	-.05	.81.82	-.0024	-.0218	-.0449	-.0024	3,008	1,637	12,680	1,781	914	811	91	..
423	Ditto ..	..	..	..	.20	2.87	-.004	-.073	-.03	-.24	-.02	-.01	.91.06	-.0006	-.0053	-.0158	-.0042	2,899	1,034	9,490	199	24	210	167	5.0
424	Ditto ..	..	..	..	2.23	13.26	-.008	-.254	-.43	-.54	-.35	-.11	.42.13	-.0064	-.2440	-.0516	-.0203	7,738	13,100	16,451	3,046	194	7,434	618	102.0
425	Ditto ..	..	..	..	1.58	12.29	-.007	-.225	-.37	-.58	-.23	-.07	.43.59	-.0066	-.2320	-.0450	-.0191	6,732	11,069	17,350	2,094	197	6,942	571	110.0
426	Ditto ..	..	..	..	1.09	12.54	-.006	-.220	-.33	-.54	-.18	-.02	.43.24	-.0029	-.2580	-.0372	-.0105	6,523	9,789	16,010	592	86	7,649	311	98.0
673	Bundaberg Sugar Experiment Station Soils	..	..	..	1.50	12.05	-.076	-.206	-.42	-.44	-.40	-.04	.42.77	-.0014	-.2147	-.1103	-.0103	6,668	13,595	14,240	1,295	45	6,950	333	45.3
674	Ditto ..	..	..	..	1.48	11.71	-.013	-.211	-.55	-.60	-.72	-.05	.41.68	-.0011	-.2193	-.0780	-.0069	6,658	17,354	18,930	1,578	35	6,920	218	35.9
675	Ditto ..	..	..	..	1.65	11.99	-.010	-.185	-.60	-.43	-.30	-.06	.39.47	-.0016	-.1936	-.0879	-.0131	6,090	19,746	14,150	1,975	53	6,372	431	51.6
676	Ditto ..	..	..	..	1.38	12.42	-.017	-.223	-.36	-.53	-.51	-.06	.43.66	-.0023	-.2215	-.0991	-.0133	7,158	11,555	17,012	1,926	74	7,110	427	39.8
677	Ditto ..	..	..	..	1.43	11.68	-.034	-.186	-.35	-.42	-.24	-.04	.44.24	-.0015	-.1867	-.0471	-.0064	5,970	11,235	13,482	1,284	48	5,994	205	40.6
678	Ditto ..	..	..	..	1.32	12.46	-.041	-.198	-.34	-.36	-.36	-.04	.43.35	-.0025	-.2030	-.1101	-.0110	6,248	10,728	11,358	1,262	79	6,406	347	54.7
679	Ditto ..	..	..	..	1.54	11.47	-.008	-.187	-.33	-.51	-.28	-.02	.45.45	-.0017	-.2229	-.1214	-.0052	5,951	10,502	16,230	636	54	7,094	165	39.1
680	Ditto ..	..	..	..	1.35	12.69	-.017	-.194	-.32	-.44	-.27	-.04	.43.66	-.0024	-.1946	-.1397	-.0057	6,175	10,186	14,004	1,273	76	6,194	181	42.2

TABLE I.—ANALYSES OF QUEENSLAND SOILS—continued.

Laboratory No.	Locality.	Description of Soils.	Reaction.	TOTAL ELEMENTS IN THE SOIL, CALCULATED ON SOIL DRIED AT 100° C.										Available Plant Food, Soluble in 1 per cent. Citric Acid, Lb. per Acre, 12" Deep.				Total Elements, Lb. per Acre, 12" Deep.				Available Plant Food, Soluble in 1 per cent. Citric Acid, Lb. per Acre, 12" Deep.			Cwt. of Lime required per Acre, 12" Deep.
				Humus.		Combined Water and Other Organic Matter.		Chlorine.		Nitrogen.		Phosphoric Acid.		Lime.		Magnesia.		Potash.		Phosphoric Acid.	Lime.	Potash.			
				%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%				%	%	
WIDE BAY—continued.																									
681	Bundaberg	Red loam	Sl. acid..	1.39	13.07	.064	.203	.36	.48	.32	.03	42.07	.0025	.2104	.0755	.0071	6,294	11,162	14,882	930	77	6,524	220	43.8	
682	Ditto	Light-grey loam	V. acid..	1.50	6.37	.010	.176	.08	.16	.06	.03	69.26	.0046	.0174	.0069	.0049	7,468	3,395	6,790	1,273	195	725	199	44.5	
1025	Ditto	Red loam	Neutral..	1.80	12.15	.050	.196	.37	.26	.11	trace	43.33	.0037	.1480	.0514	trace	6,238	11,775	8,274	Nil	117	4,711	..	23.4	
1026	Ditto	Grey loam	V. alka- line	1.56	10.05	.050	.197	.17	.54	.19	.38	44.69	.0044	.1960	.0955	.0057	6,859	5,919	18,801	13,230	153	6,824	198	5.4	
168	Childers	Red loam	Sl. alka- line	1.55	13.14	.030	.103	.18	.29	.22	.02	41.05	.0007	.1259	.0392	.0018	3,390	5,924	9,544	658	23	4,144	59	50.0	
1603	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
286	Kalkie	Chocolate loam	Alkaline	1.63	14.15	.023	.100	.26	.72	.60	.12	40.76	.0026	.3662	.0065	.1165	3,455	8,946	24,870	4,283	90	12,650	225	19.5	
287	Ditto	Dark-brown loam	Sl. acid..	2.09	15.37	.057	.102	.20	.57	.28	.08	39.83	.0012	.2122	.0087	.0591	3,468	6,902	19,380	2,686	41	7,212	296	22.7	
309	Ditto	Black gravel soil	Sl. acid..	1.17	12.13	.021	.053	.42	.45	.38	.02	39.43	.0026	.1832	.0042	.0371	2,018	15,840	17,135	800	99	6,976	160	11.7	
226	Palmwoods	Red-brown clayey loam	Sl. alka- line	3.72	18.43	.068	.430	.32	.96	.75	.10	37.81	.0065	.3612	.1375	.0415	12,865	9,574	28,720	2,992	195	10,808	1,242	8.4	
1558	Ditto	Light-brown sand	Acid	.71	2.69	.006	.048	.06	.11	.13	.05	90.98	.0020	.0339	.0212	.0069	1,697	2,122	3,890	1,768	707	1,199	244	47.0	
1557	Ditto	Light-brown sand	Acid	.98	4.47	.004	.078	.07	.14	.10	.03	88.92	.0023	.0695	.0209	.0100	2,779	2,494	4,990	1,069	820	2,477	356	62.5	
239	Gin Gin	Black sandy loam	Sl. acid..	1.17	4.68	.010	.041	.05	.24	.13	.07	86.24	.0021	.1475	.0059	.0450	1,506	1,873	8,960	2,607	77	5,416	217	9.4	
240	Ditto	Chocolate loam	Sl. acid..	1.30	7.65	.010	.062	.06	.30	.26	.06	70.78	.0020	.1157	.0040	.0781	2,176	2,176	10,600	2,176	70	4,060	140	35.9	
323	Glass House Mountains	Buff sandy loam	Acid	.03	4.07	.007	.028	.01	.09	.01	.01	92.81	.0003	.0018	.0077	.0025	1,127	322	3,422	201	12	72	101	7.0	
1282	Ditto	Dark-grey clay loam	Sl. acid..	.55	1.44	.013	.056	.02	.11	.06	.05	95.4	.0009	.0236	.0080	.0029	2,193	619	4,152	1,880	35	924	114	4.7	
1283	Ditto	Light-brown clayey loam	Sl. acid..	.24	5.61	.026	.029	.02	.09	.12	.06	74.10	.0007	.0158	.0051	.0061	1,002	518	3,282	2,176	24	546	211	35.3	
563	Beerburum	Greyish-brown sand	Sl. alka- line	.03	1.74	.006	.011	.06	.17	.05	.01	94.16	.0081	.1377	.0229	.0073	454	2,480	7,028	413	334	5,693	301	23.2	
598	Curra	Dark-grey loam	Sl. acid..	.12	.559	.006	.063	.12	.98	1.49	.32	78.13	.0070	.1877	.0983	.0082	2,022	3,852	31,459	10,270	224	6,025	263	12.5	

599	Ditto ..	Dark-grey loam	Sl. acid..	.05	5.21	.007	.029	.10	.13	1.33	.33	76.85	.0036	.1191	.0851	.0067	962	3,418	4,413	10,950	119	3,952	222	14.0
631	Nambour ..	Black peat ..	Acid ..	17.26	23.68	.040	1.289	.22	.22	.21	.16	46.33	.0131	.0674	.0451	.0180	18,242	3,112	3,112	2,263	185	953	254	262.0
1436	Ditto ..	Red loam ..	Sl. acid..	.92	1.92	.004	.005	.06	.08	.07	.08	90.52	.0065	.0328	.0200	.0043	184	2,219	2,959	2,959	240	1,213	159	21.8
1077	Cooran ..	Yellow clayey loam	V. acid ..	.64	4.98	.060	.108	.10	.07	.09	.58	82.08	.0025	.0150	.0091	.0064	3,702	3,427	2,399	19,875	85	514	219	32.0
1078	Ditto ..	Grey loam ..	V. acid ..	1.91	5.11	.060	.214	.07	.07	.16	.48	82.84	.0077	.0630	.0593	.0154	6,693	2,189	2,189	15,004	240	1,970	481	33.5
1472	Ditto ..	Grey clayey loam	Acid ..	2.71	9.38	.050	.270	.13	.22	.32	.81	67.18	.0040	.0848	.0041	.0171	8,004	3,855	6,522	24,025	119	2,512	507	43.0
1473	Ditto ..	Grey clayey loam	Acid ..	3.22	10.28	.030	.310	.13	.28	.47	.85	67.28	.0082	.1007	.0438	.0103	7,842	3,288	7,082	21,500	207	2,547	261	64.0
1377	Montville ..	Red loam ..	V. acid ..	4.84	18.22	.009	.566	.22	.06	.13	.01	32.57	.0109	.0233	.0938	.0015	16,320	6,343	1,729	172	314	671	43	84.4
1378	Ditto ..	Red loam ..	V. acid ..	4.23	17.13	.007	.551	.19	.10	.29	.01	33.58	.0083	.0573	.0050	.0013	17,080	5,891	3,100	31	257	1,777	40	82.0
1439	Maroochy River ..	Grey loam ..	Acid ..	3.70	8.95	.120	.007	.08	.14	.44	.34	67.81	.0139	.0498	.0497	.0343	190	2,176	3,808	9,248	378	1,355	933	99.1
1440	Ditto ..	Grey loam ..	Acid ..	3.36	10.55	.053	.031	.12	.28	.44	.25	66.02	.0224	.0682	.0490	.0105	784	3,036	7,084	6,324	566	1,721	265	92.9
1572	Gooburrum ..	Grey sandy loam	Acid ..	.35	1.71	.007	.045	.06	.07	.08	.06	93.78	.0015	.0118	.0419	.0046	1,872	2,496	2,913	2,496	62	491	191	6.2
BURNETT—																								
50	Gayndah ..	Light-brown sandy soil	Sl. acid..	.46	1.55	.009	.046	.06	.26	.18	.15	92.74	.0078	.0578	.0176	.0098	1,702	2,220	9,618	5,550	289	2,138	363	20.3
1605	Burnett River Demonstration Experiment Plots	Grey loam ..	Sl. acid..	5.81	13.82	.017	.641	.23	2.26	1.06	.26	61.46	.0120	.5286	.0593	.0129	17,320	6,214	61,060	7,024	324	13,485	348	7.8
1606	Ditto ..	Light-grey clayey loam	Sl. acid..	1.83	6.44	.005	.154	.14	.53	.32	.36	78.67	.0129	.1828	.0514	.0212	5,152	4,818	17,732	12,212	432	6,116	709	14.8
1607	Ditto ..	Light-brown clayey soil	Sl. acid..	.84	3.22	.008	.058	.05	.17	.23	.18	87.62	.0023	.0340	.0441	.0045	2,382	2,094	6,818	7,352	94	1,320	185	20.0
1608	Ditto ..	Light-grey loam	Sl. acid..	1.85	6.49	.024	.191	.21	1.29	1.27	.46	72.30	.0257	.2487	.0811	.0094	5,886	6,822	42,110	14,950	839	8,128	307	11.7
1609	Ditto ..	Light-grey clayey loam	Sl. acid..	4.01	12.97	.034	.536	.22	1.21	.77	.48	61.45	.0076	.3380	.0830	.0121	14,590	6,256	35,030	13,935	219	9,745	349	14.0
MORETON—																								
55	Stapylton ..	Chocolate sandy loam	Acid ..	6.01	10.24	.012	.181	.04	.18	.11	.12	66.91	.0071	.0285	.0172	.0074	4,729	1,094	4,805	3,136	185	744	193	173.4
56	Ditto ..	Chocolate sandy loam	Acid ..	6.14	9.33	.011	.201	.15	.29	.27	.09	69.41	.0089	.1010	.0496	.0158	5,568	4,270	8,130	2,414	247	2,802	438	127.0
60	Kuraby ..	Light-brown sandy loam	Sl. acid..	.81	1.54	.004	.039	.01	.15	.07	.01	94.78	.0018	.0946	.0210	.0039	1,517	389	5,834	389	70	3,680	152	23.4
691	Coominya Soldiers' Settlement Soils	Light-brown sandy loam	Acid ..	.86	2.40	.007	.008	.03	.01	.02	.01	93.10	.0019	.0016	.0106	.0038	306	1,150	383	383	73	61	146	15.6
692	Ditto ..	Grey sandy loam	Acid ..	.60	1.47	.006	.005	.04	.01	.05	.02	94.41	.0014	.0020	.0108	.0028	202	1,621	405	810	56	81	112	7.8
693	Ditto ..	Grey sandy loam	V. acid ..	1.71	3.93	.006	.012	.03	.02	.06	.05	88.75	.0029	.0045	.0196	.0097	460	1,150	767	1,912	111	172	372	28.8
694	Ditto ..	Grey sandy loam	V. acid ..	2.60	4.93	.006	.016	.04	.04	.06	.02	84.49	.0035	.0094	.0297	.0105	517	1,295	1,295	647	113	304	339	11.7

LITHO BY G. B. BURNETT AT THE GOVERNMENT PRINTING OFFICE, PERTH, 1914.

TABLE I.—ANALYSES OF QUEENSLAND SOILS—continued.

Laboratory No.	Locality.	Description of soils.	Reaction.	TOTAL ELEMENTS IN THE SOIL, CALCULATED ON SOIL DRIED AT 100° C.										Available Plant Food, Soluble in 1 per cent. Citric Acid.				Total Elements, Lb. per Acre, 12" Deep.			Available Plant Food, Soluble in 1 per cent. Citric Acid, Lb. per Acre, 12" Deep.			Cwt. of Lime required per Acre, 12" Deep.
				Humus.	Combined Water and Other Organic Matter	Chlorine.	Nitrogen.	Soluble in Hydrochloric Acid, Sp. Gr. 1.115.				Phosphoric Acid.	Lime.	Magnesia.	Potash.	Total Insoluble Matter.	Phosphoric Acid.	Lime.	Potash.	Nitrogen.	Phosphoric Acid.	Lime.	Potash.	
								%	%	%	%													
MORETON—continued.																								
695	Coominya Soldiers' Settlement Soils	Grey sand	Acid	.42	1.14	.005	.034	.04	.14	.05	.04	96.28	.0014	.0095	.0084	.0038	1,221	1,436	5,386	1,436	50	341	136	8.6
696	Ditto	Grey sandy loam	V. acid	1.16	2.90	.008	.068	.06	.16	.02	.02	91.48	.0040	.0390	.0105	.0042	2,719	2,399	6,396	799	160	1,559	108	23.4
697	Ditto	Grey sand	Acid	.37	1.10	.005	.004	.04	.07	.03	.07	96.14	.0021	.0143	.0085	.0094	169	1,697	2,970	2,970	89	606	389	8.6
918	Pinkenba	Dark-grey clayey loam	Acid	2.90	7.80	.016	.290	.36	.42	.85	.63	67.29	.0222	.1545	.0289	.0233	9,150	11,359	13,250	19,875	700	4,875	735	49.8
919	Ditto	Dark-grey clayey loam	Sl. acid	1.30	6.53	.037	.087	.20	.10	.92	.61	67.26	.0052	.0509	.0666	.0120	2,958	680	3,400	20,740	176	1,731	408	54.5
920	Ditto	Light-grey clayey loam	V. acid	.76	4.35	.050	.086	.10	.35	1.13	.52	77.23	.0248	.0027	.0494	.0121	3,017	3,509	12,280	18,245	870	94	424	35.1
921	Ditto	Grey-brown clayey loam	Acid	2.06	7.67	.008	.294	.30	.43	1.26	.60	68.02	.0049	.1098	.0625	.0152	9,276	9,466	13,568	18,931	154	3,465	479	31.8
922	Ditto	Yellowish-grey clayey loam	V. acid	0.99	6.81	.008	.106	.14	.76	.67	.58	68.31	.0024	.0626	.0327	.0099	3,431	4,532	24,600	18,772	77	2,026	32	65.5
923	Ditto	Subsoil of No. 922																						
1200	Dakabin	Grey sandy loam	V. acid	1.16	5.47	.130	.086	.02	.06	.08	.03	81.29	.0023	.0144	.0113	.0071	2,737	636	1,909	954	73	458	226	42.2
1201	Ditto	Red loam	Acid	.85	2.57	.190	.085	.03	.06	.06	.03	93.91	.0032	.0324	.0133	.0096	3,121	1,101	2,203	1,101	110	1,189	352	15.6
1291	Bald Hills Soldiers' Settlement Soils	Dark-grey clayey loam	Acid	3.41	4.17	.030	.240	.06	.53	.44	.31	81.10	.0058	.0974	.0356	.0097	8,290	2,073	18,310	10,708	200	3,365	335	101.0
1292	Ditto	Brown clayey loam	Acid	1.03	3.57	.020	.150	.04	.36	.45	.36	82.70					5,386	1,436	12,927	12,927				128.0
1293	Ditto	Dark-grey clayey loam	Acid	2.89	3.65	.010	.230	.10	.77	.43	.35	81.04	.0032	.1232	.0297	.0174	8,258	3,591	27,650	12,568	115	4,424	635	84.0
1294	Ditto	Brown clayey loam	Acid	.82	3.47	.010	.090	.08	.61	.51	.40	79.78					3,476	3,090	23,560	15,450				65.0
1295	Ditto	Chocolate loam	Acid	7.01	9.49	.290	.590	.43	.35	2.13	.39	58.72	.0145	.0353	.0203	.0280	14,763	10,760	8,761	9,760	363	883	700	247.0
1296	Ditto	Brown clayey loam	Acid	1.50	5.63	.120	.130	.12	.53	.69	.47	74.90					4,350	4,015	17,730	15,723				172.0
1370	Ipswich	Light-brown clay	Acid	.81	2.76		.042	.11	.57	.42	.20	86.86	.0079	.0625	.0309	.0059	1,560	4,033	21,090	7,398	292	2,314	218	
1371	Ditto	Light-brown clay	Sl. acid	.37	4.66	.017	.051	.06	.52	.78	.23	76.40					1,887	2,072	19,240	8,509				
1372	Ditto	Light-brown sand	Alkaline	.31	2.78	.070	.018	.06	.52	.83	.33	82.14					656	2,260	18,950	12,210				
1496	Harrisville	Chocolate loam	Sl. acid	2.75	9.25	.060	.020	.35	2.48	.34	.21	65.15	.0317	.1583	.0496	.0078	536	1,104	78,250	6,626	100	4,995	246	25.7

1500	West Burleigh ..	Light-chocolate clayey loam	Acid ..	2.10	11.93	.010	.170	.12	.19	.41	.05	59.42	.0070	.0430	.0427	.0070	4,899	3,458	5,476	1,441	219	1,238	202	78.0
1501	Ditto ..	Light-chocolate clayey loam	Acid ..	2.25	15.87	.010	.220	.09	.22	.38	.04	61.73	.0059	.0349	.0141	.0070	5,626	2,302	5,626	1,023	151	892	179	99.0
1576	Redcliffe ..	Red loam	Acid ..	6.15	1.36	.007	.105	.05	.12	.28	..	78.35	.0023	.0971	.0593	..	3,484	1,659	3,982	..	76	3,224	..	17.2
1577	Ditto ..	Chocolate loam	Acid ..	10.41	16.10	.014	.740	.24	.06	.16	.24	44.49	.0029	.0250	.0204	.0158	14,490	4,699	1,175	4,699	56	489	309	103.1
1584	Kingston ..	Grey sandy soil	Acid ..	.42	.90	.006	.033	.04	.05	.03	trace	96.80	.0007	.0089	.0079	trace	1,355	1,643	2,053	..	28	365	..	86.0
DARLING DOWNS—																								
86	Seyern River Irrigation Scheme	Brown sandy clay	Sl. acid..	.36	2.43	.014	.037	.07	.26	.55	.62	85.85	.0080	.0854	.0371	.0089	1,419	2,685	9,972	23,780	307	3,275	341	39.1
88	Ditto ..	Light-brown sandy clay	Sl. acid..	.77	2.68	.012	.060	.06	.29	.54	.54	85.27	.0046	.0943	.0253	.0051	2,334	2,334	11,280	21,000	179	3,668	198	46.9
90	Ditto ..	Dark-grey clayey loam	Sl. acid..	1.12	2.96	.009	.086	.09	.42	.60	.61	84.91	.0104	.1211	.0346	.0102	3,158	3,305	15,422	22,400	382	4,447	374	28.1
92	Ditto ..	Brown clay	Acid ..	1.08	2.37	.015	.054	.05	.17	.49	.65	85.85	.0035	.0620	.0218	.0067	1,924	1,782	6,058	23,160	125	2,209	239	48.4
94	Ditto ..	Dark-grey sandy clay	Acid ..	1.38	3.28	.011	.111	.07	.31	.33	.49	86.38	.0060	.1414	.0401	.0215	3,895	2,456	10,877	17,193	210	4,962	754	17.2
96	Ditto ..	Brown clay	Sl. acid..	.66	2.33	.014	.051	.04	.10	.35	.58	87.68	.0014	.0342	.0310	.0112	1,956	1,534	3,836	22,246	54	1,312	430	55.5
307	Applethorpe ..	Grey sand	Acid ..	.45	1.29	.016	.034	.02	.06	.09	.04	96.94	.0034	.0173	.0101	.0054	1,350	794	2,383	1,588	135	687	214	18.7
639	Dalveen ..	Grey sandy loam	Acid ..	2.06	8.52	.007	.016	.05	.04	.08	.02	80.56	.0052	.0114	.0362	.0055	539	1,855	1,349	674	175	384	185	33.5
640	Ditto ..	Grey sandy loam	Acid ..	.71	4.53	.005	.005	.03	.01	.19	.01	87.78	.0022	.0021	.0118	.0050	191	1,150	383	345	84	80	191	28.8
730	Stanthorpe ..	Grey gravelly loam	Sl. acid..	.55	5.35	.005	.003	.04	.17	.08	.18	83.92	.0039	.0599	.0275	.0072	100	1,338	5,688	6,022	130	2,004	240	21.1
782	Ditto ..	Grey gravelly loam	Neutral..	.55	.42	.007	.085	.02	.15	.05	.42	97.38	.0022	.0797	.0183	.0071	3,468	816	6,120	17,130	89	3,553	289	7.0
1280	Ballandean ..	Grey sandy loam	Sl. acid..	.25	.73	.004	.017	.02	.08	.06	.04	97.16	.0015	.0224	.0094	.0058	818	876	4,044	1,802	72	1,079	279	..
1281	Ditto ..	Grey sandy soil	Sl. acid..	.25	.69	.004	.028	.02	.08	.06	.05	97.80	.0011	.0241	.0051	.0039	1,401	1,071	3,854	1,880	55	1,206	195	..
1502	Ellinthorpe ..	Light-brown sandy	Sl. acid..	.71	2.71	.005	.080	.09	.29	.18	.15	89.72	.0034	.1341	.0398	.0197	3,090	3,476	11,200	5,794	131	5,180	761	8.6
1638	Glenceoe ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
NEW SOUTH WALES—																								
819	Yanco Irrigation Area ..	Red medium sandy	Acid ..	.45	1.17	.008	.025	.03	.08	.13	.12	94.24	.0019	.0343	.0126	.0063	1,149	1,379	3,677	5,516	87	1,576	290	10.9
820	Ditto ..	Red medium sand (subsoil of No. 819)	Acid ..	.30	1.06	.005	.017	.07	.06	.13	.14	94.06	..	..	..	..	721	2,970	2,546	5,940	..	..	..	..
821	Ditto ..	Red sandy clay	Sl. acid..	.92	3.55	.007	.086	.06	.25	.34	.55	83.71	.0007	.1209	.0379	.0164	3,556	2,481	10,336	22,740	29	4,999	678	15.6
822	Ditto ..	Red sandy clay (subsoil of No. 822)	Neutral..	.58	6.11	.006	.074	.06	.33	.74	.97	70.68	..	..	..	..	2,758	2,236	12,296	36,150	..	..	..	..
SOUTH AUSTRALIA—																								
1389	Loveday Irrigation Area ..	Red medium sandy	Neutral..	.71	2.40	.011	.065	.05	.32	.50	.64	87.37	.0018	.1539	.0386	.0249	2,811	2,162	13,840	27,680	79	6,656	1,077	4.7
1390	Berri Irrigation Area ..	Red medium sandy	Sl. alka-line	.40	2.80	.009	.045	.06	.26	.47	.64	87.64	.0026	.1423	.0548	.0371	2,020	2,693	11,670	28,723	117	6,387	1,665	..

TABLE II—ANALYSES OF QUEENSLAND ROCKS.

Laboratory No.	236	237	238	341	1,050	248	249	250	251	252	253
Name of Rock.	Phonolite.	Fayalite Basalt.	Basalt.	Rhyolite.	Quartz, Mica, Hornblende, Diorite.	Rhyolite-Tuff.	Rhyolite.	Andesite.	Andesite.	Andesite.	Andesite.
Locality.	"Virgin Rock," The Mountain, Springsure.	Mt. Boorambool, Springsure.	Scott's Hotel, Springsure.	Bon Accord Falls, Montville.	Mountain Camp.	Por. 18v, Par. Wildash, Lucky Valley Creek, near Condamine River.	Por. 2161, Par. Wildash, 8-Mile Range.	Por. 1663, Par. Wildash, 8-Mile Creek.	Por. 2161, Par. Wildash, 8-Mile Range.	Por. 26v, Par. Wildash, Oakley Creek.	Por. 1663, Par. Wildash, 8-Mile Creek.
Constituents—	%	%	%	%	%	%	%	%	%	%	%
Silica, SiO ₂	67.32	47.20	46.41	85.13	61.54	73.87	73.93	55.49	53.34	53.37	54.25
Alumina, Al ₂ O ₃	15.10	15.25	16.61	5.43	19.03	12.92	16.85	18.63	18.73	20.08	19.46
Ferric Oxide, Fe ₂ O ₃	2.70	4.61	3.85	.48	nil	nil	.60	1.89	1.72	3.94	3.16
Ferrous Oxide, FeO	1.57	8.43	8.69	2.72	5.04	2.32	1.10	5.41	6.65	5.02	4.27
Magnesia, MgO	.41	5.72	5.41	.37	2.97	.83	.43	3.28	5.10	4.26	2.75
Lime, CaO	.70	8.14	6.24	1.04	4.90	2.83	.63	6.09	8.75	4.34	5.81
Soda, Na ₂ O	5.32	3.45	3.41	2.05	2.84	3.23	3.16	4.10	2.30	4.34	3.56
Potash, K ₂ O	5.29	1.57	1.36	1.54	2.76	1.07	1.88	.11	.61	.82	.62
Water, + H ₂ O	.35	1.54	2.86	.50	.35	.43	.47	2.16	1.03	2.72	2.19
Water, - H ₂ O	.55	.50	.50	.32	.10	.09	.15	.17	.21	.22	.22
Carbonic Oxide, CO ₂	.07	.07	.03	trace	..	1.75	nil	1.19	nil	nil	1.97
Sulphuric Anhydride, SO ₃	.32	3.25	4.04	.19	..	.32	.45	1.70	1.80	1.85	1.82
Titanic Oxide, TiO ₂	.08	.55	.62	.17	.08	.03	.07	.14	.15	.12	.21
Phosphoric Oxide, P ₂ O ₅	trace	.16	.14	.02	trace	.04	.02	.09	.17	.11	.10
Manganous Oxide, MnO	..	..	..	..	trace	..	..	..	..	..	..
Sulphides	..	..	..	..	trace	..	..	..	..	..	..
Normative Minerals—	99.78	100.44	100.17	99.96	100.33	99.73	99.74	100.45	100.56	99.86	100.39
Quartz	14.94	..	..	63.78	15.90	47.04	43.74	14.40	9.00	20.40	19.56
Orthoclase	31.14	9.45	8.34	8.90	16.68	6.67	11.12	0.56	3.34	17.79	3.34
Albite	44.54	28.82	28.82	17.29	24.10	27.25	30.39	34.58	19.39	6.81	29.87
Anorthite	1.95	21.68	25.85	1.11	23.63	1.95	2.50	21.96	38.92	20.85	15.85
Corundum	..	..	..	..	2.55	5.61	8.06	3.67	..	7.85	7.14
Diopside	0.65	12.30	1.11	2.88	..	..	..	..	2.94	..	..
Hypersthene	0.70	4.42	14.59	3.77	15.45	5.80	1.89	13.88	19.32	13.64	9.14
Olivine	..	7.55	3.53	..	..	..	..	..	..	..	..
Magnetite	3.94	6.73	5.57	0.70	..	..	0.93	2.78	2.55	5.57	4.64
Ilmenite	0.61	6.23	7.60	0.30	1.37	0.61	0.76	3.19	3.50	3.50	3.50
Pyrite	0.06	0.06	..	..	trace	..	..	..	..	..	..
Apatite	0.34	1.34	1.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Calcite	..	2.04	3.36	0.82	0.45	4.00	..	2.70	..	..	..
Water, &c...	0.90	..	..	..	..	0.52	0.62	2.33	1.24	2.94	2.41
Classification (American)	I. 4, I. 3. Liparose	III. (II.) 5.3.4. Camptonose	II. 5.3.4. Andose	I. 2.1.4.	II. 4.3.3 (4)	I. 3.1.4.	L. 3.2.4. Alsbashose	II. 4.3.5. Placerose	II. 4.(5). 4.4.	II. 4.(3)(4).4.	II. 4.3.5. Placerose
Specific Gravity	2.519	2.747	2.822	..	2.750	2.604	2.626	2.731	2.860	2.786	2.712

TABLE III.—SWEET POTATOES AND CANNA, ETC.

Sample No.	Variety.	Water.	Starch.	SUGARS.		Proteins.	Fat.	Crude Fibre.	Ash.	Colour.
				Reducing.	Cane.					
		%	%	%	%	%	%	%	%	
19	Don River	75.80	15.25	1.50	0.43	1.70	0.16	0.68	0.91	White
20	Farmers' Special	77.20	12.40	2.09	1.37	1.25	0.16	.56	.80	do.
34	Home Hill	77.10	13.70	1.48	1.42	1.38	0.18	.57	.97	do.
16	Mammoth Cattle	77.30	12.40	1.91	1.34	1.38	0.25	.70	.80	do.
12	Matchless	71.20	19.15	1.35	1.20	1.75	0.14	.67	.90	do.
46	.. .. .	75.40	13.30	1.00	2.06	1.50	0.17	.76	.88	Creamy
	Average	75.70	14.40	1.56	1.30	1.50	.18	.66	.88	
729	<i>Canna edulis</i> or Queensland Arrowroot	76.77	18.14	1.10	1.42	0.27	.05	.68	1.57	
416	Scrub Yam (<i>Vitis opaca</i>) ..	95.00		2.23		0.75	.02	1.08	.92	

TABLE IV.—WHEAT ANALYSES.

Variety.	Moisture.	Crude Protein.	Crude Fat.	Crude Fibre.	Crude Ash.	Carbo-hydrates.
	%	%	%	%	%	%
No. 1	12.07	10.44	2.44	2.07	1.76	71.42
No. 2	12.19	10.25	2.16	1.63	1.64	72.13
No. 3	12.92	10.69	2.12	2.40	1.50	70.37
No. 4	12.36	9.81	2.24	2.30	1.60	71.69
No. 5	12.72	10.69	2.08	2.10	1.50	70.91
No. 6	12.29	10.11	2.12	2.47	1.52	71.49
No. 7	11.74	11.62	1.90	2.33	1.62	70.79
No. 8	11.68	9.44	2.20	2.60	1.70	72.42
No. 9	11.82	9.03	2.00	1.80	1.56	73.79
No. 10	12.16	9.03	2.20	2.33	1.48	72.80
No. 11	11.87	9.25	2.00	2.23	1.50	73.15
No. 12	12.07	8.94	2.10	2.27	1.52	73.10
No. 13	12.51	9.25	2.18	2.14	1.72	72.20
B × Fed. 33	12.19	7.82	2.14	2.19	1.58	74.08
B ₁ × Flo. No. 2	12.45	9.00	2.22	2.32	1.57	72.44
Bunge × Manitoba 5 ..	12.75	9.88	2.21	2.30	1.72	71.14
Bunge × Manitoba 7 ..	12.94	9.81	2.06	2.24	1.67	71.28
B ₁ × Manitoba 9	13.25	9.63	2.22	2.12	1.57	71.21
Bunge No. 2 × Warren ..	11.74	9.82	2.20	2.33	1.58	72.33
B × I P ₄ G	11.30	8.82	2.20	2.47	1.38	73.83
B × I P ₉ W.G.	11.85	8.75	2.00	2.27	1.47	73.66
Cedar × Bunge 1	12.74	9.13	2.30	1.97	1.58	72.38
Warren	10.72	16.64	2.00	2.47	2.06	66.11
343 × No. 8	11.20	10.0	2.20	2.37	1.44	72.79
B × I P ₉ G.	12.39	9.82	1.80	2.27	1.53	72.19
Canary Seed	11.57	15.25	5.42	5.10	5.13	57.53

TABLE V.—MILLING OF WHEATS.

Lab. No.	Variety.	Grower.	Locality.	Weight per Bushel.	Ease of Milling.	MILLING PRODUCTS.			GLUTEN.		Strength (in Quarts per 200 lb.)	Colour.	Protein in Flour.
						Flour.	Pollard.	Bran.	Wet.	Dry.			
719	Cedric	E. Rowlings	Inglewood	63.6	Easy	70.5	15.7	13.8	21.8	7.5	55.3	Good	9.31
720	343-8	ditto	ditto	59.9	Fair	69.6	12.4	18.0	23.9	8.6	56.2	ditto	9.87
721	Patriot	H. Geitz	Allora	62.1	Easy	67.9	15.3	16.8	27.8	9.6	52.1	ditto	9.69
722	Indian (Pusa No. 4)	ditto	ditto	65.5	ditto	69.1	17.8	13.1	32.2	11.6	56.3	ditto	12.69
723	B × F 37 (Inglewood)	ditto	ditto	60.0	ditto	71.5	13.2	15.3	24.8	8.6	54.2	Very good	9.69
724	BIP ₉	W. J. Anderson	Bell	64.1	Hard	70.8	11.8	17.4	37.8	13.3	49.3	Good	13.94
725	Soutters Early	ditto	ditto	63.8	Easy	70.6	13.2	16.2	38.7	13.5	54.5	ditto	14.06
779	B × 1P ₄	E. C. Stewart	Jandowae	65.2	ditto	75.3	11.0	13.7	29.9	9.9	54.7	ditto	10.06
989	B × M 9	..	..	59.4	ditto	72.2	11.7	16.1	32.9	10.7	51.3	ditto	10.94
990	B × M 5	..	..	62.2	ditto	74.3	13.4	12.3	35.7	11.7	51.5	ditto	11.31
742	Amby	State Farm	Roma	62.4	ditto	77	10.7	12.3	22.7	8.2	57.3	Whitish	9.63
743	Bunge No. 1	ditto	ditto	62.3	ditto	71.7	14.3	14.0	23.9	8.6	54.5	Very good	9.37
744	B ₂ S ₁₀	ditto	ditto	61.7	ditto	71.9	15.0	13.1	21.7	7.5	55.7	ditto	8.69
745	Bunge × Emmer	ditto	ditto	64.3	ditto	73.2	12.8	14.0	27.5	9.5	50.6	Good	9.81
746	Belatourka × Flo 7	ditto	ditto	59.0	Fair	70.3	16.0	13.7	21.1	7.1	50.0	Faint Reddish	8.81
747	Belatourka × Flo 10	ditto	ditto	63.8	ditto	68.7	16.4	14.9	19.1	6.7	52.3	Good	7.19
748	Bobs × Flo 2	ditto	ditto	63.9	Easy	70.5	11.4	18.1	21.0	7.2	51.7	Very good	7.38
749	Bobs × Flo 7	ditto	ditto	62.1	ditto	70.6	11.8	17.6	19.6	6.8	48.1	Whitish	7.38
750	Bunge × Indian Pearl 1	ditto	ditto	63.2	ditto	71.8	10.4	17.8	21.2	7.6	53.8	Very good	7.88
751	Bunge × Indian Pearl 5	ditto	ditto	62.3	ditto	70.8	11.7	17.5	27.4	8.2	51.7	ditto	7.06
752	Bunge × Indian Pearl 9	ditto	ditto	63.6	ditto	71.4	16.6	12.0	22.3	7.9	54.5	Good	8.31
753	B × M 7	ditto	ditto	61.6	ditto	70	15.9	14.1	..	..	49.4	Fair colour,	7.81
754	Cedric	ditto	ditto	64.3	Fair	70.6	16.1	13.3	23.5	8.0	52.7	Bad surface	8.69
755	Soutters Early × Warren No. 1	ditto	ditto	60.8	Easy	73.4	9.4	17.2	21.4	7.5	48.3	Very good	7.81
756	Soutters Early × Warren No. 4	ditto	ditto	62.5	ditto	74.0	9.0	17.0	25.5	8.9	48.9	ditto	9.00
757	343 × 23	ditto	ditto	62.1	ditto	69.7	17.9	12.4	20.4	7.1	54.0	Good	7.38

REPORT OF THE DIRECTOR OF FRUIT CULTURE.

The year ended 30th June, 1922, has been one of considerable interest to the fruit growers, not only of Queensland but of Australia generally, as it has witnessed the first serious attempt on the part of producers to utilise their surplus fresh fruits on anything approaching business lines. I refer to the Fruit Pool, which, though far from perfect, is a step in the right direction, as it was imperative that combined action should be taken to utilise and market fruit in order to prevent a collapse of the industry, and the ruin of very many growers who are dependent on it for their living.

Previously the only branch of the industry that was organised on sound business lines was that of the dried fruit, in which the producers not only controlled the quantity of the individual dried fruits to be placed on the market, but fixed the price to be paid both by the distributing merchants and by consumers. The success realised by the producers of dried fruits by combined action indicates the value of co-operative and co-ordinated effort, and points the way in which the products of other kinds of fruit which are suitable for the fresh fruit trade, canning, or preserving, other than by drying, can be disposed of to advantage.

As far as Queensland was concerned, the Fruit Pool only dealt with the main summer crop of smooth-leafed pineapples which were treated by three factories working on behalf of the Pool. The resultant pack was, on the whole, very satisfactory, but the factories working for the Pool were very severely handicapped owing to the very irregular manner in which the supply of fresh fruit came to hand. This increased the cost of treatment very materially, as labour had to be paid for whether the fruit was to hand or not, as labour cannot be obtained or dispensed with at a moment's notice. Personally, I am of opinion that a Pineapple Pool will not be a complete success until it is made compulsory and the whole of the fruit is controlled, so that all the fruit suitable for and required by the canneries is forwarded to and utilised by them, and the fruit required for local consumption and for consumption in the Southern States is distributed according to the demand in the different markets. By this means there would be no overlapping, as each market would only receive as much fruit as it can dispose of profitably. The proceeds should be pooled and producers paid a flat rate according to the grade of fruit supplied.

With respect to the canneries, it will be necessary to make a very great difference in the price paid for the different sizes of pines, as is done in Honolulu, where the price paid for pines 4 $\frac{7}{8}$ inches in diameter, which are large enough to cut a slice that will fit a can having a capacity of 30 ounces net, is twice that paid for pines of a smaller size. Increasing the price of the larger pines at the factory and sending all such pines to the factory instead of to the Southern States would tend to materially increase our output of standard-sized canned fruit, and the smaller fruit is more suitable for the retail trade for fresh fruit. For a fancy fresh fruit trade there are always enough extra large pines which are too big to be canned at a profit, and these should be used for this purpose.

A compulsory pool and grading the fruit to suit the purpose for which it is best adapted will undoubtedly tend to materially improve the financial side of the pineapple industry of this State.

In addition to the establishment of a Fruit Pool, the year has seen a very marked advance in the organisation of our fruit producers. The Southern Queensland Fruit Growers' Society, Limited, has extended its activities, and now embraces considerably over 100 local associations, and will, I trust, eventually embrace the whole of the fruitgrowers of this State.

This society made a very comprehensive and excellent exhibit of fruit at the Royal National Show in August, 1921, and controls the forwarding, by means of the special fruit trains, of the bulk of the bananas, pineapples; and citrus fruits forwarded to the Southern States, as well as of the bulk of the fruits and vegetables produced in the Granite Belt Area during the summer fruit period. This latter work was only started during the past season, and, despite the fact that the sale of our summer fruits was very seriously handicapped owing to the prevalence of the fruit fly, the improved methods of forwarding the fruit and of unloading it on its arrival in Brisbane have been a very great improvement on those of any previous year, as the fruit has been carried expeditiously, handled more carefully, and reached its destination in better order (fruit fly excepted). During the months of December, January, February, and March no less than 299,538 packages of fruit and vegetables were dealt with—a very good record for a first attempt, and one that will in all probability be greatly exceeded during next and subsequent seasons.

So far it has been a very difficult matter to obtain an accurate estimate of the quantity of fruit and vegetables produced in this area, a very important matter, as prospective buyers want definite information respecting the yields that are likely to be obtained before definitely committing themselves, and the records kept by the S.Q.F.S. show definitely the quantity of fruit and vegetables forwarded by the special fruit trains for the four months mentioned. During the year the unsatisfactory condition into which many of our primary-producing industries have fallen has engaged the very careful consideration of our Government, and a scheme has been evolved for the especial purpose of earnestly endeavouring to improve those conditions. The fruitgrowing industry is especially catered for by this scheme, and there are no less than five representative fruitgrowers on the Provisional Agricultural Council, who have been appointed to watch the interests of all fruitgrowers, and to suggest the best means to be adopted to place our fruitgrowing industry on a more satisfactory basis. This should be productive of good, as any action that will tend to unite the primary producers of fruit and vegetables and mould them into a concrete body working for one object—the improvement of their industry—is bound to be beneficial. The actual extent of the good to be derived thereby will, however, depend on the loyalty of individual growers, as success can only be achieved by absolute loyalty and by every grower sinking

his individuality and becoming a part of one big organisation for his own and his fellow growers protection. I have written strongly on this matter for over thirty years, and I see no reason to alter my opinion, that I have frequently expressed—that no co-operation or co-operative effort can ever be a success without absolute loyalty on the part of every one of the co-operators, a loyalty that can only be secured by the most rigid agreement and binding rules. The strength of co-operative effort is that of its weakest link, and it is therefore necessary to eliminate all weak links, even though compulsory powers are required to bring this about. I have great hopes that the attempt to place our primary producers on a sounder financial basis will prove successful and that our fruitgrowers will do their share and help in every way they can to bring about this very desirable result. Primary producers have done it elsewhere, and I firmly believe that if our fruitgrowers will be loyal to their local associations, local councils, central council, and to themselves, the fruitgrowing industry of this State will occupy the position to which it is entitled—viz., one of our most important and profitable primary industries.

The weather conditions generally throughout the year were more favourable for fruit culture, especially that of tropical and semi-tropical fruits, than for some years past.

Good rains took place during the winter of 1921 and continued throughout the spring and up to the end of February 1922, with the result that up till then citrus and tropical fruits made great headway. From the end of February a very severe dry spell set in and lasted till June—severe, in that it was accompanied by great heat, and in many cases the soil dried out badly before it was possible to get it into a good state of tilth and thus retain the necessary moisture. As a result, growth of all kinds experienced such a severe check that it practically stopped the ripening and development of all kinds of citrus fruits and retarded that of bananas and pineapples.

Citrus fruits suffered somewhat severely in parts and were much undersized; in other parts the ripening period was retarded, but the fruit did not suffer materially in size.

Fortunately for the citrus-growers, the hot and dry spell was very unfavourable for the development of the fruit fly, with the result that this season's crop has been remarkably free from this pest.

Bananas suffered somewhat and were commencing to lose colour, but made a fair recovery when the rain came. Pineapples did not suffer very greatly and well-cared-for plantations were looking remarkably well at the end of June and carrying a fair crop of winter fruit.

During the year there has been a considerable extension of the banana industry in the southern parts of the State, as well as in the coast districts near Rockhampton, but very little in the North. A glance at the figures at the end of this report will give an idea of the great increase in the production of this fruit during the year, the export for 1921-22 over 1920-21 being no less than 459,501 cases.

In order to stabilise the price of bananas it has been considered advisable to fix standard grades and standard packs for this fruit, and,

once Parliament has sanctioned a slight alteration of the present Fruit Cases Acts, these standards will be confirmed by regulations under these Acts, and growers will then be compelled to grade and pack their fruit properly. The question of forming a compulsory banana pool has also received consideration and will be dealt with early in the coming year.

The fixing of standard grades and packs for pineapples has also been dealt with and will be given effect to in due course, once the necessary regulations are brought into force.

With regard to the quality of Queensland pineapples, it is interesting to note that two visitors from Honolulu, who are connected with the largest individual pineapple-canning factory in the world, visited Queensland during the month of June and inspected a number of pineapple plantations both in the North Coast and South Coast fruit districts, and they expressed themselves as being very favourably impressed with the vigorous appearance of our pineapple plants and of the excellent quality of the fruit. They, however, expressed surprise at the large percentage of undersized fruit—that is, fruit under 5 inches in diameter—we were growing, and considered that a judicious thinning out of the suckers in our plantations would probably be advantageous. We certainly grow far too many small pines for our canneries to use our crop to the best advantage, and if a judicious thinning out of the suckers will result in the production of a greater percentage of large fruit it is worth doing.

In addition to visiting the plantations, these gentlemen inspected our factories, and spoke very highly of the quality and get-up of our canned product, which they admitted compared very favourably with theirs.

With respect to the fruits of the more temperate parts of the State, the year under review has been far from satisfactory, owing mainly to the ravages of the fruit fly, which made its appearance with the cherry crop and was present throughout the entire season, but slackened off considerably towards the end, which was to be expected, as it always becomes less active as the weather gets colder. No fruits were immune to the attack of this pest, but apples, apricots, cherries, Japanese plums, cherry plums, pears, peaches, nectarines, and quinces were all affected.

The prevalence of this pest induced many growers to gather their fruit in a very immature condition in the hope of escaping its ravages, but with little success, as the fly attacked much of the fruit whilst it was still far from ripe. Early soft-fleshed varieties of apples suffered badly, but firm-fleshed late-ripening sorts escaped fairly well, though they were by no means immune; but all kinds of stone fruits suffered severely. The question of dealing with the fruit-fly has received special attention, and Mr. Hubert Jarvis, Assistant Entomologist, has been engaged for some time in making an exhaustive examination into the best means to be adopted to keep this pest in check in the Granite Belt area. With regard to this pest, I see no reason to alter the opinion I have expressed over and over again for more than twenty-five years—that it can only be successfully fought by the use of the most drastic methods involving combined action on the part of every fruitgrower and by the compulsory gathering and destruction

of all fly-infested fruits. This remedy is evidently a very unpalatable one, as there has never been a serious attempt to carry it out. The fly is not equally destructive every season, and its prevalence or absence is largely a matter of climatic conditions; for instance, in April and May 1921 the citrus crop was badly attacked, whereas in these same months in 1922 it was a difficult matter to find an infested fruit.

In 1921 the weather was moist and warm and favourable for the development of the fly, but in 1922 it was hot and dry and therefore unfavourable. The same conditions have been noted several times in the Stanthorpe District during the past twenty-five years—viz., seasons of comparative immunity, when there was no sign of the fly in the early fruits and only a little in the mid-season and late varieties; other years in which it was bad in the early fruits the late crop was practically clean; and, again, as during the past two years, when it has been more or less prevalent throughout the whole season. It is, therefore, quite possible that during the coming season the attack will be comparatively light, if the weather conditions are not favourable for the fly. The intermittent nature of the outbreaks tends to make growers careless and they are prone to neglect the taking of the most drastic measures on the first appearance of the pest and do not wake up to the danger till it has got such a firm hold that remedial measures fail to accomplish their object. This is a very serious mistake, as the time to fight the fly is when it first makes its appearance, as every female destroyed then means the prevention of the breeding out of several hundred flies before the season is over.

It is fortunate that so far the fruit fly has not done any damage to the grape crop of the Stanthorpe area, though it is by no means uncommon to find this pest attacking coastal-grown grapes, especially those of the American type, and it is to be hoped that it will continue to leave the European varieties alone, as there is a considerable extension in the area now planted and to be planted in those parts of the Granite Belt which have been proved suitable for their culture.

Excellent quality table grapes of many kinds were produced during the past season, and they were generally very free from disease, as neither oidium, anthracnose, nor downy mildew caused serious damage. Unfortunately these remarks do not apply to the coastal districts, where downy mildew was very prevalent and the crop was only saved by spraying the vines systematically and frequently with Bordeaux mixture. This treatment was efficacious, and the growers of the Brisbane District now realise that it is folly to attempt the culture of grapes without being supplied with the means of systematically treating their vineyards. Where the vineyards were so treated they yielded a satisfactory return to their owners, but where spraying was neglected the results were practically nil, and the vines have been so injured that next year's crop is bound to be a poor one, no matter what treatment the vines receive, as much of the bearing wood has been killed and new canes will have to be produced. Downy mildew attacks every part of the vine above ground, and unless it is systematically fought, it is useless to attempt grape growing in coastal districts. On the other

hand, it is a disease that can be treated successfully, as Bordeaux mixture is a sure preventive if used in time and properly applied.

ORCHARD EXPERIMENTS.

During the year the experiment that was started some time since in a pineapple plantation at Palmwoods was continued. This experiment is being carried out for the purpose of determining the possibility of successfully combating the so-called "pineapple disease" that attacks smooth-leaved pines and causes individual plants to lose their healthy appearance and take on a yellowish-red colour, similar to that noticed when a good healthy plant is dug up and allowed to lie about on the ground. If the plants so affected are examined, they will be found to possess no feeding roots, consequently they are slowly dying from starvation. Mr. Tryon discovered a mealy bug feeding on and destroying the root terminals, thus preventing the plant so attacked from being able to obtain nourishment and so bringing about starvation. Mr. Tryon recommended the application of dry sulphur to the ground surrounding the affected roots, and where this simple remedy is given in time the plants are saved. Unfortunately, however, the damage is frequently done before the plant shows any signs of distress; consequently, when discoloured plants are seen it is best to remove them and to treat the ground for some distance around with sulphur before replanting.

There is no actual disease, as if a discoloured plant in which the root system has been destroyed is dug up, cleaned, and replanted in fresh soil free from mealy bugs it will soon make a new and vigorous growth.

Whenever mealy bugs are seen in a plantation, sulphur should be applied at once. These insects are generally found at or near the base of a fruit or on the plant itself at or a little below or above the surface of the ground. They are easily seen, as they are always accompanied by numerous small ants which live on their excreta. The experiment has definitely proved that the selection of a suitable soil and its thorough preparation prior to planting—not a mere surface scratching, but deep and thorough working and subsoiling—combined with judicious manuring, as recommended in the Departmental publications, and systematic cultivation, is extremely beneficial, and has shown that suitable land can be made to produce pines of the highest quality, even though it has been so neglected previously as to become unprofitable. Given the right class of soil, properly prepared, worked, and manured, there is nothing to prevent pineapples being grown indefinitely, provided the land gets a spell of one year or a little longer, every five or six years, during which period it should be planted with a nitrogen-producing crop to be ploughed under, so as to keep up the supply of humus and organic nitrogen. If these simple recommendations are carried out, growers need have no fear of their land becoming worn out; but where growers neglect these precautions and plant much larger areas than they are capable of looking after, this so-called "disease" will still be present.

The banana manurial experiments were discontinued as they had attained their object and had again proved that land suitable for banana culture which has become unproductive owing

to the depletion of its available plant foods can be brought back into profit by thorough cultivation and systematic manuring on the lines that have been recommended by the Department for many years.

A new series of experiments has been started for the purpose of determining the possibility of improving our citrus orchards, many of which are showing signs of distress. This is not merely the case in any one district, but is general throughout the State. For some time past the fruit in many orchards has shown signs of deterioration and is attacked by various mites, fungus pests, and scale insects, so that, instead of the skin of the fruit being clean and bright, it is more or less roughened, blotched, or discoloured, and is far from being attractive; further, it is not fit for sending out of the State, as it is liable to be condemned if an attempt is made to do so.

In addition to the deterioration of the fruit, the leaves and twigs are affected; there is more or less gum present in one part or another of the tree as well as a quantity of dead wood, and the roots are generally affected, usually with what is known as collar rot or mal-di-goma, though other fungus organisms are present.

Trees so attacked are no longer profitable, and the present experiments are for the purpose of showing how they may again become so. The remedy will in any case be a drastic one, as serious diseases require serious treatment. The trouble is not due to any one special disease, or even a combination of different diseases, but is largely of a physiological nature, the result of various causes, such as lack of nutrition, intermittent growth, resulting from irregular climatic conditions such as alternating dry and wet spells, improper cultivation, want of manuring, want of pruning, want of spraying; in brief, general neglect.

The first step to be taken will be an endeavour to eliminate every trace of actual disease from the tree itself and then to build up its constitution by systematic manuring and cultivation, so that it is able to produce a new growth of healthy wood capable of bearing good crops of high-class fruit, and at the same time to keep this growth free from insect and fungus pests.

These experiments will be on a fairly extensive scale and will be under the immediate control of the Instructor in Fruit Culture. They will be of a very practical nature, and the results will, it is hoped, show that citrus orchards, when not so far gone as to be incapable of renovation, can be brought round and made to produce good crops of first-class fruit.

The experiment vineyard at Coominya was closed down at the end of the year, as many of the varieties that were being tested there have proved to be totally unsuitable for growing in the coastal areas. In addition to this, many of the vines have never recovered from the severe hail storm they experienced last year, as the injury so caused was followed by a severe outbreak of downy mildew, with the result that the vines were in a poor condition at the beginning of the present season; and, to make matters worse, downy mildew had such a firm hold of the wood that many of them made little growth, and what little they did make is of no value for propagation unless it is subjected to a rigid process of

disinfection and is very carefully treated during the coming year. It is therefore deemed unsafe to send out any cuttings from Coominya this season. The vines have been pruned, and the cuttings of such varieties as are considered worth keeping will be planted, kept under strict supervision, and regularly sprayed during the coming season so as to endeavour to produce a little clean wood for next year's planting. Of the eight varieties of resistant stocks grown at Coominya, six have proved to be more or less resistant to downy mildew, though by no means immune, and these will be saved for future use. A few commercial varieties have resisted downy mildew to a certain extent and have made from a good to a strong growth during the year, notably Chaouch, Sweetwater, and Concord, which made a strong growth, and Zante, Gros Colman, and Black Prince, which made a good growth.

These and a few other varieties are considered by Mr. Chas. Ross, late Instructor in Fruit Culture, who has been in charge of the experiment at Coominya from its inception, to be worth giving a further trial, and this I propose doing.

With respect to downy mildew, the experience gained during the past two seasons has shown conclusively that this disease can be prevented by spraying the vines with copper sprays before it makes its appearance, and individuals can thus protect their vineyards even though the disease is more or less prevalent in adjacent vineyards. At the same time, it is advisable that all vineyards in districts in which the disease is known to exist should be regularly sprayed, and a regulation to enforce this has been brought into force.

INSTRUCTION IN FRUIT PACKING.

In compliance with the special request of the Stanthorpe District Council of Fruitgrowers, the Queensland Department of Agriculture approached the Tasmanian Department of Agriculture and asked them whether they would be prepared to permit their Fruit Packing Expert to visit this State for the purpose of instructing the Stanthorpe growers. The Tasmanian Department kindly agreed to our request, and Mr. Rowlands, their Chief Fruit Packing Expert, visited the Stanthorpe district during the month of January and gave a number of demonstrations that were well attended and very much appreciated by the fruitgrowers, so much so indeed that a request has been made for a further visit by Mr. Rowlands during the coming season, to which this and the Tasmanian Department have agreed.

Like all skilful packers, Mr. Rowlands insists on the accurate grading of the fruit both with respect to size and quality, so that all the fruit in a case shall be of one size and of as even a quality as possible—conditions that are essential to the proper packing of all kinds of fruit. Already there has been a marked improvement in some of the Stanthorpe packs, and some of our growers give promise of becoming very expert packers when they have had a little more practice. As it is the wish of the Stanthorpe growers to have grade standards fixed for their different fruits, accurate grading and proper packing will be essential, and those growers who do not feel themselves thoroughly competent packers will no doubt avail themselves of the

opportunity of obtaining the necessary instruction during Mr. Rowlands's coming visit.

Mr. Rowlands prepared an excellent pamphlet on packing for the Tasmanian Government, and he has prepared an even better and more complete one for Queensland growers, which will be issued at an early date. This pamphlet will be profusely illustrated, many of the illustrations depicting actual packs made by Mr. Rowlands when here in January last. This pamphlet will be of the greatest assistance to our growers, as it deals with all the principal varieties of temperate fruits, as well as tomatoes. I am informed that excellent results have been obtained in Tasmania by giving practical instruction in the packing of all kinds of fruit to the school children in fruitgrowing centres and that many of the children so taught have become very expert packers, in some cases very much more expert than their parents. This experience is worth following in this State, and if any young grower in the Stanthorpe area shows decided ability as a packer, and is prepared to undertake the duty of teaching our school children, it would, in my opinion, pay to give him three or four months' practical training in Tasmania, so that he would be fully competent to teach not only our growers but our school children in the Granite Belt area. I have discussed this matter with Mr. Ward, the Tasmanian fruit expert, and that gentleman is very emphatic on the benefits that are likely to result from such training. There is a general wish amongst our fruitgrowers, not only of Stanthorpe but of the State generally, to initiate standard grades and packs for all kinds of fruit, but before this can be brought about our growers must be taught to grade and pack, and this is not going to be done in a hurry, as there will be considerable opposition and prejudice to overcome, and this will necessarily take time. Any attempt to force matters will probably do more harm than good, and I therefore recommend the use of persuasion rather than that of force, as I feel it will not be very long, if this method is adopted, before those who are now the greatest offenders in the matter of careless grading and packing will see that it will not pay them to continue as they are doing, but will realise through the success of others who grade and pack properly that they must either alter their methods or be forced out of business.

THE UTILISATION OF SURPLUS FRUITS AND VEGETABLES.

The question of evaporating or drying surplus fruits and vegetables received a very large amount of attention during the earlier part of the year under the newly-coined name of "dehydration." There is nothing new in the process, other than the name, except that the modern dehydrator is built on more scientific lines than the old-fashioned evaporators and is a more efficient machine in that the heat used to dry the fruit or vegetable is under perfect control and is utilised to the best advantage. A section of such a dehydrator was exhibited at the Brisbane Exhibition of 1921; and a quantity of pineapples that had been peeled, cored, and sliced was dried during the Show week. The machine proved its suitability as a drier, as there was no question that it could and did dry pineapples, but this did not overcome the difficulty as so far a market for the dried product has not been obtained. Dried or dehydrated pine-

apple, to give it its new name, is practically an unknown product in the world's markets, and before a demand can be created it will require to be widely advertised and to be put up for sale in the most attractive form. Even then it is very doubtful if it will ever be able to compete with such fruits as dates, figs, prunes, apples, peaches, or apricots, all of which are well known to every housewife and are in daily demand.

Dehydration will probably prove much more valuable in the case of bananas, both as regards the drying of the green fruit for flour and the ripe fruit for banana figs, or for the drying of apples and such vegetables as potatoes, turnips, pumpkins, tomatoes, onions, &c., as well as herbs of all kinds. Dried vegetables properly prepared and hermetically packed will carry any distance and keep practically indefinitely. They can be used for soups or stews when fresh vegetables are scarce, and can be sent to those parts of the interior of Australia or elsewhere where fresh vegetables are either very hard to procure or are unprocurable.

The utilisation of tomatoes by converting them into sauce or soup or by pulping them for the use of Southern manufacturers has received attention, and it is probable that an extended market for these products may be obtained, provided that nothing but high-coloured fruit of good quality is used, as there is a market for such but no market for inferior lines.

The question of manufacturing non-alcoholic fruit drinks is worth testing, as is also that of fruit syrups, and it is hoped that the Department will go carefully into this matter during the coming season. The profits are not likely to be great, but if the manufacture pays expenses and a little over it will be better than allowing the fruit to lie on the ground and rot, and thus provide a breeding place for many pests.

There has been no alteration in the Acts dealing with fruit during the year, and although several prosecutions have been made thereunder, the procedure is so cumbersome that much of the good that might have resulted therefrom is nullified. What is wanted is the power to take immediate action so that careless growers can be compelled to keep their orchards clean instead of allowing them to become a breeding ground for pests to be spread broadcast over the whole of the district.

It is to be hoped that the fruitgrowers on the Council of Agriculture will see the necessity for this action and assist the Fruit Branch of the Department of Agriculture in its efforts to keep diseases in check.

During the year the Fruit Branch has received a very great amount of assistance from the Agricultural Chemist and from the Government Entomologist and Vegetable Pathologist; from the former in the matter of making numerous analyses of fruits, jams, preserved fruits, and syrups, and from the latter with respect to diseases of plants, both insect, fungus, and bacterial.

Two of the oldest members of the staff were retired during the year, having reached the age limit—viz., Mr. Chas. Ross, late Instructor in Fruit Culture, and Mr. W. H. Knowles, the late Senior Inspector under the Diseases in Plants Act. Both of these officers were men of experience, who had been in the Department for many years, during which they have done much to advance the fruit and vegetable growing industry.

of the State, and they will be missed both by growers and by those engaged in the fruit trade. They carry with them the best wishes of their fellow-officers.

As regards my work personally, I may say that I have had a very busy year, as not only has there been a great increase in my correspondence which has dealt, not only with all matters connected with the growing, marketing, and utilisation of fruits, vegetables, and many tropical products, but also with many matters connected with quarantine, in my capacity as Chief Quarantine Officer for plants and of export, as an officer of Customs and commerce, "State supervising officer," as well as Federal officer in charge of the pineapple fruit pool. I have given a large amount of personal attention to these Federal duties, which I believe has been of benefit to our fruit preservers and incidentally to our fruit-growers. I have also had a very large number of visitors during the year, to whom I have given advice on many matters; so that I have had very little time to visit country centres and none to spare for the annual leave to which I am entitled.

The instruction in the field has not been neglected, as the Instructor and Assistant Instructors in Fruit Culture have spent the most of their time visiting and instructing growers in different parts of the State—viz., one in the North, three in the Southern and Central Coast districts, one at Toowoomba, the Downs, and Western Downs, and one in the Granite Belt area. Many letters of appreciation have been received from individual growers and associations regarding the work of these officers, and if they have

not been able to please everyone, it must be remembered that Queensland is a very large State; that the number of individual growers has increased enormously during the past few years; that these growers are scattered over a large area, which necessitates a very large amount of travelling; so that the actual amount of work any one man can perform is limited. I sincerely trust that the formation of the Primary Producers' Union will result in bringing the fruit instructors into direct touch with a much larger number of growers, and that it will do its part in helping to bring this desired result about.

There must be a mutual confidence between the growers and the instructors, and it would be much better for the welfare of the fruitgrowing industry of this State did our growers as a whole do their best to help and assist the instructors rather than to indulge in destructive criticism and to belittle their efforts. Instructors are not infallible, still I am certain that there is no officer on the fruit staff who is not willing and anxious to assist any grower to the best of his knowledge and ability. In concluding this report, I have to thank all the officers of the Fruit Branch for the assistance they have willingly given me during the past year, and beg to submit herewith an abstract showing the imports and exports of fruit and vegetables during the year, as well as an abstract of the amount of goods dealt with under the Quarantine and Commerce and Customs Acts.

I have, &c.,

ALBERT H. BENSON,
Director of Fruit Culture.

IMPORTS FOR YEAR ENDED 30TH JUNE, 1922.

District.	Fruit.	Potatoes.	Onions.	Plants.	Turnips.	Vegetables and Seeds.
	Cases.	Bags.	Bags.	Packages.	Bags.	Packages.
Brisbane	351,962	221,427	39,193	378	2,818	47
Wallan-garra	190,920	81,692	..	501	..	1,550
Townsville	38,159	47,626	13,377	..	739	115
Cairns	11,201	25,692	6,379	4	640	713
Bowen	1,353	4,871	1,132	9	..	..
Rockhampton	209	4,183	..	36	..	7,635
Innisfail	942	743	298	..	..	6
Totals	594,746	386,234	60,479	928	4,197	10,066

EXPORTS FOR YEAR ENDED 30TH JUNE, 1922.

District.	Bananas.	Pines.	Oranges.	Tomatoes and Cucumbers.	Vegetables.	Mixed Fruits.	Strawberries.	Potatoes and Pumpkins.	Canned Pines, Chutney, and Jam.	Canary and Grass Seed.
	Cases.	Cases.	Cases.	Cases.	Packages.	Cases.	Cases.	Bags.	Cases.	Packages.
Brisbane	6,051	70,259	4,682	16,073	4,719	4,597	..	5,158	32,101	2,083
Wallan-garra	708,882	149,200	16,129	38,850	46,345	15,922	6,373	..	..	..
Townsville .. .. .	..	..	..	60	..	..	..	..	..	..
Innisfail .. .. .	..	..	..	..	..	..	..	..	..	..
Rockhampton	3,517	198	..	93	70	75	..	..	..	..
Bowen .. .. .	..	274	..	122,854	2,266	976	..	..	..	..
Cairns	317	8,090	17,873	..	..	..	..	..	..	..
Totals	718,767	228,021	38,684	177,930	53,400	21,570	6,373	5,158	32,101	2,083

RETURN OF IMPORTS UNDER QUARANTINE ACT, YEAR ENDED 30TH JUNE, 1922.

	Packages.
Brisbane	65,373
Cairns	7,892
Townsville	11,973
Rockhampton	2,777
Total	88,015

RETURN OF EXPORTS UNDER COMMERCE ACT, YEAR ENDED 30TH JUNE, 1922.

Brisbane, 42,022 packages.

RETURN OF PLANTS AT PARCEL POST, YEAR ENDED 30TH JUNE, 1922.

	Packages.
Interstate	2,081
Quarantine	611

REPORT OF THE DIRECTOR OF AGRICULTURE.

The outlook generally from an agricultural standpoint is most encouraging. The most striking feature witnessed during the year was the very live interest taken in cotton, a crop apparently destined to play a most important part in land settlement. Figures shown elsewhere in the Department's report help to bear this out. These, however, do not present a true indication of what the future holds in store. What actually counts, and can be relied upon to provide a most encouraging perspective and more accurate indication of what may be termed "the pulse" of the industry, is the extraordinary number of inquiries being made through the Department respecting cotton, and the desire generally expressed by persons of settling in the State if facilities are forthcoming. Hitherto, no better opportunity has presented itself of settling large areas of Crown lands in the cotton belt.

At this stage of the resuscitation of an industry, ripe for development under a guarantee price, with the certain prospect of up-to-date ginning establishments already at hand or in prospect for the treatment of the crop, a note of warning should be struck respecting the prevailing idea amongst growers that little else matters on the farm as long as an extensive area of cotton can be put in.

Obviously, the farmer who has the necessary family labour available is the better equipped man for cotton-growing than the one who employs labour. Observation goes to prove that the tendency, in some instances, is to put more land under cotton than can be properly cared for, to the detriment of other branches of farming, dairying, and pig-raising, which might also be reasonably carried out on the same farm.

The excellent reports received through the British Cotton Growing Association on the quality of last year's cotton, over 1,000 bales, proved most encouraging, and the average length of fibre— $1\frac{1}{8}$ inches—placed the Queensland article in the long-staple Upland class, which alone is sufficient indication of its quality. It was shown, however, that with a greater uniformity in character and length of staple much better results were attainable. With this objective in view the Department established several seed propagation areas (in temporary quarantine) with seed obtained through the Agent-General, and the Australian Cotton Growing Association also. The cotton-growing on one quarantine area developed a bacterial leaf disease and was destroyed by order of the Chief Quarantine Officer for Queensland. A second area showed traces of the same trouble and is under close observation, with the prospect of the crop being dealt with summarily also. Three other plots at Capella, Charters Towers, and Cooktown made satisfactory development. Seed selection work is in hand in connection with the latter plots, and it is satisfactory to note that every prospect exists of obtaining a sufficiency of seed for about 300 acres for planting in the spring of this year, and if no untoward circumstance obtrudes itself, ample supplies of improved seed should be available to meet all requirements in 1924. In this way there is every prospect of

producing a uniform type of cotton with a staple probably reaching $1\frac{1}{4}$ inch in length. Substitution of a variety of cotton of this quality even for the present class of cotton, which is admittedly good, must enhance the value of the State's output in a marked degree.

MAIZE.

The season generally was not as satisfactory as it might have been, although the crops were all that could be desired in certain districts favoured by regular rains during the growing season. Less maize than usual was planted on the Atherton Tableland. The quantity of grain carried over from the previous year was large and the quality indifferent, on account of an exceptionally wet season, and these facts militated against the utilisation of available lands, some of which were devoted to dairying instead. Although Townsville and the Northern markets were open, there was little prospect of competing successfully in the more Southern markets on account of high transport charges. As a result the 1921-22 crop on the Tableland is not expected to exceed 7,000 tons. Although the district's average yield is comparable with the highest obtainable elsewhere, the wet season ceased earlier than usual and the precipitation proved to be slightly below the average.

In the main maizegrowing districts in Southern Queensland the summer rains were not so plentiful as in the previous year; this caused curtailment of output.

Good and substantial progress was made with the departmental scheme of seed maize improvement. Fresh importations of grain were made from the United States of America to supplement the varieties now in cultivation. The technical work associated with seed selection and the production of high yielding strains of grain has been placed in the hands of Mr. C. McKeon, Assistant Instructor in Agriculture, whose efforts in segregating and propagating some choice varieties are meeting with success. Thirty plots, aggregating $91\frac{1}{2}$ acres in area, were established in the following localities:—Tingoora, Murgon, Manyung, Goomeri, Imbil, Kilcoy, Yandina, Boonah, Beaudesert, and Marburg.

The practice of selecting grain from the field propagation plots was continued for the purpose of providing seed for sale to farmers; in this way tangible results should be forthcoming and the returns from individual farms increased.

Three useful varieties have been added to those commonly grown by an importation of seed from the United States of America, viz., Funk's Ninety-day, Funk's Yellow Dent, and Eureka. In summarising the results of the season's trials, Mr. C. McKeon, the maize specialist, stated as follows:—

"The Funk's Ninety-day gave easily the best results of the imported varieties with a yield of 55 bushels per acre. The type proved to be very even and the variety a heavy yielder."

Other results obtained from departmental seed were generally most encouraging and afford evidence that careful selection of high-yielding strains is calculated to improve the standard and aggregate yield of grain in the State.

An extension of the remarks to the latter varieties is as follows:—

“Reid’s Yellow Dent returned 70 bushels per acre. The crop at Kilcoy (a four-months one) attracted much attention. Cobs were exceptionally large, with a good depth and type of grain. Husk covering showed a decided improvement. Cobs were carried very low on the stalk and turned down well during ripening.

“Golden Beauty Maize, a five-months corn, grown also in the Kilcoy district, returned 85 bushels per acre. This variety gave very fine results. It was raised from seed selected from low-bearing plants, and the improvement in the position of ear was very marked. Type of grain good, and husk covering very good.”

Improved Yellow Dent grown at Bunjurgan, near Boonah, averaged 90 bushels per acre—

“An exceptionally fine crop. Weather conditions throughout were very favourable. Cobs were very large and of splendid type. Plants were spaced 2 feet apart in the rows, which probably accounts for the extra development of the ears and grain. Easily the best crop of the season.”

To encourage the production of specified types of grain, arrangements were made with the Royal National Agricultural Association to revise their schedule for maize.

The work designed for the purpose of determining the amount of moisture in Atherton-grown maize—in the field, barn, bag, and tank—has been consistently followed up and some useful information compiled. Mr. Field-Assistant Wise, who has been engaged in the compilation of data, is following up the matter of moisture content of marketed grain to complete a series of tests.

WHEAT.

Although the aggregate yield proved to be somewhat less than last year, the quality of grain was better; in fact, only a small percentage proved to be under f.a.q. standard. Results of this character compare more than favourably with the best wheat-producing States in the Commonwealth.

The Wheat Board’s operations were facilitated in no small degree by having grain of this excellent description to handle. Overseas shipment of grain was continued by the Board, and Queensland wheat has been well received by the trade.

The co-ordination of activities of the Department and the Wheat Board, for the betterment of the industry, was arranged in time for the present planting season, and put into practice. All available stud seed from State farms and field propagation plots was placed with approved growers, whose land was first inspected by a member of the Board in

company with an officer of the Department. The reduction aimed at in the number of varieties in cultivation—from about 70 to 22—is a first step towards the elimination of many unsatisfactory kinds. The outline of the scheme is appended:—

1. The Department of Agriculture to co-ordinate its wheat-breeding and wheat-testing work and to link it up with the activities of the Wheat Board.
2. The scientific and technical work necessary to give effect to the scheme to be carried out as at present by the Department of Agriculture, and when seed of improved varieties recommended by the Department is available from time to time in sufficient quantities, the Board to take it over by purchase (at a price to be mutually agreed upon at the time) and make arrangements for sowing the respective varieties in localities and on picked areas recommended by the Department as suitable for the purpose of propagating supplies of the several kinds.
3. The Board, in sequence, to secure seed from these sources, rail it to its central depôt for cleaning, fumigation, grading, and storage, for ultimate despatch to the localities decided upon for the commercial propagation of specified types of wheat.
4. For the purposes of the successful working of the scheme, and of the production of standard types of grain, the State to be classified into districts or zones, so that efforts may be directed towards the growing of suitable types and varieties within each for delivery to, and subsequent distribution by, the Board. In this way it would be possible to draw upon certain classes of grain for milling or export, as may be required.
5. That a classification be made of varieties now in cultivation, with a view to the discarding of those which are undesirable or unsuitable for Queensland conditions, or which are of soft, starchy, poor milling, or indifferent keeping qualities.
6. That the Board take the necessary steps to further this latter object by ensuring the delivery by the grower of all wheat to the Board which comes under this latter category. In this way, the usual reservations or arrangements for next season’s seed by the grower will be brought into line with the policy of standardisation, as the approved wheats can then be supplied in lieu thereof.
7. That for the purpose of ensuring the preservation of supplies of pure seed of varieties finally approved of under the scheme, the Department to continue the work of seed selection by

maintaining small nursery plots at its wheat-breeding or on other farms, with the object also of the improvement by selection, and the maintenance of certain strains within the respective varieties, which could be drawn upon should the identity or purity to type of the original varieties require to be renewed at any time.

8. That seedsmen dealing in seed wheat be furnished with an outline of the scheme in order to secure their active co-operation in effecting its aims and objects by placing varieties purchased from the Board, or other sources, with growers in districts or zones to which such varieties have been allotted.

The officer deputed to carry on last season's field tests and wheat trials, Mr. C. S. Clydesdale, Assistant Instructor in Agriculture, reported good progress in all operations. Work of this character, dependent as it is on the highly technical and skilled efforts of the manager of the Roma State farm in breeding up and selecting new types of wheat, is demonstrating in a marked degree that Queensland's requirements are being catered for and successfully met. Farmers are showing a greater interest in this class of experiment work than formerly, which is tangible evidence that its importance is recognised.

Ten varieties of wheat, produced at the Roma State farm, were tested at different centres—Allora, Jandowae, Bell, and Inglewood—under field conditions, the plots aggregating 46½ acres in area, the highest yield being recorded at Inglewood with "Cedric," 30 bushels per acre.

The comparative trials of over 130 varieties of wheat, principally new crossbreds, admitted of the selection of a limited number exhibiting improved field characteristics and ability to resist rust; and these latter have in turn been sown again this season in larger areas to admit of extension trials under field conditions. This gradual process of evolution is calculated to furnish further evidence of the fitness or otherwise of the varieties for general cultivation, providing that the imprimatur of the chemist and miller is received.

Wheat taken from one of the Department's seed propagation plots proved to be of good quality, and when exhibited by the grower at Toowoomba was only beaten by .5 in a strong competitive class.

Touching the question of the industry generally, matters appear to be promising, as the area put under crop and in course of preparation for planting should show an increase on last year's figures.

Good rains fell during the month of June, and expectations of suitable conditions for germination were realised.

Arrangements have been made by the Wheat Board for increased storage accommodation at several railway centres, which will go a long

way towards the removal of disabilities in this direction.

The growing of malting barley (once a specialised industry) appears to have its limitations, due to the restricted local demand by brewers. The generally accepted opinion is that Queensland is capable of producing large quantities of first-class barley if a profitable market could be found. Last year's crop was ravaged in some localities by the so-called "army worm," which occasioned damage.

Darling Downs farmers, many of whom are dairying in conjunction with crop raising, are paying attention to the growing of cape and skinless barley as a fodder crop for grazing off, with good results.

Canary seed growers, who harvested good crops, found themselves restricted in a marked degree in the matter of a payable price and an indifferent demand for their product, so decided to form a "pool" in order to regulate supplies and prices, but at the time of writing the price still remained low and the demand less active than formerly.

Lucerne still holds pride of place in many districts where its cultivation is specialised in, but the excellence of the plant for cropping purposes calls for a wider recognition of its value on the average Queensland farm, it being generally recognised that if more lucerne were grown on dairy farms it would naturally follow that better results would be obtainable through the use of a protein-yielding food, an essential in milk production.

Of the varied assortment of crops grown (particulars concerning which are to be noted in the statistical returns), *English Potatoes* occupy an important position as a food crop. It is an anomaly to find that such a large quantity of potatoes still find their way here from Southern States, a circumstance which means a big loss to Queensland growers.

Sweet Potatoes.—Facts made known concerning the quality and extraordinary yields (over 30 tons per acre) of potatoes obtained in the trials carried out by the Instructor in Agriculture at Rockhampton, Mr. G. B. Brooks, have focussed attention on this crop, and it is significant that upwards of 10,000 cuttings were sent out last year from propagation plots, the distribution covering a wide range of country. Evidence of this character serves to indicate that growers recognise the importance of making the best use of their land for the production of maximum crops.

The pamphlet on "Sweet Potatoes," prepared by Mr. Brooks for publication (affording as it does a wealth of technical detail dealing with the classification of varieties), promises to provide a very useful and instructive addition to the printed matter on this subject.

Reference was made in last year's report to the establishment of dairy fodder and pig fodder plots on the North and South Coasts respectively. The results generally were excellent, the season being an exceptionally favourable one. Returns of this character should be sufficiently convincing without further elaboration.

RESULTS OF DAIRY FODDER TRIALS.

Varieties.	YIELDS PER ACRE OF GREEN FODDER.											
	A. Hulse, Yandina.				F. G. Burton, Bridges.				J. B. Stephens, Nindooimbah.			
	Tons	cwt.	qr.	lb.	tons	cwt.	qr.	lb.	tons	cwt.	qr.	lb.
Prince wheat and peas	16	16	2	12	2	14	0	2	13	10	0	10
Prince wheat and vetches	10	16	0	8	6	1	2	4	11	17	2	20
Patriot wheat and peas	16	4	0	12	9	2	0	0	14	0	3	16
Patriot wheat and vetches	11	6	3	4	2	0	2	1	12	18	1	26
Rye and peas	10	16	0	8	5	5	1	9	14	11	2	22
Rye and vetches	7	11	1	0	Destroyed by wallabies				16	4	0	22
Cape barley and peas	12	3	0	9	10	16	0	8	13	10	0	10
Cape barley and vetches	7	11	1	0	2	19	1	19	15	2	2	0
Skinless barley and peas	11	6	3	14	Destroyed by wallabies				5	18	3	10
Skinless barley and vetches	5	13	1	21	Destroyed by wallabies				5	2	2	15
Ruakura oats and peas	9	9	0	7	4	3	2	25	18	18	0	14
Ruakura oats and vetches	7	11	1	0	Destroyed by wallabies				17	16	2	2
Algerian oats and peas	8	18	1	1	3	6	0	19	9	3	2	18
Algerian oats and vetches	6	15	0	5	Destroyed by wallabies				9	14	1	24

The yields generally on Mr. F. G. Burton's plots were reduced by the depredations of wallabies.

Seed sown 17th and 18th May on F. G. Burton's farm and on 26th and 27th May on A. Hulse's farm.

Rainfall taken at Yandina during period of growth of crop 20.71 inches—twenty-eight wet days.

Seed sown on J. B. Stephens's farm, 17th and 18th May.

Rainfall during period of growth of crops 18.93 inches—forty wet days.

RESULTS OF PIG FODDER TRIALS.

Varieties.	A. Hulse, Yandina, N.C.				F. G. Burton, Bridges, N.C.				J. B. Stephens, Nindooimbah.			
	Tons	cwt.	qr.	lb.	tons	cwt.	qr.	lb.	tons	cwt.	qr.	lb.
Yellow globe mangel	35	2	0	26	28	12	2	10	23	15	1	12
Long red mangel	33	17	0	19	52	13	1	11	24	6	0	18
Sugar beet	32	8	0	24	24	6	0	18	20	14	0	15
Silver beet	15	17	1	11	10	11	0	18	9	0	0	6
Scotch kale	9	9	0	7	No record				Not sown			
Dwarf Essex rape	16	4	0	12	16	4	0	12	10	5	2	24
Purple-top swede	24	6	0	18	51	17	0	16	13	10	0	10
Elephant swede	25	13	0	19	32	8	0	24	16	4	0	12
White Belgian carrot	11	12	1	3	No record				19	6	0	14
Large drumhead cabbage	27	10	3	26	No record				17	5	2	24

Seed sown on F. G. Burton's and J. B. Stephens's farms, 18th May. On the 25th May on A. Hulse's farm.

Rainfall 20.71 inches for Messrs. Burton and Hulse's farms (twenty-eight wet days), and 18.93 inches for J. B. Stephens's farm (forty wet days).

STATE FARMS.

Gindie.—Development work, directed towards the improvement of the property, including that of water supply, fencing, and of erection of yards, improvement to cattle dip, &c., has been carried on throughout the year and more efficient control attained. New cultivation areas were added to the existing ones.

Much preparatory work was given to the main cultivation areas to provide supplies of hay and ensilage for stud stock and working horses, and the extra cultivation resulted in exceptionally good crops of hay, wheaten yielding 2 tons per acre and oaten 30 cwt. Good weather was experienced for curing the crops. Approximately, 100 tons of maize were cut and chaffed into the silos.

The season generally was favourable (approximately 26 inches of rain) for the stud herd of shorthorns, and the young stock are very promising, but prices for young bulls for herd improvement have dropped in keeping with the present depression of the cattle industry. Three shows were attended during the year with teams of cattle to advertise the stock, and honours won throughout. At Rockhampton good competition had to be met, and the farm carried off the champion prize for bull with an animal bred on the place, beating last year's champion, an imported animal. Females also bred on the farm gained most of the prizes, although unsuccessful in the championship. The aim throughout to produce typical sires for sale to improve the quality of district herds is meeting with success. Three animals of our own breeding were put over the scales to determine whether the early maturing qualities claimed for the cattle had been realised; the weights bear this contention out. The champion bull—Gindie Duke of Beauford 2nd, 28½ months old—turned the scale at 1,834 lb., whilst two young cows in the fat stock section weighed 1,518 and 1,442 lb. respectively.

Kairi.—Development work in the way of falling an area of over 50 acres of scrub was undertaken. Maintenance of existing areas proved a heavy item, as undergrowth and weed-growths, forced into activity by a generous rainfall, had to be coped with. Stud stock (Jerseys and Illawarra shorthorns) have improved in numbers and quality, and the work of classification has entailed the testing of a large number of different samples of milk from individual animals in the herd. The dairying industry has assumed large proportions on the Tableland, and evidence goes to prove that herd testing is a work which cannot long be delayed.

An excellent demand has set in for cane sets from sugar districts below the range, it being recognised that the change of climate undergone on the highlands here by the varieties being grown to meet this demand will have an excellent effect and overcome disabilities which cane is subjected to when grown consistently under forcing climatic conditions on the coast.

The stud of Berkshire pigs has increased, and when matters were practically booming in this line in keeping with developments expected in the way of a co-operative factory, the demand for animals for breeding purposes was difficult to meet; as the factory proposition is not finalised, interest in this excellent side line to dairying has waned.

The purchase of a young Suffolk Punch stallion from the well-known Dangar stud in New South Wales has equipped the farm with a long-felt want.

Warren.—The season was not as satisfactory as it could have been, owing to the falls of rain being sporadic in character. Throughout the year effort has been directed towards putting the property on as efficient a basis as possible, and minor improvements were consistently directed towards this objective. Useful experiment work was engaged in and added interest shown in the farm operations. A feature which promises well from an educational standpoint is the instructional work to pupils of the local school, who are keen to acquire a knowledge of agriculture. Lectures and practical demonstration work have been combined. It is purposed to extend this class of instruction and co-operate with the head teacher of the school.

Arrowroot, grown on a 3-acre demonstration area, has proved itself a very valuable crop for providing large supplies of "bulbs" for pig-feeding purposes. Local farmers are interested, and the experiment is one of the most striking successes of the year's operations. It was also demonstrated that the ordinary dun field pea, when grown under field conditions, was another valuable crop to the district, the growth of the crop and the selling of a large amount of seed bearing this out.

The Ayrshire stud has been maintained in a state of efficiency and the young stock are promising. Berkshire pig breeding has proved a profitable line of work, and the animals from this farm are doing much towards improving the standard, both of breed and quality, of the district's pigs.

Hermitage.—The principal work of the year was directed towards the testing of a large number of different varieties of wheat, barley, and oats, both in the stud seed selection rows and in

larger areas under field conditions. Co-operation was arranged in the comparative tests of over 130 Roma State farm crossbreds, and although sown rather late in the season, the results were conclusive in respect to the susceptibility of certain strains to rust, and more pronouncedly so regarding the quality looked for in carrying out the trials, *i.e.*, rust resistance. Comparisons drawn from these tests and of the field trials have shown that some varieties possess extraordinary powers of rust resistance. This elusive quality in the field characteristics of wheat has evidently been fixed. Seed supplies of some of these have been made available to farmers for the present season's sowing.

During the year the farm was used as a depôt for a quantity of seed wheat from demonstration plots carried out under the Field Branch of the Department, and the whole of the grading and despatch of the grain was undertaken.

The sheep kept on the farm have been improved by careful culling, and proved valuable in conjunction with the raising of wheat and other cereals.

Roma.—Wheat-breeding work, for which this farm was principally established, absorbs a good deal of time and attention, but the results of several years devoted to this all-absorbing subject are now manifest. Encouraging reports have been received of the several new varieties which have been brought into cultivation, and it is satisfactory to be able to record the fact that a distinct objective has been attained in the co-ordination of the technical work on the one hand, carried out in the evolution of new strains of wheat at this farm, with that of the demonstration plots conducted by the field branch of the Department and the linking up of these several activities with those of the Wheat Board. Propagation of improved varieties of this character under conditions to insure purity of type, and their substitution for older and possibly inferior kinds, should have an excellent effect on the industry. Fertiliser trials carried on for a number of years, effecting, as they have done, some slight improvement in the yields of grain by the use of special mixtures, have not yet shown that fertilising will pay, unless the quantity of fertilisers applied can be reduced to a minimum.

Valuable work has been carried out by the Agricultural Chemist in the milling of new cross-bred wheats and in the testing of the nutritive qualities of the resultant flour. One feature of outstanding importance is the fact that Queensland-grown grain is equal in quality to grain grown in the other States, and, in a number of instances, it has shown out to advantage. This farm has participated in the comparative tests of Australian varieties carried out in conjunction with the Bureau of Science and Industry.

Another section of plant-breeding work taken up a few years ago, *viz.*, that of the production of new varieties of grapes, is affording some excellent data.

A retrospective view of the year's work indicates that good progress has been made. My thanks are due to the whole-hearted and loyal efforts of the staff throughout the three divisions of the State—North, Central, and South.

I am, &c.,

H. C. QUODLING.

REPORT OF THE CHIEF DAIRY EXPERT.

SIR,—I have the honour to submit herewith a report upon the dairying industry for the year 1921-22.

A feature of the season just terminated was the favourable weather conditions which prevailed throughout the spring, summer, and early autumn months, and changed adversely to dairying for the remaining portion of the year.

The lack of rain during March and April was responsible for a curtailment in the amount of green fodder usually available for dairy stock, and the customary feeding-off of the young crops of wheat by the dairy herds during the winter months in the Downs district did not take place. Dairy farmers in the coastal areas were unsuccessful in raising satisfactory crops of sorghums, imphee, &c., so generally utilised for winter feeding, because of the comparatively dry condition of the soil during the months when crops of this nature make much of their growth.

The comparative scarcity of fodder on the farms, coupled with a winter more severe than the average, resulted in a pronounced reduction in the milk yield, affecting in turn the complement of butter and cheese produced within the closing months of the season.

Despite the foregoing unfavourable seasonal conditions, the amount of dairy foodstuffs produced within the year was in the aggregate considerably in excess of the quantity manufactured within the former year, and consequently a new record of production has been established in this State. Formerly, the high mark of butter production in Queensland was credited to the season 1920-21, but the production is higher this season. The following are the particulars of the production within the respective seasons:—

Season.	Amount Butter Production.
1920-21	40,751,373 lb.
1921-22	60,923,194 lb.
Increase for season 1921-22 ..	20,171,821 lb.

No change occurred within the year to the uses to which the milk raised on the dairy farms was ultimately placed. The milk produced was utilised for domestic purposes and in the production of butter, cheese, or condensed milk, the production of butter claiming by far the larger proportion of the total amount of the milk raised.

Generally, the standard of quality of the dairy produce manufactured within the year was well maintained. A number of factories effected an improvement in the quality of the butter manufactured therein. Especially was this noticeable in the cases where pasteurisers were installed and the pasteurisation of the cream supply carried into operation.

It is calculated that at present at least 90 per cent. of the total amount of butter manufactured in this State is made from cream which has been subjected to neutralisation and pasteurisation prior to churning.

The few remaining companies which have so far refrained from adoption of pasteurisation of cream intend to install the necessary plant and carry the process into practice at their factories if it is found that any considerable percentage of their output of butter is being submitted for export overseas. It is anticipated

that practically the whole of the butter intended for export during next season will be from churnings of cream to which pasteurisation had been applied.

Although the beneficial effects accruing to the quality and keeping properties of butter as a result of pasteurisation of the cream supplies are widely known and accepted by manufacturers, several experiments were carried out during the season for the purpose of testing the efficiency of pasteurisation towards arresting the deterioration in the quality of butter intended for cold storage extending over lengthy periods, such as is involved in the exportation of butter to markets in Great Britain and other countries overseas. In every case the results of the experiments were in confirmation of the results of former experiments which had been carried out from time to time, and go to provide, if such is necessary, additional evidence in support of pasteurisation.

Generally, the quality and appearance of the butters coming forward for market indicate that factories are giving closer attention to what may be described as the details in manufacture than was the case during the war and the years immediately subsequent to it. This may be regarded as a healthy sign and be taken as an indication that manufacturers are alive to the importance of zealously guarding the reputation of dairy produce of Queensland origin and the necessity to avoid any loss of prestige which would assuredly take place if laxity in attention to the methods of manufacture is allowed to creep in.

The reversion to open market conditions in Great Britain that occurred during the year brought with it a return to the older and more established order of affairs, under which dairy produce of this State is brought into open competition with that of other countries; but in another respect the position of the market was unique, because of the heavy accumulation of stock of Australian butters which were owned and held in cold storage by the Imperial authorities, and it was found most difficult to dispose of the new season's make of Australian butter in either satisfactory quantities or at remunerative prices. Merchants were afraid to purchase large quantities of butter, and bought in a hand-to-mouth way. These conditions prevailed throughout the earlier portion of the season, and eventually the Imperial authorities decided to unload the stocks of stored butter held by them. It is understood that this butter was sold at a figure considerably less than half the amount of the original purchase cost. Immediately those stored butters were made available to consumers at a comparatively low price, the market for freshly-made Australian butters collapsed, and as a result the dairy industry here received a severe shaking.

Manufacturing companies were for some months unable to gauge accurately the true position of the markets, and with nothing more for their guidance beyond the definite knowledge that the value of butter had become depreciated and the condition of the market reduced to a disorganised and chaotic state, exporting companies were placed in a most awkward position, particularly as they had further quantities of butter shipped on consignment, upon which it

appeared that they would be faced with heavy reclamations.

It was natural, under the circumstances, that manufacturing companies sought to protect themselves against additional monetary loss by adopting the only means within their power, and that was to materially reduce the rates for cream delivered to them; and in this way the value of cream was reduced to a figure lower than that recorded within the past ten years.

The adjustment made in this manner was efficacious in adding to the security of the position of manufacturing factories, but it did not tend towards the alleviation of the difficulties which producers were experiencing. Excessively low rates for cream brought consternation amongst dairy farmers, who found it impossible to carry on dairying profitably. Luckily, this unsatisfactory condition of affairs was short-lived, as fortunately the market for dairy produce recovered much more rapidly than was generally anticipated, principally on account of the demand for the cold-stored butters being stronger than it was expected would be the case even by those closely connected with the trade. The butters were eagerly sought after by consumers, and the incident indicates that the appetite of the consuming public for butter has not been seriously affected either by the rationing of supplies, as was customary for some years past in Great Britain, or by the enforced use of margarine as a substitute for butter. Evidently there still exists practically an unlimited demand for butter provided the quality is satisfactory and the price within the purchasing power of the people.

The rapid recovery of the market brought considerable relief to producers, and the oversea market has now assumed a much more buoyant tone, and with little or no butter carried over in cold stores a continuance of satisfactory prices may be reasonably expected. Certainly the prospects for the approaching season are encouraging and the outlook is decidedly in the producers' favour.

The matter of the inadequacy of cold storage accommodation available for the storage of dairy produce has been referred to in former reports upon the industry, and the importance of ample and efficient cold storage, affecting as it does the quality of the dairy produce intended for export and the progress of the industry generally, has been specially mentioned.

The complement of dairy produce coming forward during the flush of a normal season has reached a point beyond the capacity of the existing cold stores, and the Government has, in consequence, decided upon the erection of a cold storage premises, which will be situated on a water frontage at Hamilton. It is intended that provision shall be made within the cold storage premises to allow for the cold storage of dairy produce, fruit, eggs, and products of like kind.

The work of construction of the necessary buildings and wharfage accommodation for vessels receiving refrigerated cargo from the stores has been under way for some time past, and the progress made to date gives promise of a section of the premises being completed and available for use for storage purposes early in the new year.

Throughout the year a much-improved shipping service than that on offer for seven or eight years past has been enjoyed, and the export section of the industry has benefited accordingly. Ocean liners carrying produce in refrigerated chambers have left our port with greater frequency of late, and, in addition, transit charges have been reduced somewhat.

There has taken place a revival in the interstate trade in dairy produce, which may be attributed to the abandonment of "winter-pooling" of butter—a practice which owed its origin to the war. The requirements of Southern States in butter fluctuate considerably in agreement with the winter season experienced by them. The indications are that the volume of the "interstate trade" in butter during this winter will exceed 30,000 boxes. The popular taste in Australia is for "fresh" butter, which is held in preference to butter which has been subjected to cold storage.

A comparatively small quantity of butter was introduced by merchants into Victoria from New Zealand during the earlier months of the winter, and by far the greater portion of this butter was utilised for the purpose of the trade in tinned butter, and it was ultimately re-converted by Victorian merchants to the markets in the East. By arranging to carry out the tinning operations in bond, payment of the duty charges imposed upon imported butter was avoided, and it thereby became possible to land New Zealand butter in Victoria, repack the butter into tin containers in bonded store, and later ship it to the East at a cost lower than the then prevailing quotation for Queensland butter. No exception can be taken to the indulgence in a trade of this nature, but the incident is mentioned because it was reported that the reason of the intake of butter from New Zealand was to the quality of Queensland butter being found unsatisfactory for the Melbourne market, but the statement was ill-advised, and quite unwarranted on the grounds alleged.

It was really the matter of difference in the relative cost of purchase between Queensland and New Zealand butters that militated against the exclusive use of Queensland butter for the purpose of meeting the entire shortage of Victorian requirements in butter. In other words, New Zealand was prepared to accept a price for butter which, exclusive of import duty, was somewhat below the figure at which Queensland was prepared to do business at the moment the purchase was effected. Only a limited quantity of butter of New Zealand origin actually passed into consumption in Victoria.

CHEESE.

The production of cheese in this State continues to be carried on upon a fairly extensive scale, and because of the population of Queensland being less than that of either New South Wales or Victoria, which are the other principal centres of cheese production in the Commonwealth, it automatically follows that there is a proportionate curtailment in the aggregate amount of cheese disposed of in the local market here, and that this State has a goodly percentage of the total production of cheese available for exportation every normal season.

Queensland occupies the foremost position in respect to the quantity of cheese exported each year, and it is not an unusual happening for Queensland to contribute three to four fold the amount of cheese exported each year by the remaining States of Australia.

Within the year something more than 15,000,000 lb. of cheese was produced, the production being approximately 3,500,000 lb. in excess of that for the former twelve months.

This branch of dairying has reached a stage where it is necessary that careful consideration should be given to the matter of deciding the lines upon which the future development of the industry is to be directed.

In the initiatory stages of the manufacture of cheese in this State it frequently happened that a cheese factory was erected in a somewhat isolated centre to serve the needs of the small dairymen in a community who otherwise would have experienced great difficulty in marketing the milk raised on their farms.

As is customary in the case of settlers in a new locality, there was a limit to the amount of capital available for expenditure in the erection and equipment of the cheese factory, and although elaborate buildings and plant were not within reach, the factories generally served the purpose intended of them, and laid the foundation of the cheese industry in this State. However, what was tolerably serviceable as factory, plant, and equipment ten or more years ago fails to meet the requirements of to-day, particularly as we have reached a stage where the principal proportion of the total amount of cheese manufactured is marketed in oversea countries, which incidentally means that the quality of the cheese must be of a standard sufficiently high to withstand the stress of the voyage across seas.

In previous reports the necessity to add pasteurising plants to the equipment of cheese factories has been emphasised, and if manufacturers here desire to retain a footing for their cheese in oversea markets, it is obvious that they must specially cater for the requirements of such markets, and supply a commodity of the standard of quality suited to the popular taste of the consumers. This can be done by arranging for the pasteurisation of the milk under accredited methods prior to manufacture, but before it is practicable the installation of milk-pasteurising plants at many cheese factories is necessary.

It is granted that money is required in order to purchase and equip a factory with a pasteurising plant, but the expenditure involved is warranted, and amongst the principal advantages to be gained by so doing are (a) improvement in the standard of quality, (b) material increase in the yield of cheese, (c) the production of a cheese which will better stand the conditions of transit from factory to cold store and from cold store to oversea markets. The benefits accruing under the heading of either (a) or (b) are material, and either is individually sufficient to merit the installation of a pasteurising plant forthwith in every cheese factory in receipt of a reasonable quantity of milk.

By no means at our command, other than the general adoption of the principle of pasteurisation of milk for cheese purposes at factories, is it possible to bring about the improvement in

the general standard of quality of the cheese output from factories, a matter which is so essential in order to place this particular branch of the dairy industry upon a satisfactory and permanent footing.

One of the principal companies engaged in the manufacture of cheese installed a milk pasteurising plant at the head factory during the year, and the results derived from its use have been sufficiently beneficial to encourage the company to extend the principle of pasteurisation to some of the branch factories in the immediate future.

For some years past the annual reports submitted have been strong in the advocacy of pasteurisation of milk at cheese factories, and as a consequence it is interesting to record that the results accruing from the application of the principle of pasteurisation of milk at a cheese factory in this State, stand in substantiation of the claims voiced in favour of the method by this office.

There remains no longer a doubt whether the adoption of efficient pasteurisation of milk will, when applied here, be equally as advantageous as it has proven to be in other countries. Any hesitancy by factories in the installation of milk pasteurisers on that score is no longer warranted, and the experience so far is that, both in respect to theory and practice, the pasteurisation of milk is a sound proposition for cheese factories, and the equipment of the cheese factory is alike imperfect and inadequate unless a replete pasteurising plant is included.

HERD TESTING.

The practice of testing the dairy herds of individual dairy farmers that were submitted simultaneously in any district or locality was continued throughout the year.

The importance and value of herd testing to the industry generally and those engaged in it individually has been frequently emphasised, and the advantages to be gained by the submission of the herds in unrestricted numbers to a butter-fat test has been advocated from practically every quarter competent to advise upon the matter.

Babcock test results are the only undeniable form of evidence of the worth of a cow as an agent for the production of butter-fat. To rely solely upon appearance in the selection of a dairy cow, assessing her merits as a producer in accord with the degree to which she appeals to the eye, or even to weigh her milk without also determining the butter-fat content of same, is frequently, if not always, a misleading plan, and in this connection it is significant to relate that no owner of an untested dairy herd has yet been successful in accurately indicating to the herd-testing officer, prior to herd-testing operations, the relative order of merit of the cows in his herd; and what is even more convincing in proclaiming herd-testing as the one reliable means whereby the productive capabilities of a dairy cow are to be determined, is the fact that to date no owner of a dairy herd has been successful in his selection of the animal yielding the most butter-fat in his herd immediately prior to the commencement of the testing operations. Consequently, it can be claimed that herd-testing provides the solution of what otherwise would remain a most difficult and intricate problem—that is, the accurate assessment of the relative merits and demerits of the respective cows in the dairy herds as producers of butter-fat.

Without doubt herd-testing should be more fully patronised by dairy farmers, as it really constitutes the keystone of economic dairy farming.

Other things being comparable, it follows that dairy farmers utilising dairy cows capable of the production of something less than 120 lb. of butter per annum cannot successfully compete with dairymen elsewhere whose herds yield equivalent to 300 lb. of butter each year. There exists a distinct difference between "drudgery" and profitable dairy farming, and the elimination from the herds of the unprofitable cows, whose presence is to be exposed by the adoption of systematic herd-testing, leads on to the latter goal, along what is the shortest and most certain route.

Particulars of the localities at which testing was carried out and the results of the testing of the dairy herds within the year, as contained in the report of the Herd-testing Officer, are given below.

During the first month of the year I was engaged in testing dairy herds on the Atherton Tableland, and although the season was not very favourable for big yields, a fair number of dairymen availed themselves of the opportunity, with the result that twenty-seven herds were submitted and 690 cows tested.

On returning to the South, herd-testing was continued in various districts without interruption until the month of May, when, owing to continued dry weather conditions, testing operations slackened off until rain improved conditions slightly, and work was continued throughout the remainder of the year. The centres in which I have operated during the year are as follows:—Atherton (in the North); Greenwood, Bell, Burton, Warra, Texas, Yelarbon, Gibinbell, and Kurrumbul (on the Darling Downs); Rosewood district in the West Moreton; and Boonara Estate, Goomeri, and Mundubbera in the Burnett.

In Greenwood district tests were continued from last year, and when the fourth testing period was completed in November the dairymen interested decided to discontinue the tests for a season or more, expressing entire satisfaction with the scheme, and they intend at a later date to again apply to this Department for the services of a herd-testing officer. In September a series of tests were commenced in the Warra district, also taking in a few herds from Ehlma and Brigalow to the west of Warra. Further tests were subsequently carried out in the months of December, March, and June, a total of fifty-nine herds being submitted and 1,580 cows tested.

From Yelarbon, on the South-western Railway, an application came along in December, and a testing centre was formed there early in January, with the result that the largest number of herds of the season was submitted and 823 cows tested. Great enthusiasm was shown at the time, and it was arranged to have a second test carried out in April; but on arriving there the season had been so dry and severe that practically all the dairymen were reduced to milking once a day, and only two herds were submitted.

In Goomeri district two tests were carried out in November and February, but here again weather conditions interfered with any further tests being taken during the season.

Texas, situated about 30 miles from Inglewood, was visited during December, and 645 cows were submitted to the Babcock test. Unfortunately, when a retest was mentioned later on, no response was received, and therefore no further tests were carried out. In February twenty-three herds were submitted and 505 cows tested in Mundubbera district, but here again weather conditions interfered with further tests.

At the end of February a series of tests were commenced in the Rosewood district, and subsequent tests taken during April and June. The Testing Association there asked to have a test carried out every sixty days, and I certainly think this an improvement on the ninety days period, which has, up to the present, been the custom under the scheme of herd-testing.

Although the number of herds submitted in this district are not large, much good work has already been done, and it is anticipated that, as summer approaches, many more dairymen will join in the movement. The total number of herds submitted during the year was 278, comprising 6,916 cows.

The daily average yield of milk of all animals tested is shown as 17.5 lb., and the average butter-fat per cent. 4.1, while the average yield of commercial butter daily amounts to .84 lb. The highest herd average recorded is 1.30 lb. commercial butter. If we compare a herd with an average production of 1.30 lb. commercial butter with a herd producing the average—viz., .84 lb. commercial butter daily—taking the lactation as 300 days and both herds containing forty cows, the following figures are of interest:—40 cows of the better herd produce 15,600 lb. of butter, while 40 cows of the average produce 10,080 lb., a difference of 5,520 lb. Taking butter at 1s. 6d. per lb., the best herd returns £1,170, against £750 for the poorer herd, a difference of 54 per cent. in favour of the better herd. If it were possible to improve the dairy herds throughout Queensland to that level, it would mean, roughly, £4,000,000 sterling additional to the dairy farmers of Queensland. While this may not be possible for many years to come, it should not be a very difficult task to raise the average production of our dairy herds by 25 per cent. Assuming that there are 400,000 dairy cows in the State, this would mean an approximate gain of £1,900,000.

During the year sixty-eight samples of herd milks have been analysed for solids; also a large number of skim milks have been put through, which in many instances have shown that considerable losses occur during the operation of skimming—in one instance to the extent of 2½ lb. butter per day.

In most cases an improvement is generally made by more speed, higher temperature, or an addition of more dishes in the bowl of the separator.

As in the past, every opportunity has been given to dairy farmers to learn the method of testing milk and cream, and a fair amount of time has been given to this. During the present season I have been so busy that very few inspections of herds have been made, although in many instances I have been asked to go; but on account of so much actual testing it has been impossible.

As will be observed from the summaries attached, many farmers do not continue the testing, which is much to be regretted, as it is impossible to make any estimate of an animal's

production unless at least three testings are carried out.

In regard to this I think the Department should try in some way to exact a promise from

applicants that they will continue the tests for at least six months. This would also help the Department in arranging the work of testing for the officers engaged in this work.

PARTICULARS OF DISTRICTS WHEREIN TESTING OPERATIONS WERE CARRIED OUT.

District.	Month.	Number of Cows.	Average Daily Yield of Milk.	Average Fat per cent.	Average Daily Yield of Commercial Butter.
			Lb.		Lb.
Atherton	July	690	13.3	4.3	.67
Greenwood.. .. .	August	257	22.1	4.0	1.02
Ditto	November	279	20.4	4.0	.94
Goomeri	ditto	681	19.0	3.88	.87
Ditto	February	489	19.2	4.0	.89
Texas	December	645	18.9	3.7	.82
Yelarbon	January	823	20.8	3.8	.92
Ditto	April	39	..	..	..
Mundubbera	February	505	18.5	4.0	.86
Burton	March	157	18.8	4.2	.92
Warra	September	382	20.8	3.9	.91
Ditto	December	507	18.2	3.75	.80
Ditto	March	506	18.9	4.0	.88
Ditto	June	185	12.6	4.6	.68
Rosewood	February	156	19.5	4.0	.90
Ditto	April	298	12.4	4.4	.64
Ditto	June	155	12.0	4.1	.57
Koondai-i	ditto	162	11.3	4.8	.64
Total .. .. .	.. .. .	6,916	..	..	..
Mean average .. .. .	.. .. .	..	17.5	4.1	.84

SUMMARY OF HERD-TESTING OPERATIONS.

Number of cows tested	6,916
Average daily yield of milk per cow	17.5 lb.
Average daily yield of commercial butter per cow .. .. .	.84 lb.
Average fat per cent. of all cows tested	4.1 %
Highest average yield of milk in a herd per diem	28.7 lb.
Lowest average yield of milk in a herd per diem	4 lb.
Highest average yield of commercial butter in a herd per diem	1.30 lb.
Lowest average yield of commercial butter in a herd per diem .. .. .	.28 lb.
Highest average fat per cent. in milk of a herd	6.1 %
Lowest average fat per cent. in milk of a herd	3.0 %
Highest yield of milk recorded for a cow p. diem	45.5 lb.
Highest yield of commercial butter recorded for a cow per diem	2.18 lb.
Highest test recorded	7.9 %
Lowest test recorded	1.2 %

The conveying of instruction to those engaged in the manufacture of dairy produce was continued throughout the year, and an increased number of requests was received for assistance in dealing with what may be regarded as the more intricate or technical phases connected with the manufacture of dairy products. The applications from factories were of particularly frequent occurrence during the warmer months of the summer, which is naturally the period wherein factories experience the most difficulty in the treatment of the milk or cream received from the dairy farms.

At present there are five dairy instructors engaged upon the dairy staff, but owing to the growing demand from factories for their services and the appreciable expansion of the industry which has taken place within recent years, the time is at hand when consideration must be given to the advisability of strengthening the number of dairy instructors somewhat.

A considerable number of samples of dairy produce, also water used for dairy factory purposes and ingredients employed in the manufacture of either butter or cheese, such as salt, rennet, preservative, artificial colouring matter, were submitted during the year to the Agricultural Chemist (Mr. J. C. Brünnich) for analysis, and the Government Bacteriologist (Mr. C. J. Pound) carried out the examination of many specimens of dairy products forwarded for bacteriological purposes by the Dairy Branch.

CONSERVATION OF FODDER.

No distinctive progress was made during the year in the matter of conservation of fodder in any of the accredited forms; consequently, as a result of the somewhat severe winter and with a decrease in the customary amount of the rainfall, coupled with an absence of ample supplies of fodders stored on the dairy farms in readiness to draw upon for the feeding of dairy stock, there occurred a noticeable shrinkage in the quantity of dairy produce raised during the winter period.

Dairy farmers will fail to enjoy the maximum return from their industry until such time as every dairyman conserves on his farm an ample supply of fodder to meet the requirements of his herd during every period of shortage in the supply of field pastures.

The conservation of fodder on an elaborate scale is something that cannot be achieved without the exertion of considerable effort on the part of owners of dairy herds, but there is no denying the advantages that are to be gained by the general adoption of a higher standard of animal husbandry.

The dairy farmer who conserves his fodder scores heavily during periods of dry weather over the man who does not practise the conservation of fodder. The former receives comparatively higher monetary returns from the factory for his produce; he reduces the risk of loss in his stock to a minimum, and immediately the season changes to normal his cows respond with an increased flow of milk, owing principally to the fact that their vigour had not been impaired by the temporary withholding of sufficient nutriment.

It appears that in the aggregate the advantages to be gained by fodder conservation are too great to sacrifice longer, and the way to overcome the difficulty is for every dairy farmer to conserve a supply of fodder on the farm, either in the form of ensilage or as hay in stacks, according to the kind of crop which may grow to best satisfaction in his particular locality.

E. GRAHAM, Chief Dairy Expert.

REPORT OF THE CHIEF INSPECTOR OF STOCK.

SIR,—I have the honour to submit the following report for the year ended 30th June, 1922.

STOCK STATISTICS.

The following figures supplied by the Government Statistician show an increase in horses, cattle, sheep, and pigs as compared with the previous year:—

Year.	Horses.	Cattle.	Sheep.	Pigs.
1921	742,217	6,455,667	17,404,840	104,370
1922	747,543	7,047,370	18,402,399	145,083
Increase ..	5,326	591,703	997,559	40,713

It is satisfactory to note the increase in the number of stock. There has been a general depression in the cattle industry owing to the low value of stock, and until oversea markets are established, there seems little likelihood of any permanent improvement. The sheep industry is in a much more satisfactory position, owing to the enhanced value of merino wools and mutton.

PROSECUTIONS.

	Number of Prosecutions.	Number of Convictions.
Diseases in Stock Act	62	61
Slaughtering Act	25	25

Action under "*The Diseases in Stock Act of 1915*" was, in the majority of cases, taken in

respect of the movement of stock without a permit or waybill. It is imperative that owners should comply with these regulations, otherwise disease may be carried from one district to another. This refers more particularly to the cattle tick, which may be spread to hitherto clean areas as a result of irregular movements of stock. A waybill is also necessary in order that stock may be identified when suspected of having been stolen. The majority of breaches of the Slaughtering Act were in connection with illegal slaughtering and the feeding of swine on uncooked offal.

HORSES EXPORTED.

Eight hundred and seventy-six (876) horses were exported oversea, of which two hundred and eighty-two (282) were mares.

EXAMINATIONS OF STALLIONS.

Examinations were held at the following places:—Brisbane, Laidley, Esk, Lawnton, Townsville, Beenleigh, Gympie, Nambour, Warwick, Goomeri, Kingaroy, Nanango, Dalby, Killarney, Georgetown, Gatton, Boonah, Lowood, Bundaberg, Rockhampton, Caboolture, Beau-desert, Toowoomba, Ipswich, Marburg, Mackay, Charters Towers.

Eighty (80) stallions were examined, of which number six (6) or 7.5 per cent. were rejected.

Tabulated results of the examination are as follow:—

	DRAUGHT HORSES.		FLOOD HORSES.		LIGHT HORSES.		PONIES		TOTALS.	
	Number Examined.	Number Certificated.	Number Examined.	Number Certificated.	Number Examined.	Number Certificated.	Number Examined.	Number Certificated.	Number Examined.	Number Certificated.
	16	15	20	17	21	19	23	23	80	74
	Number Rejected.	Percentage Rejected.	Number Rejected.	Percentage Rejected.	Number Rejected.	Percentage Rejected.	Number Rejected.	Percentage Rejected.	Number Rejected.	Percentage Rejected.
Defects.	1	6.25	3	15.00	2	9.52	..	..	6	7.5
Sidebones	1	6.25	..	..	..	..	..	..	1	1.25
Spavin .. ..	..	..	1	5.00	2	9.52	..	..	3	3.75
Curb .. ..	..	..	1	5.00	..	..	..	..	1	1.25
Want of type and conformation ..	..	..	1	5.00	..	..	..	..	1	1.25
Totals	1	6.25	3	15.00	2	9.52	..	..	6	7.5

ANALYTICAL EXAMINATIONS.

Forty-nine (49) samples of viscera and contents were submitted to the Agricultural Chemist for analysis, and in twenty-two (22) cases poison was detected. In North Queensland twenty-three (23) samples were examined, of which fifteen (15) contained poison.

INTERSTATE CONFERENCE.

A conference of the chief veterinarians and stock officials of the different States was held in Sydney in April last. The following subjects, amongst others, were dealt with:—

Uniformity with regard to stock and stock disease legislation.

The adoption of a uniform schedule of diseases of animals throughout the States.

That each State should undertake an educative campaign with the object of eliminating and eradicating pleuro-pneumonia contagiosa from Australia.

The diagnosis and control of swine fever and the restriction of interstate traffic in pigs.

Control of the cattle tick and the effect of cattle tick on interstate traffic.

Control of sheep louse and sheep tick.

The disposal of actinomycotic, tubercular, and cancerous cattle.

Conditions governing the export of cattle to Java and other countries.

Rabbit and vermin suppression.

Railways and their importance in suppressing the spread of animal diseases.

Certification and registration of stallions.

The passage of legislation governing the veterinary profession.

Consideration of the form of certification and notification in connection with interstate traffic in stock.

TICK BOARD.

The activities of the Board have, during the year under review, been increasingly directed to the suppression of the tick pest in areas where sporadic outbreaks have occurred, and in the minimisation of the pest in the heavily tick-infested territory; also to the prevention of an extension of the present infested areas of the State.

It has been noted with satisfaction that stockowners generally are becoming more alive to their responsibilities, and efforts to secure their co-operation have been attended with more success than hitherto. It is obvious, however, that unless this co-operation is directed systematically, there is little hope that the objects of the Board can be fully achieved.

The Local Authorities throughout the State, with isolated exceptions, do not exhibit that practical sympathy which would be expected in efforts made to deal with the tick pest.

In the earlier portion of the year stock movements, especially in Northern areas, were considerably reduced owing to the fact that meatworks were not operating, but the traffic on routes converging on the Queensland Northern Railway is now very heavy.

Cattle have from time to time arrived at Julia Creek from Gulf areas in a heavily tick-infested condition, and the attention of those interested has been drawn to the necessity for dipping at the Government dip at Donor's Hills prior to further movement in a southerly direction. A subsequent dipping from seven to ten days prior to arrival at centres on the Queensland Northern Railway should also be arranged for, and if effective, this would permit stock to cross to centres south of the railway on one further dipping.

Effective facilities for dipping at Winton are now provided, and dips are also available on the Tower Hill route, where provision is made for the disinfection of stock travelling from Prairie, *viâ* Aramac and Barcaldine.

Owing to unforeseen circumstances, delay has occurred in placing the Muttaborra dip in commission, but arrangements in that connection are now being finalised.

Large mobs of cattle have during the past year travelled through the Burnett areas to the Darling Downs, and dipping at Jarrah, Durah, and Boondooma, prior to entry on to the Downs, has been enforced in the interests of stockowners in the clean areas south of the Main Range. Owing to the difficulty in securing effective supervision by a permanent officer at Boondooma, the Burrandowan dip was commissioned for the cleansing of cattle travelling across the range *en route* to Jandowae and centres further South, but it may be possible to again use the Boondooma dip for that purpose when the services of an officer from the Kingaroy area can be detailed for supervisory duties.

Notwithstanding the close supervision and the application of restrictions on stock movements from tick-infested to clean country, it is regretted that an important extension of the area of infestation in Central-Western Queensland has occurred.

In July 1921 mobs of travelling stock from territory north of the Queensland Northern Railway were found tick-infested on arrival at Isisford after movement *viâ* Winton, Evesham, Maneroo, and Arrilalah. Immediate action was taken to ascertain, if possible, the source of infestation and to return the infested cattle on the route travelled, and thence to Aramac for dipping. Exhaustive inquiries indicated that the cattle were clean on arrival at Winton, and as certain cattle depastured at Baratria, on the Winton-Maneroo route, were found infested, there is no doubt that these stock were responsible for the trouble. Every precaution was taken to prevent stock movements on or across the infested route until dipping facilities could be provided by stockowners or local authorities interested. The co-operation of the shire councils at Isisford and Blackall was sought and obtained to deal with spraying operations at those centres, and additional inspectors were detailed for duty at Isisford, Blackall, and Jundah. It was necessary to extend cleansing operations to Blackall in view of the fact that holdings on both sides of the Barcoo River were found infested. Stock from Northern areas for the south, travelling *viâ* Winton, were deviated at Evesham, *viâ* Camoola, to Aramac, for dipping, and were thence permitted to travel *viâ* Barcaldine, Jericho, and Tambo, avoiding Blackall. Close inspections have been periodically made of the infested route, also of adjoining holdings and town reserve, but no ticks have been found for some months.

This indicates a possibility that the outbreak has been successfully coped with, but development during the ensuing summer must be awaited before this can be assumed with any degree of certainty. The restrictions therefore will apply, with the exception of a variation to permit fat stock for immediate slaughter, from holdings west of the Maneroo route, crossing that route direct to Longreach to the trucks.

The Board also decided recently that as there is no danger to be apprehended by the movement of stock *viâ* Blackall from Barcaldine, this route has now been opened, and cattle may

travel through Blackall *en route* to Tambo and southern areas.

Regular dippings or spraying and inspections were carried out in centres on the Darling Downs, where sporadic outbreaks of ticks occurred during the previous year, and restrictions on movements of travelling stock in the Clifton, Pratten, Dalby, and Pittsworth areas have now been removed.

Unfortunately, in March last ticks were found on cattle at Yeulba, but as the route between the Main Range and the railway on which the infested cattle had travelled was found clean, it was not considered that infestation occurred from that source. Upon further inquiry, it was ascertained that some cows had been introduced from the Brisbane district. These cattle were dipped twice in approved dips and found free from ticks before permission was granted to truck for Yeulba, but the stock were not trucked for some twenty-four hours after dipping, as it was considered, until recent investigations proved otherwise, that dipping would prevent larval ticks from attaching themselves to animals for at least thirty-six hours after dipping. It has since been proved that larval ticks will attach themselves within eighteen hours, which probably occurred in this case. The infested cattle were periodically sprayed until clean, and all cattle on suspected holdings were mustered and crush-inspected, but were not found infested.

Isolated outbreaks also occurred at Macalister and Bowenville, but after necessary spraying restrictions had been periodically applied, and frequent inspections had revealed the fact that

the infested areas were clean, quarantine restrictions imposed at the discovery of the outbreaks were removed.

Certain tick-infested cattle arrived at Jondaryan from the Boonah district in April last, but the ticks were noted immediately on arrival, and the cattle were returned to their original pastures.

The Railway Department has co-operated with the Board in respect of the disinfection of stock trucks, but until provision is made for the establishment of central depôts for that purpose it will be difficult to secure thoroughly effective results.

HELIDON CLEANSING AREA.

The work carried out in this area has been attended with successful results. In January last a considerable portion was declared clean, and restrictions were removed. The area has been enlarged, as it was found necessary to extend the boundaries to conform with watersheds. By so doing, we now have included therein a large portion of rough, grossly tick-infested country adjoining Cressbrook Creek and the Anduramba road. The officer in charge of the area reports that infestation has been greatly reduced in these localities by frequent periodical dippings, and he anticipates that with the co-operation of stockowners, which is cheerfully extended, the majority of the infested holdings will be cleaned in the ensuing twelve months.

Holdings inspected	..	..	..	4,201
Horses inspected	..	..	..	10,165
Cattle inspected	..	..	..	152,327
Sheep inspected	..	..	..	158
Number of infested holdings	..	..	..	499
Number of stock dipped	..	..	..	46,188

STOCK MOVEMENTS.

ENTERED DISTRICT.			REMOVED FROM DISTRICT.			MOVEMENTS IN DISTRICT.			STOCK DIPPED.		STOCK SPRAYED.	
Horses.	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Horses.	Cattle.
1,309	4,090	4,356	1,998	9,943	75	1,453	41,447	1	1,198	49,894	129	27

SOUTH BURNETT CLEANSING AREA.

As reported last year, the southern portion of this area, comprising about 1,280 holdings and aggregating approximately 220,000 acres, has remained clean, with the exception of sporadic outbreaks caused by the passage of certain tick-infested stock. Although precautions are taken to prevent infested stock gaining admission to the cleansing areas, it is found practically impossible at times owing to irregularities on the part of owners of travelling stock.

An officer has been stationed at Wondai for a considerable period to prevent the introduction of tick-infested stock from the northern portion

of the gazetted cleansing area, and also to supervise the dipping of stock grazing on the northern boundary. It has been decided that the present southern portion of the cleansing area is a sufficient buffer to the clean country on its southern boundary; therefore, the cleansing work will not be continued in the northern portion, but operations will be extended in a westerly direction to include the parishes of Durong and Boondooma, which will link up this area with the Miles-Chinchilla Area.

Holdings inspected	..	..	..	832
Stock inspected	..	..	..	65,107
Infested holdings	..	..	..	207
Stock dipped	..	..	..	41,151

STOCK MOVEMENTS.

ENTERED DISTRICT.			REMOVED FROM DISTRICT.			MOVEMENTS IN DISTRICT.			STOCK DIPPED.		STOCK SPRAYED.	
Horses.	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Horses.	Cattle.
1,350	18,999	9,610	2,104	31,692	8,100	7,885	160,862	859	414	60,530	35	103

MILES-CHINCHILLA AREA.

During the early portion of the year under review repeated applications were made for the removal of restrictions applicable to this area. After full reports had been received from the officer in charge it was decided to release the greater portion of the area from cleansing operations. However, in view of the possibility of infestation due to the movement of tick-infested cattle to Chinchilla, it was decided that action for the release of the south-eastern portion of the area should be deferred until there is evidence that no danger is to be apprehended as a result thereof.

Holdings inspected	..	..	..	531
Stock inspected	..	..	..	41,150
Infested holdings	..	..	..	—
Stock dipped	..	..	..	—

SOUTH COAST AREA.

Regular dipping of stock was carried out in the Coolangatta town area. It was not considered expedient at present to extend operations to the other portion of the proclaimed area which extends to the Logan River. Straying stock on roads at Tugun were dipped as a precaution against their surreptitious entry into the Coolangatta town area. Notwithstanding the precautions taken, stock were found tick-infested in the Coolangatta area in the months of March and April last.

STOCK MOVEMENTS.

ENTERED DISTRICT.			REMOVED FROM DISTRICT.			MOVEMENTS IN DISTRICT.			STOCK DIPPED.		STOCK SPRAYED.	
Horses.	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Horses.	Cattle.
559	1,323	220	482	1,514	..	234	2,300	..	4	1,168	72	..

DIPS.

The total number of dips registered in the State totals 4,163, as compared with 3,976 last year.

Particulars of dips registered in the various stock districts are as follow:—

District.	Number.
Barcaldine	3
Bowen	205
Brisbane	1,047
Cairns	202
Clermont	53
Cloncurry	40
Cooktown	39
Gladstone	323
Hughenden	34
Maryborough	1,290
Normanton	32
Rockhampton	446
Roma	43
Springsure	60
Toowoomba	93
Townsville	217
Warwick	34
Winton	2
Total	4,163

DIPPING FLUIDS.

One thousand one hundred and fifty samples of dipping fluids were analysed, viz., 612 from Southern and Central Queensland, and 538 in North Queensland. As reported previously, the regulation providing for the compulsory analysis of dipping fluids twice annually is not enforced except in proclaimed cleansing areas or in cases where dips are recognised by the Department for the cleansing of stock prior to movement into tick-free country. In these cases it is found necessary to regulate intervals between the analyses of dip fluids to conform with the number of stock dipped or the addition of fresh concentrate. The portable testers supplied to stock inspectors have been found most useful for field tests, more particularly in isolated centres where samples could not be analysed for a considerable

period. No less than 52 pints of standardised iodine solution was supplied to the various inspectors by the agricultural chemist.

DISEASES IN STOCK.

The members of the veterinary staff have made 356 visits to various centres in Southern and Central Queensland (Appendix I. deals specifically with North Queensland). The distances travelled in many cases were very great, as can be readily understood when the size of this State is considered, but much useful knowledge has been disseminated and practical aid given to numerous stockowners. The testing of cows for tuberculosis was carried out free of cost, but prior to the test the consent of owners was obtained in all cases for the destruction of animals which reacted. The health of stock generally has been good, and no outbreaks of any new infectious diseases were noted. Cases of poisoning were investigated in several districts, due in most cases to poisonous vegetation. Cases of arsenical poisoning were also investigated, and were chiefly associated with the destruction of prickly-pear. In most instances stock were not removed from the paddock while the work of destruction was in progress, with the inevitable result that the animals consumed the poisoned pear. Treatment in many cases was impracticable, as the animals were unaccustomed to being handled. With quiet cattle the administration of moist peroxide of iron has been found very successful. The only practical method of dealing with these cases is to remove stock from the paddocks where pear is being treated, or by eradication of the poisoned pear before stock are allowed to graze in the paddocks.

In a few instances mycotic poisoning came under notice, due to the growth of moulds on dry grasses, following a propitious season. The cutting of the natural grasses for conservation as hay or silage is undoubtedly a precaution against mycotic poisoning, and also serves as an asset in drought periods, although an impression has gained ground that the natural grasses are useless when conserved for fodder. If this

fodder is used as hay, or cut into chaff, and is sprinkled with a mixture of molasses and water, which adds to the digestibility and palatability, it is a very wholesome and desirable article of food on which stock do well for considerable periods. The molasses acts to a slight extent as a corrective to fungi poisoning, in that it assists a healthy and normal bowel action.

PLEURO-PNEUMONIA CONTAGIOSA.

Seventy cases of this disease have been reported, as compared with sixty-six last year. The usual quarantine of three months after successful inoculation has been enforced. It was resolved at the Interstate Conference held in Sydney to reduce the quarantine period to two months.

The following tabulated list shows the number of outbreaks in the various stock districts:—

District.	1921.						1922.						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June	
Barcaldine .. ..	..	..	..	..	..	..	..	..	..	..	1	..	1
Bowen .. ..	..	..	..	2	..	..	..	..	..	1	..	..	3
Brisbane	2	1	4	..	..	..	..	2	..	4	1	2	16
Cairns .. ..	..	..	..	..	..	..	..	..	1	..	..	..	1
Charleville	1	..	..	3	..	4	1	..	..	..	..	..	9
Clermont .. ..	..	..	1	..	..	..	..	..	..	..	1	..	2
Cloncurry	1	2	..	..	..	..	..	..	..	..	..	1	4
Cunnamulla .. ..	..	..	1	..	1	..	..	..	1	..	..	..	3
Gladstone .. ..	..	..	..	..	1	..	..	2	..	..	..	..	3
Hughenden .. ..	..	..	..	1	..	..	..	..	..	..	..	..	1
Longreach	1	..	..	..	..	..	1	..	..	..	..	..	2
Maryborough .. ..	..	..	1	..	..	1	1	2	..	1	2	..	8
Rockhampton .. ..	..	..	..	2	1	..	..	1	3	1	1	..	9
Roma .. ..	..	1	..	..	..	1	..	..	..	..	..	..	2
Springsure .. ..	..	..	1	..	..	1	..	..	..	..	..	..	2
Toowoomba .. ..	..	..	..	..	..	..	..	..	..	..	..	1	1
Townsville .. ..	..	..	..	..	1	..	..	..	1	..	..	..	2
Warwick .. ..	..	..	..	..	..	1	..	..	..	..	..	..	1
	5	4	8	8	4	8	3	7	6	7	6	4	..
Total number of outbreaks in Queensland													70

SO-CALLED CATERPILLAR PLAGUE AFFECTING CATTLE.

Early in July information was received from the Roma District that large numbers of cattle had died and that others were sick, the result of eating so-called caterpillars.

The District Inspector of Stock, Roma, was wired to for confirmation of the news, but before receiving his reply, Mr. Armstrong (officer in charge of the Soldiers' Settlement, Gunneview), reported that losses of stock were occurring on Westgrove Station, about 100 miles north of Roma, and arrangements were at once made to personally visit Westgrove. Mr. Harding, the manager, very kindly placed his motor-car, horses, and men at our disposal, and, although we rode over Westgrove, and made inquiry from adjoining stations, we were unable to find a single sick case suitable for examination. A number of carcasses were noticed lying about on Boxvale, but decomposition had advanced too far for an examination to be made. It was estimated that fifty or sixty deaths had occurred out of 900 animals. So far as can be ascertained we have nothing on record showing the actual cause of death when cattle eat caterpillars. Personally, I was of opinion that it was caused by the grubs setting up a mechanical irritation of the mucous membrane of the stomach and bowels, but from information obtained at Westgrove it is now considered that death is probably due to a poison contained in the grubs. The treatment of affected animals can only be attempted in small herds, such as those on dairy farms, where the animals are regularly handled. Daily doses of raw linseed oil ($\frac{1}{2}$ to 1 pint), followed every four to six hours with 1 quart of linseed or oat-meal gruel, the white of two eggs, and 2 oz. of

sweet spirits of nitre, was reported to have been successful in several cases.

The prevention of the pest appears to be an entomological question, and was therefore referred to the Government Entomologist. At present owners of large herds are practically helpless, and can only remove their cattle from paddock to paddock, according to the development of the pest in the various paddocks. It was pointed out that ringbarking was of little service, because for each tree destroyed numerous suckers grow up, which make even greater feeding ground for the grubs.

Mr. Harding and Mr. E. C. Alexander (head stockman on Westgrove) supplied the following information:—

History.—The affection was first seen on Westgrove in 1908, when deaths were attributed to cyanide poisoning, used for killing opossums. In 1913 similar caterpillars or grubs to those now on the station were seen, and large numbers of animals, chiefly weaners and heifers heavy in calf, died. About ninety-eight were found dead in one small area. The grubs are chiefly noticed in wet seasons, and do not disappear until warm weather sets in. Trees attacked by grubs are confined to the narrow-leaf ironbark, silver or broad leaf ironbark, young spotted gum, box, and small currajong.

Symptoms.—Animals appear dull, and exhibit the following brain symptoms:—Will readily charge, have peculiar gait, quivering of the muscles, die without struggling, and sickness only noticed for about two days.

Post Mortem.—The blood is very dark in colour, connective tissue is dark, and putrefaction present at time of death, particularly

around neck. Lungs are enlarged and pale in colour, pleura easily detached. Stomach contains blackish-coloured fluid, but the mucous membranes are normal in colour, petechial spots on the peritoneum. The liver in some cases is enlarged and dark in colour, with an appearance when cut into as if it had been pin-pricked. The gall is normal.

A full report dealing with the particular grub referred to has been issued by the Government Entomologist.

SUPPOSED GIDYEA POISONING.

It was reported in May last by Inspector Comiskey, of Urandangie, that cattle were dying in that district, apparently from eating gidyea. Losses generally occur when the trees are in pod and when green feed is scarce. The pods, after falling to the ground, are readily eaten by cattle, hence the suspicion that they are the cause of the trouble. After rain, when grass and herbage are available, deaths are not noted, although the pods appear to be as plentiful as previously. It was stated that cattle were dying when the report was submitted, but that no pods were on the trees, and, owing to the dry season, green feed was not available. The inspector, after investigating the cause of death for some weeks, was of opinion that it was due to the cattle eating the green leaves, especially those of the very young or stunted shrub-like gidyea, which was then plentiful. In 1919 feeding experiments were carried out at Roxburgh, with pods and leaves of the mature gidyea, with negative results. At the same time cattle were dying, probably from eating the new leaves of the young or stunted gidyea.

CONTAGIOUS ABORTION.

This disease has existed in the State for many years, but, according to official reports, not to any great extent. Although much has been written concerning this affection, and numerous experiments have been carried out for many years in various parts of the world, it appears from latest reports that much has yet to be learned, more particularly with regard to the best methods of elimination and control. A living vaccine is now used successfully in affected herds in various parts of the world. It has been suggested that animals are immune to the disease only whilst they carry in their system the living abortion bacilli. Therefore, to control the disease by this method all the breeding herd would have to be vaccinated annually for at least two or three years. The bull should not be allowed to animals for at least two months after their vaccination, by which time immunity takes place before pregnancy occurs. Contrary to previous ideas, recent research work indicates that the bull is seldom responsible for the spread of the disease. By means of the agglutination test, which, however, is not absolutely infallible, it is possible to detect infected animals which carry the organism, but few farmers are prepared to divide and maintain their herds in two distinct lots—viz., infected and non-infected animals. Further, it would involve the employment of special attendants and the exercise of isolation precautions. Whilst thoroughly appreciating the serious financial loss entailed by an occurrence of this disease in a dairy herd, and the necessity

for the most strenuous endeavour to limit its spread, there is still one phase of the subject that must be borne in mind: Statistics prove, in so far as they are available, that the majority of affected cows acquire a measure of immunity, and that only a small percentage become sterile. Many cows abort only once, others frequently do so a second time, but seldom on a third occasion. By this means the very great susceptibility to fresh infestation is greatly reduced, and cows carry their calves the full period. Thus it appears that in a herd where the disease has become established the majority of cows are only what may be termed as clinically affected for a relatively short period. If all the cows were simultaneously affected, within a period of two years the majority would be immune and the breeding again normal, with the exception of the small percentage which had become sterile. But as under natural conditions all cows in a herd are not simultaneously affected, the disease gradually spreads, and some years may elapse before the herd generally has acquired immunity.

The advisability of slaughtering all affected animals has been suggested, but in view of the information detailed above such action would appear unnecessarily drastic, and if carried into effect would needlessly deplete the dairy herds of the country, as well as entail serious financial loss, with no guarantee that the disease would be exterminated.

TUBERCULOSIS.

During the year under review the tuberculin test was applied to 381 animals as compared with 280 in 1921 and 160 in 1920. The number of positive reactions was 30, whilst 10 were doubtful and will be retested. Of the animals tested 130 were owned by Government departments, 212 privately owned, and 39 were subjected to the test prior to exportation.

The advantage to dairymen and other cattle-owners of application of the test free of any cost is gradually being appreciated. Many owners now realise that, apart from the public health point of view, it is most unprofitable to keep diseased animals running with healthy stock, but there are others who, through gross ignorance, will not voluntarily free their herds from this most infectious and insidious disease. It is intended to as far as possible utilise the services of the Veterinary Staff for the inspection of dairy cows supplying milk to our larger cities. At the present time, unless owners make application for the test to be applied, only suspected animals are tested. Some years ago it was suggested that dairymen who maintained their dairy herds free from tuberculosis by regular tests, carried out by Government veterinary surgeons, should be allowed some distinguishing mark on their milk carts, or perhaps a special coloured cart, which the public could easily recognise. It is considered that the general public would fully appreciate milk with a Government guarantee of freedom from this disease. If a few dairymen adopted this scheme, it is anticipated that it would be ultimately adopted by many others. Householders and others who may require milk for sick people, and more particularly for young children, would certainly prefer the guaranteed milk, even at a slightly increased cost.

SWINE FEVER.

Early in March one of the metropolitan meat inspectors reported that he had found lesions of swine fever in some pigs from the Boonah District, and his diagnosis was confirmed by the Veterinary Staff. The consignment consisted of twenty-nine pigs purchased from some nine different owners. Six carcasses revealed the typical lesions. An Order in Council was issued providing for the quarantine of all pigs within a radius of 12 miles from the Boonah Post Office. Although every effort was made to trace the source of infestation by thorough periodical inspections of pigs in the area, no definite information in that connection could be ascertained. As no further sickness was reported, the quarantine was lifted at the end of June.

SHEEP.

The general health of the sheep has been good. For the last six months, owing to the drought conditions prevailing, parasitic diseases, such as the stomach-worm, tapeworm, and the blowfly pest, have not been seriously in evidence. With regard to the latter, it can now safely be said that important results have been obtained after years of experiments with various dipping mixtures and dressings. A simple, safe, and economical formula has proved very effective, which consists of 7 lb. of arsenic, 2 lb. soda ash, boiled in 100 gallons of water. This mixture is jetted into the breech of the sheep at from 50 to 200 lb. pressure. The pressure varies according to the amount of wool on the animal. As females are attacked in the majority of cases, the treatment gives protection for about three months, at a cost of about one-fifth of a penny per head. Sheepowners may be assured that their ewes can be carried over the lambing period without the great losses, both of lambs and ewes, they have experienced in the past. Of course, other parts of the body are attacked, but it can be confidently stated that 90 per cent. of the attacks are in the breech. Experiments are now being carried out at Dalmally in the direction of finding a process or specific to protect the whole body. Another feature of jetting with arsenic is that a jetted sheep is a first-rate fly trap, in that enormous numbers of flies are killed.

Reports in regard to the nasal fly have been received from various districts. It is regretted that little can be done to ward off attack in view of the limited knowledge available. This pest, which is seldom responsible for the death of animals, lowers their vitality and makes them a prey to other parasites.

THE SLAUGHTERING ACT OF 1898.

The volume of slaughtering for human consumption has considerably increased during the year, as will be seen on perusal of the following comparative figures, compiled from the returns of permanent officers of the Department. The returns of police officers in country centres are not included:—

	1920-1921.	1921-1922.
Bullocks	62,570	79,268
Cows	15,605	24,848
Calves	21,345	27,018
Sheep	377,820	465,731
Pigs	17,325	21,977

In addition, 164,825 pigs were slaughtered at the various bacon factories. This increase has created a great deal of additional work for all inspectors, so much so that it is necessary to detail another officer for the metropolitan area. Many persons entering the trade required considerable information from inspectors concerning the erection and renovation of shops and slaughter-yards. Inspectors have been successful in their efforts to impress many of those who enter the business with the necessity for the equipment of their buildings in accordance with the standard required by the regulations. The low price of cattle has created a keen competition amongst the butchers, and in many instances stockowners have been compelled by force of circumstances to commence operations on their own account to clear off some of their surplus stock, and quite a number have purchased established businesses at a high cost. At the same time, owing to the low price of stock, illegal slaughtering has been prevalent in almost every district. Several flagrant breaches of the Act have been investigated, but few prosecutions instituted owing to the difficulty experienced in securing sufficient evidence to convict.

The annual return, supplied to the Government Statistician, of stock slaughtered up to the 31st December last in the Brisbane District, including Sandgate, North Pine, Wynnum, Manly, Cleveland, and Redland Bay, indicates the increase in the volume of consumption in that district, due mainly to the increased population and the low price of meat:—

Cattle slaughtered	46,809
Calves slaughtered	25,072
Sheep slaughtered	318,070
Pigs slaughtered	5,902

Returns of stock slaughtered for human consumption are now regularly received from police officers in 198 country centres, which show the following totals:—

Bullocks slaughtered	60,542
Cows slaughtered	28,648
Calves slaughtered	6,651
Sheep slaughtered	110,799
Pigs slaughtered	11,082

It is regretted that in country centres no arrangements can be made for inspection. The police are willing to render any service possible, but, owing in most cases to their lack of knowledge of meat inspection, only those carcasses with unmistakable post-mortem lesions are dealt with; consequently statistics showing carcasses and portions condemned are not procurable. The Senior Slaughtering Inspector when on patrol inspects all carcasses available, but the total of these inspections is negligible. As pointed out in previous years, thorough inspections of carcasses, even in the larger centres and towns, cannot be accomplished until abattoirs are established.

The Senior Slaughtering Inspector has again largely assisted in improving the general standard of yards and shops in many country towns and districts, and investigated complaints, which are frequently received, and generally supervised the work of the inspectors.

During the year he visited and, if circumstances demanded, revisited the following places:

—Rockhampton, Emerald, Alpha, Aramac, Ilfracombe, Longreach, Muttaborra, Bogan-tungan, Mount Morgan, Gladstone, Many Peaks, Bundaberg, Maryborough, Mount Perry, Theebine, Murgon, Wondai, Proston, Kingaroy, Biggenden, Degilbo, Byrnestown, Gayndah, Tiaro, Esk, Toogoolawah, Fernvale, Nambour, Woodford, Caboolture, Beerburrum, Glen Aplin, Stanthorpe, Allora, Clifton, Warwick, Thallon, Milmerran, Koorongarra, Blanchview, Laidley, Grandchester, Rosewood, Ipswich, Roma, Dalby, Injune Creek, Charleville, Wutul, Kulpi, Peranga, Acland, Coolangatta, &c.

The number of slaughter-houses erected in accordance with the regulations during the year, inclusive of those under construction on 30th June, 1921, are as follows:—Completed, 106; reconstructed, 3. One hundred and nine shops have been erected, whilst a considerable number have been opened in various centres which were

not originally erected for the purpose, but have been altered to comply with the regulations. Many of the new premises are very fine structures, well equipped and up to date, with refrigerating plants installed, involving expenditure of many thousands of pounds.

The completion of so many newly-established slaughter-houses demonstrates the value of a regulation dealing with the erection of a minimum-sized slaughter-yard, which has brought about a general improvement by the establishment of progressive methods of sanitation and hygiene.

The following tabulated list shows stock slaughtered and condemned at Brisbane, Gympie, Maryborough, Bundaberg, Rockhampton, Mount Morgan, Mackay, Townsville, Charters Towers, Cairns, Ipswich, Toowoomba, Warwick, and Charleville:—

Description of Stock.	Number of Stock Slaughtered.	Carcasses and Portions Condemned.	Disease.	Percentage.		
Bullocks	79,268 .. .	102 carcasses	Tuberculosis .. .. .	.123	
		174 forequarters	Tuberculosis .. .. .	.108	
		28 hindquarters	Tuberculosis .. .. .	.017	
		455 heads	Tuberculosis .. .. .	.574	
		18 carcasses	Bruised .. .. .	.022	
		31 forequarters	Bruised .. .. .	.019	
		3 hindquarters	Bruised .. .. .	.002	
		6 carcasses	Redwater .. .. .	.007	
		4 carcasses	Emaciation .. .. .	.005	
		3 carcasses	Abscesses .. .. .	.004	
		3 forequarters	Abscesses .. .. .	.002	
		22 heads	Abscesses .. .. .	.028	
		2 carcasses	Pleuro-pneumonia .. .. .	.002	
		1 forequarter	Pleuro-pneumonia .. .. .	.0006	
		2 carcasses	Pink nose .. .. .	.002	
		12 heads	Pink nose .. .. .	.015	
		1 carcass	Actinomycosis .. .. .	.001	
		1 forequarter	Actinomycosis .. .. .	.0006	
		3 hindquarters	Actinomycosis .. .. .	.002	
		266 heads	Actinomycosis .. .. .	.335	
		3 forequarters	Pleurisy .. .. .	.002	
		2 forequarters	Gangrene .. .. .	.001	
		1 forequarter	Gangrene .. .. .	.0006	
		1 forequarter	Fistula .. .. .	.0006	
		2 heads	Malignant growth .. .. .	.002	
		2 heads	Fracture .. .. .	.002	
		Cows	24,848 .. .	146 carcasses	Tuberculosis587
				88 forequarters	Tuberculosis177
9 hindquarters	Tuberculosis .. .. .			.018
178 heads	Tuberculosis .. .. .			.716
18 carcasses	Bruised .. .. .			.072
22 forequarters	Bruised .. .. .			.044
3 hindquarters	Bruised .. .. .			.006
13 carcasses	Emaciation .. .. .			.052
3 carcasses	Emaciation .. .. .			.012
3 carcasses	Emaciation .. .. .			.012
2 carcasses	Redwater .. .. .			.008
1 carcass	Actinomycosis .. .. .			.004
124 heads	Actinomycosis .. .. .			.499
1 carcass	Abscesses .. .. .			.004
2 hindquarters	Abscesses .. .. .			.004
1 head	Abscesses .. .. .			.004
1 carcass	Septicæmia .. .. .			.004
1 carcass	Jaundice .. .. .			.004
1 carcass	Hydatids .. .. .			.004
18 forequarters	Nodules .. .. .			.036
8 forequarters	Pleurisy .. .. .			.016
5 forequarters	Septic wounds .. .. .			.010
1 forequarter	Gangrene .. .. .	.002			
2 hindquarters	Mammitis .. .. .	.004			
2 hindquarters	Melanosis .. .. .	.004			
Calves	27,018 .. .	606 carcasses	Immature	2.243		
		35 carcasses	Putrefaction .. .. .	.129	
		24 carcasses	Emaciation .. .. .	.088	
		4 carcasses	Tuberculosis .. .. .	.015	
		3 carcasses	Bruised .. .. .	.011	
		1 carcass	Abscesses .. .. .	.004	
		1 carcass	Peritonitis .. .. .	.004	
		3 forequarters	Bruised .. .. .	.005	

Description of Stock.	Number of Stock Slaughtered.	Carcasses and Portions Condemned.	Disease.	Percentage.
Pigs	186,802 ..	885 carcasses	Tuberculosis .. .. .	.474
		9,473 heads	Tuberculosis	5.071
		9 carcasses	Unfit .. .. .	.005
		4 carcasses	Emaciation .. .. .	.002
		3 carcasses	Swine fever .. .. .	.002
		2 carcasses	Bruised .. .. .	.001
		2 carcasses	Putrefaction .. .. .	.001
		1 carcass	Jaundice .. .. .	.0005
		1 carcass	Kidney wound .. .. .	.0005
		1 carcass	Melanosis .. .. .	.0005
		1 carcass	Pneumonia .. .. .	.0005
		81 heads	Abscesses .. .. .	.043
Sheep	465,731 ..	16 carcasses	Putrefaction .. .. .	.003
		6 carcasses	Emaciation .. .. .	.001
		4 carcasses	Bruised .. .. .	.0008
		4 carcasses	Blowfly .. .. .	.0008
		3 carcasses	Malignant growth .. .. .	.0006
		3 carcasses	Emaciation .. .. .	.0006
		5 carcasses	Abscesses .. .. .	.001
		1 carcass	Pseudo T.B. .. .. .	.0002
		1 carcass	Emaciation .. .. .	.0002
		1 carcass	Jaundice .. .. .	.0002
		1 carcass	Redwater .. .. .	.0002

The following is a tabulated list showing the particulars of pigs slaughtered and condemned at bacon factories:—

Number of Pigs Slaughtered.	Carcasses and Portions Condemned.	Disease.	Percentage.
164,825 ..	837 carcasses	Tuberculosis .. .. .	.507
	8,964 heads	Tuberculosis	5.438

STOCK SALES.

The following are particulars of stock sold through the Newmarket yards at Brisbane during the year ended 30th June last:—

Number of Stock Sold.			Average Prices Realised.	Number of Stock Sold.			Average Prices Realised.
			£ s. d.				£ s. d.
Cattle	.. ..	60,195	5 14 0	Sheep	.. ..	317,980	0 12 6
Calves	.. ..	9,172	3 7 6	Lambs	.. ..	47,141	0 10 0

The following table shows stock movements for the various stock districts:—

District.	ENTERED DISTRICT.			REMOVED FROM DISTRICT.			MOVEMENTS IN DISTRICT.			STOCK DIPPED.		STOCK SPRAYED	
	Horses.	Cattle.	Sheep.	Horses	Cattle.	Sheep.	Horses.	Cattle.	Sheep.	Horses.	Cattle.	Horses.	Cattle.
Barcaldine ..	5,268	45,419	303,250	7,161	45,824	715,491	4,458	8,796	361,904	592	65,778	6,421	1,933
Bowen ..	584	1,357	1,459	200	3,433	..	6,215	23,412	167	..	..	..	..
Brisbane ..	6,262	128,408	358,463	3,375	27,192	36,059	8,405	104,200	74,698	697	56,062	825	254
Cairns ..	1,425	6,487	7,523	670	6,069	284	5,018	11,246	6,651	..	11,041	..	..
Charleville ..	6,973	83,520	648,579	13,382	84,969	913,053	9,285	78,479	412,996	..	..	..	..
Clermont ..	241	3,113	30,446	1,888	37,336	68,728	2,387	22,788	56,173	12	37,690	12	25
Cloncurry ..	2,519	67,350	13,249	8,537	113,968	182,824	8,319	62,033	216,997	1,383	149,640	..	..
Cunnamulla ..	6,347	60,797	537,436	12,454	171,227	960,143	7,155	39,983	238,158	..	..	..	..
Gladstone ..	666	17,598	658	1,321	14,905	..	726	15,941	..	88	9	249	..
Helidon ..	1,309	4,090	4,356	1,998	9,943	75	1,453	41,447	1	1,198	49,894	129	27
Hughenden ..	4,251	21,240	22,234	4,053	31,351	234,590	3,477	5,021	252,031	340	32,460	49	..
Longreach ..	2,108	10,976	164,309	9,438	26,229	1,056,434	8,647	6,005	625,414	75	41	6,308	3,063
Maryborough ..	3,675	22,230	17,823	5,706	63,966	703	7,550	97,285	828	5,010	100,874	100	1,662
Normanton ..	470	535	..	1,552	26,089	..	1,168	5,386	..	..	..	..	..
Rockhampton ..	1,157	11,253	80,488	5,348	48,884	64,989	14,767	98,545	23,404	845	2,884	71	3
Roma ..	1,700	29,752	101,942	9,663	107,988	462,852	8,560	100,989	233,781	701	42,373	338	1,203
South Burnett ..	1,350	18,999	9,610	2,104	31,692	8,100	7,885	160,862	859	414	60,530	35	103
Springure ..	1,660	11,233	21,767	5,572	52,316	114,728	2,745	21,609	71,247	3,719	41,801	565	..
Tallebudgera ..	559	1,323	220	482	1,514	..	234	2,300	..	4	1,168	72	..
Toowoomba ..	8,116	90,312	194,735	18,837	128,718	236,896	25,856	314,540	341,814	2,949	139,452	1,672	548
Townsville ..	1,392	29,024	51,325	5,068	13,522	30,583	8,002	34,158	401	100	152	87	12
Warwick ..	3,164	40,738	104,606	3,330	47,323	244,197	9,345	123,157	307,158	51	5,824	..	..
Winton ..	272	7,227	34,326	3,329	11,989	324,885	2,445	19,193	291,539	..	4,231	18	182

REPORT OF THE GOVERNMENT BACTERIOLOGIST.

SIR,—Herewith I submit my report on the Stock Experiment Station, Yeerongpilly.

FEES AND MONEYS RECEIVED.

The total amount of money received for work performed, bleeders, blackleg vaccine, pleuro virus, and other laboratory products was as follows:—

	£	s.	d.
Immunisation and stalling of stud animals ..	416	19	0
Bleeders supplied	156	0	0
Blood for inoculation	110	7	6
Blackleg vaccine	70	0	0
Pleuro virus	107	16	0
Lactic culture	34	4	0
	£895	6	6

IMMUNISATION OF STUD CATTLE FOR TICK FEVER.

Notwithstanding the fall in the prices of cattle, 115 stud animals were received for treatment, and comprised bulls and heifers of different breeds:—

The following is a summary of the results since the work commenced in 1910:—

Date.	Stud Cattle.	Deaths.	Remarks.
1910	33 inoculated ..	Nil	
1911	49 inoculated ..	Nil	
1912	72 inoculated ..	1 bull	This animal was very fat, and weather very hot
1913	49 inoculated ..	Nil	
1914	66 inoculated ..	1 bull 1 cow in calf ..	Tick fever Tick fever
1915	70 inoculated ..	1 bull 1 cow in calf ..	Pleurisy Tick fever
1916	148 inoculated ..	1 bull (aged) .. 1 bull	Tick fever Pleurisy
1917	119 inoculated ..	1 bull	Tick fever and pneumonia
1918	112 inoculated ..	1 cow in calf ..	Tick fever
1919	140 inoculated ..	Nil	
1920	149 inoculated ..	1 bull 1 bull 1 heifer	Tick fever Tick fever and tuberculosis Tick fever
1921	115 inoculated ..	1 bull	Tick fever and pneumonia
Total	1,122 inoculated ..	14 deaths or 1.24 per cent.	

RESULTS AT TOWNSVILLE.

From 1913, when Mr. Tucker, Government Veterinary Surgeon, took charge at the Townsville Experiment Station, until his death in

1917, the records were given in his annual reports of the number of stud cattle stalled and inoculated and the deaths as shown in the following abstracted summary:—

Date.	Stud Cattle.	Deaths.	Remarks.
1913	4 inoculated ..	Nil	
1914	72 inoculated ..	3 bulls	
1915	36 inoculated ..	Nil	
1916-1917.. .. .	126 inoculated ..	1 bull	Degeneration of the liver
Total	238 inoculated ..	4 deaths or 1.68 per cent.	

	Bulls.	Heifers.
Shorthorn	21	4
Hereford	8	..
Aberdeen Angus	7	..
Milking Shorthorn	10	51
Jersey	7	7
	53	62

All the animals reacted, either after the first or, when necessary, the second inoculation. Some of the bulls were aged, while a number of the cows were in calf, but there was only one death, viz., a Hereford bull which developed an attack of pneumonia during the inoculation fever period. Post-mortem examination revealed the usual lesions of tick fever and acute red hepatization of both lungs.

RESULT OF TWELVE YEARS' WORK IN THE IMMUNISATION OF STUD CATTLE AT YEERONGPILLY.

In each Annual Report reference is made to the number of stud animals received, stalled, and inoculated for tick fever; also the number of deaths and post-mortem examinations of animals that have died during the inoculation fever period.

EXAMINATION OF SPECIMENS.

During the year 391 specimens were received for examination. These included blood for tick fever organism, milk and cream and pus for tubercle bacilli, streptococci, &c.; blood and lacteal fluids for agglutination test with bacillus abortus; fowls and eggs for bacillus pullorum, and specimens of blood from affected fowls for agglutination test; morbid specimens for tubercle, actinomycosis, and general pathological characters; external and internal parasites for identification; samples of pickling brine from meat-preserving factories, samples of water from butter and cheese factories, &c., &c.

BLACKLEG VACCINE AND THE SUPPLY OF VACCINE.

Notwithstanding stock value continues to be low and the number of well-advertised proprietary vaccines on the market, the Department has supplied sufficient double vaccine to treat 3,500 calves, distributed in the following districts:—Kingaroy, Laidley, Goomeri, Esk, Kanya, Maryborough, Bell, Cambooya, Kilkivan, Toogoolawah, Jimbour, Nerang, Wondai, Rosewood, Beaudesert, Humphery, Tara, Bororen, Jackson, and Kumbia.

There can be no possible doubt as to the efficacy of the double-vaccine method. Apart from our own observations, I have assurance from many stockbreeders on this point. In this connection it is likely that losses from tick fever, pneumonia, and lung worm (especially in certain coastal areas) are sometimes attributed to blackleg.

BACILLIARY WHITE DIARRHŒA IN YOUNG CHICKENS.

An outbreak of this disease occurred during the early part of last year at the Returned Soldiers' Poultry Farm Settlement at Enoggera. The Superintendent, Mr. Rumball, requested me to make an investigation, and supplied me with all the information at his disposal, and also a number of infected birds; while on several occasions I visited the settlement and made personal inquiries with reference to the nature and cause of the outbreak, and at a special meeting of a large gathering of the settlers engaged in poultry-raising I gave an illustrated lantern lecture emphasising the importance of adopting methods for the prevention and treatment of this and other epizootic diseases occurring among fowls.

Where this disease exists in a brooder it causes a heavy mortality, killing from 60 to 80 per cent. of all chickens hatched. The first symptoms usually appear about four or five days after hatching, and deaths occur usually during the following three weeks.

The cause of the disease is a micro-organism, the bacillus pullorum, which flourishes in the intestinal canal of the infected chicken. It is also found in the liver, lungs, kidneys, spleen, heart, and the unabsorbed yolks of the affected chicks. The principal post-mortem appearances are those of the liver and intestine, the former showing pale and congested areas, while the intestine is colourless and to a large extent void of contents.

Symptoms.—The disease seldom manifests itself in chicks after they have attained the age of four or five weeks. The greatest mortality occurs within the first two weeks. The young

chicks become dull and sleepy, and are inclined to huddle together for warmth. There is loss of appetite, and consequent emaciation. The wings droop, the back seems to shorten, and the abdomen protrudes out of proportion, causing the chicks to look stilty. The characteristic whitish faecal discharge may be absent from individual chicks, but is usually noticeable in groups of any appreciable size.

A microscopical examination of stained smear preparations of this discharge will often reveal numbers of bacilli, and often in small encysted masses.

Method of Spread.—The disease may be transmitted to healthy young chicks under five days old through infected grit food and drinking water becoming contaminated with the droppings of infected birds.

Treatment.—In consequence of the difficulty in recognising the disease in its earlier stages, and its rapid development, and also the fact that young chickens have very low powers of resistance, treatment is almost futile. An attempt might be made by the use of calomel (one-tenth of a gram) or a few drops of castor oil containing one to three drops of turpentine. Along with this, five to ten grams of sulphate of iron should be dissolved daily in one gallon of drinking water.

Methods of Control.—Immediately the disease makes its appearance among young chicks in a brooder, all apparently healthy birds should at once be removed, while all those obviously infected should be killed and with all the dead ones destroyed by burning, and the soil which the chicks have access to should be dug up well and covered with lime and exposed to the air, and, as an extra precaution, the ground and the surrounding walls of the brooder-room should be sprayed with a disinfectant such as hycol—1 part to 200 parts of water.

In the absence of any bacteriological method of examining the egg contents of a suspected hen, it is advisable to adopt the following precautions:—All eggs used for hatching should be cleansed by washing in some reliable antiseptic solution—hycol, 1-200, has proved most efficient for this work. The same solution should be used for washing all parts of the incubator and floor and sides of the nursery, while the felt or cloth flaps should be burnt and replaced with new pieces.

Even with all these precautions, freedom from the disease cannot be guaranteed, as some (although very few) of the eggs may become contaminated with the bacillus pullorum during development, when the result is not apparent until a few days after hatching.

If natural incubation is practised, the hen with young chicks should be placed upon ground that has been well disinfected and limed, and at least every few days moved to fresh ground which has been treated in the same way, and from which all other chicks have been debarred.

Prevention.—The essential work in dealing with this disease consists in prevention.

To ensure absolute success, this must begin with the hen that lays the egg to be used for hatching, for the hen is the original source of infection, transmitting the organism (bacillus pullorum) from the ovary to the eggs.

Apparently, from examination of the egg it is almost impossible to make a diagnosis of the infection without injury to the egg contents, and the time occupied is too long for practical application; moreover, as the bacillus pullorum is eliminated so irregularly, it would be necessary to examine all eggs laid by a suspected hen over a long period.

Egg-testing Method.—Although this test is somewhat complicated, a brief description will not be out of place.

In this method eggs are allowed to remain in a disinfectant solution (1-40 carbolic acid, or 1-200 hycol) for about five minutes, then taken out and dried with sterilised absorbent cotton wool. The end of the egg is sterilised in a bunsen flame and then removed by being cut out with sterile scissors. The albumen is then carefully separated from the yolk, and the latter inserted in a large sterile test tube containing 30 c.c. of sterile beef broth. In some cases fresh eggs are studied, but the best results are obtained when the eggs are incubated prior to testing, and in some cases sufficiently long for the embryos to develop.

The disintegrated yolks (and embryos when present) are inserted in the tubes of sterile broth and placed in the incubator at 38 deg. C., and allowed to remain for varying lengths of time from 24 hours to 240 hours.

After the removal of the tubes from the incubator, the material is thoroughly mixed and inoculation made on the surface of the tubes of sterile nutrient agar, which are placed in the incubator and examined daily for the development of colonies of the bacillus pullorum, and none are considered negative until they have been incubated for at least seventy-two hours. In some cases the egg-testing method has given positive results with the examination of the first few eggs, while in others it varied from the sixth to the twenty-first egg laid before the bacillus pullorum was detected for the first time, while the egg-laying periods varied from eight to sixty-one days. It will, therefore, be readily seen that in those infected hens which did lay eggs containing the disease-producing organisms the elimination from the ovary was so irregular that it would be impossible to make a diagnosis in a short time.

The following is an example of the amount of work necessary to carry out an experiment with the egg-testing method:—Of 619 eggs laid in one month by thirty suspected hens, the bacillus pullorum was detected in only sixteen eggs laid by nine different birds.

The Agglutination Test.—Although a hen with an infected oviduct becomes a carrier of the disease, it is very exceptional for the bird to manifest external symptoms of the disease.

In view of the nature of the contagium, it has been suggested that the use of another method of diagnosis—viz., “the agglutination test”—be employed, it being similar to that so satisfactorily made use of in the diagnosis of contagious abortion in cattle. It is reported from the United States that this method has proved successful in detecting individual hens harbouring the bacillus pullorum.

Briefly, this consists of adding diluted blood serum from a suspected bird with a suspension in carbolated saline of sterilised cultivated

bacilli pullorum. In a negative case the cloudy mixture remains unaffected, while in a positive reaction the suspended bacilli agglutinate and gradually gravitate as flocculent masses to the bottom of the test tubes.

Preparation of the Test Fluid.—The bacillus pullorum is grown on slant agar tubes in an incubator for two days at 38 deg. C. The growth is then washed off with a carbolated salt solution (0.85 per cent. salt solution containing 0.5 per cent. carbolic acid). The whole volume of washed material should have a definite cloudy appearance. It is then shaken in a machine for one half-hour and passed through sterile absorbent cotton wool to strain out any clumps of bacteria which might remain. Care should always be observed that this suspension of bacilli should not be too thin; in fact, it has been found necessary, in order to obtain uniform results, to have the degree of cloudiness standardised, by diluting it or otherwise, to be the same density as a weak solution of barium chloride of known strength. When not required, this standard test fluid must be kept in a refrigerator.

The Best Method of Obtaining Blood Serum from a Suspected Bird.—The bird is laid on its side and the wing laid out and turned downward near the edge of the table. Disinfect the skin covering the large vein (*vena ulnaris*) on the underneath side, and with a pair of fine scissors make a longitudinal incision through the skin into the vein. As the blood flows out in large drops it is collected into a test tube and allowed to clot, and the serum is later drawn off as a clear yellowish-coloured supernatant fluid. This is then diluted with carbolated salt solution to the usual stock dilution, 1-20.

Making the Agglutination Test.—For this purpose small test tubes 4 by $\frac{1}{2}$ in. are used, each tube containing 3 c.c. of the test fluid. The dilutions of serum are 1-100, 1-200, 1-300, 1-400, and 1-500.

After the dilutions are made, each tube is thoroughly shaken to afford a complete mixture of the agglutinative sera and the pullorum bacilli; and then placed in the bacteriological incubator at 38 deg. C., and readings made of the macroscopic agglutinative appearances at the end of twenty-four, forty-eight, and seventy-two hours. It is imperative that all test fluids and agglutination sera be controlled.

A positive macroscopic reaction is evident when the formation of fine flake-like masses settle to the bottom of the tube into uneven heaped-up masses at the bottom and the sides, leaving the supernatant fluid clear.

The reaction is usually very prompt, and, with sera of marked potency, it is very clear and definitely defined. Controls should always be kept for check of test fluid and check of diluted serum in carbolated salt solution.

Keeping Qualities of prepared Sera and Test Fluid.—Properly prepared and cooled agglutinative sera may be retained in a reliable state for subsequent tests for as long as two weeks, while a carefully prepared test fluid made from newly incubated cultures of bacillus pullorum and suspended in 0.85 per cent. physiological salt solution containing 0.5 per cent. of pure carbolic acid, if retained on ice, will remain in good condition for making tests even after two months.

Agglutinins Obtained from Rabbits.—Rabbits are easily infected with bacillus pullorum, and show a marked reaction when injected with pure cultures of this organism.

Recent experiments have shown that these agglutinins elaborated in this way are much more stable than those from fowls naturally harbouring the organism. The blood of rabbits just experimented with furnished a serum which was active in dilution so far, up to 1-5000. Such sera have greatly facilitated the diagnosis of ovarian infection in suspected birds.

In compiling these notes extracts have been made from, and references to, the investigations of Rettgar, who first discovered the bacillus pullorum, and to Gage, Jones, Ward, and Gallagher, each of whom has carried out valuable investigations into the nature of this disease and the various methods to aid its diagnosis.

CONTAGIOUS MAMMITIS.

Milk from twenty-six animals suspected to be affected with contagious mammitis was received for examination, and in seventeen cases the specific streptococci were detected.

The farmers sending the specimens are each supplied with the pamphlet on the disease by the Chief Inspector of Stock, at the same time urging the necessity for isolation of the affected animals, which must be milked last, and also the disinfection of the udder and hands of the milker with a non-poisonous disinfectant solution such as hycol, cyllin, kerol, C.N., or M.O.H.

Vaccines have been prepared from a number of samples of infected milk, and supplied, with directions, to all those who were prepared to use same. The results, on the whole, have been gratifying, many owners reporting complete recovery within a short period of the injection of the vaccine. The disappearance of the trouble has been most marked in those cases where auto-genous vaccines have been used.

CONTAGIOUS ABORTION.

Considerable time has been devoted to the study of this disease, more particularly the "agglutination test" of blood serum and lacteal fluid from suspected cases. Although in our present state of knowledge the agglutination test may not be infallible, the results obtained have been consistently uniform, and for accuracy can be compared with Widal's well-known test for typhoid.

During the past year specimens of blood and milk have been tested and retested with varying dilutions, and in every instance the second and subsequent testings have been confirmatory of the first.

This test is of great value, and should be taken advantage of by the breeders of stud cattle, particularly the dairy breeds, as the disease is more prevalent among this class of cattle.

In this connection it is necessary to mention that a frequent habitat of the bacillus abortus is the mammary gland; consequently, from an animal so affected, it can be readily seen how the disease is transmitted to other cows by the hands of the milkers. Further, as there are frequent changes in the herd by purchase of fresh animals, there is correspondingly a greater opportunity of introducing the disease.

INVESTIGATIONS OF COTTON PLANT DISEASE.

In March last I accompanied Mr. C. J. McKeon, Assistant Instructor in Agriculture, to the Beaudesert District for the purpose of examining specimens of diseased leaves from cotton plants. The disease is known as Bacterial Blight or Angular Leaf Spot, and is caused by a specific micro-organism, the bacillus *Malva cearum*. It has a very wide distribution in the United States of America, where, in all probability, infected seeds came from in the first place, and plants grown from such seed became diseased in several parts of the State. Some cotton-trees, however, growing in the Executive Gardens have evidently shown signs of infection for several years.

There can be little doubt that the trouble becomes more pronounced when conditions of environment (particularly an excessive rainfall) are unfavourable to the young growing plants.

A special report has been furnished on this subject, with recommendations as to the treatment of suspected infected seed and methods for the control of the disease and its prevention.

EXHIBIT AT THE ROYAL NATIONAL SHOW.

At the Royal National Show a special exhibit from this station was arranged in the Agricultural Court. The exhibit, which was of an educational nature, was so arranged as to demonstrate the following subjects:—The life history of the cattle tick and tick eradication, contagious abortion in cattle, blackleg disease, contagious mammitis, pleuro-pneumonia, tuberculosis in cattle and pigs, poultry diseases, including bacillary white diarrhoea, and also a series of culture tests demonstrating the necessity for cleanliness on the dairy farm.

The principal feature dealt with the cattle tick pest and eradication, and by means of specimens, diagrams, charts, and maps, &c., it was forcibly shown that the cattle tick is a serious menace to the live stock industry. Apart from the heavy mortality from tick fever, the tick is the direct cause of injury to the hide and consequent depreciation in value. Leather made from a ticky hide realises from 1d. to 1½d. less per lb.

Tick-infested cattle, apart from the irritation, require more feed, while ticky cows give less milk.

On the question of tick eradication it was shown what had been accomplished in the United States of America and in South Africa. In the former country there were originally 741,515 square miles tick infested, and under certain quarantine restrictions. A vigorous propaganda, which taught the people all about the difficulties and benefits which must accrue from systematic eradication work, was carried out by the officers of the Federal and various State Governments, assisted by agricultural societies, stock breeders' associations, farmers' institutes, county councils, banking institutions, railway companies, manufacturers of agricultural implements, and in no small measure by the general public.

On the 1st July, 1906, systematic tick eradication commenced, and up to the present time over 510,000 square miles have been cleaned up and released from quarantine restrictions. This area is equal to two-thirds or nearly 70 per cent. of the original tick-infested country.

Tick eradication work in South Africa was also reviewed. In the State of Swaziland, with an area of 8,500 square miles, there are over 260,000 cattle which have had to be dipped at least every three to five days in the standard arsenical solution. During the past five years the cost of control, including erection of dipping tanks, dipping materials, European and native supervision, works out at 1s. 1d. per head of cattle per annum.

The South African cattle-tick, which causes east coast fever, is extremely hardy and can live on the ground apart from its host for over twelve months; therefore it is absolutely necessary for dipping operations to be continued for at least fifteen months to clean the country before quarantine restrictions can be removed. Moreover, as this particular tick has a preference for attaching and sheltering itself in the matted hair of the brush of the tail and in the depth of the ears, it necessitates hand-dressing of these parts.

In comparing the difficulties of tick eradication in South Africa (where much has already been accomplished) and Queensland, the factors are all in favour of the latter. The life history of the South African tick is such that dipping plus hand-dressing is necessary every three to five days and must be continued for fifteen

months. On the other hand, the Queensland cattle tick is eradicated in nine months by regular fourteen-day dippings; moreover, no hand-dressing is required.

The overcoming of all obstacles and the successful results achieved in America and South Africa completely refutes the frequent assertion that tick eradication by dipping is impracticable in Queensland.

FARM CROPS.

Last season proved very successful for storing the various crops. Four stacks were built and two barns filled, while the silo was filled with a particularly fine lot of ensilage prepared from finely-cut green but mature imphee.

Sufficient pumpkins and sweet potatoes were grown to feed the smaller experimental animals through the winter months.

Only a small portion of land is suitable for lucerne cultivation, but from this a number of cuttings have been obtained for hay and chaff, and several acres of oats have been grown during the winter months.

C. J. POUND,
Government Bacteriologist.

REPORT OF THE DIRECTOR, STOCK EXPERIMENT STATION, TOWNSVILLE.

Several visits have been paid into country districts in connection with reported outbreaks of disease among stock. One long trip was again paid to the Gilbert River this year with the Government Botanist, but, although it was hoped that some valuable evidence would be obtained in connection with the disease known as the Gilbert River horse disease, only two cases of the disease were seen, and both of these were probably atypical.

STOCK EXPERIMENT STATION.

Buildings.—It was hoped that the new laboratory, which was commenced in April, 1921, would be completed early in the year just closed, but, although the actual building was finished some time in December last, the fittings, with gas and water supply, and the furnishings and some equipment, have yet to be added. It is hoped that these will all be completed shortly.

IMMUNISATION OF CATTLE AGAINST TICK FEVER.

The stud cattle received for inoculation for the year ending 30th June, 1922, consisted of 72 bulls and 7 heifers.

The method of inoculation was that usually practised and needs little comment—the blood being used soon after being drawn from a recovered animal, usually in doses of 5cc., but occasionally larger. Where larger doses have been used, no material difference has been noted in the type of reaction produced. This, of course, is what would be expected, as the type of reaction does not depend on the size of the dose, but upon the susceptibility of the animal inoculated, and, perhaps, to some extent, on the particular strain of organism used. It is worth noting here in this connection that all the deaths that have occurred from redwater in the Townsville Experiment Station in the last two years have followed the use of blood from one particular animal, and it has been noticed on several occasions that blood from this particular animal tends to produce a type of reaction severer than that of several other animals used.

Testing of Bleeders.—It is necessary to test fresh recovered animals occasionally in order to ascertain whether they can be used as bleeders, because it is found that at times the blood of some animals is not capable of setting up reactions in susceptible cattle. Blood from animals from tick-infested country, and themselves being infested with ticks, has been repeatedly tested by the writer and found to be incapable of producing a reaction in susceptible cattle.

Unfortunately, there is no other method of testing blood than by inoculation in susceptible cattle, and the supply of these latter is not always available.

Claim has been made that by a special method of staining piroplasms could be detected in the blood of recovered animals (Pound; Annual Report, Department Agriculture, Queensland, 1919-20), but, unfortunately, in the report referred to no details of the special method

are given. As, however, the inability to detect piroplasms in the blood of recovered animals under ordinary circumstances is not due to our inability to stain them (for there are some very excellent stains used in the detection of protozoa in the blood, such as the Leishmann, Giemsa, and Jenner methods), but to their comparative rarity in the blood, it is not likely that such a claim will be substantiated.

At the present moment the only method of testing blood is the one indicated.

Mortality at Experiment Station.—During the two years ended 30th June, 1922, 278 head of cattle have been received at the Townsville Experimental Station for inoculation purposes. Particulars of the deaths that have occurred are as follows:—

Animal.	Date of Death.	Cause of Death.
Bull	.. 12 July, 1921	Septicæmia, abscess formation
Bull	.. 17 June, 1921	Arsenic poisoning after dipping
Bull	.. 25 May, 1921 (destroyed)	Abscess hock
Bull	.. 4 August, 1921	Tick fever
Bull	.. 5 August, 1921	Tick fever
Bull	.. 2 September, 1921	Gastric tympany
Bull	.. 7 December, 1921	Tick fever
Bull	.. 7 December, 1921	Tick fever
Bull	.. 10 January, 1922 (destroyed)	Tick fever and abscesses
Bull	.. 10 June, 1922	Tick fever

Total deaths, 10. Percentage, 3.6 %.

Deaths from Tick Fever, 6. Percentage, 2.16 %.

It will be noted in the above table that two deaths from redwater occurred on 7th December, 1921, and one bull was destroyed on 10th January, 1922. These were three animals from a lot of twelve bulls which had been inoculated at the end of November, 1921. Unfortunately, commencing about ten days after the inoculation, and when the animals were at the height of their reactions, a few days of very hot weather were experienced. The whole twelve animals were very much distressed, two dying and one other becoming very much weakened, and finally developing abscesses in the knees and elbows where the skin had been bruised, thus necessitating its destruction on the 10th January following. It is believed that, although the mortality from redwater has been comparatively low during the last two years, had cooler weather been experienced when this particular lot of animals was inoculated the mortality would have been lower still.

Loss of Virulency in Redwater Blood after being drawn.—In my last annual report I drew attention to the possibility of blood losing its infectivity soon after being drawn from an animal used for bleeding purposes. The question is of great importance, for the reasons mentioned in the report referred to. No experiments have recently been performed in this connection at Townsville, owing to there being no susceptible cattle available for inoculation purposes; but towards the middle of last year three samples of blood were received at Towns-

ville from the Yeerongpilly Experimental Station for inoculation purposes, and the manner in which this blood was used constituted an ideal experiment. It is presumed, of course, that these samples of blood would all have been drawn from bleeders which had been tested before, although the writer is not certain on this point. It was not anticipated that this blood would prove avirulent, but it did so, and, although the samples were tested on several head of susceptible cattle, in *not one instance was a reaction produced*, and each and every one of the cattle so inoculated proved subsequently to be susceptible to the disease.

The following is extracted from a report forwarded to the Chief Inspector of Stock, dated 10th August, 1921. The samples of blood received are marked Y1, Y2, and Y3 respectively:—

- Sample Y1. Received 23/5/21. Approximate age 96 hours.
 Sample Y2. Received 7/6/21. Approximate age 96 hours.
 Sample Y3. Received 15/6/21. Approximate age 120 hours.

The three samples have been named Y1, Y2, and Y3, and will be referred to as such throughout. In each case the inoculation was made behind the near shoulder with a 5 cc. sterile hypodermic syringe as soon as the bottle was opened, and with the usual antiseptic precautions.

Bull No. 28.—Two-year-old Shorthorn. Imported from New South Wales:—

- 23/5/21. Inoculated 10 cc. blood, sample Y1.
 24/5/21. Temperature rose to 105.6.
 25/5/21. Temperature 105.4.
 26/5/21. Temperature normal.
 7/6/21. Inoculated 5 cc. blood sample Y2. Night of 7th temperature rose to 104.8. Fell to normal next morning.
 14/6/21. Bull turned into yard at owner's request.

Blood smears taken 23/5/21 to 14/6/21 were all negative.

Temperature and smears were not continued long enough to ascertain whether the animal had reacted after the second inoculation, but the bull showed no signs of illness.

- 12/7/21. Inoculated 5 cc. blood from one of our own bleeders "B." Temperature fluctuated from 12/7/21 to 24/7/21 between 101.5 and 103.

Smears over those dates were negative.

- 25/7/21. Temperature 102.8. Blood smears showed numerous piroplasma bigeminum.

- 26/7/21 (morning). Temperature 106.6. Blood smears showed fully 25 p.c. of red blood corpuscles invaded by the piroplasms.

(Midnight). Temperature 107.6. Animal prostrate, urine coffee-coloured. Laboured breathing. Gave 1 gram trypan blue in 100 cc. water.

- 27/7/21. Temperature 101.5. Smears showed very few parasites.

- 28/7/21. Temperature 101.5. Smears negative.

From this date on the animal made an uneventful recovery, its blood showing the usual lesions seen in piroplasmosis, poikilocytosis, polychromatophilia, granular basophilia, &c.

Bull No. 29.—Two-year-old Shorthorn. Imported from New South Wales. The history of this bull was exactly that of 28, being inoculated on same dates with same amounts of blood, turned out on the 14/7/21 at owner's request.

Its immunity was tested in the same manner on 12/7/21 by using 5 cc. blood of bleeder "B."

- 12/7/21. Inoculated with 5 cc. blood bleeder "B."

- 19/7/21. Temperature 103.2. Smears showed few piroplasms.

- 20/7/21. Temperature 103. Smears showed few piroplasms.

- 21/7/21. Temperature 104.6. Piroplasms scarce in blood.

- 22/7/21. Temperature 106.4. Piroplasms very numerous.

- 23/7/21. Temperature 101.6. Piroplasms very numerous.

Smears were continued until 27/7/21, when they were still positive, but as the animal's temperature had subsided it was turned out of the stalls.

Bull No. 37.—Two-year-old Devon. Imported from New South Wales:—

- 7/6/21. Inoculated 5 cc. blood sample Y2. Bull turned into yard on the 10th and kept under observation. It never showed any signs of illness and was got ready for show purposes. Owner then decided not to show the animal and it was tested as follows:—

- 13/7/21. Inoculated 5 cc. blood from bleeder "B."

- 19/7/21. Temperature 103.1. Piroplasms bigeminum numerous in blood.

- 20/7/21. Temperature 104.4. Piroplasms bigeminum very numerous.

- 21/7/21. Temperature 104.8. Piroplasms bigeminum very numerous.

Organisms were present in the blood for the next four days, when they gradually disappeared, the temperature at the same time falling gradually to normal. The blood showed the usual pathological changes seen in piroplasmosis, these gradually disappearing also, the animal making an uneventful recovery.

Bulls 67-76.—Ten young Shorthorn bulls, each inoculated with 5 cc. blood sample Y3 on 20/6/21. The animals were all treated the same way, hence are grouped together. As there were ten animals, the test of this blood can be considered as fairly exhaustive. Temperatures and smears were commenced on the 25/6/21 and continued until the middle of July. In no case did organisms appear in the blood of any of these animals, but the temperatures fluctuated some-

what. Many of the animals were, however, suffering from acute ophthalmia, which possibly influenced the temperatures.

Bulls 175-179.—Five young Shorthorn bulls inoculated with 5 cc. blood sample Y3 on 6/7/21. Temperatures and smears, taken between 16/7/21 and 19/7/21 inclusive, showed slight fluctuations in temperature, whilst smears were negative.

All these fifteen animals were then inoculated with the blood of bleeder "D," one of our own bleeders, but although blood examinations were continued they were negative in every case, and the temperatures showed no redwater reactions. This result was unexpected, because bleeder "D" had been tested on five consecutive bulls in June, and had given good reactions in each case. It was thought that the fifteen animals were immune as a result of the inoculation with blood Y3 on the 6/7/21 and our examination of the blood had been defective, inasmuch as we had been unable to detect organisms, although in all other cases previously we had no trouble in finding the piroplasm bigeminum, even though scanty.

It was then decided to again test the animals with the blood of bleeder "B," an animal which had never failed to produce a reaction in susceptible animals for a month previously. The inoculation was carried out on 19/7/21, a dose being 5 cc. in each case.

It is unnecessary to give the details of each of these fifteen cases, but in every one of the fifteen animals piroplasms appeared in the blood during the following fortnight, and remained in the blood for from one to six days. Several of the animals became very sick and passed red urine, and one, No. 70, died on the 5th August of redwater. This animal had shown a continuous high temperature from the eighth day after inoculation, with numerous organisms in its blood.

Conclusions.—

1. The blood sample Y1 when tested on susceptible bulls 28 and 29 produced no reaction and gave the animals no immunity to redwater.
2. That blood sample Y2 when tested on susceptible bulls 28, 29, and 37 produced no reaction and gave no immunity. Each of the above three animals passed through a typical redwater reaction some weeks subsequent to the above inoculations when inoculated with blood from bleeder "B."
3. That blood sample Y3 produced no reaction and conferred no immunity on bulls 67-76, and 175-179, each of these animals subsequently passing through a typical redwater reaction some weeks subsequent to the above inoculations when tested with blood from bleeder "B."

These experiments should be continued further, and we hope to be able to test this question in the near future by using blood from our own animals.

ANALYTICAL BRANCH.

The work of the analytical chemist is contained in Appendix 1 attached to this report. It is noted that many dip-owners are not sending in samples as required by the Act, and in view of the fact that so many samples are below the standard strength it is suggested that an example be made of one or two of the worst offenders and a prosecution instituted.

The registration of dips is kept well up by some stock inspectors each year. Other districts are very much behind. It is quite evident that the administration of this portion of the Act, at least, is largely a question of the personal element.

TETANUS.

This disease seems to be particularly rife in the small towns of the North. In many cases it runs a very acute course once symptoms have set in. It is believed that the organism does not vary very much in its virulency, and the acute course of the disease can only be put down to the individual susceptibility of the animal concerned.

Antitetanic sera have been used in many cases, but their value is very doubtful. It is intended to test the value of subcutaneous injections of magnesium sulphate solution in the near future, if possible.

MASTITIS IN CATTLE.

This appears to be a fairly common disease, and affects many milking cows along the coast. The disease usually runs a benign course and is of a chronic nature. Frequently it does not show very much tendency to spread from one quarter to another, although it is commonly seen in several cattle belonging to the one herd and is apparently of a contagious nature. Owing to the present cheapness of cattle, it is advisable to turn any affected cattle into beef, and not attempt curative measures.

Vaccines are produced by commercial firms for the treatment of this condition, and also many so-called specifics for udder injection, but the value of these is very doubtful.

GILBERT RIVER HORSE DISEASE.

A visit was paid to the Gilbert River early in the year in order to study the symptoms of this disease, to make post-mortems, and to obtain pathological material if possible, and, with the Government Botanist, to make a survey of the plants of the area, as it has been long suspected that the disease has been of the nature of a plant poison.

The visit was very disappointing in many ways. It was expected that a considerable number of cases would occur during the wet season, as there were considerable rain and floods during the six weeks we remained on the river, yet only two cases of the disease occurred, and both these were probably atypical.

The post-mortem in these two cases showed two marked features—*i.e.*, very great distension and engorgement of the stomach with foodstuffs, and, microscopically, a peculiar mottled greenish condition of the liver, which on microscopic examination proved to be a condition of necrosis. It is believed that the condition of necrosis of

the liver is the primary lesion in the disease and is sufficient to account for the symptoms, but a study of only two cases is not sufficient to allow of conclusions being drawn.

If this condition is found in all cases, it will bring the disease into line with the disease known as "Staggers" in South Africa and also another disease known as "Dunziect" in the same country, both diseases being due to liver necrosis and both suspected as being due to plant poisoning.

No plants were found which might be likely to cause the condition, but there are several which it would be better to test. Included among these are some specimens of the genera *Crotalaria* and *Indigofera*.

Further study in connection with this disease should first be made by ascertaining whether this condition of hepatitis (and necrosis) occurs in all cases. At present it appears to be the significant lesion in the disease, but only further study will reveal as to whether it is invariable or not.

BLACKLEG.

Several reports of the previous Government Veterinary Surgeons in the North have indicated that this disease occurs periodically about the Don River in the Bowen District.

It is believed that many crude methods of vaccination are being used in connection with this disease, such as the inoculation of garlic and turpentine into the skin of the brisket.

LANTANA POISONING IN CATTLE.

This condition was fairly common during the last wet season, particularly in the Cairns District. As usual, it was commonly found among cattle brought down from the Tableland country by the butchers for killing purposes, these cattle, when being turned into paddocks along the coast, taking at once to the lantana. Cattle seem to have a much greater liking for the young shoots than for the older plants.

SEPTIC INFECTION OF THE FEET OF IMPORTED SHEEP.

During the cooler months of the year a large number of flock rams are imported from New South Wales into Queensland, and many of these pass through Townsville.

One consignment of about 200 was received in Townsville in April last, and many of these animals were suffering from injuries to the feet. The ten days that the sheep were on the boat were very wet ones, and the sheep were in all probability standing in water on iron decks a considerable portion of the time. A cracking of the skin between the toes of a good many was produced, probably owing to the animals slipping and sliding on the deck, and through these injuries infection had crept in. Small abscesses formed in between the toes and around the coronet, and there discharged a greenish-blue

pus, and was probably due to the bacillus pyocyaneus. The animals became very distressed and were unable to shift about and obtain feed for themselves. The exact percentage of deaths is not known, but the mortality was very high.

ANKYLOSTOMA DUODENALE IN PIGS.

The discovery of this parasite, the common hookworm of man, in the pig in North Queensland is largely due to the initiative and energy of an officer of this Department (J. A. Rheuben, Slaughtering Inspector, Townsville). Particular credit is due in this instance to this officer, because several attempts had previously been made by those interested to ascertain whether this parasite occurred in the pig or not. All previous investigations have been negative in their results.

The following is extracted from the "Medical Journal of Australia," dated 5th November, 1921, under the heading "Notes on the finding of *Ankylostoma duodenale* in the Intestines of the Pig," by John Legg and J. A. Rheuben:—

O'Connor reported in the "Medical Journal of Australia" for 2nd October, 1920, of the finding of *Ankylostoma duodenale* in the intestine of the pig in Funafuti, Ellice Island. Following on this, Maplestone reported in the "Medical Journal of Australia," on the examination of 182 pigs from the Townsville District of Queensland, with negative results in each case.

So far as the writers are aware, no case has been reported of the occurrence of *Ankylostoma duodenale* in the intestine of the pig in Australia.

During July last a small number of pigs from Cromarty, a small railway siding about 20 miles from Townsville, was killed, and in accordance with the usual practice, the intestines were examined by one of us (J.A.R.) for parasites.

In three of the animals nematodes closely resembling *Ankylostoma duodenale* (man) were found attached to the mucuous membrane of the duodenum; they were identified as such by Dr. G. Sweet, of the Melbourne University.

The pigs in question were semi-domesticated.

The discovery of the *Ankylostoma duodenale* in pigs in North Queensland would seem to us to be of importance, and to suggest the carrying out of experiments to ascertain with what facility pigs can be infected from human sources.

PARALYSIS IN DOGS DUE TO THE BITE OF SCRUB TICKS.

Paralysis in dogs seems to be fairly common in places along the coast in North Queensland. It was always believed that this was due to the bite of scrub ticks, but this had never been tested. A recent report of Dodd in the "Journal of Comparative Pathology and Therapeutics," Part 4, 1921, contains details of certain experiments which he has performed in this connection, which would seem to indicate that there is little doubt that this condition is caused by the bite of the scrub tick. The condition is more common in young than in old dogs. Dodd suggests that this is probably due to a greater susceptibility of the young animals.

JOHN LEGG,
B.Sc., B.V.Sc., M.R.C.V.S.

APPENDIX.

The analytical work performed during the year was principally in connection with dipping fluids, or which 538 samples were submitted, with the following result:—

.6%	(last year 1.4%)	contained up to 2 lb.	} Arsenious Acid per 400 gallons.
3.6%	(last year .9%)	contained from 2 to 4 lb.	
15.8%	(last year 15.6%)	contained from 4 to 6 lb.	
16.5%	(last year 16.6%)	contained from 6 to 7 lb.	
19.3%	(last year 21.1%)	contained from 7 to 8 lb.	
23.8%	(last year 20.3%)	contained from 8 to 9 lb.	
10.7%	(last year 11.1%)	contained from 9 to 10 lb.	
9.7%	(last year 13.0%)	contained 10 lb. and over	

of which—

81.5%	(last year 80.3%)	were free from oxidation	} Arsenic Acid per 400 gallons.
1.2%	(last year 4.9%)	contained from 0 to .5 lb.	
1.6%	(last year 1.3%)	contained from .5 to 1 lb.	
4.3%	(last year 4.1%)	contained from 1 to 2 lb.	
4.2%	(last year 3.4%)	contained from 2 to 3 lb.	
7.2%	(last year 6.0%)	contained 3 lb. and over	

In addition there were also analysed:—

Dipping concentrates	.. .. .	5
Samples from departmental dip and spray	.. .. .	18
Waters (partial)	.. .. .	4
Arsenic	.. .. .	5
Viscera and stomach contents	.. .. .	23
Miscellaneous	.. .. .	6

whilst 19 pints of standard Iodine were prepared and despatched, 10 pints being for the use of inspectors.

DIPPING FLUIDS.

The number of samples submitted this year (538) shows a marked increase over the total (378) for last year, but the position in this regard is still very disappointing, as can be seen from the following table:—

Year.	Number Registered.	Number Submitted.
1919-1920	.. .. 668	.. .. 539
1920-1921	.. .. 456	.. .. 378
1921-1922	.. .. 606	.. .. 538

Perhaps if a few prosecutions in several stock districts were made, under Regulations 29, 1, and 6 (analysis), and 30 (registrations) of the Diseases in Stock Act, owners might be made to realise that the Act just quoted is a very important and live one.

Although the number of registrations this year seem to be well forward (90 per cent. approximate), still a good number have only just come to hand, whereas they should be registered by 31st January.

Again, it should also be enforced that correct information be forwarded with each sample, and no analysis be carried out unless the form of questions (4th Schedule) accompanies such sample.

VISCERA AND STOMACH CONTENTS.

Of the 23 samples examined, the cause of death was ascertained in fifteen cases; the high percentage of positive results being accounted for by several samples from the same source being tested separately at different periods.

INQUIRIES.

Many inquiries have been made as to the possibility of carrying out analyses of different products manufactured to conform with several of the Acts administered by this Department, but unfortunately the incompleteness of the new laboratory precluded any work in this connection.

REPORT OF THE GOVERNMENT BOTANIST.

SIR,—I have the honour to present herewith a report on the work of the Botanical Division for the year ended 30th June, 1922.

GENERAL.

Correspondence and personal interviews with farmers, pastoralists, &c., took up a considerable amount of time. The inquiries extended over a wide range of subjects dealing with various phases of plant life. The major portion dealt with plants sent in for identification by agriculturists as to their fodder value, poisonous properties, &c., by school teachers for help in their nature study lessons, by forest officers for identification of trees, &c. On these matters 3,800 specimens were examined and reported on during the past twelve months.

FIELD WORK.

A. GENERAL.

For the purpose of general botanical collecting, visits were paid to Bribie Island (August), Beerwah (September), Mount Lindsay, Crow's Nest, Fraser Island, and Theebine (October), Burleigh Heads (November), National Park (Macpherson Range) (December).

During August Professor Douglas H. Campbell, of the Leland Stanford University, California, one of the world's leading botanical authorities, paid a visit to Queensland for the purpose more particularly of studying some of our plant associations in the field. I accompanied him on trips to the Blackall Range and to the Woogaroo Scrub near Brisbane.

During March I spent about twelve days in the Russell River and Bellenden-Ker country for the purpose of obtaining seeds and botanical material of (1) Meston's Mangosteen (*Garcinia Mestoni*) and (2) the Russell River Lime (*Citrus inodora*) for the United States Department of Agriculture for use in their plant-breeding experiments. We found the *Garcinia Mestoni* trees to be very common on the eastern slopes of the range at 2,000 feet and over, and, in fact, it might be said to be the commonest tree there. No signs of ripe fruit, however, were seen, but many of the young trees bore very young flower buds, and one or two very young fruits, so it would seem that the fruiting period is very erratic. With the *Citrus inodora* we were more successful, finding many trees in fruit, and I sent to the United States Department 200 seeds and also supplied them with photographs and notes of the tree in the field.

B. FORESTRY.

During July the Assistant Botanist (Mr. W. D. Francis) paid a visit to Imbil and Traveston, and in November to the National Park (Macpherson Range) for the purpose of obtaining photographs and notes on field characters of some of our more important scrub timber trees. This was in continuation of work started in 1920 towards getting together full series of photographs and field descriptions of all Queensland trees.

C. POISONOUS PLANTS.

In October I visited a property at Caboolture where seven head of valuable dairy cattle had died, reported by the veterinary staff to have been through eating some poisonous weed or weeds. In one paddock there was a large quantity of rattle-pod (*Crotalaria striata*). This plant bears a reputation in parts of South-eastern Queensland as one poisonous to stock. Other members of the genus are known to be poisonous to stock in the United States of America and in South Africa. Since cutting the *Crotalaria* out of the paddocks no further losses were reported.

In October the Assistant Botanist (Mr. W. D. Francis) visited a farm at Palmwoods where losses of calves had occurred, supposedly due to the eating of poisonous plants. Examination of the paddocks revealed two or three plants of doubtful character, viz., *Trema aspera* (Wild Peach), *Polygonum strigosum* (Smart Weed), and *Glochidion Ferdinandi*. The advisability of eradicating these plants was recommended.

In November I paid a visit to the Quarantine Station at Combsley, where losses among stock had occurred through eating poisonous weeds. A careful look over a large swamp, where the animals had been supposed to have picked up the weed responsible for the trouble, showed only one plant in any way believed to be poisonous, viz., the Smart Weed (*Polygonum strigosum*). Some of the genus have been accused of causing hæmaturia in stock, one of the symptoms reported in this case.

From time to time losses among stock from eating poisonous plants have been reported from Tambourine Mountain, and in December I paid a visit to the Mountain with the local Stock Inspector (Mr. J. H. McCarthy). Several farms were visited, and a comprehensive report on the harmful plants was published in the "Beaudesert Times" of 23rd December, 1921.

In January a request was received to visit a farm at Petrie, where losses among valuable stud cattle had occurred, it was thought from eating poisonous plants. A small patch of scrubby country on the farm was found to contain several plants poisonous or of doubtful reputation. The clearing of this small patch was advised, since which I believe no further losses have occurred.

A careful inspection of some large paddocks at Kingston, South Coast line, failed to reveal any definitely known poisonous plants. Several losses of dairy cows had occurred, and the trouble was afterwards ascertained to be from a different cause.

During February I spent about twelve days in the Gilbert River District accompanied by Mr. J. Legg, B.V. Sc., M.R.C.V.S., examining from a botanical standpoint a good deal of the country over which the trouble known as "Gilbert River Horse Disease" or "Walk-about" occurs, numerous references to which are to be found in previous Annual Reports of the Department of Agriculture and Stock. During my stay I made a careful examination

of paddocks along the Gilbert River, from Forest Home Station to a few miles past the Gilbert River Telegraph Station. We were rather unfortunate in our researches, as there had been very few cases of typical Gilbert River disease last season, and though a careful examination of the paddocks was made I could find no plant that could be definitely blamed for the trouble. On the whole, in fact, the district is one fairly free from plants known to be poisonous or harmful to stock.

In other parts of the world trouble is brought about by certain leguminous plants when eaten by stock causing "Walk-about" or "Madness" diseases, and allies of these are found in the Gilbert River District, as species of *Tephrosia*, *Indigofera*, and *Crotalaria*. Finality on the botanical side could only be reached by a series of feeding experiments. It must be borne in mind, however, that the disease has not definitely been proved to be due to a poisonous plant, and in the present state of our knowledge I am personally rather doubtful if such is really the case.

EXHIBITIONS.

In the Department's Court at the August National Show a comprehensive collection of native grasses was staged, each specimen being labelled with its name (both botanical and local) and information as to its fodder value. A collection of edible trees and shrubs was also staged, particular attention being directed to those not generally known to be of considerable value as fodder plants. The willingness of this division to name and report on specimens of weeds, grasses, trees, &c., for farmers and others was brought under public notice.

HERBARIUM.

Exchanges of material were carried out as follows:—

Despatched.—To Bureau of Science, Manila, Philippine Islands, 386 sheets of Queensland plants; to Arnold Arboretum, Harvard University, U.S.A., 429 sheets of Queensland plants; to the University of California, Berkeley, Cal., U.S.A., 100 sheets of Queensland plants; to M. Koch, Pembroke, West Australia, 100 specimens; to U.S.A. Forest Service, Washington, D.C., U.S.A., 15 sheets of Queensland mistletoes; to the British Museum, London, 177 sheets of Queensland plants; to Botanic Gardens, Sydney, 251 specimens; to Botanic Gardens, Singapore, 60 specimens; to Botanic Gardens, Buitenzorg, Java, 60 sheets of Queensland plants; to Royal Botanic Gardens, Kew, 60 specimens; to U.S. Department of Agriculture, 35 specimens of North Queensland plants.

Received.—From the U.S.A. Forest Service, 18 specimens of woody fungi; from M. Koch, 100 specimens of West Australian plants; from Botanic Gardens, Sydney, 200 specimens of N.S.W. and West Australian plants; from Botanic Gardens, Singapore, 45 sheets of Malayan plants; from British Museum (Natural History), London, 28 specimens from Dutch New Guinea and a few rare Northern Queensland species; from Bureau of Science, Manila, Philippine Islands, 900 specimens of Philippine Islands and Malayan plants.

In addition, smaller bundles of specimens were sent to specialists for critical examination and report, as follows:—To J. H. Maiden, I.S.O., F.R.S., Government Botanist, Sydney, specimens of eucalypts; to H. G. Williamson, Melbourne, specimens of *Pultenaea*; to Director, Royal Botanic Gardens, Kew, miscellaneous specimens. From the National Herbarium, Melbourne, Victoria, a number of North Australian plants were received for the Queensland Herbarium or on loan for the purposes of comparison with doubtful Queensland material.

EDUCATIONAL.

In January the Assistant Botanist (Mr. W. D. Francis) paid a visit to the schoolboys' camp at Mount Alford, conducted by the Children's Welfare Society, and gave the boys instruction in plant life by a day spent in the field and by means of a lantern lecture in the evening.

On 22nd January, at the request of the W.E.A. Students' Society, I conducted a botanical excursion of members to the Enoggera Waterworks Reserve.

In the March number of the "Queensland School Paper" I contributed an article on the "Eucalypti or Australian Gum Trees," the second of a series of articles descriptive of Queensland plant life and intended for nature study lessons for the higher school classes.

The publication of a "Text Book of Australian Forest Botany," referred to in my last year's report, has been delayed on account of pressure of other work on hand, but final proofs have now been passed, and the book should be available for sale before the end of the year. It should fill a distinct want in Australian botanical literature, and will, I hope, be found of considerable educational value, particularly to those engaged in the forestry services of the different States. It is being published by the New South Wales Forestry Commission, through permission of the Queensland Government.

PUBLICATIONS.

The following articles were published during the year:—C. T. White: Notes on the Genus *Flindersia* (Family Rutaceae) (Proceedings Linnean Soc., N.S.W., vol. XLVI, pp. 324-329). The following in the "Queensland Agricultural Journal":—Illustrated Notes on the Weeds of Queensland, Nos. 22-26; Two Plants Poisonous to Stock (September, 1921); A Native Yam (December, 1921). In the "Australian Forestry Journal":—A New Insecticide (July, 1921); A Plant Harmful to Horses (October, 1921); Edible Trees and Shrubs of Coastal Queensland (November, 1921); Botanical Notes on Queensland Forests, No. 1: The Flora of the Russell River "Scrubs" (Rain-forests), N.E. Queensland (June, 1922). In the "Queensland Naturalist":—Four Notable Native Plants (July, 1921); Three Interesting Fungi and Notes on Mistletoes (October, 1921); Net Fungi (February, 1922).

White, C. T., and Francis, W. D.—In the "Queensland Agricultural Journal": Queensland Trees, Nos. 4-11. In the "Proceedings of the Royal Society of Queensland": Contributions to the Queensland Flora.

RESEARCH WORK IN HAND.

In addition to the work listed under "Publications," a considerable amount of work in the field of systematic botany is being accomplished. Both myself and the Assistant Botanist have been at work on miscellaneous collections, and a number of apparently undescribed plants have been described in manuscript or put by for critical examination.

I have now finished the examination of most of the Papuan material collected by me in 1918, and have handed in a paper to the Royal Society of Queensland for publication. It should materially increase our knowledge of the flora of the Territory.

The Assistant Botanist has in hand a paper on the identification of our larger "scrub" (rain-

forest) trees in the field, which embodies a number of notes on native trees not previously published, and gives a guide to their identification in the field by bark and wood characters, a class of work not previously dealt with in Australia.

I am gathering together a number of notes on some families and genera of Queensland and tropical Australian plants which I believe are badly in need of revision, and have nearly ready for publication revised accounts of Australian members of the genera *Evodia*, *Acronychia*, and *Rhodamnia*, and the Queensland species of *Casuarina*.

C. T. WHITE,
Government Botanist.

REPORT OF THE CURATOR OF THE BOTANIC GARDENS.

I have the honour to submit the following report of the work of the Botanic Gardens for the year ended 30th June, 1922.

WEATHER.

The rainfall throughout the year has been fairly consistent, no prolonged spells of dry weather occurring, the two months with lowest rainfall being April with 35 and August with 48 points, whilst December furnished the heaviest with 1,048 points. The distribution of the rainfall was not quite as good as during the previous year, rain having been registered on 129 days against 153. The growth of vegetation was exceptionally good during the summer months, and special attention had to be paid to the grass on lawns, and very frequent cuttings were necessary to keep it in order. A good season was also experienced with flowering trees, shrubs, climbers, and palms all making good growth.

Grass temperatures were taken during the winter months. Frost was again registered occasionally, the lowest readings being 29.0 and 28.0 on the 5th and 6th August respectively.

Following is a list of the rainfall registered, the amount for the corresponding month of the previous year being in parentheses:—July, 613 (226); August, 48 (114); September, 226 (285); October, 118 (221); November, 407 (561); December, 1,048 (217); January, 378 (467); February, 870 (120); March, 253 (873); April, 35 (764); May, 278 (82); June, 180 (830); total, 4,474 (4,760).

GENERAL IMPROVEMENTS.

The formation of a new sloping bank around the bird and animal enclosure, commenced last year, has been completed. Over 1,500 cubic yards of additional material was used, topped off with street sweepings and planted with grass. It has provided much better accommodation for the public, and is largely availed of; the old flat, being badly drained, became very cold and sloppy when rain fell during the winter months. An old drain through the centre of the ground to the pond was taken up and relayed for some distance, and is now working satisfactorily. The fence has been removed to top of bank, new K wire and posts being used where required. This also has proved a great convenience, as formerly it was impossible to keep the steep banks in good order, owing to tracks and holes being made by visitors. It was also very difficult to keep the grass on slope decent, owing to steep grade to be cut by hand; now the birds and animals keep the new longer slope in good order. The bamboos around the large lagoon have been thinned out, and an accumulation of between forty and fifty years of old dead stems removed. This was put in hand chiefly on account of the old bamboos harbouring rats to some extent; also, because of the danger of fire. The yard between the bamboos and the pond has also been dealt with; previously in wet weather it was in a very unsatisfactory state. The stone wall around the edge of the pond was repaired and carried higher, with a sloping face, the ground at the back filled in and graded towards the fence. This secures a much greater depth of

water, and provides a high dry bank all round. About 900 cubic yards of material was used in this work, all of which was delivered free of cost by contractors, chiefly from excavations for new buildings within a short distance of the Gardens. It is proposed to plant grass on all of the newly-filled up portion of the enclosure. This will very much improve its appearance. The boundary fence around this portion of the yard has been removed to outside of the bamboos; this enlarges the enclosure slightly. The opportunity was taken also to replace all old wire netting, where necessary, with new, and to erect a more suitable entrance gate. The whole fence round the enclosure has therefore been put in good repair.

The rose garden has also been finished, the one remaining very large bed subdivided, and new borders, approaching the main rosery from the lower end, made and planted. About 150 new plants have been put in. This brings the collection up to nearly 700 kinds. A large number of new roses are put on the market each year, and the nurserymen of Australia have initiated a movement to discard a large number of the old kinds. This may to some extent be necessary, but many of the novelties of recent introduction do not promise to remain favourites for any length of time, as it is doubtful whether the present craze for single and purely decorative roses will last.

A lot of new hardwood edgings to paths has been put in. Most of those that were either without any, or those in bad condition, have been dealt with. The very high price of timber delayed the completion of this useful and necessary work. Hardwood suitable for this still costs two-thirds more than in pre-war times. A new asphalt path, to connect with the one from George-street entrance to steps leading to large fountain terrace, has been made. Quite a number of new asphalt paths are required, chiefly because many of the students and teaching staff of the University and Technical College insist on taking the shortest cuts possible from the Kiosk entrance gate to the Edward street entrance.

A good deal of patching and top-dressing of the asphalt paths has been carried out, and I propose to continue with this work until all paths have received attention and are in good order. A "painting" of tar sprinkled with coarse sand, if done once a year, will keep paths in good order. The portable tar-boiler, with spray pump and sprinkler attached, has proved very useful in carrying out this necessary work.

LAWNS.

Owing to the wet summer the *Paspalum dilatatum* was again very much in evidence, particularly in the moist portions of the Gardens. A lot of cutting-out has been done and is still going on. One great trouble is to get suitable top-dressing material, free from seeds of noxious plants, to fill up the holes caused by chipping out paspalum. Screened street sweepings are the best so far used. The blue couch (*Panicum didactylum*) is being planted freely. It soon becomes thick enough to prevent the paspalum seed from germinating.

GARDEN SEATS.

About a dozen new seats have been made, with wrought-iron legs and 2 by 1 hardwood battens. All old seats needing repair have been attended to with new battens and bolts. The painting of all seats is a matter that has been long delayed, and is very urgently needed.

PLANT NAMING.

This matter has been kept in view, and a number of new name plates put out. It is work of an educational character, that should be carried out to the fullest extent possible. In most large botanic gardens a painter or label writer is employed constantly on this work.

GRASS PLOTS.

The grasses in plots have done very well, and numerous parcels of kikouya and elephant grass have been distributed. Of the six kinds received from the Principal, Gatton College, for trial, *Paspalum notatum* is the most promising. It is a tufted grass, forming dense mats, growing about 3 feet 6 inches high, with a branching habit, seeds freely, and has kept green all through the winter. Its native habitat extends from Mexico and the West Indian Islands to South America. *Pennisetum setosum*, the "Mission Grass," also did very well during the summer months. It is strong in growth but somewhat harsh. The "Vasey Grass," *Paspalum larranagai*, did fairly well, but is not as promising as the two first-mentioned. I propose extending the plots during the coming season.

PLANT DISTRIBUTION.

The propagating department has kept up good stocks of plants for distribution, and has experienced a busy year. Plants for State School Arbor Days again show a slight increase. The planting season for this work extends over four months, from the 1st of May until the 31st of August. A large number of requisitions come to hand for the first week of this period and for the final fortnight. Between these there is a moderate demand only. Every assistance possible is accorded teachers to improve their school grounds. Some of the large new State schools, High and Rural schools, have been supplied with large numbers of plants. Apart from the State school work the number of plants sent out shows a slight decrease, but I anticipate it will be much higher next season. Plants were distributed as follows:—430 State schools received 2,316 plants; other Government Departments and institutions, 661; Local Authorities, 367; churches, convents, and cemeteries, 276; progress associations and memorials, 304; hospitals, 126; botanic gardens, 330; general exchanges, 670; total, 5,050.

EXCHANGES.

A large quantity of seeds of native plants have been collected and despatched to numerous botanic gardens and correspondents abroad. In return we have received many seeds of an interesting and useful nature. I am indebted to correspondents for seeds from Italy, France, Egypt, India, China, Japan, America, South Africa, Java, Singapore, and Rabaul. An interesting lot was received from the Commonwealth

Bureau of Commerce and Industry that was forwarded by the Trade Commissioner in China (Mr. Little). This is a step in the right direction, and one I trust that will be maintained. Many scientists and others sent by the State and Commonwealth Governments have from time to time visited other countries with which it would have been very advantageous to the Botanic Gardens to enter into exchange relationship, but so far as our Gardens are concerned, nothing has been done, and no seeds obtained by such gentlemen. Southern exchanges and those of this State have been well maintained, and I am grateful for the assistance rendered.

VISITORS.

The Gardens were well patronised by local visitors, the largest number attending on Sundays and during the school holidays. Large numbers of country, Southern, and oversea visitors have also visited the Gardens. An apparently increasing number of Southern visitors is now coming to the State during the winter months, many of whom take a keen interest in the tropical and sub-tropical vegetation to be seen here.

NOTABLE FLOWERING AND OTHER PLANTS.

Some very fine displays were seen during the year. Amongst the flowering trees may be mentioned—*Colvillea racemosa*, from Madagascar; *Spathodea campanulata*, the West African Tulip tree; *Butea frondosa* and *Dillenia indica*, from India; *Schotia brachypetala* and *Calodendron capense* (Cape chestnut), from South Africa; *Erythrina tomentosa*, from Abyssinia; and *Kigelia pinnata*, the sacred tree of Nubia. Many of these and others I brought before the notice of the readers of the "Agricultural Journal" by writing a short illustrated article on each. They created a good deal of interest, as the many inquiries for seed testify. A fine display of azaleas near the bamboos in September attracted great attention, and a large collection of caladiums, chiefly seedlings, in the bush-house created a lot of interest during the summer months.

CORRESPONDENCE AND INQUIRIES.

A lot of correspondence, chiefly inquiries relating to horticultural subjects, such as cultural difficulties and names of garden plants, was dealt with; also numerous verbal inquiries on the same subjects, and what to plant in certain districts.

ELECTRIC LIGHTING.

The lighting system was very satisfactory during the year, only a few minor troubles occurring, chiefly "earths" caused by heavy rain in December, by the corroding of lead covering of underground cables, and in one or two cases by ants' nests. All faults were located and repairs effected by the electrician in charge (J. E. Chalk). The half-watt lamp system, adopted three years ago, continues to give good results with a minimum of expense and labour. The Gardens were opened for eight nights covering Exhibition week for the benefit of country visitors, and from the first Sunday in October until the end of June. The attendance on week nights does not improve; there are very

few visitors, but large crowds attend on Sunday nights during the warm weather. The few that attend on Saturday nights hardly warrant the expense of opening, but it is a great convenience for picnic and family parties who come to the Gardens on Saturday afternoons and stay till evening. For this reason, it is advisable to open on Saturday nights.

ZOOLOGICAL COLLECTION.

The chief additions to the collection during the past year were a pair of peacocks and a pair of green monkeys from Perth Zoo in exchange for birds and animals sent. A young monkey was born in Sydney on the way over. It has thrived well and the "family" are a great attraction for children. A female white swan and four Carolina drakes were also received from Sydney. Unfortunately we received no ducks to mate them with, but may possibly get a cross with the native black duck. A large number of black duck come in to the gardens lagoon during the open season. After September they appear to go away again. It has been very noticeable the past two seasons. Apparently they find out where they are protected. A number of night herons have taken to the Gardens; recently twenty were counted one night at dusk. They are very keen on the fish provided for the pelicans, and often come out during the day for their share.

A curious liking on the part of the old cassowary for fish also may be noted. She is also very keen on rats, swallowing all she can get. In their native Northern scrubs the diet of these birds is chiefly fruits of scrub trees varied by small animals and reptiles.

All holes that were in the aviary asphalt floors were filled with boiling tar. This effectually destroyed rats present, and I find that it is by far the best method of coping with the pest. All holes or rat burrows that appeared were dealt with in this manner at intervals of a few weeks, resulting in practically eliminating the rats that for years gave considerable trouble, it being impossible to either poison or set traps. Suspended feeding trays have also been provided in the bird cages, with good results. New bar wire netting has been put in fronts of four cages. It is much stronger than the old wire netting, that was in a bad state.

BAND CONCERTS.

Band concerts have been held regularly on Sunday afternoons and on Sunday nights when the Gardens are open. They are still very popular, and large crowds assemble. Any particularly good band, such as a visiting one, is always assured of a very large audience. The Cessnock band from Maitland, N.S.W., and the Ipswich Vice-regal band, that played each on one occasion, met with good receptions. The other bands that appeared were South Brisbane, Federal, Austral, Citizens', Hibernian, and Excelsior. There appears to be rather too many weak bands, and greater satisfaction would be derived by the music-loving community if some of them amalgamated.

DOMAIN.

The sports ground has been largely used during the football season, chiefly for practice purposes. A disorderly scene that occurred between two junior football clubs towards the end of the football season at a Saturday afternoon match was the cause of prohibiting such matches in future. The hockey teams of the University and senior girls of the Central Technical College play during the season. A concrete wicket, laid down by the Department of Agriculture Head Office Cricket Club, is now in use. The two tennis courts formerly used by the University students were abandoned by them just previous to the long vacation in November. The courts were handed over to the Central Technical College, but little is being done to keep them in order.

CHILDREN'S PLAYGROUND.

The children's playground is still largely patronised during week-ends and school holidays. A few minor accidents have occurred owing to the misuse of the apparatus provided. Some other features or new apparatus might with advantage be introduced.

STAFF.

No changes in staff have occurred beyond the promotion of Angus Martin from labourer to gardener. I desire to record my thanks and appreciation for the good work done and loyal support accorded me during the past year.

E. W. BICK, Curator.

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The Sheep Depastured on 31st December, 1921, were		18,402,399
Add those dealt with as per Table XV., page 102		2,262,220
		20,664,619
On 31st December, 1920, the Sheep Depastured were		17,404,840
A difference (above 18.73 per cent. increase) of		3,259,779
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REPORT OF THE REGISTRAR-GENERAL ON LIVE STOCK FOR THE YEAR 1921.

Table No. I.

RETURN SHOWING THE NUMBER OF LIVE STOCK IN THE STATE FOR TWO YEARS, AND THE INCREASE OR DECREASE FOR THE YEAR 1921.

Year.	Horses.	Cattle.	Sheep.	Swine.
1920	742,217	6,455,067	17,404,840	104,370
1921	747,543	7,047,370	18,402,399	145,083
Numerical Increase in 1921	5,326	592,303	997,559	40,713
Numerical Decrease in 1921 ... ..	...	...	...	...
Centesimal Increase in 1921	0.72	9.18	5.73	39.01
Centesimal Decrease in 1921 ... ..	...	...	...	...

Table No. II.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF HORSES, CATTLE, SHEEP, AND SWINE IN THE STATE.

Year.	Horses.	Cattle.	Sheep.	Swine.
1912	674,573	5,210,891	20,310,036	143,695
1913	707,265	5,322,033	21,786,600	140,045
1914	743,059	5,455,943	23,129,919	166,638
1915	686,871	4,780,893	15,950,154	117,787
1916	697,517	4,765,637	15,524,293	129,733
1917	733,014	5,316,558	17,204,268	172,699
1918	759,726	5,786,744	18,220,985	140,966
1919	731,705	5,940,433	17,379,332	99,593
1920	742,217	6,455,067	17,404,840	104,370
1921	747,543	7,047,370	18,402,399	145,083

Table No. III.

RETURN FOR TEN YEARS SHOWING THE CENTESIMAL INCREASE OR DECREASE IN LIVE STOCK.

Year.	Horses.	Cattle.	Sheep.	Swine.
1912	8.99	2.71	— 2.08	— 17.37
1913	4.85	2.13	7.27	— 2.54
1914	5.06	2.52	6.17	18.99
1915	7.56	— 12.37	— 31.04	— 29.31
1916	— 1.55	— 0.32	— 2.67	10.14
1917	5.09	11.56	10.82	33.12
1918	3.64	8.84	5.91	— 18.37
1919	— 3.69	2.66	— 4.62	— 29.35
1920	1.44	8.66	0.15	4.80
1921	0.72	9.18	5.73	39.01

Table No. IV.

RETURN SHOWING THE DENSITY OF THE VARIOUS KINDS OF LIVE STOCK IN THE SEVERAL PASTORAL DISTRICTS AND THE NUMBER PER CAPITA IN THE STATE FOR THE YEAR 1921.
In converting Horses and Cattle to Terms of Sheep, Ten Head of Sheep are Taken as Equal to One Horse or Head of Cattle.

Pastoral District.	Area in Acres.	Centesimal Ratio of Area of District to Area of State.	HORSES.		CATTLE.		SHEEP.		ALL KINDS IN TERMS OF SHEEP.	
			Acres per Head.	Number per Square Mile.	Acres per Head.	Number per Square Mile.	Acres per Head.	Number per Square Mile.	Acres per Head.	Number per Square Mile.
Burke	65,383,040	15.24	1,091	0.59	74	8.65	26	24.27	5.49	116.64
Burnett	7,972,480	1.86	183	3.50	15	42.15	1,526	0.42	1.40	456.88
Cook	63,601,920	14.82	1,211	0.53	137	4.69	159,403	0.004	12.27	52.15
Darling Downs	16,249,600	3.79	202	3.16	27	23.54	15	44.03	2.06	311.03
Gregory North	54,266,240	12.64	1,583	0.40	142	4.51	26	24.32	8.71	73.51
Gregory South	31,617,920	7.37	2,381	0.27	188	3.41	99	6.47	14.79	43.28
Leichhardt	30,916,560	7.21	558	1.15	41	15.72	34	18.97	3.41	187.61
Maranoa	25,110,400	5.85	748	0.86	67	9.52	12	51.58	4.12	155.38
Mitchell	35,431,680	8.26	72	0.89	141	4.55	5	123.82	3.59	178.20
Moreton	5,649,920	1.32	72	8.91	10	66.51	468	1.37	0.85	755.64
North Kennedy	21,832,960	5.09	242	2.65	42	15.27	4,342	0.15	3.57	179.33
Port Curtis	8,994,560	2.09	187	3.42	19	34.53	348	1.84	1.68	381.37
South Kennedy	19,528,960	4.55	455	1.41	44	14.43	120	5.31	3.91	163.65
Warrego	37,333,760	8.70	1,346	0.48	144	4.45	15	41.35	7.07	90.59
Wide Bay	5,200,000	1.21	138	4.64	15	42.50	1,213	0.53	1.36	471.91
STATE	429,120,000	100.00	574	1.11	61	10.51	23	27.45	4.45	143.70
Number per Capita Population ...			0.97		9.15		23.90		125.13	

Table No. V.

The following table shows, from the latest information available, the live stock density in various countries:—

	Live Stock in Terms of Sheep per Square Mile.
Queensland	144
New South Wales	224
Victoria	396
United Kingdom	1,311
Argentina	336
United States of America	322
Russia in Europe	448
Union of South Africa	255

Table No. VI.

RETURN SHOWING NUMBER AND PROPORTION OF HORSES, CATTLE, SHEEP, AND SWINE IN THE SOUTHERN, CENTRAL, AND NORTHERN DIVISIONS OF THE STATE FOR THE YEAR 1921.

Division.	Horses.		Cattle.		Sheep.		Swine.	
	No.	%	No.	%	No.	%	No.	%
Southern Division	322,818	43.18	2,994,035	42.48	5,909,159	32.11	123,422	85.07
Central Division	187,116	25.03	1,975,929	28.04	9,977,214	54.22	8,642	5.96
Northern Division	237,609	31.79	2,077,406	29.48	2,516,026	13.67	13,019	8.97
Total State	747,543	100.00	7,047,370	100.00	18,402,399	100.00	145,083	100.00

Table No. VII.

RETURN SHOWING NUMBER OF HORSES, CATTLE, AND SHEEP PER SQUARE MILE AND PER CAPITA OF POPULATION IN THE SOUTHERN, CENTRAL, AND NORTHERN DIVISIONS OF THE STATE, FOR THE YEAR 1921.

Division.	Area in sq. miles.	Population.*	HORSES.		CATTLE.		SHEEP.		ALL KINDS IN TERMS OF SHEEP.	
			Per Sq. Mile.	Per Capita of Population.	Per Sq. Mile.	Per Capita of Population.	Per Sq. Mile.	Per Capita of Population.	Per Sq. Mile.	Per Capita of Population.
Southern Division	209,980	547,765	1.54	0.59	14.26	5.47	28.14	10.79	186.10	71.34
Central Division	209,340	90,391	0.89	2.07	9.44	21.86	47.66	110.38	150.99	349.68
Northern Division	251,180	131,860	0.95	1.80	8.27	15.75	10.02	19.08	102.18	194.65

* Estimated 31st December, 1921.

Table No. VIII.

RETURN SHOWING THE NUMBER OF HORSES IMPORTED AND EXPORTED INTO AND FROM THE STATE FOR THE YEAR 1921.

HORSES IMPORTED DURING 1921.				HORSES EXPORTED DURING 1921.					
Country.	Number.		Value.		Country.	Number.		Value.	
			£	£				£	£
<i>Oversea—</i> United Kingdom ...	1	...	550	...	<i>Oversea—</i> Dutch New Guinea	13	...	130	...
		1		550	India ...	1,646	...	27,909	...
					Java ...	229	...	3,480	...
					Papua ...	8	...	106	...
					Straits Settlements	1	...	1,000	...
						1,897		32,625	
<i>Interstate (by land)—</i> New South Wales...	7,410	...	57,825	...	<i>Interstate (by land)—</i> New South Wales ...	19,142	...	135,743	...
South Australia ...	1,335	...	9,107	...	South Australia ...	1,425	...	6,809	...
		8,745		66,932		20,567		142,552	
Totals ...	...	8,746	...	67,482	Totals ...	...	22,464	...	175,177

Table No. IX.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF ENTIRE AND OTHER HORSES.

Year.	Entire Horses.	Other Horses.	Total.
1912	9,322	665,251	674,573
1913	9,691	697,574	707,265
1914	9,719	733,340	743,059
1915	8,629	678,242	686,871
1916	7,861	689,656	697,517
1917	7,762	725,252	733,014
1918	7,664	752,062	759,726
1919	6,616	725,089	731,705
1920	6,402	735,815	742,217
1921	6,164	741,379	747,543

Table No. X.

RETURN SHOWING THE NUMBER OF OWNERS AND THE SIZES OF HERDS UNDER VARIOUS GROUPINGS FOR THE YEAR 1921.

For details of sizes of Herds of Cattle in Pastoral Districts, see Table No. XXXIII.

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.
41,009	1,178,980	4,846	817,130	1,859	976,696	1,005	4,074,564	48,719	7,047,370

Table No. XI.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF OWNERS, NUMBER OF CATTLE, THE AVERAGE SIZE OF HERD, AND INCREASE OR DECREASE ON PREVIOUS YEARS.

Year.	Number of Owners.	Increase or Decrease.	Number of Cattle.	Average Size of Herd.	Increase or Decrease.
1912	37,242	6.86	5,210,891	140	— 4.19
1913	38,136	2.40	5,322,033	140	0.00
1914	39,716	4.14	5,455,943	137	2.14
1915	40,051	0.84	4,780,893	119	— 13.15
1916	39,727	— 0.81	4,765,657	120	0.84
1917	40,664	2.36	5,316,558	131	9.17
1918	42,735	5.09	5,786,744	135	3.05
1919	43,576	1.97	5,940,433	136	0.74
1920	46,232	6.10	6,455,067	140	2.94
1921	48,719	5.38	7,047,370	145	3.57

Table No. XII.

RETURN SHOWING THE NUMBER OF OWNERS AND THE SIZES OF FLOCKS UNDER VARIOUS GROUPINGS FOR THE YEAR 1921.

For details of Sizes of Flocks of Sheep in Pastoral Districts see Table No. XXXIV.

1 to 500.		501 to 1,000.		1,001 to 2,000.		2,001 to 5,000.		5,001 to 10,000.	
Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.
1,965	179,974	305	232,192	408	612,923	558	1,861,362	426	3,036,394
10,001 to 20,000.		20,001 to 50,000.		50,001 to 100,000.		100,001 and Upwards.		Totals.	
Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.	Owners.	Sheep.
211	2,984,081	157	4,770,684	47	3,192,221	13	1,532,568	4,090	18,402,399

Table No. XIII.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF OWNERS, NUMBER OF SHEEP, AVERAGE SIZE OF FLOCKS, AND INCREASE OR DECREASE ON PREVIOUS YEARS.

Year.	Number of Owners.	Increase or Decrease.	Number of Sheep.	Average Size of Flocks.	Increase or Decrease.
1912 ...	3,224	3.37	20,310,036	6,300	— 5.26
1913 ...	3,365	4.37	21,786,600	6,474	2.76
1914 ...	3,719	10.52	23,129,919	6,219	— 3.94
1915 ...	4,091	10.03	15,950,154	3,899	— 37.31
1916 ...	3,986	— 2.57	15,524,293	3,895	— 0.10
1917 ...	4,008	0.55	17,204,268	4,292	10.19
1918 ...	4,030	0.55	18,220,985	4,521	5.34
1919 ...	4,130	2.48	17,379,332	4,208	— 6.92
1920 ...	4,036	— 2.28	17,404,840	4,312	2.47
1921 ...	4,090	1.34	18,402,399	4,499	4.34

Table No. XIV.

RETURN SHOWING THE RESULTS OF LAMBING, LOSSES, ETC., IN THE STATE FOR THE YEAR 1921.

For details see Table No. XXXIX.

	1921.
Total Sheep as per Stock Returns on 1st January, 1921	17,404,840
Ewes mated with Rams	7,762,276
Lambs Dropped	4,711,185
Percentage of Lambing	60.69
Purchases	3,283,849
Sales	5,325,881
Total Losses	1,436,443
Killed for Food on Holding	235,151
Total Sheep as per Wool Returns on 31st December, 1921	18,402,399
Skins obtained during Year	232,935

Table No. XV.

RETURN FOR TWO YEARS SHOWING THE NUMBER OF CATTLE EXPORTED AND KILLED.

	CATTLE.		SHEEP AND LAMBS.	
	1920.	1921.	1920.	1921.
Exported, less number imported alive Oversea	36	434	*7	1,074
" " " " Overland, 12 months	300,273	243,751	1,212,800	1,491,786
Preserved, frozen, and boiled down	201,120	252,103	21,842	120,654
Estimated number killed for food for home consumption	247,983	247,889	439,607	648,706
Totals	749,412	744,177	1,674,242	2,262,220

N.B.—This Table does not include Interstate Traffic by Sea in live animals; this is unascertainable, but insignificant in number.

* Excess of Imports.

Table No. XVI.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF CATTLE AND SHEEP IMPORTED INTO AND EXPORTED FROM THE STATE OVERLAND AND OVERSEA.

* Year.	CATTLE.		SHEEP.	
	Inwards.	Outwards.	Inwards.	Outwards.
	Number.	Number.	Number.	Number.
1912	55,482	144,803	288,523	551,416
1913	55,402	131,634	204,045	843,028
1914 { Overland, 12 months ...	49,632	109,591	404,530	827,178
{ Oversea, 6 months ..	6	46	...	2,312
1915 { Overland, Calendar year ...	47,065	93,309	227,853	938,785
{ Oversea, Financial year ...	74	81	1,766	388
1916 { Overland, Calendar year ...	47,765	69,096	172,955	420,791
{ Oversea, Financial year ...	13	3	...	447
1917 { Overland, Calendar year ...	36,729	97,552	73,185	476,778
{ Oversea, Financial year ...	12	38	6	202
1918 { Overland, Calendar year ...	55,048	101,995	205,763	476,255
{ Oversea, Financial year ...	...	66	9	32
1919 { Overland, Calendar year ...	58,618	91,874	396,731	409,982
{ Oversea, Financial year ...	...	10	...	9
1920 { Overland, Calendar year ...	51,202	351,475	280,406	1,493,206
{ Oversea, Financial year ...	1	37	11	4
1921 { Overland, Calendar year ...	57,111	300,862	74,459	1,566,245
{ Oversea, Financial year ...	2	436	...	1,074

* Interstate Coastwise Traffic no longer available.

Table No. XVII.

RETURN SHOWING THE NUMBER, &C., OF BACON-CURING AND MEAT-PRESERVING WORKS FOR THE YEAR 1921 AND INCREASE OR DECREASE ON PREVIOUS YEAR.

Kind of Establishment.	Number.	Number of Hands Employed.	Value of Machinery and Plant.	Value of Land and Premises.	Value of Output.
Bacon Curing	6	400	£ 47,188	£ 90,903	£ 1,093,292
Meat Preserving	12	3,241	852,763	1,515,221	3,476,228
Totals, 1921	18	3,641	899,951	1,606,124	4,569,520
Totals, 1920	19	3,780	913,358	1,568,532	5,241,323
Increase, 1921 ... ..	...	...	...	47,592	...
Decrease, 1921	1	139	13,407	...	671,803

Table No. XVIII.

RETURN SHOWING NUMBER OF SWINE SLAUGHTERED AND THE PRODUCTS THEREOF IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE FOR THE YEAR 1921.

Petty Sessions District.	Swine Slaughtered.	Fresh Pork.	Salt and Preserved Pork.	Bacon and Hams.
	Number.	Lb.	Lb.	Lb.
Atherton	129	6,800	5,525	375
Brisbane*	115,568	403,847	318,549	9,767,345
Bundaberg	124	3,123	7,073	5,189
Clifton	164	807	2,217	18,400
Crow's Nest	161	60	2,088	16,722
Dalby	188	1,123	4,639	14,701
Dugandan	156	4,798	5,095	11,575
Gatton	95	1,556	9,240	3,439
Gayndah	185	3,390	5,612	15,230
Gladstone	170	6,723	5,908	9,148
Gympie	110	1,597	8,653	2,646
Laidley	135	3,398	6,758	14,163
Logan	320	25,547	25,757	19,674
Maroochy	24	255	567	2,007
Maryborough	5,798	939	287,424	118,561
Nanango	220	5,311	10,871	9,183
Oakey	106	1,330	2,370	10,171
Pittsworth	114	1,513	3,370	9,200
Rockhampton	414	13,995	13,875	6,475
Roma	213	4,406	3,780	13,156
Stanthorpe	224	8,460	3,710	11,665
Toowoomba	27,490	410	3,995	1,815,116
Warwick	3,445	2,761	8,377	300,925
Wienholt	181	3,813	11,730	11,424
All other Districts	4,471	177,467	66,370	179,927
Totals, 1921	160,205	683,429	823,553	12,386,417
„ 1920	132,049	197,199	471,246	11,337,050

N.B.—Returns received from Inspectors of Slaughter-houses for 1921 account for 25,665 swine killed, producing 2,205,173 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.

* Including South Brisbane.

Table No. XIX.

WOOL.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF SHEEP SHORN AND THE WOOL PRODUCED.
For details for the year 1921 see Table No. XXXVIII.

Production of Wool.	1912.	1913.	1914.	1915.	1916.
Number of sheep shorn	19,969,378	20,289,124	22,059,015	19,558,810	13,798,462
Result off Shears only, lb. net—					
Greasy wool	89,390,788	106,570,719	114,585,709	89,231,347	67,114,101
Scoured wool	19,816,854	19,699,752	17,159,546	17,671,445	14,717,559
Above expressed as "Greasy"	129,024,496	145,971,861	148,904,801	124,574,237	96,549,219
Average weight, lb.—					
Per Greasy bale	367	362	361	357	365
Per Scoured bale	226	227	224	219	238
Per Fleece in the Grease	6.46	7.19	6.75	6.37	7.00
Total wool production (Greasy), including quantity fell-mongered, exported on skins, and utilized, lb.	136,878,270	154,183,114	155,478,740	130,783,277	102,220,125
*Estimated value of production	£5,561,000	£6,296,000	£6,707,000	£5,122,000	£4,898,000

Production of Wool.	1917.	1918.	1919.	1920.	1921.
Number of sheep shorn	11,920,074	17,290,116	17,210,372	15,709,426	16,832,655
Result off Shears only, lb. net—					
Greasy wool	67,772,382	83,997,850	88,450,759	89,215,429	109,440,938
Scoured wool	7,310,368	12,475,776	12,476,486	10,648,967	9,031,961
Above expressed as "Greasy"	82,393,118	108,949,402	113,403,731	110,513,363	127,504,860
Average weight, lb.—					
Per Greasy bale	365	353	356	368	361
Per Scoured bale	239	235	226	235	243
Per Fleece in the Grease	6.91	6.30	6.59	7.03	7.55
Total wool production (Greasy), including quantity fell-mongered, exported on skins, and utilized, lb.	87,425,558	113,777,272	118,035,461	114,809,963	132,579,733
*Estimated value of production	£5,646,317	£8,177,741	£8,606,747	£8,371,560	£7,783,818

* Based on Oversea Export value.

Table No. XX.

RETURN FOR TEN YEARS SHOWING THE AVERAGE PRICE OF WOOL.

Average Export Price of Wool (Oversea).	1912.*	1913.*	1914.*	1915.*	1916.*	1917.*	1918.*	1919.*	1920.*	1921.*
Greasy wool ...	Per lb. 9 $\frac{3}{4}$ d.	Per lb. 9 $\frac{4}{5}$ d.	Per lb. 10 $\frac{1}{2}$ d.	Per lb. 9 $\frac{2}{5}$ d.	Per lb. 11 $\frac{1}{2}$ d.	Per lb. 15 $\frac{1}{2}$ d.	Per lb. 17 $\frac{1}{4}$ d.	Per lb. 17 $\frac{1}{2}$ d.	Per lb. 17 $\frac{1}{2}$ d.	Per lb. 15d.
Scoured wool ...	Per lb. 18 $\frac{1}{4}$ d.	Per lb. 18 $\frac{1}{2}$ d.	Per lb. 19d.	Per lb. 18 $\frac{1}{5}$ d.	Per lb. 20 $\frac{3}{4}$ d.	Per lb. 28 $\frac{1}{2}$ d.	Per lb. 27d.	Per lb. 28d.	Per lb. 29 $\frac{1}{4}$ d.	Per lb. 28 $\frac{1}{4}$ d.

* Oversea only.

Table No. XXI.

RETURN FOR SEVEN YEARS SHOWING THE QUANTITY AND VALUE OF WOOL EXPORTED Oversea.

Exports of Wool, Oversea Only.	Year.	GREASY.		SCOURED.	
		Quantity.	Value.	Quantity.	Value.
		Lb. gross.	£	Lb. gross.	£
1914-1915	...	78,206,793	3,058,035	17,589,369	1,335,150
1915-1916	...	52,620,768	2,511,222	16,268,471	1,410,708
1916-1917	...	51,906,001	3,382,793	16,901,805	2,019,060
1917-1918	...	35,272,597	2,529,684	8,972,507	1,011,748
1918-1919	...	56,666,969	4,114,183	22,780,888	2,651,034
1919-1920	...	92,835,718	6,730,813	20,019,683	2,435,603
1920-1921	...	71,532,151	4,467,815	14,821,191	1,749,033

Table No. XXII.

RETURN FOR TEN YEARS SHOWING THE AMOUNT OF SCOURED WOOL USED IN MANUFACTURE.

Quantity of Scoured Wool used in manufacture ...	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.
	Lb. 291,946	Lb. 203,415	Lb. 160,449	Lb. 202,262	Lb. 241,600	Lb. 223,695	Lb. 262,393	Lb. 122,814	Lb. 268,787	Lb. 875,610

Table No. XXIII.

RETURN FOR TWO YEARS SHOWING THE EXPORT Oversea OF HOME PRODUCE.

Value of—	1919-20.		1920-21.					
	HOME PRODUCE ONLY.		HOME PRODUCE ONLY.					
	Total Exports.	Percentage to Total Exports.	Total Exports.	Percentage to Total Exports.				
	Overseas £	Only.	Overseas £	Only.				
Agricultural Products	954,917	6.65	4,185,010	27.75
*Pastoral	12,914,546	89.92	10,435,474	69.19
Mineral	71,432	0.49	194,859	1.29
Other	421,960	2.94	266,842	1.77
Totals	£14,362,855	100.00	£15,032,185	100.00

* Exclusive of Furred Skins:—1919-20, £99,383; 1920-21, £11,860.

Table No. XXIV.

RETURN FOR TWO YEARS SHOWING THE DETAILS OF PASTORAL PRODUCTS EXPORTED Oversea.

Value of—	1919-20.		1920-21.		Increase or —Decrease, 1920-21. £
	HOME PRODUCE ONLY.				
	Exports Overseas.		Exports Overseas.		
	£		£		
Pastoral Products—					
Wool	— 2,949,568
Live stock	40,121
*Meat (all kinds, including Extract)	720,844
Tallow	30,283
Hides and skins	— 190,504
All other	— 130,248
Totals	— 2,479,072

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

Table No. XXV.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF GOATS IN THE STATE AND THE NUMBER KILLED FOR FOOD, &c.

	Number Depastured.	Number Killed.	Weight: Lb.	Average Weight.	Number of Skins Sold.
1912	155,010	37,044	974,430	26.30	*
1913	148,006	35,541	978,244	27.52	*
1914	134,967	31,471	831,932	26.43	*
1915	126,730	35,153	880,352	25.04	*
1916	119,645	28,992	791,321	27.29	*
1917	129,173	27,700	731,591	26.41	*
1918	124,964	26,375	719,033	27.26	13,851
1919	122,088	26,903	698,874	25.98	16,133
1920	122,993	30,863	801,474	25.97	18,994
1921	134,177	25,080	689,587	27.49	11,630

* Not available.

Table No. XXVI.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF ANGORA GOATS IN THE STATE AND THE NUMBER
KILLED FOR FOOD, MOHAIR OBTAINED, &C.

Year.	Number of Animals.	Mohair Obtained.	Number Killed for Meat.	Skins Obtained.
1912	6,924	Lb. 6,770	1,388	1,342
1913	7,925	6,935	1,148	1,063
1914	5,543	3,427	687	632
1915	4,931	3,864	860	691
1916	4,462	4,012	577	587
1917	3,774	3,144	526	441
1918	3,569	2,188	501	411
1919	3,682	2,181	528	477
1920	3,210	1,858	406	314
1921	4,248	2,895	625	517

Table No. XXVII.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF CAMELS, OSTRICHES, AND MULES IN THE STATE.

Year.	Number of Camels.	Number of Ostriches.	Number of Mules.
1912	888	35	742
1913	751	29	793
1914	977	32	900
1915	855	24	873
1916	829	18	1,009
1917	874	15	1,037
1918	660	3	1,094
1919	379	5	1,379
1920	740	2	1,175
1921	936	...	1,257

Table No. XXVIII.

RETURN FOR FOUR YEARS SHOWING THE NUMBER OF CALVES RETURNED AS BRANDED IN THE STATE.
For details of 1921 see Table XXX.

Year.	Male.	Female.	Total.
1918	592,720	605,403	1,198,123
1919	588,008	598,524	1,186,532
1920	674,523	690,876	1,365,399
1921	742,811	777,013	1,519,824

Table No. XXIX.

RETURN OF THE NUMBER OF HORSES, CATTLE, SHEEP, AND SWINE IN THE VARIOUS PETTY SESSIONS DISTRICTS OF THE STATE, TOGETHER WITH THE INCREASE AND DECREASE OF CATTLE AND SHEEP ON THE 31ST DECEMBER, 1921.

Petty Sessions District.	HORSES. 1921.	CATTLE.				SHEEP.				SWINE. 1921.
		1920.	1921.	1921.		1920.	1921.	1921.		
				Increase.	Decrease.			Increase.	Decrease.	
Adavale	2,166	10,864	16,967	6,103	...	223,739	238,951	15,212	...	47
Allora	3,845	12,723	14,312	1,589	...	5,967	4,861	...	1,106	2,246
Alpha	6,427	106,161	128,209	22,048	...	61,009	59,813	...	1,196	120
Aramac	3,241	11,211	13,481	2,270	...	297,835	303,309	5,474	...	59
Atherton	7,899	42,692	44,682	1,990	...	72	339	267	...	4,203
Augathella	4,034	35,005	40,321	5,316	...	318,947	317,384	...	1,563	23
Ayr	10,810	30,253	33,760	3,507	...	56	201	145	...	828
Banana	3,140	49,145	60,153	11,008	...	4,283	3,419	...	864	21
Barcardine	4,729	13,780	15,023	1,243	...	864,817	919,768	54,951	...	265
Beaudesert	4,975	71,038	71,284	246	...	1,924	2,119	195	...	5,473
Biggenden	3,702	38,148	44,161	6,013	...	249	363	114	...	1,171
Blackall	5,815	14,141	17,150	3,009	...	1,056,363	1,019,981	...	36,382	174
Bollon	4,435	72,450	74,579	2,129	...	348,329	395,275	46,946	...	16
Boulia	11,102	133,029	151,260	18,231	...	333,555	402,915	69,360	...	68
Bowen	15,561	143,178	155,208	12,030	...	405	573	168	...	445
Brisbane	11,258	22,971	24,335	1,364	...	1,937	1,392	...	545	3,535
Bundaberg	7,683	33,507	35,188	1,681	...	398	284	...	114	1,309
Burke	5,682	117,898	124,749	6,851	...	4,247	4,695	448	...	76
Caboolture	1,287	10,605	10,927	322	...	671	450	...	221	1,100
Cairns	4,581	7,709	7,869	160	...	2	28	26	...	313
Camooeal	4,981	83,738	87,149	3,411	...	...	...	...	...	4
Cape River	8,924	100,297	107,799	7,502	...	630	636	6	...	302
Cardwell	1,614	9,672	9,961	289	...	...	...	...	...	50
Charleville	8,004	74,608	87,272	12,664	...	662,616	646,997	...	15,619	232
Charters Towers	23,309	169,977	184,935	14,958	...	488	673	185	...	1,031
Childers	3,699	13,064	14,966	1,902	...	24	15	...	9	459
Chillagoe	7,959	37,011	37,985	975	...	...	...	...	...	222
Clermont	14,214	188,313	207,173	18,860	...	569,163	569,343	180	...	455
Cleveland	383	1,129	1,054	...	75	109	1	...	108	149
Clifton	6,900	18,296	19,723	1,427	...	23,558	18,431	...	5,127	2,786
Cloncurry	24,448	241,355	259,074	17,719	...	575,936	605,153	29,217	...	473
Coen	3,479	25,717	28,478	2,761	...	...	...	...	...	...
Condamine	4,195	49,175	52,102	2,927	...	3,425	2,574	...	851	695
Cook	4,639	30,300	34,780	4,480	...	...	...	...	...	76
Cooyar	1,581	11,527	12,964	1,437	...	683	753	70	...	823
Crow's Nest	3,170	20,936	23,174	2,238	...	316	293	...	23	3,461
Croydon	3,149	34,978	39,185	4,207	...	...	1	1	...	9
Cunnamulla	4,651	23,065	35,367	12,302	...	560,201	596,949	36,748	...	166
Dalby	16,627	161,137	176,802	15,665	...	239,843	227,763	...	12,080	4,315
Diamantina	4,162	61,336	59,879	...	1,457	...	...	...	...	...
Douglas	1,730	2,414	2,566	152	...	...	...	...	...	8
Dugandan	4,977	35,334	36,347	1,013	...	399	387	...	12	6,385
Eidsvold	5,793	91,859	96,443	4,584	...	443	212	...	231	305
Emerald	5,124	42,402	49,604	7,202	...	130,301	137,717	7,416	...	184
Esk	6,111	74,760	77,093	2,333	...	882	892	10	...	2,463
Etheridge	13,721	159,260	179,669	20,409	...	...	...	...	...	97
Eulo	1,387	19,384	22,233	2,849	...	53,811	54,136	325	...	42
Gatton	4,702	21,830	24,106	2,276	...	1,288	1,103	...	185	4,207
Gayndah	9,116	119,558	133,533	13,975	...	1,317	1,273	...	44	2,347
Gin Gin	4,978	54,028	58,298	4,270	...	503	522	19	...	710
Gladstone*	17,667	201,621	213,228	11,607	...	2,912	3,216	304	...	1,967
Goodna	629	2,540	2,955	415	...	61	35	...	26	268
Goombungee	1,344	6,800	7,221	421	...	5,011	4,105	...	906	1,563
Goondiwindi	5,424	58,010	64,345	6,335	...	320,479	315,610	...	4,869	623
Gympie	8,455	115,269	116,368	1,099	...	1,762	1,285	...	477	6,553
Harrisville	3,382	20,411	20,644	233	...	487	595	108	...	3,777
Helidon	2,417	13,646	14,821	1,175	...	193	204	11	...	2,091
Herberton	9,453	52,113	58,003	5,890	...	601	708	107	...	369
Highfields	1,462	8,181	8,655	474	...	133	206	73	...	1,235
Hughenden	12,115	110,156	129,496	19,340	...	617,298	673,296	55,998	...	193
Hungerford	643	4,734	5,285	551	...	33,067	31,650	...	1,417	3
Ingham	9,984	20,557	25,572	5,015	...	128	136	8	...	1,376
Inglewood	2,907	24,847	28,641	3,794	...	111,910	134,371	22,461	...	637
Ipswich	3,299	13,895	15,652	1,757	...	168	211	43	...	1,197
Isisford	5,270	9,681	12,581	2,900	...	698,615	775,658	77,043	...	37
Jondaryan	1,356	12,665	11,636	...	1,029	61,260	63,007	1,747	...	589
Jundah	2,545	25,158	26,946	1,788	...	177,622	196,952	19,330	...	...
Kilcoy	1,791	19,485	20,419	934	...	362	383	21	...	1,651
Kilkivan	1,794	18,960	21,345	2,385	...	456	597	141	...	507
Killarney	2,979	10,533	11,734	1,201	...	2,923	1,278	...	1,645	1,168
Laidley	4,011	17,999	19,510	1,511	...	169	199	30	...	3,230
Logan	2,564	16,010	16,626	616	...	390	356	...	34	1,453
Longreach	11,579	33,758	39,999	6,241	...	1,466,297	1,670,837	204,540	...	258
Lowood	2,143	18,042	18,025	...	17	333	251	...	82	2,579
Mackay	34,162	114,753	129,943	15,190	...	3,322	2,981	...	341	943
Marburg	1,872	9,669	10,794	1,125	...	47	36	...	11	3,387
Maroochy	4,764	41,714	42,769	1,055	...	492	464	...	28	3,743
Maryborough	5,967	26,301	27,684	1,383	...	544	619	75	...	1,021
Mitchell	9,558	108,802	113,001	4,199	...	368,656	294,696	...	73,960	189
Mount Morgan*	4,614	20,272	10,275	...	9,997	161	137	...	24	269
Mount Perry	2,870	31,834	37,281	5,447	...	31	31	...	...	237
Mourilyan	3,306	3,816	3,908	92	...	...	30	30	...	217
Muttaburra	7,539	33,806	44,292	10,486	...	1,421,872	1,515,887	94,015	...	8
Nanango	14,653	112,901	116,681	3,780	...	1,189	1,067	...	122	7,090
Nerang	2,715	36,752	35,841	...	911	484	431	...	53	3,181
Norman	11,170	313,079	349,266	36,187	...	2	3,002	3,000	...	2
Oakey	4,903	26,702	28,736	2,034	...	14,324	9,603	...	4,721	4,005
Palmer	1,224	50,505	16,209	...	34,296	...	...	...	...	13
Pittsworth	7,576	47,803	47,114	...	689	131,147	125,499	...	5,648	4,065
Proserpine	5,788	15,359	16,568	1,209	...	2,251	1,895	...	356	268
Quilpie	2,519	16,242	19,996	3,754	...	149,906	159,691	9,785	...	6
Ravenswood	4,116	16,865	17,986	1,121	...	...	...	...	...	145

Table No. XXIX—continued.

RETURN OF THE NUMBER OF HORSES, CATTLE, SHEEP, AND SWINE IN THE VARIOUS PETTY SESSIONS DISTRICTS OF THE STATE, TOGETHER WITH THE INCREASE AND DECREASE OF CATTLE AND SHEEP ON THE 31ST DECEMBER, 1921.

Petty Sessions District.	HORSES. 1921.	CATTLE.				SHEEP.				SWINE. 1921.
		1920.	1921.	1921.		1920.	1921.	1921.		
				Increase.	Decrease.			Increase.	Decrease.	
Redcliffe	2,246	18,421	18,416	...	5	31	216	185	...	2,082
Richmond	11,685	113,377	120,751	7,374	...	1,340,775	1,492,136	151,361	...	51
Rockhampton*	27,476	348,728	374,432	25,704	...	17,969	22,838	4,869	...	3,767
Roma	10,753	87,215	106,576	19,361	...	234,800	240,096	5,296	...	1,326
Rosewood	2,739	20,973	22,781	1,808	...	743	526	...	217	3,002
St. George	6,781	48,357	60,669	12,312	...	643,226	757,133	113,907	...	174
St. Lawrence	6,580	121,211	129,231	8,020	...	1,746	1,558	...	188	119
Somerset	394	435	524	89	...	...	...	...	...	...
Southport	526	2,795	2,664	...	131	36	66	...	...	158
Spingsure	10,398	108,272	126,919	18,647	...	331,579	335,229	3,650	...	204
Stanthorpe	2,374	18,967	23,881	4,914	...	109,931	106,717	...	3,214	406
Surat	3,061	41,649	40,579	...	1,070	366,392	340,192	...	26,200	54
Tambo	4,324	25,049	28,445	3,396	...	534,982	533,855	...	1,127	...
Taroom	5,623	94,335	103,588	9,253	...	9,786	9,884	98	...	121
Texas	2,042	13,572	14,860	1,288	...	15,068	14,459	...	609	190
Thargomindah	8,248	103,182	115,750	12,568	...	155,857	149,687	...	6,170	58
Tiaro	4,382	53,851	58,301	4,450	...	508	588	80	...	1,210
Toowoomba	5,640	18,418	20,971	2,553	...	3,709	7,331	3,622	...	1,883
Townsville	9,554	25,168	29,394	4,226	...	2,091	792	...	1,299	1,412
Warwick	10,320	59,296	59,708	412	...	85,910	82,065	...	3,845	3,358
Wienholt	10,858	121,295	131,485	10,190	...	2,901	2,901	...	...	7,256
Windorah	6,137	85,477	87,806	2,329	...	182,183	173,546	...	8,637	13
Winton	14,030	74,716	82,345	7,629	...	1,415,894	1,596,611	180,717	...	62
Woodford	1,788	19,871	20,866	995	...	507	329	...	178	1,281
Wowan†	2,547	...	24,251	24,251	...	...	16	16	...	498
Wynnum	681	1,780	1,720	...	60	138	144	6	...	189
Yeulba	1,728	13,443	19,073	5,630	...	272	325	53	...	149
Total in State, 1921 ...	747,543	...	7,047,370	...	...	...	18,402,399	...	...	145,083
Total in State, 1920 ...	742,217	6,455,067	...	...	...	17,404,840	...	...	...	104,370
Increase in 1921 ...	5,326	...	...	592,303	...	...	...	997,559	...	40,713
Decrease in 1921 ...	...	...	...	...	...	...	...	...	...	...
Centesimal Increase in 1921 ...	0.72	...	...	9.18	...	...	...	...	...	...
Centesimal Decrease in 1921 ...	...	...	...	...	...	...	...	5.73	...	39.01

* See note to Wowan†.

† Previously included in Gladstone, Mount Morgan, and Rockhampton districts.

Table No. XXX.

RETURN SHOWING NUMBER OF CALVES RETURNED AS BRANDED IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE DURING THE YEAR 1921.

Petty Sessions District.	Male.	Female.	Petty Sessions District.	Male.	Female.
Adavale	1,954	1,924	Ingham	2,744	2,679
Allora	1,259	1,362	Inglewood	2,520	2,467
Alpha	15,060	15,284	Ipswich	731	1,165
Aramac	1,775	1,725	Isisford	990	980
Atherton	1,872	3,483	Jondaryan	968	1,097
Augathella	5,100	4,964	Jundah	3,759	3,692
Ayr	4,169	3,866	Kilcoy	863	1,222
Banana	6,940	7,292	Kilkivan	1,728	1,895
Barcaldine	1,776	1,771	Killarney	804	939
Beaudesert	3,814	4,951	Laidley	930	1,268
Biggenden	3,663	4,245	Logan	175	1,158
Blackall	1,985	1,817	Longreach	4,374	5,358
Bollon	6,540	6,717	Lowood	836	938
Boulia	20,413	21,503	Mackay	14,660	14,103
Bowen	20,411	20,249	Marburg	201	783
Brisbane	195	1,707	Maroochy	887	2,990
Bundaberg	2,217	2,573	Maryborough	1,473	2,339
Burke	15,379	15,629	Mitchell	12,625	13,129
Caboolture	308	865	Mount Morgan	1,039	1,085
Cairns	489	483	Mount Perry	3,919	3,821
Camooweal	12,146	12,038	Mourilyan	258	247
Cape River	13,256	13,088	Muttaborra	6,244	6,125
Cardwell	877	881	Nanango	8,239	10,053
Charleville	7,999	7,942	Nerang	753	2,290
Charters Towers	23,565	23,556	Norman	41,689	41,220
Childers	1,373	1,449	Oakey	1,714	2,571
Chillagoe	3,361	3,150	Palmer	1,916	1,912
Clermont	27,863	27,238	Pittsworth	3,166	4,239
Cleveland	24	81	Proserpine	2,060	1,993
Clifton	1,477	2,055	Quilpie	2,241	2,241
Cloncurry	36,993	37,210	Ravenswood	2,444	2,498
Coen	2,543	2,587	Redcliffe	125	822
Condamine	5,609	5,424	Richmond	13,694	13,860
Cook	3,019	3,260	Rockhampton	42,056	42,255
Cooyar	1,251	1,369	Roma	13,390	13,128
Crow's Nest	1,641	1,962	Rosewood	837	1,364
Croydon	4,665	4,585	St. George	6,117	6,031
Cunnamulla	3,160	3,179	St. Lawrence	15,353	15,332
Dalby	18,967	19,299	Somerset	46	47
Diamantina	6,774	6,844	Southport	33	114
Douglas	183	136	Springsure	18,737	18,693
Dugandan	1,674	2,324	Stanthorpe	1,820	1,770
Eidsvold	10,547	10,489	Surat	4,940	4,847
Emerald	6,132	5,949	Tambo	3,963	3,918
Esk	3,811	4,702	Taroom	12,932	12,779
Etheridge	24,193	24,423	Texas	1,192	1,236
Eulo	2,791	2,897	Thargomindah	11,342	11,105
Gatton	1,550	1,949	Tiaro	4,728	5,260
Gayndah	13,362	14,385	Toowoomba	1,024	1,835
Gin Gin	6,000	6,127	Townsville	3,096	2,931
Gladstone	20,644	21,572	Warwick	5,499	5,260
Goodna	151	196	Wienholt	9,064	10,952
Goombungee	406	685	Windorah	10,549	10,571
Goondiwindi	5,804	5,882	Winton	11,764	11,969
Gympie	2,924	8,004	Woodford	838	1,482
Harrisville	1,325	1,705	Wowan	2,019	2,289
Helidon	865	1,269	Wynnum	9	98
Herberton	6,847	6,814	Yeulba	2,397	2,276
Highfields	595	804			
Hughenden	15,800	15,610			
Hungerford	811	763			
			Totals	742,811	777,013

Table No. XXXI.

RETURN OF THE NUMBER OF HORSES, CATTLE, SHEEP, AND SWINE IN THE VARIOUS PASTORAL DISTRICTS OF THE STATE FOR THE YEARS 1920 AND 1921, TOGETHER WITH THE NUMERICAL AND CENTESIMAL INCREASE OR DECREASE IN THE LATTER YEAR.

Pastoral District.	Year.	Horses.	Cattle.	Sheep.	Swine.	Numerical Increase or Decrease —				Centesimal Increase or Decrease —				
						Horses.	Cattle.	Sheep.	Swine.	Horses.	Cattle.	Sheep.	Swine.	
Burke ...	1920	58,733	830,771	2,226,075	694									
	1921	59,910	883,705	2,479,894	684	1,177	52,934	253,819	— 10	2·00	6·37	11·40	— 1·44	
Burnett ...	1920	41,559	484,293	5,784	9,873									
	1921	43,552	525,058	5,223	17,736	1,993	40,765	— 561	7,863	4·80	8·42	— 9·70	79·64	
Cook ...	1920	52,257	431,926	76	3,140									
	1921	52,521	465,654	399	5,168	264	33,728	323	2,028	0·51	7·81	425·00	64·59	
Darling Downs	1920	80,109	550,372	1,134,721	21,166									
	1921	80,255	597,643	1,117,956	29,798	146	47,271	— 16,765	8,632	0·18	3·59	— 1·48	40·78	
Gregory North	1920	33,863	350,132	1,818,733	161									
	1921	34,289	382,828	2,061,699	169	426	32,696	242,966	8	1·26	9·34	13·36	4·97	
Gregory South	1920	14,223	158,616	345,454	25									
	1921	13,277	168,565	319,702	13	— 946	9,949	— 25,752	— 12	— 6·65	6·27	— 7·45	— 4·80	
Leichhardt ...	1920	56,320	661,124	880,171	1,318									
	1921	55,427	759,999	917,444	1,497	— 893	98,875	37,273	179	— 1·59	14·96	4·23	13·58	
Maranoa ...	1920	32,427	339,378	1,957,707	1,298									
	1921	33,590	373,699	2,023,562	1,694	1,163	34,321	65,855	396	3·59	10·11	3·36	30·51	
Mitchell ...	1920	47,262	218,761	6,425,183	521									
	1921	49,160	251,918	6,854,732	894	1,898	33,157	429,549	373	4·02	15·16	6·69	71·59	
Moreton ...	1920	80,273	564,219	12,749	46,583									
	1921	78,688	587,182	12,083	61,275	— 1,585	22,963	— 666	14,692	— 1·97	4·07	— 5·22	31·54	
North Kennedy	1920	88,622	477,557	6,070	4,830									
	1921	90,356	520,917	5,028	6,046	1,734	43,360	— 1,042	1,216	1·96	9·08	— 17·17	25·18	
Port Curtis ...	1920	50,456	453,797	20,792	4,392									
	1921	48,084	485,307	25,861	6,285	— 2,372	31,510	5,069	1,893	— 4·70	6·94	24·38	43·10	
South Kennedy	1920	42,488	398,189	194,292	1,450									
	1921	42,966	440,171	162,146	1,219	478	41,982	— 32,146	— 231	1·13	10·54	— 16·55	— 15·93	
Warrego ...	1920	26,119	209,736	2,372,391	406									
	1921	27,747	259,443	2,412,383	576	1,628	49,707	39,992	170	6·23	23·70	1·69	41·87	
Wide Bay ...	1920	37,506	326,196	4,642	8,513									
	1921	37,721	345,281	4,287	12,029	215	19,085	— 355	3,516	0·57	5·85	— 7·65	41·30	

Table No. XXXII.

RETURN FOR TEN YEARS SHOWING THE DENSITY OF LIVE STOCK IN THE STATE.
(In Converting Horses and Cattle to terms of Sheep, Ten Head of Sheep are taken as Equal to One Horse or Head of Cattle.)

Year.	HORSES.			CATTLE.			SHEEP.			ALL KINDS IN TERMS OF SHEEP.		
	Acres per Head.	Number per Square Mile.	Number per Capita Population.	Acres per Head.	Number per Square Mile.	Number per Capita Population.	Acres per Head.	Number per Square Mile.	Number per Capita Population.	Acres per Head.	Number per Square Mile.	Number per Capita Population.
1912 ..	636	1·01	1·06	82	7·77	8·19	21	30·29	31·91	5·42	118·07	124·39
1913...	607	1·05	1·07	81	7·94	8·06	20	32·49	33·00	5·23	122·42	124·33
1914...	577	1·11	1·10	79	8·14	8·06	19	34·50	34·18	5·04	126·95	125·79
1915...	625	1·02	1·00	90	7·13	6·96	27	23·79	23·22	6·08	105·34	102·80
1916 ..	615	1·04	1·04	90	7·11	7·12	28	23·15	23·19	6·12	104·63	104·78
1917...	585	1·09	1·06	81	7·92	7·72	25	25·66	24·99	5·52	115·88	112·85
1918...	565	1·13	1·09	74	8·63	8·33	24	27·17	26·24	5·13	124·81	120·51
1919...	586	1·09	1·01	72	8·86	8·20	25	25·92	23·96	5·10	125·43	115·97
1920...	578	1·11	1·01	66	9·63	8·74	25	25·96	23·57	4·80	133·30	121·04
1921...	574	1·11	0·97	61	10·51	9·15	23	27·45	23·00	4·45	143·70	125·13

Table No. XXXIII.

RETURN SHOWING THE NUMBER OF OWNERS AND THE SIZES OF HERDS OF CATTLE UNDER VARIOUS GROUPINGS IN THE SEVERAL PASTORAL DISTRICTS OF THE STATE FOR THE YEAR 1921.

Pastoral District.	100 and Under.		101 to 300.		301 to 1,000.		1,001 and Upwards.		Totals.	
	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.	Owners.	Cattle.
Burke ...	352	10,670	116	21,729	100	54,286	104	797,020	672	883,705
Burnett ...	3,953	144,243	520	98,217	193	103,856	77	178,742	4,743	525,058
Cook ...	1,623	43,310	155	25,188	38	21,979	51	375,177	1,867	465,654
Darling Downs ...	7,855	238,892	890	144,104	219	109,055	54	105,592	9,018	597,643
Gregory North ...	164	4,215	26	5,135	40	22,477	46	351,001	276	382,828
Gregory South ...	57	2,880	30	5,839	27	14,719	27	145,127	141	168,565
Leichhardt ...	1,342	42,007	354	62,043	217	119,393	148	536,556	2,061	759,999
Marano ...	1,302	43,997	300	51,445	149	80,264	72	197,993	1,823	373,699
Mitchell ...	627	15,810	107	19,601	103	56,899	66	159,608	903	251,918
Moreton ...	11,507	318,470	927	145,952	171	79,351	23	43,409	12,628	587,182
North Kennedy ...	2,319	48,568	189	32,482	114	58,640	83	381,227	2,705	520,917
Port Curtis ...	2,849	80,943	427	72,611	179	96,482	92	235,271	3,547	485,307
South Kennedy ...	1,310	29,784	126	23,466	85	48,086	74	338,835	1,595	440,171
Warrego ...	488	13,995	116	20,752	99	52,292	58	172,404	761	259,443
Wide Bay ...	5,261	141,196	563	88,566	125	58,917	30	56,602	5,979	345,281
Totals ...	41,009	1,178,980	4,845	817,130	1,859	976,696	1,005	4,074,564	48,719	7,047,370

Pastoral and Petty Sessions Districts.

Pastoral District.	Petty Sessions District.	Pastoral District.	Petty Sessions District.	Pastoral District.	Petty Sessions District.	Pastoral District.	Petty Sessions District.
Burke ...	Burke	Darling Downs —contd.	Stanthorpe	Mitchell —contd.	Longreach	North Kennedy —contd.	Charters Towers
	Camooweal		Texas		Alpha, part of		Ingham
	Richmond		Warwick		Hughenden, part of		Proserpine
	Cloncurry, part of		Crow's Nest, part of		Isisford, part of		Ravenswood
	Croydon, part of		Highfields, part of		Jundah, part of		Townsville
	Hughenden, part of		Toowoomba, part of		Muttaburra, part of		Bowen, part of
	Norman, part of		Yeulba, part of		Tambo, part of		Cape River, part of
	Eidsvold		Bouli				Herberton, part of
	Gayndah		Winton				Gladstone
	Mount Perry		Cloncurry, part of				Mount Morgan
Burnett ...	Wienholt	Gregory North	Diamantina, part of	Moreton	Beaudesert	Port Curtis	Rockhampton, part of
	Biggenden, part of		Windorah, part of		Caboolture		St. Lawrence, part of
	Gin Gin, part of		Adavale, part of		Cleveland		Wowan, part of
	Nanango, part of		Diamantina, part of		Cooyar		Alpha, part of
	Atherton		Isisford, part of		Dugandan		Bowen, part of
	Cairns		Jundah, part of		Esk		Cape River, part of
	Chillagoe		Quilpie, part of		Gatton		Clermont, part of
	Coen		Thargomindah, part of		Goodna		Mackay, part of
	Cook		Windorah, part of		Harrisville		Muttaburra, part of
	Douglas		Banana		Helidon		Augathella
Cook ...	Etheridge	Leichhardt	Emerald	North Kennedy	Ipwich	Warrego	Charleville
	Mourilyan		Clermont, part of		Kilcoy		Cunnamulla
	Palmer		Mackay, part of		Laidley		Eulo
	Somerset		Rockhampton, part of		Logan		Hungerford
	Croydon, part of		Roma, part of		Lowood		Adavale, part of
	Herberton, part of		St. Lawrence, part of		Marburg		Quilpie, part of
	Norman, part of		Wowan, part of		Nerang		Tambo, part of
	Allora		Bollon		Redcliffe		Thargomindah, part of
	Clifton		Mitchell		Rosewood		Bundaberg
	Condamine		St. George		Southport		Childers
Darling Downs ...	Dalby	Maranoa	Surat	Wide Bay	Wynnum	Wide Bay	Gympie
	Goombungee		Roma, part of		Crow's Nest, part of		Kilkivan
	Goondiwindi		Yeulba, part of		Highfields, part of		Maryborough
	Inglewood		Aramac		Maroochy, part of		Tiaro
	Jondaryan		Barcaldine		Nanango, part of		Biggenden, part of
	Killarney		Blackall		Toowoomba, part of		Gin Gin, part of
	Oakey				Woodford, part of		Maroochy, part of
	Pittsworth						Woodford, part of

Table No. XXXIV.
RETURN SHOWING THE NUMBER OF OWNERS AND THE SIZES OF FLOCKS OF SHEEP UNDER VARIOUS GROUPINGS IN THE SEVERAL PASTORAL DISTRICTS OF THE STATE FOR THE YEAR 1921.

Pastoral District.	1 to 500.		501 to 1,000.		1,001 to 2,000.		2,001 to 5,000.		5,001 to 10,000.		10,001 to 20,000.		20,001 to 50,000.		50,001 to 100,000.		100,001 and Upwards.		Totals.		
	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	Owners	Sheep.	
Barke	30	2,878	6	4,427	11	17,835	61	228,027	67	482,312	28	424,750	30	861,630	5	350,125	1	107,910	239	2,479,894	
Burnett	103	2,723	1	600	1	1,900	...	...	...	...	...	...	...	...	...	...	...	...	105	5,223
Cook	9	399	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	399
Darling Downs	735	85,334	128	95,018	92	129,886	69	213,092	30	206,168	8	117,215	9	271,243	...	...	...	...	1,071	1,117,956
Gregory North	16	2,300	2	1,300	7	11,993	21	70,141	49	334,372	20	261,098	17	553,783	10	697,005	1	129,707	143	2,061,699	
Gregory South	6	236	1	650	7	10,957	2	7,500	4	28,012	4	57,970	4	138,186	1	76,191	...	...	29	319,702
Leichhardt	125	15,084	35	27,011	53	77,835	53	168,052	19	128,004	8	101,139	9	320,842	2	79,477	...	...	304	917,444
Maranoa	185	33,815	88	69,760	124	188,299	108	348,976	57	429,026	23	314,025	16	474,325	1	53,596	...	...	603	2,023,562
Mitchell	55	6,769	18	14,269	36	58,246	131	464,597	135	984,850	87	1,253,276	54	1,620,839	20	1,387,688	...	...	545	6,854,732
Moreton	343	10,973	2	1,110	...	...	...	...	...	...	...	...	...	...	...	...	...	...	345	12,033
North Kennedy	46	3,338	2	1,690	...	...	...	...	...	...	...	...	...	...	...	...	...	...	48	5,028
Port Curtis	107	5,823	1	817	4	5,221	2	6,000	1	8,000	...	...	...	...	...	...	...	...	48	5,028
South Kennedy	15	1,264	5	3,613	9	13,108	8	23,583	2	12,884	3	43,832	...	...	...	...	...	...	115	25,861
Warrego	58	4,751	16	11,927	64	102,643	103	331,394	62	422,766	30	410,776	18	529,836	7	63,862	...	...	43	162,146
Wide Bay	132	4,287	359	2,412,383
Totals	1,965	179,974	305	232,192	408	612,923	558	1,861,362	426	3,036,394	211	2,984,081	157	4,770,684	47	3,192,221	13	1,532,568	4,090	18,402,399	

Table No. XXXV.

RETURN FOR TEN YEARS SHOWING THE NUMBER OF CATTLE, SHEEP, ETC., SLAUGHTERED FOR CONSUMPTION AS FOOD IN THE STATE, TOGETHER WITH THE AVERAGE DEAD WEIGHT OF EACH ANIMAL AND THE ESTIMATED QUANTITY CONSUMED PER CAPITA (EXCLUSIVE OF FACTORIES ENGAGED IN SLAUGHTERING FOR PRESERVATION).

Years.	Mean Population for the Year.	NUMBER SLAUGHTERED.						AVERAGE DRESSED WEIGHT.						CONSUMPTION PER CAPITA.					
		Cattle.	Sheep.	Calves.	Lambs.	Swine.	Cattle.	Sheep.	Calves.	Lambs.	Swine.	Beef.	Mutton.	Veal.	Lamb.	Pork.	Total.		
1912	631,577	228,250	643,897	17,068	15,754	49,978	580	44	76	35	84	209.47	44.67	2.05	0.88	6.62	263.69		
1913	652,555	235,212	627,637	18,465	16,331	43,804	588	43	78	32	87	211.99	41.51	2.21	0.82	5.82	262.35		
1914	674,932	215,703	578,038	14,296	16,416	40,178	584	42	76	34	86	186.51	35.65	1.62	0.82	5.14	229.74		
1915	687,010	193,082	598,944	18,016	21,398	41,273	537	37	71	32	80	150.89	32.49	1.86	0.99	4.81	191.04		
1916	677,630	178,375	459,716	11,570	20,135	27,405	570	43	67	36	88	150.01	29.50	1.15	1.06	3.54	185.26		
1917	680,313	153,206	412,669	8,467	15,400	29,035	591	43	50	32	86	133.00	25.97	0.62	0.73	3.66	163.98		
1918	688,547	159,066	359,688	5,659	13,665	39,588	576	43	47	29	81	133.00	22.61	0.38	0.57	4.65	161.21		
1919	719,928	204,977	431,503	10,773	16,219	33,986	586	39	50	30	86	166.80	23.41	0.75	0.68	4.08	195.72		
1920	734,379	229,839	417,423	18,144	22,184	25,635	471	43	56	34	91	147.56	24.49	1.39	1.03	3.19	177.66		
1921	764,665	*214,547	*624,758	33,342	23,948	27,273	583	41	49	30	86	163.64	33.79	2.12	0.93	3.06	203.54		

* Including 11,238 Cattle and 3,110 Sheep and Meat obtained therefrom supplied by Meat Works to State Butchers' Shops.

Table No. XXXIX.

RETURN SHOWING THE RESULTS OF LAMBING, LOSSES, SHEEP KILLED FOR FOOD ON HOLDINGS, &C., IN THE SEVERAL PASTORAL DISTRICTS OF THE STATE FOR THE YEAR 1921.

Pastoral District.	Total Sheep as per Stock Returns on 1st Jan., 1921.	Ewes Mated with Rams.	Lambs Dropped.	Percentage of Lambing	Purchases.	Sales.	LOSSES AND THE CAUSES AS RETURNED BY OWNERS, AND THE PERCENTAGE TO TOTAL LOSSES FROM EACH CAUSE.					
							Drought.		Flood.		Fly.	
							No.	%	No.	%	No.	%
Burke	2,226,075	901,412	519,924	57.68	672,925	788,695	19,056	14.42	1,922	1.46	32,240	24.39
Burnett	5,784	1,167	918	78.66	3,254	4,053	25	8.19	4	1.31	65	21.32
Cook	76				323							
Darling Downs	1,134,721	352,611	226,073	64.11	298,306	440,853	4,264	5.77	17,820	24.10	19,383	26.21
Gregory North	1,818,733	896,684	551,218	61.47	298,372	431,022	11,866	7.59	1,080	0.68	50,852	32.49
Gregory South	345,454	147,342	78,976	53.60	16,500	84,945	490	1.63	500	1.67	8,742	29.12
Leichhardt	880,171	335,538	209,648	62.48	124,114	189,429	1,233	1.32	3,342	3.57	41,400	44.18
Maranoa	1,957,707	813,388	465,120	57.18	676,996	883,951	2,808	1.78	6,771	4.27	74,684	47.12
Mitchell	6,425,183	3,232,459	1,981,864	61.31	667,957	1,608,288	10,814	2.03	14,261	2.66	208,248	38.98
Moreton	12,749	2,976	2,283	76.71	7,119	7,905	50	5.04	113	11.39	89	8.97
North Kennedy	6,070	1,425	816	57.26	2,109	3,134	6	0.84	175	24.37	97	13.51
Port Curtis	20,792	4,602	3,723	80.89	6,851	2,583	137	5.98	6	0.27	651	28.47
South Kennedy	194,292	62,085	41,028	66.08	24,152	76,085	230	1.30	150	0.84	7,262	40.69
Warrego	2,372,391	1,009,181	628,657	62.29	482,748	802,389	3,841	1.64	3,058	1.30	118,703	50.62
Wide Bay	4,642	1,405	937	66.69	2,123	2,549	28	5.14			1	0.18
Totals	17,404,840	7,762,276	4,711,185	60.69	3,283,849	5,325,881	54,848	3.82	49,202	3.42	562,417	39.15

Pastoral District.	LOSSES AND THE CAUSES AS RETURNED BY OWNERS, AND THE PERCENTAGE TO TOTAL LOSSES FROM EACH CAUSE.								Killed for Food on Holding.	Total Sheep as per Stock Returns on 31st Dec., 1921.	Skins Obtained during Year.
	Dingoes.		Old Age and Lambing.		Other.*		Total Losses and Percentage to Total Sheep.				
	No.	%	No.	%	No.	%	No.	%			
Burke	7,163	5.42	56,919	43.07	a 14,848	11.24	132,148	5.93	18,187	2,479,894	15,803
Burnett	111	36.39	66	21.64	b 34	11.15	305	5.27	375	5,223	261
Cook										399	
Darling Downs	10,890	14.73	14,237	19.26	c 7,343	9.93	73,937	6.51	26,354	1,117,956	29,490
Gregory North	22,896	14.63	51,230	32.73	d 18,585	11.88	156,509	8.61	19,093	2,061,699	14,652
Gregory South	12,168	40.54	5,094	16.96	e 3,025	10.08	30,019	8.69	6,264	319,702	4,043
Leichhardt	17,459	18.63	20,959	22.36	f 9,316	9.94	93,709	10.65	13,351	917,444	13,320
Maranoa	25,739	16.24	40,331	25.44	g 8,168	5.15	158,501	8.10	33,809	2,023,562	30,357
Mitchell	88,371	16.53	166,625	31.18	h 46,064	8.62	534,383	8.32	77,601	6,854,732	79,818
Moreton	391	39.42	150	15.12	i 199	20.06	992	7.78	1,171	12,083	1,351
North Kennedy	18	2.51	166	23.12	j 256	35.65	718	11.83	115	5,028	135
Port Curtis	82	3.59	816	35.68	k 595	26.01	2,287	9.19	635	25,861	639
South Kennedy	3,949	22.12	2,987	16.74	l 3,267	18.31	17,845	11.00	3,396	162,146	3,044
Warrego	42,425	18.09	46,947	20.01	m 19,571	8.34	234,545	9.89	34,479	2,412,383	39,698
Wide Bay	244	44.77	112	20.55	n 160	29.36	545	11.74	321	4,287	304
Totals	231,906	16.14	406,639	28.31	131,431	9.16	1,436,443	8.25	235,151	18,402,399	232,935

* Causes included in "Other"—

a Bugged, cancer, hawks, eagles, killed for baits, missing, poisoned.

b Eagles, foxes, worms.

c Accident, blown, cancer, dogs, eagles, foxes, heavy rain at shearing, stolen, strayed, worms.

d Cancer, cold rain at shearing, killed for baits, poisonous weeds, stolen, while being marked.

e Foxes, grass-seed, stolen, while being marked.

f Cancer, dogs, eagles, foxes, grass-seed, missing, poisonous weeds, snakebite, stolen, worms.

g Accident, cancer, cold rain at shearing, eagles, foxes, snakebite, strayed, worms.

h Cancer, eagles, exposure after shearing, foxes, grass-seed, hawks, killed for baits, missing, poisonous weeds, tetanus, while being marked, worms.

i Cancer, foxes, hawks, poisonous weeds, scrub-ticks, worms.

j Ticks, worms.

k Spear-grass, worms.

l Eagles, heavy rain at shearing, ticks, worms.

m Accident, cancer, eagles, foxes, heavy rain at shearing, killed for baits, poison, strayed while droving.

n Foxes, scrub-ticks, worms.



Brisbane, 16th October, 1922.

Registrar-General.

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REPORT OF THE REGISTRAR-GENERAL ON AGRICULTURAL PRODUCTION FOR THE YEAR 1921.

DAIRYING.

Table No. I.

RETURN SHOWING THE PROGRESS OF THE DAIRYING INDUSTRY SINCE THE YEAR 1909.

Year.	Dairying Establishments, Exclusive of Factories.	DAIRY COWS.			Production of Butter.	Production of Cheese.	
		In Milk.	Dry.	Total.			
					Lb.	Lb.	
					1890	*2,000,000	*170,240
					1895	3,719,523	1,841,799
					1900	8,680,389	1,984,705
1909 ...	15,279	228,497	105,342	333,839	1905	20,319,976	2,682,089
1910 ...	16,079	262,788	102,656	365,444	1910	31,258,333	4,146,661
1911 ...	16,225	237,997	119,098	357,095	1911	27,858,535	3,718,257
1912 ...	16,579	267,847	107,813	375,660	1912	30,307,339	3,947,615
1913 ...	17,866	285,403	106,036	391,439	1913	35,199,387	5,395,050
1914 ...	18,029	288,334	98,977	387,311	1914	37,230,240	7,931,869
1915 ...	17,876	218,511	116,732	335,243	1915	25,456,714	4,383,410
1916 ...	18,410	247,855	95,456	343,311	1916	28,967,279	8,495,825
1917 ...	19,404	303,133	96,375	399,508	1917	38,930,690	11,142,114
1918 ...	19,313	255,039	126,466	381,505	1918	32,371,575	8,636,700
1919 ...	18,952	211,331	161,815	373,146	1919	26,213,514	8,296,318
1920 ...	20,457	335,026	113,608	448,634	1920	40,751,373	11,512,262
1921 ...	21,695	423,251	130,957	554,208	1921	60,923,194	15,200,527

* Estimated.

Table No. II.

RETURN SHOWING DETAILS OF THE PRINCIPAL DAIRYING DIVISIONS FOR THE YEAR 1921.

District.	Total Milk Obtained.	HOW UTILISED.						
		For Butter on Farms.	For Cheese on Farms.	For Domestic Purposes by Producer.	Separated for Sale.	Sold for Consumption as Milk.	Sold to Condensed Milk Factories.	Sold to Cheese Factories.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Moreton	55,859,167	1,909,969	7,500	2,028,629	46,452,001	3,190,205	2,082,077	188,786
Wide Bay	41,465,135	1,560,260	5,000	1,218,360	37,589,361	330,143	...	762,011
Port Curtis	6,392,781	465,774	240	270,526	5,338,442	317,799	...	...
Downs	40,334,474	1,211,270	...	1,592,056	23,010,152	359,315	1,903,902	12,257,779
Other Districts	7,029,335	768,272	...	810,901	5,021,750	372,178	...	56,234
Total, 1921	^a 151,080,892	5,915,545	12,740	5,920,472	117,411,706	4,569,640	3,985,979	13,264,810
Total, 1920	^b 104,659,484	5,291,685	2,850	5,554,327	76,961,308	4,136,124	3,360,824	9,552,366
Increase, 1921	46,421,408	623,860	9,890	366,145	40,450,398	433,516	625,155	3,912,444
Decrease, 1921 ... ..	...	...	...	...	...	...	...	...

District.	ESTABLISHMENTS.			DAIRY CATTLE.		BUTTER MADE.			CHEESE MADE.		
	Dairying.	Butter Factories.	Cheese Factories.	In Milk.	Dry.	At Factories.	By Farmers.	Total.	At Factories.	By Farmers.	Total.
	No.	No.	No.	No.	No.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Moreton	7,734	16	3	160,829	40,539	22,879,832	802,397	23,682,229	371,327	7,009	378,327
Wide Bay	4,951	12	7	112,818	35,536	18,280,124	612,746	18,892,870	748,047	4,700	752,747
Port Curtis	1,093	4	...	23,981	12,348	2,838,993	155,189	2,994,182	...	200	200
Downs	5,370	12	70	100,919	28,152	12,633,291	532,303	13,165,594	14,016,829	...	14,016,829
Other Districts	2,547	3	3	24,704	14,382	1,917,998	270,321	2,188,319	52,424	...	52,424
Total, 1921	21,695	47	83	423,251	130,957	58,550,238	2,372,956	60,923,194	15,198,627	11,900	15,200,527
Total, 1920	20,457	47	92	335,026	113,608	38,464,870	2,286,503	40,751,373	11,509,762	2,500	11,512,262
Increase, 1921	1,238	...	...	88,225	17,349	20,085,368	86,453	20,171,821	3,678,865	9,400	3,688,265
Decrease, 1921 ... ..	...	...	9	...	...	...	...	...	...	...	...

^a 1,031,014 gallons of this were sent from the Moreton Division and 56,890 gallons from Downs Division to New South Wales.
^b 1,086,429 gallons of this were sent from the Moreton Division to New South Wales.

Table No. III.

BUTTER.

RETURN SHOWING QUANTITY EXPORTED FOR FIVE YEARS.

Butter Exported Overseas.	1916-17.	1917-18.	1918-19	1919-20.	1920-21.
Quantity (lb.)	17,945,023	19,595,849	7,839,356	5,793,447	26,067,478
Value	£1,285,169	£1,320,992	£608,587	£469,135	£2,964,204
Average value per lb.	1s. 5½d.	1s. 4⅓d.	1s. 6⅔d.	1s. 7½d.	2s. 3¼d.

NOTE.—Butter sent to other States not included in above.

Table No. IV.
CONDENSED MILK MANUFACTURED—RETURN FOR FIVE YEARS.

	Lb.
1917	9,409,059
1918	6,845,610
1919	9,170,034
1920	13,362,464
1921	15,168,652

POULTRY.
Table No. V.

RETURN SHOWING THE NUMBERS OF POULTRY AND EGGS PRODUCED IN THE PRINCIPAL DISTRICTS OF THE STATE FOR THE YEAR 1921.

Petty Sessions District.	Fowls.	Ducks.	Geese.	Turkeys.	Other.	Eggs.
	No.	No.	No.	No.	No.	Doz.
Allora	11,143	163	30	86	...	39,406
Atherton	23,423	833	36	282	6	95,375
Beaudesert	14,868	808	206	714	77	47,467
Brisbane (A)	38,332	2,109	96	87	1,398	270,519
Brisbane (B)	11,126	686	27	29	240	63,238
Bundaberg	14,005	303	60	177	...	39,236
Cairns	14,367	530	8	4	...	79,848
Clifton	20,373	375	22	708	...	100,512
Crow's Nest	11,698	104	57	26	4	36,425
Dalby	22,425	716	158	1,084	5	82,695
Dugandan	31,533	2,138	510	542	52	182,503
Esk	14,019	915	639	520	53	55,314
Gatton	22,499	2,104	850	311	72	80,452
Gayndah	12,396	317	115	659	10	36,347
Gladstone	10,629	322	71	436	50	36,093
Gympie	21,002	1,625	197	455	818	83,921
Harrisville	20,287	1,299	202	463	18	108,368
Helidon	10,079	429	47	91	...	56,213
Highfields	8,141	114	15	93	12	37,136
Ipswich	8,254	291	75	84	47	33,557
Jondaryan	7,980	110	29	550	...	23,217
Killarney	9,263	362	27	264	...	45,359
Laidley	17,316	2,824	739	191	...	89,254
Logan	11,709	1,095	246	148	...	47,091
Lowood	14,110	2,423	1,061	188	5	54,437
Mackay	28,489	954	80	93	48	82,734
Marburg	11,199	1,779	202	23	...	45,744
Maroochy	25,060	805	32	30	264	86,613
Maryborough	10,901	641	88	233	5	49,025
Nanango	25,654	958	84	1,704	62	90,495
Nerang	10,061	1,197	151	103	...	37,422
Oakey	18,235	192	20	304	63	74,222
Pittsworth	18,582	165	17	759	20	65,968
Redcliffe	8,969	641	27	142	7	23,323
Rockhampton	18,727	787	98	416	97	95,401
Rosewood	15,522	1,042	167	194	49	71,309
Stanthorpe	11,356	104	...	117	...	21,941
Toowoomba	15,842	186	43	22	20	50,787
Warwick	26,741	616	76	988	17	79,792
Wienholt	26,949	2,331	447	793	95	100,747
All other Districts	161,830	6,714	847	5,513	1,029	525,063
Totals, 1921	835,094	42,107	7,902	19,626	4,643	3,324,569
Totals, 1920	721,772	31,174	6,592	14,679	2,503	2,797,606
Increase, 1921	113,322	10,933	1,310	4,947	2,140	526,963
Decrease, 1921	...	...	...	...	...	...

N.B.—Brisbane (B) refers to South Brisbane.
NOTE.—Total value poultry and eggs—1920, £449,827; 1921, £429,983.

APIARIES.
Table No. VI.

RETURN SHOWING THE PARTICULARS OF THE BEE INDUSTRY FOR THE YEAR 1921.

Petty Sessions District.	No. of Hives.		Honey.	Average per Productive Hive.	Wax.	Petty Sessions District.	No. of Hives.		Honey.	Average per Productive Hive.	Wax.
	Productive.	Non-Productive.					Productive.	Non-Productive.			
			Lb.	Lb.	Lb.				Lb.	Lb.	Lb.
Allora	57	31	1,040	18	23	Maroochy	541	340	28,542	53	220
Atherton	44	2	1,350	31	80	Maryborough	488	164	27,829	57	563
Brisbane (A)	464	215	27,322	59	170	Nerang	73	80	1,800	25	20
Brisbane (B)	108	3	5,668	52	110	Oakey	67	2	2,450	37	20
Bundaberg	128	22	11,330	89	50	Pittsworth	218	35	14,092	65	213
Caboolture	1,061	203	47,010	44	541	Redcliffe	165	63	8,300	50	146
Clifton	200	15	23,509	118	50	Rockhampton	931	279	72,988	78	1,121
Cook	302	15	13,468	45	319	Roma	48	34	2,788	58	81
Dalby	361	49	32,725	91	237	Rosewood	126	117	4,804	38	8
Dugandan	74	72	1,729	23	...	Southport	120	107	2,000	17	70
Esk	98	62	2,441	25	25	Stanthorpe	123	57	4,939	40	70
Gatton	250	127	10,553	42	75	Tiaro	102	6	3,946	39	11
Gympie	1,199	474	53,910	45	841	Toowoomba	89	50	1,194	13	39
Harrisville	147	66	2,500	17	...	Warwick	1,049	225	56,986	54	705
Helidon	35	42	1,050	30	...	All other Districts	1,306	647	43,274	33	911
Highfields	130	30	13,040	100	96						
Ipswich	96	82	3,391	35	27	Totals, 1921	12,062	4,145	598,357	50	8,231
Killarney	850	268	35,440	42	400	Totals, 1920	10,664	4,727	426,662	40	7,501
Laidley	221	19	5,680	26	8						
Logan	615	112	22,587	37	873	Increase, 1921	1,398	...	171,695	10	730
Lowood	176	30	6,682	38	108	Decrease, 1921	...	582	...	...	...

N.B.—Brisbane (B) refers to South Brisbane.
NOTE.—Total value honey and wax—1920, £11,338; 1921, £12,409.

Table No. VII.

RETURN SHOWING PROGRESS OF HOLDINGS AND AREA CULTIVATED.—RETURN FOR 10 YEARS.

Year.	Number of Holdings Returned.	Increase per cent. on Previous Year.	Increase per cent. on Figures of 1904.	Area under Cultivation.	Increase per cent. on Previous Year.	Increase per cent. on Figures for 1904.
1912 ...	22,976	3.1	28.7	844,420	8.29	46.12
1913 ...	23,472	2.2	31.5	920,010	8.95	59.20
1914 ...	24,553	4.6	37.5	981,218	6.65	69.79
1915 ...	24,828	1.11	39.06	1,059,401	7.97	83.32
1916 ...	25,713	3.56	44.02	1,077,342	1.69	86.42
1917 ...	25,872	0.62	44.91	998,036	-7.36	72.70
1918 ...	26,041	0.65	45.86	982,066	-1.60	69.94
1919 ...	26,713	2.58	49.62	988,541	0.66	71.06
1920 ...	26,921	0.78	50.78	1,018,444	3.02	76.23
1921 ...	28,122	4.46	57.51	1,045,342	2.64	80.89

The minus sign (-) implies a decrease.

Table No. VIII.

RETURN SHOWING LABOUR EMPLOYED AND THE CAPITAL INVESTED IN FARMING MACHINERY, ETC., 1921.

PETTY SESSIONS DISTRICT.	LABOUR.				VALUE OF MACHINERY AND IMPLEMENTS.				
	Farming.		Dairying.		Farming.	Dairying.	Irrigation.	Travelling Machinery.	Total.
	Males.	Females.	Males.	Females.	£	£	£	£	£
Allora ...	497	22	64	63	62,696	8,435	900	2,170	74,201
Atherton ...	527	15	508	342	35,763	29,549	1,105	318	66,735
Ayr ...	1,203	10	4	2	85,114	280	180,937	1,482	267,813
Beaudesert ...	351	2	358	316	34,376	20,425	1,256	...	56,057
Biggenden ...	318	37	512	277	11,436	17,407	...	...	28,843
Brisbane (A) ...	1,015	40	383	263	30,336	8,372	5,305	1,203	45,216
Brisbane (B) ...	110	...	165	62	9,178	2,020	...	...	11,198
Bundaberg ...	1,184	14	130	131	56,363	4,928	15,110	13,550	89,951
Cairns ...	1,352	10	23	10	88,430	273	...	...	88,703
Childers ...	614	3	49	52	30,260	1,476	...	...	31,736
Clifton ...	756	2	194	340	133,127	16,396	330	2,700	152,553
Crow's Nest ...	187	3	216	134	23,577	9,635	...	...	33,212
Dalby ...	635	8	1,257	792	53,268	39,919	125	710	94,022
Dugandan ...	947	13	823	622	64,484	11,646	...	...	76,130
Esk ...	552	9	504	347	38,762	9,503	5,420	1,430	55,115
Gatton ...	994	21	775	489	50,463	9,480	...	...	68,943
Gayndah ...	440	4	697	483	25,618	21,169	315	...	47,102
Goombungee ...	171	...	13	138	16,200	3,121	...	2,800	22,121
Gympie ...	857	6	1,615	1,155	25,385	55,874	594	...	81,853
Harrisville ...	507	5	427	304	37,318	8,946	1,870	...	48,134
Helidon ...	317	1	312	256	16,081	5,172	790	...	22,043
Ingham ...	828	6	11	6	65,968	132	...	...	66,100
Ipswich ...	238	...	180	207	8,836	5,110	1,045	385	15,376
Jondaryan ...	267	...	162	254	21,474	10,210	300	...	31,984
Killarney ...	417	2	298	116	42,934	8,241	3,701	1,710	56,586
Laidley ...	611	20	366	409	49,855	6,325	...	400	56,580
Logan ...	593	86	407	402	24,253	6,705	...	40	30,998
Lowood ...	425	9	158	280	24,536	4,938	...	...	29,474
Mackay ...	2,461	63	32	74	162,636	2,251	385	180	165,452
Marburg ...	276	6	90	305	14,999	4,738	...	...	19,737
Maroochy ...	1,299	27	580	302	28,986	25,644	556	841	56,027
Maryborough ...	470	24	242	164	19,792	4,635	223	...	24,650
Nanango ...	936	3	842	372	77,621	33,610	500	1,995	113,726
Nerang ...	297	8	536	365	9,010	19,320	337	75	28,742
Oakey ...	570	...	413	317	58,119	14,186	...	740	73,045
Pittsworth ...	626	3	652	588	111,055	34,633	...	1,221	146,909
Redcliffe ...	421	6	358	261	12,111	8,778	2,195	...	23,084
Rockhampton ...	654	48	645	322	37,906	22,520	12,561	190	73,177
Roma ...	353	74	304	242	29,642	8,170	...	...	37,812
Rosewood ...	322	3	309	269	18,484	5,721	...	...	24,205
Tiaro ...	417	...	346	284	15,574	10,156	...	...	25,730
Toowoomba ...	618	98	245	428	42,223	12,025	6,395	1,500	62,143
Warwick ...	1,020	3	550	428	65,860	14,266	...	7,435	87,561
Wienholt ...	1,188	49	1,143	609	97,091	45,391	...	3,600	146,082
All other Districts ...	6,163	179	2,493	1,711	317,556	80,357	38,813	946	437,672
Total, 1921 ...	35,004	942	20,391	15,293	2,293,756	672,088	281,068	47,621	3,294,533
Total, 1920 ...	32,342	998	17,160	14,228	2,063,765	516,121	255,339	49,115	2,884,340
Increase, 1921 ...	2,662	...	3,231	1,065	229,991	155,967	25,729	...	410,193
Decrease, 1921	56	1,494	...

N.B.—Brisbane (B) refers to South Brisbane.

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Table No. IX.

RETURN SHOWING LAND TREATED FOR CULTIVATION, ETC., FOR THE YEAR 1921.

	1920.	1921.
	Acres.	Acres.
Under crop	779,497	804,507
In fallow	109,493	95,887
New ground broken up... ..	12,733	12,427
Previously cropped, but not during 1920 and 1921 respectively	116,721	132,521
Under cultivation	1,018,444*	1,045,342*
Under permanent artificially sown grasses	450,780	459,914
Grand total	1,469,224	1,505,256

* See Table No. XII. for details of areas and owners.

Table No. X.

RETURN FOR TEN YEARS SHOWING LAND SELECTED IN EACH YEAR DESTINED TO BECOME FREEHOLD.

Year.	Acres.	Year.	Acres.
1912	1,261,712	1917	Nil
1913	1,086,825	1918	Nil
1914	1,140,492	1919	Nil
1915	789,572	1920	Nil
1916	305,500	1921	Nil

Table No. XI.

RETURN SHOWING THE VALUE OF AGRICULTURAL CROPS FOR THE YEAR 1921.

	1920.	1921.	Increase or—Decrease, 1921.
	£	£	£
Grain crops	2,742,296	1,536,284	— 1,206,012
Green forage	712,770	735,675	22,905
Hay and straw	1,336,694	867,295	— 469,399
Root crops	408,769	169,492	— 239,277
Sugar-cane	3,430,095	5,794,787	2,364,692
Fruit	1,101,795	925,118	— 176,677
All other	653,814	486,008	— 167,806
Total	10,386,233	10,514,659	128,426

The minus sign (—) indicates a decrease.

Table No. XII.

RETURN SHOWING AREA UNDER CULTIVATION AND SIZES OF FARMS FOR THE YEAR 1921.

Petty Sessions District.	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	...	...	3	30	18	649	267	43,188	288	43,867
Atherton	68	97	69	704	143	4,881	175	11,329	455	17,011
Ayr	3	7	35	412	164	5,702	261	23,357	463	29,478
Beaudesert	36	97	194	2,193	152	4,461	22	1,426	404	8,177
Biggenden	56	163	119	1,260	34	926	3	242	212	2,591
Brisbane (A)	192	564	419	4,302	76	2,035	7	482	694	7,383
Brisbane (B)	64	142	77	753	24	711	1	58	166	1,664
Bundaberg	61	154	206	2,363	272	8,538	90	15,349	629	26,404
Cairns	21	38	77	886	134	4,534	216	22,598	448	28,056
Childers	19	43	64	776	75	2,509	112	11,243	270	14,571
Clifton	1	4	2	18	22	815	469	78,054	494	78,891
Crow's Nest	9	28	68	857	200	6,423	93	6,619	370	13,927
Dalby	84	142	169	1,890	217	6,803	216	20,307	686	29,142
Douglas	9	25	30	350	35	1,124	43	4,184	117	5,683
Dugandan	6	14	109	1,455	380	12,447	109	7,413	604	21,329
Esk	38	99	164	1,753	142	4,421	70	5,426	414	11,699
Gatton	7	23	79	1,019	253	8,084	241	21,228	590	30,354
Gayndah	84	216	166	1,768	61	1,757	16	1,099	327	4,840
Gin Gin	25	52	57	622	107	3,364	36	3,077	225	7,115
Goombungee	1	3	7	89	56	1,913	76	6,790	140	8,795
Gympie	230	597	389	3,764	68	1,860	14	932	701	7,153
Harrisville	10	14	57	692	229	7,490	63	5,002	359	13,198
Helidon	4	14	75	852	119	3,777	35	2,197	233	6,840
Highfields	2	8	42	489	108	3,421	66	5,085	218	9,003
Ingham	20	52	47	467	65	2,331	218	21,612	350	24,462
Inglewood	15	59	29	311	46	1,360	48	5,219	138	6,949
Ipswich	20	59	84	933	71	2,237	19	1,130	194	4,359
Jondaryan	6	19	34	413	84	2,831	110	9,802	234	13,065
Killarney	7	20	19	184	23	832	177	29,143	226	30,179
Laidley	10	28	35	454	165	5,965	239	20,394	449	26,841
Logan	46	137	297	3,290	61	1,562	...	...	404	4,989
Lowood	7	21	34	420	178	6,055	81	5,305	300	11,801
Mackay	48	103	275	2,941	444	15,261	462	42,371	1,229	60,681
Marburg	7	23	21	288	139	4,474	36	2,143	203	6,928
Maroochy	339	839	663	6,314	89	2,343	3	216	1,094	9,712
Maryborough	86	241	262	2,875	78	2,123	3	178	429	5,417
Mourilyan	11	28	66	760	178	6,333	197	16,254	452	23,375
Nanango	38	105	182	2,132	310	10,187	265	24,569	795	36,993
Nerang	98	260	156	1,539	26	700	4	274	284	2,773
Oakey	2	7	22	218	76	2,518	339	39,460	439	42,233
Pittsworth	6	14	31	375	106	3,564	433	59,014	576	62,967
Proserpine	24	62	128	1,481	95	2,792	36	2,816	283	7,151
Rockhampton	205	484	253	2,503	65	1,817	11	850	534	5,654
Redcliffe	42	131	181	2,059	54	1,440	1	80	278	3,710
Roma	48	91	40	375	76	2,401	152	19,014	316	21,881
Rosewood	8	19	77	1,079	195	6,251	25	1,530	305	8,879
Stanthorpe	21	61	362	4,570	152	4,159	12	787	547	9,577
Tiaro	84	224	134	1,402	74	2,175	10	697	302	4,498
Toowoomba	91	258	190	1,903	133	4,207	157	25,429	571	31,788
Warwick	18	53	110	1,205	130	4,344	451	58,114	709	63,716
Wienholt	31	65	131	1,599	287	9,665	336	28,900	785	40,229
All other Districts	785	1,883	1,215	12,234	446	13,029	189	20,218	2,635	47,364
Total, 1921	3,153	7,895	7,755	83,651	6,935	221,601	6,715	732,195	24,558	1,045,342
Total, 1920	2,925	7,307	7,109	78,955	6,683	214,023	6,484	718,159	23,201	1,018,444
Increase, 1921	228	588	646	4,696	252	7,578	231	14,036	1,357	26,898
Decrease, 1921	...	...	...	...	...	...	...	...	...	...

N.B.—Brisbane (B) refers to South Brisbane.

See Summary, Table No. IX.

Table No. XIII.

IRRIGATION.—RETURN FOR 10 YEARS.

Year.	Acres Irrigated.	Year.	Acres Irrigated.
1912	9,420	1917	4,467
1913	11,904	1918	6,947
1914	11,809	1919	9,267
1915	11,842	1920	9,803
1916	10,886	1921	11,264

Table No. XIV.

RETURN SHOWING THE AREA IRRIGATED AND THE PRINCIPAL CROPS TREATED FOR THE YEAR 1921.

Petty Sessions District.	Number of Irrigators.	Acres Irrigated.	Original Source of Water Supply.	Means Employed for Procurement and Utilisation.	Principal Crops Treated.
Ayr	210	7,915	River, lagoons, wells, and creeks	Electricity, oil, steam, suction gas, and windmill pumps, drains	Sugar-cane
Brisbane (A)	55	211	Bore, wells, creeks, river, and town supply	Gravitation, oil, windmill, and horse pumps, pipes, sprays	Market gardens, maize, lucerne, and green fodder
Brisbane (B)	15	63	Creek, bore, well, and spring	Oil, windmill, and horse pumps, pipes, and drains	Market gardens
Beaudesert	6	63	Lagoon, creeks, and rivers	Oil, steam, suction gas pumps, gravitation	Lucerne and vegetables
Bowen	79	541	Wells, river, and creek	Gravitation, oil, steam, horse, and windmill pumps, pipes, and drains	Green fodder, sugar-cane, tobacco, fruit, and vegetables
Bundaberg	1	200	Burnett River	Steam pumps, gravitation	Sugar-cane
Charters Towers	31	111	Wells, river, creek, and town supply	Oil, horse, and windmill pumps, gravitation, pipes	Fruit and vegetables
Cloncurry	12	42	River, well, and creek	Oil, steam, horse, and windmill pumps, pipes, and drains	Fruit and vegetables
Cunnamulla	7	326	River and bores	Gravitation, oil and steam pumps, flooding, drains, and pipes	Natural grasses, wheat, and oats (hay), fruit, and vegetables
Esk	10	71	Lagoon, river, creek, and well	Oil engine pumps, sprays, and pipes	Lucerne and vegetables
Gympie	7	31	River and creek	Oil engine and windmill pumps, pipes, drains, and sprays	Lucerne, maize, hay, and potatoes
Hughenden	2	44	Wells	Oil engine, pumps, and drains	Fruit and vegetables
Killarney	16	92	River and creek	Oil and steam pumps, drains	Vegetables
Mount Morgan	13	37	Wells	Oil engine and windmill pumps, pipes, and sprays	Fruit and vegetables
Redcliffe	9	81	Creek and river	Oil engine pumps, sprays, and pipes	Lucerne and green fodder, maize, and vegetables
Rockhampton	61	298	Wells, creek, bore, river, and lagoons	Oil, steam, suction gas, horse, and windmill pumps, pipes, and drains	Lucerne and green fodder, hay and maize, fruit and vegetables
St. George	6	31	River	Oil and steam engine pumps, pipes, and drains	Market gardens
Texas	1	40	River	Gravitation and oil engine	Tobacco
Toowoomba	46	105	Bores and wells	Oil engine and windmill pumps, pipes, and sprays	Lucerne, fruit, and vegetables
Townsville	46	518	River, wells, creeks, and lagoon	Oil, steam, suction gas, horse, and windmill pumps	Market gardens, sugar-cane, and green fodder
52 Other Districts	121	444	Various		Mostly market gardens
Total 1921	754	11,264			

Table No. XV.

WHEAT (GRAIN).

RETURN FOR TEN YEARS SHOWING THE AREA AND PRODUCE OF WHEAT FOR GRAIN.

Year.	Area.	Produce.	Average per Acre.	INCREASE OR — DECREASE ON THE PREVIOUS YEAR.		
				Area.	Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.	Acres.	Bushels.	Bushels.
1912	124,963	1,975,505	15.81	82,001	1,690,396	9.17
1913	132,655	1,769,432	13.34	7,692	206,073	— 2.47
1914	127,015	1,585,087	12.48	— 5,640	— 184,345	— 0.86
1915	93,703	414,438	4.42	— 33,312	— 1,170,649	— 8.06
1916	227,778	2,463,141	10.81	134,075	2,048,703	6.39
1917	127,815	1,035,268	8.10	— 99,963	— 1,427,873	— 2.71
1918	21,637	104,509	4.83	— 106,178	— 930,759	— 3.27
1919	46,478	311,638	6.71	24,841	207,129	1.88
1920	177,320	3,707,357	20.91	130,842	3,395,719	14.20
1921	164,670	3,025,786	18.37	— 12,650	— 681,571	— 2.54
Average of Ten Years	124,403	1,639,216	11.58	...	...	...

Table No. XVI.

WHEAT.

RETURN FOR TEN YEARS SHOWING AVERAGE YIELD PER ACRE IN EACH STATE.

States.	Average Produce per Acre—Bushels.										
	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	Mean for 10 Years ending 1921.
Queensland	15.81	13.34	12.48	4.42	10.81	8.10	4.83	6.71	20.91	18.37	11.58
New South Wales	14.56	11.86	4.65	15.94	9.61	11.33	7.60	2.96	17.79	14.29	11.06
Victoria	12.58	12.84	1.38	15.90	16.37	14.03	11.40	7.75	17.19	16.80	12.62
South Australia	10.34	7.47	1.41	12.46	16.46	12.18	10.49	7.77	15.80	10.46	10.48
Western Australia	11.56	12.15	1.91	10.52	10.28	7.44	7.72	10.77	9.60	10.21	9.22
Tasmania	24.99	18.97	16.10	20.43	12.53	11.57	15.66	18.58	20.01	20.00	17.88

Table No. XVII.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCE OF WHEAT FOR GRAIN IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE.

Divisions and Petty Sessions Districts.	1920.			1921.			INCREASE OR — DECREASE.		
	Area.	Produce.	Average per Acre.	Area.	Produce.	Average per Acre.	Area.	Produce.	Average per Acre.
MORETON.									
Cooyar	201	3,366	16·75	10	105	10·50	— 191	— 3,261	— 6·25
Crow's Nest	927	17,305	18·67	555	11,703	21·09	— 372	— 5,602	2·42
Dugandan	19	442	23·26	27	267	9·89	8	— 175	— 13·37
Esk	1	10	10·00	...	...	...	— 1	— 10	— 10·00
Gatton	385	5,178	13·45	35	405	11·57	— 350	— 4,773	— 1·88
Hehdon	54	1,213	22·46	...	...	...	— 54	— 1,213	— 22·46
Laidley	240	3,935	16·40	3	65	21·67	— 237	— 3,870	5·27
Márburg	15	219	14·60	...	...	...	— 15	— 219	— 14·60
Rosewood	1	20	20·00	...	...	...	— 1	— 20	— 20·00
Total, Moreton	1,843	31,688	17·19	630	12,545	19·91	— 1,213	— 19,143	2·72
WIDE BAY.									
Nanango	931	18,730	20·12	262	2,485	9·48	— 669	— 16,245	— 10·64
Wienholt	1,126	22,135	19·66	614	9,049	14·74	— 512	— 13,086	— 4·92
Total, Wide Bay	2,057	40,865	19·87	876	11,534	13·17	— 1,181	— 29,331	— 6·70
PORT CURTIS.									
Rockhampton	6	18	3·00	...	...	...	— 6	— 18	— 3·00
EDGE CUMBE.									
Townsville ... ..	...	...	...	2	60	30·00	2	60	30·00
CENTRAL.									
Taroom	2	25	12·50	...	...	...	— 2	— 25	— 12·50
MARANOA.									
Mitchell	1,455	24,527	16·86	2,107	28,220	13·39	652	3,693	— 3·47
Roma	11,381	185,319	16·28	12,555	182,719	14·55	1,174	— 2,600	— 1·73
Surat ... ..	...	...	...	20	360	18·00	20	360	18·00
Yeulba ... ..	...	...	...	27	702	26·00	27	702	26·00
Total, Maranoa	12,836	209,846	16·35	14,709	212,001	14·41	1,873	2,155	— 1·94
DOWNS.									
Allora	20,462	488,025	23·85	17,599	339,265	19·28	— 2,863	— 148,760	— 4·57
Clifton	36,440	777,838	21·35	34,787	628,918	18·08	— 1,653	— 148,920	— 3·27
Condamine	493	6,318	12·82	625	7,125	11·40	132	807	— 1·42
Dalby	8,349	165,711	19·85	8,789	155,082	17·69	440	— 10,629	— 2·16
Goombungee	2,437	52,650	21·17	1,661	31,644	19·05	— 826	— 21,006	— 2·12
Goondiwindi	2,039	38,148	18·71	2,186	33,754	15·44	147	— 4,394	— 3·27
Highfields	1,063	25,638	24·12	722	13,972	19·35	— 341	— 11,666	— 4·77
Inglewood	2,821	57,351	20·33	3,024	57,004	18·85	203	— 347	— 1·48
Jondaryan... ..	2,680	52,503	19·59	2,472	38,453	15·56	— 208	— 14,050	— 4·03
Killarney	10,918	267,743	24·52	9,815	228,457	23·28	— 1,103	— 39,286	— 1·24
Oakey	10,118	218,435	21·59	10,481	186,999	17·84	363	— 31,436	— 3·75
Pit'sworth	27,659	512,372	18·52	29,012	494,350	17·04	1,353	— 18,022	— 1·48
Stanthorpe	15	250	16·67	9	70	7·78	— 6	— 180	— 8·89
Texas	247	3,870	15·67	221	2,325	10·52	— 26	— 1,545	— 5·15
Toowoomba	6,032	129,265	21·43	5,089	97,282	19·12	— 943	— 31,983	— 2·31
Warwick	28,753	628,798	21·86	21,961	474,946	21·63	— 6,792	— 153,852	— 0·23
Total, Downs	160,576	3,424,915	21·33	148,453	2,789,646	18·79	— 12,123	— 635,269	— 2·54
Total State	177,320	3,707,357	20·91	164,670	3,025,786	18·37	— 12,650	— 681,571	— 2·54

Table No. XVIII.

RETURN SHOWING THE QUANTITY OF WHEAT TREATED IN QUEENSLAND DURING THE YEAR 1921.

District.	Number of Establishments.	Number of Hands Employed.	Pairs of Stones.	Sets of Rollers.	Wheat Treated.	FLOUR MADE.		MEAL MADE.		BRAN AND POLLARD.	
						Tons.	Value.	Tons.	Value.	Bushels.	Value.
Metropolitan } 1921 {	2 }	288	7	90	2,652,580	54,694	£ 1,098,268	281	£ 5,634	2,553,984	£ 202,888
Elsewhere	9 }										
Total, 1920 ...	11	259	7	98	2,720,018	54,383	£ 1,118,314	305	£ 5,994	2,594,856	£ 234,568

Table No. XIX.

BARLEY.

RETURN FOR TWO YEARS SHOWING THE RESULT OF THE CROP.

Barley.	1920.	1921.
	Acres.	Acres.
Reaped for grain	15,908	7,730
Mown for hay	1,012	862
Used for green food	12,126	15,958
Totals	29,046	24,550

Table No. XX.

BARLEY.

RETURN FOR TWO YEARS SHOWING RESULT OF GRAIN CROP.

Year.	Area for Grain.	Produce.	Average Produce per Acre.
	Acres.	Bushels.	Bushels.
1920	15,908	317,511	19.96
1921	7,730	133,885	17.32
Decrease, 1921	8,178	183,626	2.64

Table No. XXI.

BARLEY.

RETURN SHOWING RESULT OF CROP, DISTINGUISHING BETWEEN MALTING AND OTHER VARIETIES, FOR THE YEAR 1921.

Petty Sessions District.	Malting Grain.			Other Varieties Grain.		
	Acres.	Bushels.	Average per Acre, Bushels.	Acres.	Bushels.	Average per Acre, Bushels.
Allora	309	5,750	18.61	272	3,975	14.61
Clifton	1,959	35,587	18.17	399	7,444	18.66
Crow's Nest	22	522	23.73	51	865	16.96
Dalby	243	2,925	12.04	67	1,130	16.87
Goombungee ... ..	...	...	...	79	2,070	26.20
Highfields	6	66	11.00	41	1,071	26.12
Inglewood	37	792	21.41	37	663	17.92
Jondaryan ... ..	...	...	...	49	939	19.16
Killarney	171	2,046	11.96	38	890	23.42
Oakey	639	10,076	15.77	315	5,136	16.30
Pittsworth	1,016	16,284	16.03	48	1,023	21.31
Toowoomba	573	9,014	15.73	181	4,077	22.52
Warwick	550	9,923	18.04	527	10,043	19.06
All other Districts	33	582	17.64	68	982	14.59
Total, 1921	5,558	93,567	16.83	2,172	40,318	18.56

Table No. XXII.

MALT.

RETURN FOR TEN YEARS SHOWING QUANTITY OF MALT MADE AND HOW DEALT WITH.

Year.	Made from Imported Barley.	Made from Queensland Barley.	Total Malt Made.	Beer (including Waste).	Malt used in Breweries as returned to Excise.
	Bushels.	Bushels.	Bushels.	Gallons.	Bushels.
1912	197,160	4,735	201,895	6,809,405	224,852
1913	65,830	85,769	151,599	6,248,304	203,564
1914	46,545	73,398	119,943	6,244,462	194,031
1915 ... ..	...	34,204	34,204	5,821,397	177,323
1916	47,730	...	47,730	5,586,940	161,764
1917 ... ..	...	70,117	70,117	6,167,638	181,067
1918 ... ..	...	58,139	58,139	6,889,707	206,992
1919	66,119	1,270	67,389	8,466,242	256,658
1920	43,400	24,898	68,298	8,902,429	261,992
1921 ... ..	...	64,000	64,000	7,476,595	225,749

Table No. XXIII.

MAIZE.

RETURN FOR FIVE YEARS SHOWING THE AREA AND PRODUCE OF MAIZE.

Year.	Grain.		Average per Acre.
	Acres.	Bushels.	Bushels.
1917	165,124	4,188,586	25·37
1918	149,505	4,105,974	27·46
1919	105,260	1,830,664	17·39
1920	115,805	2,012,864	17·38
1921	135,034	2,907,754	21·53

Table No. XXIV.

MAIZE (GRAIN).

RETURN SHOWING THE AREA AND PRODUCTION IN EACH DIVISION OF THE STATE FOR THE YEAR 1921.

Division or Group.	Acres.	Produce.	Average.	Proportion of Divisional
				Area to Total Area of Maize for Grain.
		Bushels.	Bushels.	
Moreton	46,837	939,305	20·05	34·69
Wide Bay	42,934	905,353	21·09	31·79
Port Curtis	2,056	33,230	16·16	1·52
Edgumbe	357	6,693	18·75	0·26
Rockingham	15,173	448,733	29·57	11·24
York Peninsula	48	1,505	31·35	0·04
Carpentaria	55	1,058	19·24	0·04
Central Western	...	...	...	...
South Western	5	50	10·00	0·00
Central	110	2,133	19·39	0·08
Maranoa	295	2,929	9·93	0·22
Downs	27,164	566,765	20·86	20·12
Total	135,034	2,907,754	21·53	100·00

Table No. XXV.

MAIZE.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCE IN EACH PRINCIPAL DISTRICT OF THE STATE.

Petty Sessions District.	Area for Grain.			Produce.			Average per Acre.		
	1920.	1921.	Increase or Decrease	1920.	1921.	Increase or Decrease	1920.	1921.	Increase or Decrease
	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Allora	1,660	2,203	543	16,702	44,989	28,287	10·06	20·42	10·36
Atherton	15,479	15,021	458	667,497	445,175	222,322	43·12	29·64	13·48
Beaudesert	1,857	2,446	589	41,426	53,219	11,793	22·31	48·21	25·90
Biggenden	936	944	8	17,982	19,308	1,326	19·21	20·45	1·24
Bundaberg	2,231	1,206	1,025	43,970	29,589	14,381	19·71	24·53	4·82
Clifton	1,999	3,643	1,644	52,176	67,606	15,430	26·10	18·56	7·54
Crow's Nest	3,970	4,230	260	39,797	94,183	54,386	10·02	22·27	12·25
Dalby	524	497	27	5,098	5,038	60	9·73	10·14	0·41
Dugandan	5,313	8,721	3,408	89,145	191,494	102,349	16·78	21·97	5·19
Esk	2,500	2,456	44	54,101	47,914	6,187	21·64	19·51	2·13
Gatton	4,572	5,455	883	44,573	89,730	45,157	9·75	16·45	6·70
Gayndah	1,900	2,179	279	14,318	48,863	34,545	7·54	22·42	14·88
Gin Gin	1,323	773	550	21,834	20,402	1,432	16·50	26·39	9·89
Gladstone	1,250	943	307	17,332	23,079	5,747	13·87	24·47	10·60
Goombungee	1,817	1,185	632	38,871	24,226	14,645	21·39	20·44	0·95
Gympie	1,832	1,555	277	64,549	61,630	2,919	35·23	29·63	5·60
Harrisville	2,362	3,093	731	41,362	55,773	14,411	17·51	18·03	0·52
Helidon	683	1,064	381	12,378	20,178	7,800	18·12	18·96	0·84
Highfields	2,233	1,905	328	41,257	48,406	7,149	18·48	25·41	6·93
Jondaryan	478	1,409	931	3,862	21,881	18,019	8·08	15·53	7·45
Killarney	3,425	3,567	142	28,225	87,573	59,348	8·24	24·55	16·31
Laidley	5,695	6,893	1,198	38,309	126,481	88,172	6·73	18·35	11·62
Logan	768	693	75	16,516	15,444	1,072	21·51	22·29	0·78
Lowood	3,649	4,493	844	50,836	86,555	35,719	13·93	19·26	5·33
Marburg	1,600	1,823	223	24,515	33,280	8,765	15·32	18·26	2·94
Nanango	13,601	16,612	3,011	120,948	256,981	136,033	8·89	16·47	7·58
Nerang	732	590	142	20,417	16,706	3,711	27·89	28·32	0·43
Oakey	1,653	3,150	1,497	31,029	77,112	46,083	18·77	24·48	5·71
Pittsworth	230	1,102	872	2,046	15,991	13,945	8·90	14·51	5·61
Rockhampton	1,227	548	679	10,916	6,118	4,798	8·90	11·16	2·26
Rosewood	1,539	1,590	51	22,756	27,858	5,102	14·79	11·23	3·56
Toowoomba	828	1,615	787	12,209	34,364	22,155	14·75	21·28	6·53
Warwick	6,452	6,592	140	69,739	134,739	65,000	10·81	20·42	9·61
Wienholt	11,306	17,955	6,649	74,328	425,111	350,783	6·57	23·68	17·11
Wowan	*	536	536	*	3,342	3,342	*	6·24	6·24
All other Districts	8,181	6,347	1,834	161,845	147,416	14,429	19·78	23·23	3·45
Total State	115,805	135,034	19,229	2,012,864	2,907,754	894,890	17·38	21·53	4·15

* Included in Rockhampton for 1920.

Table No. XXVI.

OATS.

RETURN FOR FIVE YEARS SHOWING THE AREA UNDER CROP.

Oats.	1917.	1918.	1919.	1920.	1921.
	Acres.	Acres.	Acres.	Acres.	Acres.
Reaped for grain	3,002	298	363	4,690	2,274
Mown for hay	10,901	1,803	2,488	19,229	12,480
Cut for green fodder	16,439	11,109	27,245	33,375	49,793
Totals	30,342	13,210	30,096	57,294	64,547

Table No. XXVII.

OATS.

RETURN FOR TWO YEARS SHOWING THE RESULT OF THE GRAIN CROP.

Year.	Area for Grain.	Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.
1920	4,690	103,933	22.16
1921	2,274	34,409	15.13
Decrease, 1921	2,416	69,524	7.03

Table No. XXVIII.

RYE.

RETURN FOR FIVE YEARS SHOWING THE AREA AND PRODUCE OF THE GRAIN CROP.

Year.	Area.	Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.
1917	43	595	13.84
1918	2	20	10.00
1919	3	20	6.67
1920	72	1,046	14.53
1921	5	60	12.00

Table No. XXIX.

POTATOES.

RETURN FOR FIVE YEARS SHOWING THE AREA, PRODUCTION, AND VALUE OF THE ENGLISH POTATO CROP.

	Acres.	Tons.	Value.
1917 ..	10,738	22,139	£196,484
1918 ..	6,434	11,083	£102,241
1919 ..	4,432	7,844	£183,942
1920 ..	8,770	19,068	£329,876
1921 ..	9,553	16,794	£119,237

Table No. XXX.

COTTON.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCE OF COTTON.

Division or Group.	1920.		1921.		
	Acres.	Lb. Seed Cotton.	Acres Bearing.	Acres not Bearing.	Lb. Seed Cotton.
Moreton	34	13,837	369	78	227,610
Wide Bay	31	11,541	468	27	232,190
Port Curtis	47	20,543	675	468	329,919
Edgecumbe	2	900	10	...	3,875
Rockingham ... ..	...	...	...	...	...
York Peninsula ... ..	...	...	...	2	...
Carpentaria ... ..	...	...	...	...	...
Central Western ... ..	...	...	...	...	...
South Western ... ..	...	...	...	...	...
Central	2	454	124	172	46,080
Maranoa	41	6,780	96	45	34,635
Downs	9	3,010	202	66	65,817
Total State	166	57,065	1,944	858	940,126

Table No. XXXI.
SUGAR.

RETURN SHOWING THE NUMBER OF PLANTATIONS, AREA OF AND AVERAGE AREA FOR THE YEAR 1921.

	Number of Plantations.	Area under Cane.	Average to each Planter.
No. 1 District	1,228	66,500	54
No. 2 District	1,894	74,392	39
No. 3 District	1,076	39,651	37
No. 4 District	267	3,970	15
Total	4,465	184,513	41

Table No. XXXII.

RETURN FOR FIVE YEARS SHOWING THE NUMBER OF PLANTATIONS, AREA AND PRODUCE OF SUGAR-CANE.

Year.	Number of Plantations.	Average to each Planter.	Acres Cultivated.	Acres Crushed.	PRODUCE.	
					Tons Cane.	Tons Sugar, at 94 per cent. Net Titre.
1917	4,401	40	175,762	108,707	2,704,211	307,714
1918	4,148	39	160,534	111,572	1,674,829	189,978
1919	3,634	41	148,469	84,877	1,258,760	162,136
1920	3,930	41	162,619	89,142	1,339,455	167,401
1921	4,465	41	184,513	122,956	2,287,416	282,198

The consumption per capita is estimated at 133 lb. of raw sugar.

Table No. XXXIII.

RETURN FOR FIVE YEARS SHOWING PERCENTAGES OF YIELDS

Year.	TO EACH ACRE CRUSHED.		Tons of Cane to One Ton of Sugar.
	Tons of Cane.	Tons of Sugar.	
1917	24.88	2.83	8.79
1918	15.01	1.70	8.82
1919	14.83	1.91	7.76
1920	15.03	1.88	8.00
1921	18.60	2.30	8.11

Table No. XXXIV.

RETURN SHOWING AREA, PRODUCE, &C., IN EACH DIVISION OF THE STATE FOR THE YEAR 1921.

Division and District.	Area for Plants.	Area Stand-over or Unproductive.	Area Crushed for Sugar.	Total Area for Sugar.	Weight of Cane.	Sugar, 94 N.T.	Molasses Returned.
	Acres.	Acres.	Acres.	Acres.	Tons.	Tons.	Gallons.
<i>Rockingham and York Peninsula—</i>							
Cairns and Douglas	920	7,370	18,951	27,241	348,403	40,332	1,594,480
Ingham and Mourilyan, &c.	1,451	9,762	28,106	39,259	521,947	63,779	2,527,494
Total	2,371	17,072	47,057	66,500	870,350	104,111	4,121,974
<i>Edgcumbe—</i>							
Ayr and Townsville	767	7,629	15,399	23,795	308,363	42,510	1,712,110
Proserpine and Bowen	73	2,193	3,412	5,678	55,917	7,597	238,870
Mackay	862	15,221	28,500	44,583	459,748	57,698	1,882,008
Total	1,702	25,043	47,311	74,056	824,028	107,805	3,832,988
<i>Wide Bay—</i>							
Bundaberg, Gin Gin, &c.	280	7,861	15,803	23,944	309,160	38,463	1,534,046
Biggenden, Childers, Maryborough, Tiaro, &c.	124	5,015	10,522	15,661	232,737	26,399	1,015,062
Gympie* ... ..	...	56	18	74	238	...	...
Total	404	12,932	26,343	39,679	542,135	64,862	2,549,108
<i>Port Curtis—</i>							
Gladstone§ ... ..	...	19	27	46	505	...	...
St Lawrence†	4	185	147	336	3,409	...	...
Total	4	204	174	382	3,914	...	...
<i>Morcton—</i>							
Logan and Nerang|| ... ..	2	345	523	870	11,543	1,100	38,834
Marburg* ... ..	...	69	26	95	361	...	...
Maroochy, &c.	32	1,377	1,522	2,931	35,085	4,320	191,495
Total	34	1,791	2,071	3,896	46,989	5,420	230,329
TOTAL OF STATE	4,515	57,042	122,956	184,513	2,287,416	282,198	10,734,399

* Crushed in Maroochy.

† Crushed in Mackay.

§ Crushed at Bundaberg.

‡ Area exclusive of 1,078 acres cut for fodder.

|| Part crushed in Maroochy.

Table No. XXXV.

RETURN SHOWING THE SUGAR AVERAGES IN EACH DIVISION OF THE STATE FOR THE YEAR 1921.

Divisions or Groups and Districts.	Tons of Cane per Acre Crushed.	Tons of Sugar per Acre Crushed.	Tons of Cane per Ton of Sugar.
<i>Rockingham and York Peninsula—</i>			
Cairns and Douglas, &c.	18·38	2·13	8·64
Ingham and Mourilyan	18·57	2·27	8·18
Total	18·50	2·21	8·36
<i>Edgumbe—</i>			
Ayr and Townsville	20·02	2·76	7·25
Bowen and Proserpine	16·39	2·23	7·36
Mackay	16·13	2·01	8·03
Total	17·42	2·27	7·68
<i>Wide Bay—</i>			
Bundaberg, Gin Gin, &c.	19·56	2·43	8·05
Biggenden, Childers, Maryborough, Tiaro, &c.	22·12	2·51	8·82
Gympie*	13·22	...	...
Total	20·58	2·46	8·36
<i>Port Curtis—</i>			
Gladstone §	18·70	...	...
St. Lawrence†	23·19	...	...
Total	22·49	...	...
<i>Moreton—</i>			
Logan and Nerang‡	22·07	2·10	10·49
Marburg*	13·88	...	...
Maroochy, &c.	23·05	2·76	8·26
Total	22·69	2·59	8·71
TOTAL STATE	18·60	2·30	8·11

* Crushed in Maroochy.

† Crushed at Mackay.

‡ Part crushed in Maroochy,

§ Crushed in Bundaberg.

Table XXXVI.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCE IN EACH DIVISION OF THE STATE.

Division.	AREA UNDER CULTIVATION.			PRODUCTION.					
	1920.	1921.	Increase or —Decrease	1920.		1921.		Increase or —Decrease in 1921.	
				Area Crushed.	Sugar.	Area Crushed.	Sugar.	Area Crushed.	Sugar.
	Acres.	Acres.	Acres.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Rockingham and York Peninsula	60,736	66,500	5,764	43,119	100,865	47,057	104,111	3,938	3,246
Edgumbe	65,338	74,056	8,718	33,399	52,970	47,311	107,805	13,912	54,835
Port Curtis*	93	382	289	42	...	174	...	132	...
Wide Bay†	33,767	39,679	5,912	11,394	11,196	26,343	64,862	14,949	53,666
Moreton	2,685	3,896	1,211	1,188	2,370	2,071	5,420	883	3,050
Total	162,619	184,513	21,894	89,142	167,401	122,956	282,198	33,814	114,797

* Crushed in Edgumbe and Wide Bay.

† The cane grown in Gympie was crushed in the Moreton Division.

Table No. XXXVII.

RETURN FOR TWO YEARS SHOWING PERCENTAGES IN EACH DIVISION OF THE STATE.

Division.	TO EACH ACRE CRUSHED.				TONS CANE TO EACH TON SUGAR.	
	Tons of Cane.		Tons of Sugar.		1920.	1921.
	1920.	1921.	1920.	1921.		
Rockingham and York Peninsula	18·63	18·50	2·34	2·21	7·96	8·36
Edgumbe	12·09	17·42	1·58	2·27	7·64	7·68
Port Curtis	21·33	22·49	*	*	*	*
Wide Bay	9·57	20·58	0·98	2·46	9·74	8·36
Moreton	18·73	22·69	1·99	2·59	9·40	8·71
Total	15·03	18·60	1·88	2·30	8·00	8·11

* Included in Edgumbe and Wide Bay.

Table No. XXXVIII.

RETURN SHOWING THE AREA AND PRODUCTION OF SUGAR-CANE AND SUGAR BEET IN AUSTRALIA FOR THE YEAR 1921.

	Area under Cultivation.	Area Cut or Dug for Manufacture.	Yield of Cane, &c.	Sugar Obtained.
	Acres.	Acres.	Tons.	Tons.
Queensland	184,513	122,956	2,287,416	282,198
New South Wales	11,517	5,519	131,313	15,124
Victoria (beet)	1,602	1,602	16,578	1,872

Table No. XXXIX.
RETURN SHOWING NUMBER OF SUGAR MILLS IN QUEENSLAND DURING THE YEAR 1921.

Manufactories.	Works.	Hands Employed.	VALUE.		
			Machinery.	Land and Premises.	
			£	£	
Refineries } Sugar Mills }	In operation, 1921 {	No.	No.	} 3,763,773	} 578,216
	{	2	372		
	{	40	5,663		
Total	...	42	6,035		

NOTE.—In addition, 2 mills were closed during the year.

Table No. XL.
SUGAR MILLS.

RETURN SHOWING THE FINANCIAL ASSISTANCE RENDERED TO SUGAR MILLS, &C., AND THEIR PRESENT INDEBTEDNESS AT 31ST DECEMBER, 1921.

- Number of Sugar Mill Companies to which advances have been made under—

The Sugar Works Guarantee Acts	13
"The Sugar Works Act of 1911" (Babinda and South Johnstone)	2
From Consolidated Revenue (North Eton and Racecourse)	2
From General Loan Fund	7
- Number of Tramway Companies to which advances have been made under—

The Sugar Works Guarantee Acts (Double Peak)	1
Under other conditions	None.
- Total amount of advances made to 31st December, 1921, under the Sugar Works Guarantee Acts—

	£	s.	d.	£	s.	d.
Marian Mill	39,000	0	0			
Mount Bauple Mill	32,480	16	1			
Pleystowe Mill	35,472	1	3			
Nerang River Mill	19,998	18	10			
Gin Gin Mill	50,000	0	0			
Plane Creek Mill	65,000	0	0			
North Eton Mill	18,200	0	0			
Proserpine Mill	54,000	0	0			
Moreton Mill	32,864	15	0			
Mulgrave Mill	46,000	0	0			
Isis Mill	38,636	0	0			
Mossman Mill	66,300	0	0			
Johnstone Mill	847	17	8			
				498,800	8	10

Under "The Sugar Works Act of 1911"—

Babinda Mill	371,088	15	3
South Johnstone Mill	547,525	0	9
			918,613 16 0

From Consolidated Revenue—

North Eton Mill	26,000	0	0
Racecourse Mill	21,000	0	0
			47,000 0 0

From General Loan Fund—

North Eton Mill	62,965	18	4
Mount Bauple Mill	8,500	0	0
Gin Gin Mill	2,000	0	0
Proserpine Mill	17,765	9	4
Moreton Mill	14,350	0	0
Mossman Mill	14,071	14	0
			119,653 1 8

Indebtedness at 31st December, 1921, under the Sugar Works Guarantee Acts—

Mount Bauple Mill	21,332	16	5
Nerang Mill	31,001	0	4
Gin Gin Mill	8,429	0	11
Proserpine Mill	11,395	1	6
Mossman Mill	11,609	5	10
Johnstone Mill	740	7	8
North Eton Mill	7,251	6	8
			91,758 19 4

Under "The Sugar Works Act of 1911"—

Babinda Mill	331,799	10	5
South Johnstone Mill	547,525	0	9
			879,324 11 2

Under Consolidated Revenue—

North Eton Mill			
			5,496 19 5

Under General Loan Fund—

North Eton Mill	52,609	2	1
Mount Bauple Mill	8,670	0	0
Proserpine Mill	2,657	4	10
Mossman Mill	7,769	17	11
			71,705 4 10

Table No. XLI.

ARROWROOT.

RETURN FOR TWO YEARS SHOWING AREA AND PRODUCE, &C., OF ARROWROOT TUBERS IN PETTY SESSIONS DISTRICTS.

Petty Sessions District.	1920.		1921.		Increase or Decrease —	
	Area.	Produce.	Area.	Produce.	Area.	Produce
	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Beaudesert ... ..	...	...	1	12	1	12
Cairns	6	10	...	...	— 6	— 10
Cleveland ... ..	...	...	15	190	15	190
Gatton ... ..	...	...	3	Nil	3	...
Gayndah ... ..	...	...	2	40	2	40
Gin Gin ... ..	...	...	1	5	1	5
Gladstone ... ..	...	...	5	25	5	25
Kilcoy	2	9	4	30	2	21
Logan	364	4,114	575	7,995	211	3,881
Lowood	1	4	1	10	...	6
Marburg ... ..	...	...	8	35	8	35
Maroochy	2	11	6	32	4	21
Nerang	260	3,142	343	6,220	83	3,078
Rosewood	1	1	3	20	2	19
Tiaro	2	10	1	5	— 1	— 5
Woodford	1	1	...	...	— 1	— 1
Total State	639	7,302	968	14,619	329	7,317

Table No. XLII.

RETURN SHOWING ARROWROOT MANUFACTURED DURING THE YEAR 1921.

Petty Sessions District.	Hands Employed.	Tuber.	Arrowroot.
	No.	Tons.	Lb.
Logan	} 86	12,636	2,688,460
Nerang			

Table No. XLIII.

TOBACCO.

RETURN FOR TWO YEARS SHOWING AREA AND PRODUCTION OF TOBACCO.

Division and Petty Sessions District.	1920.		1921.		Increase or Decrease — 1921.	
	Area.	Produce Dried Leaf.	Area.	Produce Dried Leaf.	Area.	Lb.
	Acres.	Lb.	Acres.	Lb.	Acres.	Lb.
<i>Moreton—</i>						
Lowood	3	4,667	2	407	— 1	— 4,260
Nerang	2	2,780	1	800	— 1	— 1,980
<i>Wide Bay—</i>						
Childers ... ..	...	...	3	469	3	469
<i>Edgecumbe—</i>						
Bowen	46	34,702	4	3,072	— 42	— 31,630
Proserpine	25	13,947	6	2,572	— 19	— 11,375
Townsville	9	8,643	8	4,846	— 1	— 3,797
<i>Rockingham—</i>						
Cardwell	1	242	...	...	— 1	— 242
<i>Downs—</i>						
Goondiwindi ... ..	...	...	6	900	6	900
Inglewood	16	2,288	45	29,114	29	26,826
Texas	126	55,554	122	103,186	— 4	47,632
Killarney ... ..	...	...	1	728	1	728
Total State	228	122,823	198	146,094	— 30	23,271

Table No. XLIV.

COFFEE.

RETURN FOR TWO YEARS SHOWING AREA AND PRODUCTION OF COFFEE.

DIVISION AND PETTY SESSIONS DISTRICT.	Not Bearing.		Bearing.				Average per Acre (Bearing).		1921. Increase or Decrease—Bearing Area.	1921. Increase or Decrease—in Produce.
	1920.	1921.	1920.		1921.		1920.	1921.		
	Acres.	Acres.	Acres.	Lb. (Parchment.)	Acres.	Lb. (Parchment.)	Lb.	Lb.	Acres.	Lb.
Moreton— Maroochy ... ..	...	...	11	5,360	12	7,410	487	618	1	2,050
Wide Bay— Maryborough ... ..	...	...	3	1,000	2	700	333	350	— 1	— 300
Edgumbe— Proserpine	2	...	1	160	2	224	160	112	1	64
Rockingham— Atherton ... ..	...	...	3	5,600	3	6,700	1,867	2,233	...	1,100
Totals	2	...	18	12,120	19	15,034	673	791	1	2,914

Table No. XLV.

VINES.

RETURN FOR TWO YEARS SHOWING AREA AND PRODUCTION OF VINES.

Year.	VINEYARD.			Grapes Gathered.	Average per Acre (Bearing).
	Acres Bearing.	Acres not Bearing.	Total.		
1920	1,110	146	1,256	Lb. 2,566,815	Lb. 2,312
1921	1,042	239	1,281	2,338,966	2,245

Table No. XLVI.

RETURN FOR TWO YEARS SHOWING AREA UNDER VINES AND PRODUCTION OF GRAPES IN THE PRINCIPAL DISTRICTS OF THE STATE.

Petty Sessions District.	AREA UNDER VINES.								
	1920.			1921.			Increase or Decrease—	1920.	1921.
	Bearing.	Not Bearing.	Total Area.	Bearing.	Not Bearing.	Total Area.		Grapes Gathered.	Grapes Gathered.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Lb.	Lb.
Brisbane (A)	285	13	298	276	8	284	— 14	559,275	393,867
Brisbane (B)	9	...	9	5	...	5	— 4	22,204	6,669
Bundaberg	13	...	13	7	1	8	— 5	9,984	4,681
Clifton	2	...	2	2	...	2	...	4,626	3,221
Gatton	5	1	6	5	1	6	...	2,460	4,950
Gympie	6	...	6	2	1	3	— 3	14,122	1,450
Laidley	3	1	4	2	...	2	— 2	1,400	3,260
Logan	7	...	7	9	...	9	2	19,040	10,160
Lowood	75	7	82	58	...	58	— 24	140,700	2,046
Marburg	9	...	9	7	...	7	— 2	345	1,230
Maryborough	16	6	22	15	2	17	— 5	23,773	22,297
Redcliffe	3	2	5	3	...	3	— 2	5,651	2,483
Rockhampton	21	1	22	20	2	22	...	37,526	37,871
Roma	289	24	313	301	32	333	20	812,952	852,759
Stanthorpe	138	80	218	155	148	303	85	409,456	594,074
Toowoomba	27	1	28	27	...	27	— 1	45,146	37,587
Warwick	71	...	71	58	6	64	— 7	42,463	132,005
Wynnum	20	1	21	9	...	9	— 12	53,492	19,816
All other Districts	111	9	120	81	38	119	— 1	362,200	208,540
Totals	1,110	146	1,256	1,042	239	1,281	25	2,566,815	2,338,966

N.B.—Brisbane (B) refers to South Brisbane.

Table No. XLVII.

RETURN FOR FIVE YEARS SHOWING THE AVERAGE PRODUCTION OF GRAPES IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE.

Petty Sessions District.	1917. Average per Acre.	1918. Average per Acre.	1919. Average per Acre.	1920. Average per Acre.	1921. Average per Acre.
Brisbane	Lb. 1,605	Lb. 1,611	Lb. 2,059	Lb. 1,962	Lb. 1,427
Roma	882	563	2,216	2,813	2,833
Brisbane (B), including Wynnum	3,195	4,042	2,952	2,610	1,892
Stanthorpe	1,436	1,568	2,087	2,967	3,833
Toowoomba	1,288	1,310	1,571	1,672	1,392
Warwick	1,970	1,468	978	598	2,276
State	1,613	1,468	2,002	2,312	2,245

Brisbane (B) refers to South Brisbane.

Table No. XLVIII.

WINE.

RETURN FOR FIVE YEARS SHOWING NUMBER OF MAKERS, WINE MADE, AND WINE SPIRIT DISTILLED.

Year.	Number of Makers.	Quantity of Wine Made.	Quantity of Wine Spirit Distilled.
1917	103	Gallons. 39,125	Gallons. 1,326
1918	90	44,491	1,029
1919	80	48,495	1,360
1920	64	71,403	1,700
1921	58	57,793	642

Table No. XLIX.

RETURN SHOWING THE PRINCIPAL DISTRICTS IN WHICH WINE WAS MADE DURING THE YEAR 1921.

Petty Sessions District.	Number of Makers.	Quantity of Wine Made.	Quantity of Wine Spirit Distilled.
Brisbane (A and B), including Wynnum	7	Gallons. 4,788	Gallons. ...
Logan	1	230	...
Maryborough	5	1,425	...
Roma	3	44,030	...
Toowoomba	15	1,393	...
Warwick	1	4,000	...
All other Districts	26	1,927	...
Totals	58	57,793	642

N.B.—Brisbane (B) refers to South Brisbane.

Table No. L.
BANANAS.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF BANANAS IN THE PRINCIPAL DISTRICTS OF THE STATE.

Petty Sessions District.	Area.		Produce.		Increase or Decrease—1921.	
	1920.	1921.	1920.	1921.	Area.	Produce.
	Acres.	Acres.	Bunches.	Bunches.	Acres.	Bunches.
Brisbane (A)...	703	1,021	188,679	259,872	318	71,193
Cairns ...	361	211	55,743	35,658	— 150	—20,085
Caboolture ...	177	146	22,838	24,657	— 31	1,819
Cleveland ...	124	159	8,012	16,585	35	8,573
Gladstone ...	136	219	3,923	26,053	83	22,130
Gympie ...	1,682	2,280	217,572	443,682	598	226,110
Logan ...	276	315	37,945	54,000	39	16,055
Maroochy ...	2,298	2,581	227,596	350,413	283	122,817
Maryborough ...	620	609	88,324	125,424	— 11	37,100
Mourilyan ...	60	74	7,546	5,842	14	— 1,704
Nerang ...	919	594	141,255	99,924	— 325	— 41,331
Redcliffe ...	612	652	70,977	113,787	40	42,810
Rockhampton ...	225	242	27,282	57,037	17	29,755
Somerset ...	98	98	7,000	6,585	...	— 415
Townsville ...	132	83	15,729	5,432	— 49	— 10,297
All other Districts ...	558	589	77,700	117,835	31	40,135
Totals ...	8,981	9,873	1,198,121	1,742,786	892	544,665

Table No. LI.

RETURN SHOWING THE AVERAGE YIELD OF BANANAS IN THE PRINCIPAL DISTRICTS OF THE STATE DURING THE YEAR 1921.

	Average per Acre— Bunches.		Average per Acre— Bunches.
Brisbane (A) ...	255	Maroochy ...	136
Caboolture ...	169	Maryborough ...	206
Cairns ...	169	Mourilyan ...	79
Cleveland ...	104	Nerang ...	168
Gladstone ...	119	Redcliffe ...	175
Gympie ...	195	Rockhampton ...	236
Logan ...	171		

Table No. LII.

PINEAPPLES.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF PINEAPPLES IN THE STATE.

Petty Sessions District.	1920.		1921.		Increase or Decrease—1921.	
	Area.	Produce.	Area.	Produce.	Area.	Produce.
	Acres.	Dozen.	Acres.	Dozen.	Acres.	Dozen.
Brisbane (A) ...	435	133,895	394	116,448	— 41	— 17,447
Brisbane (B) ...	130	39,414	131	30,735	1	— 8,679
Bundaberg ...	25	3,016	41	8,171	16	5,155
Caboolture ...	116	18,266	144	21,960	28	3,694
Cairns ...	135	21,391	95	16,350	— 40	— 5,041
Cleveland ...	1,015	230,645	971	244,002	— 44	— 13,357
Logan ...	156	46,236	149	32,436	— 7	— 13,800
Maroochy ...	1,190	218,889	1,229	241,218	39	22,329
Maryborough ...	158	32,365	154	38,679	— 4	6,314
Redcliffe ...	37	9,215	32	8,222	— 5	— 1,023
Rockhampton ...	101	17,905	132	29,118	31	11,213
Tiaro ...	45	6,179	52	5,040	7	— 1,139
Wynnum ...	137	20,574	131	26,520	— 6	5,946
All other Districts ...	229	28,646	301	57,202	72	28,556
Totals ...	3,909	826,666	3,956	876,101	47	49,435

N.B.—Brisbane (B) refers to South Brisbane

Table No. LIII.

ORANGES.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF ORANGES IN THE PRINCIPAL DISTRICTS OF THE STATE.

Petty Sessions District.	Area.		Bearing, 1921.	Not yet Bearing, 1921.	Produce.		Increase or Decrease - 1921.	
	1920.	1921.	Area.	Area.	1920.	1921.	Area.	Produce.
	Acres.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Acres.	Bushels.
Atherton	20	25	17	8	2,231	3,327	5	1,096
Bowen	170	178	149	29	9,276	6,573	8	2,703
Brisbane (A)	18	33	18	15	734	1,169	15	435
Brisbane (B)	22	19	16	3	1,046	991	3	55
Bundaberg	60	43	39	4	5,649	4,286	17	1,363
Caboolture	30	41	26	15	2,330	2,312	11	18
Cairns	225	137	131	6	29,814	19,779	88	10,035
Cardwell	85	72	66	6	3,140	5,187	13	2,047
Charters Towers	42	46	33	13	3,329	2,421	4	908
Childers	42	45	31	14	1,407	2,360	3	953
Cleveland	22	27	13	14	2,108	1,795	1	313
Cook	67	69	57	12	3,819	3,514	2	305
Douglas	26	29	24	5	...	482	3	482
Esk	42	64	33	31	3,033	4,585	22	1,552
Gatton	66	74	68	6	371	10,988	8	10,617
Gayndah	41	32	29	3	2,139	2,994	9	855
Gladstone	27	49	31	18	2,814	6,932	22	4,118
Gympie	46	56	14	42	1,368	1,431	10	63
Helidon	33	26	26	...	1,199	3,488	7	2,289
Ingham	23	22	17	5	3,233	3,141	1	92
Ipswich	17	17	7	10	318	254	...	64
Laidley	8	5	4	1	74	680	3	606
Logan	108	72	62	10	10,025	7,891	36	2,134
Lowood	22	118	118	...	383	529	96	146
Mackay	41	43	27	16	4,043	5,120	2	1,077
Maroochy	1,423	1,480	822	658	53,915	77,688	57	23,773
Maryborough	474	510	337	173	15,405	26,865	36	11,460
Mourilyan	298	106	101	5	602	546	192	56
Nerang	55	74	48	26	4,281	7,471	19	3,190
Proserpine	28	23	18	5	1,166	1,787	5	621
Redcliffe	32	23	9	14	2,811	1,538	9	1,273
Rockhampton	182	170	116	54	10,796	12,141	12	1,345
Tiaro	60	74	52	22	2,990	3,816	14	826
Toowoomba	43	43	37	6	814	1,007	...	193
Woodford	21	21	19	2	7,316	1,657	...	5,659
Wowan	*	3	1	2	*	204	3	204
All other Districts	291	284	212	72	15,345	18,869	7	3,524
Total	4,216	4,153	2,828	1,325	209,324	255,818	63	46,494

N.B.—Brisbane (B) refers to South Brisbane.

* Included in Rockhampton for 1920.

Table No. LIV.

MANGOES.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF MANGOES IN THE PRINCIPAL DISTRICTS OF THE STATE.

Petty Sessions District.	Area.		Bearing, 1921.	Not yet Bearing, 1921.	Produce.		Increase or Decrease - 1921.	
	1920.	1921.	Area.	Area.	1920.	1921.	Area.	Produce.
	Acres.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Acres.	Bushels.
Atherton	5	6	5	1	1,250	1,962	1	712
Bowen	28	34	25	9	4,555	8,208	6	3,653
Brisbane (A)	6	6	5	1	687	2,366	...	1,679
Bundaberg	6	5	5	...	867	1,209	1	342
Cairns	12	6	6	...	1,874	1,709	6	165
Cleveland	3	5	4	1	490	1,091	2	601
Douglas	9	6	6	...	...	1,771	3	1,771
Ingham	22	20	20	...	1,176	982	2	194
Logan	8	4	4	...	1,284	185	4	1,099
Mackay	25	32	31	1	6,512	4,953	7	1,559
Maroochy	7	7	5	2	965	539	...	426
Maryborough	16	11	9	2	4,213	2,082	5	2,131
Proserpine	16	15	14	1	809	1,456	1	647
Redcliffe	7	10	8	2	753	664	3	89
Rockhampton	38	38	34	4	3,337	4,086	...	749
Tiaro	9	11	8	3	2,579	2,247	2	332
Townsville	17	9	7	2	5,188	1,905	8	3,283
All other Districts	57	71	54	17	8,965	11,743	14	2,778
Totals	291	296	250	46	45,504	49,158	5	3,654

Table No. LV.
STRAWBERRIES.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF STRAWBERRIES IN THE PRINCIPAL DISTRICTS OF THE STATE.

Petty Sessions District.	Area.		Produce.		Increase or Decrease —	
	1920.	1921.	1920.	1921.	1921.	1921.
	Acres.	Acres.	Quarts.	Quarts.	Acres.	Quarts.
Brisbane (A)	3	13	1,766	17,376	10	15,610
Brisbane (B)	3	6	1,370	13,378	3	12,008
Cleveland	53	87	123,120	146,782	34	23,662
Maroochy	32	31	55,917	29,784	1	26,133
Rockhampton	1	1	2,008	3,420	...	1,412
Wynnum	9	18	5,350	31,222	9	25,872
All other Districts	6	6	4,659	3,127	...	1,532
Totals	107	162	194,190	245,089	55	50,899

N.B.—Brisbane (B) refers to South Brisbane.

Table No. LVI.
APPLES.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF APPLES IN THE PRINCIPAL DISTRICTS OF THE STATE.

Petty Sessions District.	Area.		Increase or Decrease — 1921.	Bearing, 1921.	Not Bearing, 1921.	Produce.		Increase or Decrease — 1921.
	1920.	1921.				1920.	1921.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Atherton	3	7	4	6	1	166	1,515	1,349
Crow's Nest	2	...	2	...	...	213	...	213
Dalby	2	1	1	1	...	15	23	8
Highfields	1	1	...	1	...	158	55	103
Nanango	11	9	2	6	3	164	171	7
Nerang	3	3	...	3	...	3	30	27
Stanthorpe	3,101	3,288	187	2,093	1,195	95,167	113,614	18,447
Toowoomba	13	11	2	9	2	189	334	145
Warwick	183	248	65	70	178	461	1,062	601
All other Districts	21	18	3	14	4	292	419	127
Totals	3,340	3,586	246	2,203	1,383	96,828	117,223	20,395

Table No. LVII.

OTHER FRUITS.

RETURN SHOWING THE AREA AND PRODUCTION OF OTHER FRUITS DURING THE YEAR 1921.

	Acres.	Yield.
Apricots	110	4,073 bushels
Cape gooseberries	40	52,772 quarts
Cherries	16	654 bushels
Citrons	4	28 bushels
Custard apples	207	15,572 bushels
Figs	14	1,166 bushels
Lemons	367	21,514 bushels
Nectarines	231	11,422 bushels
Passion fruit	40	4,286 bushels
Paw-paws	258	57,262 dozen
Peaches	1,973	100,703 bushels
Pears	292	9,463 bushels
Persimmons	12	1,068 bushels
Plums	907	29,696 bushels
Quinces	56	1,872 bushels
Rosellas	2	108 bushels
Olives	1	Nil

Table No. LVIII.
OTHER VEGETABLES.

RETURN FOR TWO YEARS SHOWING AREA AND PRODUCTION OF OTHER VEGETABLES..

Other Vegetables.	1920.		1921.	
	Acres.	Produce.	Acres.	Produce.
Pulse { Beans	44	967 bushels	53	7,237 bushels
Peas	45	1,620 bushels	36	1,231 bushels
Green { Beans	268	21,466 bushels	368	28,430 bushels
Peas	244	15,909 bushels	285	18,535 bushels
Cabbages and Cauliflowers ...	920	188,320 dozen	788	166,334 dozen
Cucumbers	181	89,104 dozen	199	68,381 dozen
Onions	290	24,952 cwt.	266	15,320 cwt.
Tomatoes	2,154	220,043 bushels	2,128	218,742 bushels
Turnips	256	1,216 tons	152	501 tons
Carrots	3	121 cwt.	1	171 dozen
Marrows	10	34 tons	9	23 tons

Table No. LIX.

PRINCIPAL OTHER CROPS.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF OTHER CROPS.

	1920.		1921.	
	Acres.	Produce.	Acres.	Produce.
Cocoanuts	867	{ 15,698 dozen and 12 tons copra }	750	{ 11,877 dozen and 8 tons copra }
Broom millet	372	194,236 lb.	195	97,934 lb.
Canary seed	12,425	7,876,828 lb.	2,111	989,306 lb.
Indiarubber	5	...	5	...
Grass seed	1,735	24,955 bushels	597	10,878 bushels
Mangold wurzel	106	766 tons	109	795 tons
Peanuts	272	274,916 lb.	521	551,047 lb.
Lucerne seed	275	24,120 lb.	3	3,696 lb.
Millet seed	313	6,543 bushels	39	522 bushels
Linseed	56	18,720 lb.	37	11,540 lb.

Table No. LX.

PASTURAGE.

RETURN FOR FIVE YEARS SHOWING THE AREA UNDER PASTURAGE.

	1917. Acres.	1918. Acres.	1919. Acres.	1920. Acres.	1921. Acres.
Hay	96,431	54,772	48,843	94,212	98,155
Green forage	87,909	90,635	157,568	142,554	147,135
Artificially sown pasture ..	406,094	418,467	449,019	450,780	459,914
Total	590,434	553,874	655,430	687,546	705,204

Table No. LXI.

HAY.

RETURN FOR TWO YEARS SHOWING THE AREA AND PRODUCTION OF HAY CROPS.

Hay Crops.	Area.		Increase or Decrease — 1921.	Produce.		Increase or Decrease — 1921.
	1920.	1921.		1920.	1921.	
	Acres.	Acres.	Acres.	Tons.	Tons.	Tons.
Wheat	14,024	13,837	- 187	18,885	17,277	- 1,608
Oats	19,229	12,480	- 6,749	24,812	14,636	- 10,176
Lucerne	53,059	67,183	14,124	63,804	100,822	37,018
Other	7,900	4,655	- 3,245	9,208	5,940	- 3,268
Totals	94,212	98,155	3,943	116,709	138,675	21,966

Table No. LXII.
ARTIFICIALLY GROWN PASTURE.

RETURN FOR TWO YEARS SHOWING THE AREA UNDER ARTIFICIALLY GROWN PASTURES.

Petty Sessions District.	1920.		1921.		Increase, 1921.	Decrease, 1921.
	Acres.	Acres.	Acres.	Acres.		
Atherton	39,051	41,809	2,758	...		
Beaudesert	4,769	5,273	504	...		
Biggenden	17,115	16,193	...	922		
Dalby	33,019	30,502	...	2,517		
Dugandan	3,139	4,804	1,665	...		
Eidsvold	1,979	2,130	151	...		
Esk	2,941	3,622	681	...		
Gatton	4,619	5,395	776	...		
Gayndah	20,081	29,161	9,080	...		
Gladstone	11,680	3,081	...	8,599		
Goondiwindi	628	230	...	398		
Gympie	87,078	90,938	3,860	...		
Helidon	1,999	2,398	399	...		
Maroochy	48,112	48,737	625	...		
Nanango	29,814	32,131	2,317	...		
Nerang	22,372	21,702	...	670		
Pittsworth	9,088	7,465	...	1,623		
Redcliffe	1,049	907	...	142		
Rockhampton	28,124	14,494	...	13,630		
Tiaro	3,527	4,638	1,111	...		
Wienholt	50,303	51,176	873	...		
Woodford	11,013	12,659	1,646	...		
Wowan	*	8,880	8,880	...		
All other Districts	19,280	21,589	2,309	...		
Totals	450,780	459,914	9,134	...		

* Included in Rockhampton for 1920.

Table No. LXIII.
ENSILAGE.

RETURN FOR TWO YEARS SHOWING NUMBER OF MAKERS AND ENSILAGE MADE IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE.

Petty Sessions District.	1920.		1921.		Increase, 1921.	Decrease, 1921.
	No. of Makers.	Tons.	No. of Makers.	Tons.		
Atherton	2	260	3	260	...	...
Beaudesert	1	30	...	...	...	30
Biggenden	3	135	5	405	270	...
Brisbane (A)	1	200	5	205	5	...
Brisbane (B)	11	819	6	528	...	291
Cairns	1	80	1	60	...	20
Charters Towers	2	53	3	73	20	...
Clifton	1	14	...	...	...	14
Condamine	1	18	2	68	50	...
Dalby	4	59	...	...	...	59
Dugandan	6	306	1	50	...	256
Eidsvold	...	...	2	60	60	...
Esk	7	535	14	910	375	...
Gatton	10	538	5	328	...	210
Gayndah	3	85	4	255	170	...
Gin Gin	...	...	1	90	90	...
Gladstone	2	30	2	35	5	...
Gympie	10	365	3	245	...	120
Harrisville	5	137	1	40	...	97
Herberton	1	70	1	60	...	10
Highfields	1	15	...	...	...	15
Inglewood	1	30	...	...	...	30
Ipswich	6	475	6	524	49	...
Kilcoy	1	20	...	...	...	20
Killarney	3	220	2	32	...	188
Laidley	...	...	1	50	50	...
Logan	1	65	...	...	...	65
Lowood	4	113	...	...	...	113
Marburg	2	145	2	180	35	...
Maroochy	4	45	2	105	60	...
Maryborough	3	134	2	110	...	24
Nanango	16	506	5	170	...	336
Nerang	1	50	1	40	...	10
Oakey	2	160	1	12	...	148
Pittsworth	...	...	1	210	210	...
Redcliffe	3	42	3	140	98	...
Rockhampton	5	250	1	20	...	230
Roma	1	5	...	...	...	5
Rosewood	14	514	1	100	...	414
Taroom	3	71	3	30	...	41
Toowoomba	2	180	2	440	260	...
Warwick	3	54	...	...	...	54
Wienholt	17	772	1	50	...	722
Woodford	...	...	1	100	100	...
Wowan	*	*	2	560	560	...
Totals	164	7,600	96	6,575	...	1,025

N.B.—Brisbane (B) refers to South Brisbane.

* Included in Rockhampton for 1920.

Table No. LXIV. RETURN SHOWING THE RESULTS OF THE DAIRYING INDUSTRY IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE DURING THE YEAR 1921.

District.	HOW UTILISED.													ESTABLISHMENTS.				DAIRY CATTLE.		BUTTER MADE.			CHEESE MADE.		
	Total Milk Obtained.	For Butter on Farms.	For Cheese on Farms.	For Domestic Purposes by Producer.	Separated for Sale.	Sold for Consumption as Milk.	Sold to Condensed Milk Factories.	Sold to Cheese Factories.	No. Dairying.	No. Butter Factories.	No. Cheese Factories.	In Milk.	Dry.	Average per Cow.	At Factories.	By Farmers.	Total.	At Factories.	By Farmers.	Total.	At Factories.	By Farmers.	Total.		
<i>Moreton—</i>																									
Brisbane (A)	2,400,718	151,116	...	225,158	838,731	1,185,713	...	613	...	...	7,278	2,367	249	...	55,068	...	55,068	...	...	...	...	...	...	...
Brisbane (B)	824,543	33,364	...	152,217	588,180	...	...	173	...	...	2,492	782	252	...	9,158	...	9,158	...	...	...	...	...	...	...
Beaudesert	3,948,767	116,899	...	110,339	3,674,223	47,306	...	425	1	...	15,734	3,502	212	...	1,906,611	...	1,906,611	...	...	...	...	...	...	...
Caboollure	629,090	20,486	...	23,737	565,699	19,158	...	94	1	...	2,468	659	201	...	2,451,381	...	2,451,381	...	...	...	...	...	...	...
Cleveland	104,715	2,860	...	51,958	6,100	43,797	...	104	...	...	355	158	204	...	1,140	...	1,140	...	...	...	...	...	...	...
Cooyar	805,008	34,058	...	23,927	747,023	...	...	90	...	...	2,184	451	306	...	13,923	...	13,923	...	...	...	...	...	...	...
Crow's Nest	2,703,389	106,608	...	71,066	2,522,757	2,958	...	353	1	...	1,754	1,754	333	...	969,752	...	969,752	...	...	...	...	...	...	...
Dugandan	4,144,285	141,628	...	156,026	3,835,686	10,945	...	568	1	...	11,115	1,764	322	...	2,677,569	...	2,677,569	...	...	...	...	...	...	...
Esk	3,659,610	93,141	...	114,208	1,600,778	6,324	...	385	1	...	11,488	4,252	233	...	386,808	...	386,808	...	...	...	...	...	...	...
Gatton	3,359,823	127,266	...	142,021	3,085,032	4,912	592	559	2	...	7,060	2,634	347	...	1,941,394	...	1,941,394	...	...	...	...	...	...	...
Goodna	145,403	8,731	...	26,365	102,663	7,644	...	31	...	...	372	161	273	...	3,862	...	3,862	...	...	...	...	...	...	...
Harrisville	2,750,377	94,849	...	73,712	2,544,768	37,048	...	355	...	...	7,582	1,411	306	...	44,961	...	44,961	...	...	...	...	...	...	...
Helidon	1,835,131	85,992	...	53,952	1,693,442	1,745	...	239	...	...	3,934	1,294	851	...	30,578	...	30,578	...	...	...	...	...	...	...
Ipswich	1,287,815	40,782	...	52,302	1,033,637	161,094	...	197	3	...	5,129	995	210	...	18,545	...	18,545	...	...	...	...	...	...	...
Laidley	1,342,797	62,619	...	47,764	1,229,424	2,980	...	134	...	...	6,320	1,723	234	...	23,088	...	23,088	...	...	...	...	...	...	...
Laidley	3,545,383	62,619	...	106,604	3,300,403	8,830	17,749	421	1	...	5,662	1,808	303	...	1,431,120	...	1,431,120	...	...	...	...	...	...	...
Logan	2,265,773	117,129	...	78,325	1,928,249	142,070	...	409	1	...	5,891	915	265	...	4,506,432	...	4,506,432	...	...	...	...	...	...	...
Lowood	1,806,397	60,551	...	59,767	1,460,910	7,543	...	294	...	...	3,792	876	309	...	20,665	...	20,665	...	...	...	...	...	...	...
Marburg	1,442,162	41,550	...	41,062	1,352,007	15,936	...	202	...	...	15,646	3,846	309	...	1,658,355	...	1,658,355	...	...	...	...	...	...	...
Maroochy	4,513,488	183,680	...	242,369	4,071,423	39,964	...	918	2	...	14,235	2,947	256	...	89,668	...	89,668	...	...	...	...	...	...	...
Nerang	6,439,129	115,071	...	87,858	4,005,138	60,204	143,798	337	...	...	8,415	1,509	374	...	48,461	...	48,461	...	...	...	...	...	...	...
Redcliffe	3,707,453	45,904	...	60,735	2,989,110	75,349	...	285	1	...	6,561	1,707	254	...	760,208	...	760,208	...	...	...	...	...	...	...
Rosewood	2,100,071	59,707	...	60,821	1,871,638	56,205	...	301	...	...	890	210	387	...	29,752	...	29,752	...	...	...	...	...	...	...
Southport	403,221	6,769	...	335,702	...	...	...	32	...	...	5,537	1,429	228	...	2,234	...	2,234	...	...	...	...	...	...	...
Woodford	1,584,974	32,831	...	35,062	1,505,241	...	...	164	1	...	11,840	...	...	...	739,989	...	739,989	...	...	...	...	...	...	...
Wynnum	156,945	10,825	...	25,840	...	120,280	...	61	...	...	397	174	275	...	1,794	...	1,794	...	...	...	...	...	...	...
Total Moreton	55,859,167	1,909,969	7,500	2,028,629	46,452,001	3,190,205	2,082,077	7,734	16	3	160,829	40,539	277	22,879,832	802,397	23,682,229	371,327	7,000	202,800	7,000	167,885	202,800	7,000	167,885	
<i>Wide Bay—</i>																									
Biggenden	2,591,984	104,085	...	63,203	2,235,192	90,589	189,504	308	1	...	9,213	2,398	223	...	1,149,539	...	1,149,539	...	...	...	...	...	...	...
Bundaberg	1,077,574	111,234	...	103,147	772,804	8,693	...	385	1	...	3,872	2,102	180	...	1,080,936	...	1,080,936	...	...	...	...	...	...	...
Childers	284,505	69,947	...	46,039	159,826	...	...	197	...	...	1,349	774	134	...	23,611	...	23,611	...	...	...	...	...	...	...
Eidsvold	279,057	20,535	...	10,435	248,037	...	...	40	...	...	858	294	242	...	5,878	...	5,878	...	...	...	...	...	...	...
Gayndah	3,336,157	153,597	...	76,532	2,816,606	9,500	279,922	499	2	...	12,795	3,198	209	...	1,653,030	...	1,653,030	...	...	...	...	...	...	...
Gin Gin	641,021	138,503	...	47,448	456,523	547	...	180	...	...	2,539	1,528	158	...	35,455	...	35,455	...	...	...	...	...	...	...
Gympie	14,412,528	229,409	...	276,432	13,857,685	49,162	...	997	4	...	31,843	10,277	343	...	5,997,680	...	5,997,680	...	...	...	...	...	...	...
Kilkivan	897,518	64,241	...	37,599	795,495	183	...	111	...	...	3,199	867	221	...	19,644	...	19,644	...	...	...	...	...	...	...
Maryborough	1,335,794	147,019	...	64,761	986,092	127,322	...	356	1	...	4,663	1,905	203	...	1,107,510	...	1,107,510	...	...	...	...	...	...	...
Mount Perry	1,247,710	9,330	...	3,962	110,688	730	...	22	...	...	505	130	196	...	4,516	...	4,516	...	...	...	...	...	...	...
Nanango	7,674,437	194,920	...	189,860	6,983,915	24,472	...	804	2	...	17,008	4,704	353	...	3,996,249	...	3,996,249	...	...	...	...	...	...	...
Tiaro	1,681,324	105,328	...	53,895	1,518,621	480	...	257	...	...	2,754	193	193	...	50,557	...	50,557	...	...	...	...	...	...	...
Wienholt	7,128,526	214,112	...	244,997	6,639,577	18,525	...	795	1	...	19,015	4,655	301	...	3,339,840	...	3,339,840	...	...	...	...	...	...	...
Total Wide Bay	41,465,135	1,560,260	5,000	1,218,360	37,589,361	330,143	762,011	4,951	12	7	112,818	35,536	280	18,280,124	612,746	18,892,870	748,047	4,700	214,702	4,700	4,700	214,702	4,700	4,700	
<i>Port Curtis—</i>																									
Banana	45,260	32,760	...	12,500	2,455,811	9,420	...	22	...	...	154	42	231	...	8,150	...	8,150	...	...	...	...	...	...	...
Gladstone	2,721,416	159,489	...	96,456	24,385	2,455,811	...	379	1	...	8,559	4,330	211	...	1,394,150	...	1,394,150	...	...	...	...	...	...	...
Mount Morgan	64,289	13,950	...	8,430	17,524	283,599	...	29	...	...	530	267	81	...	2,685	...	2,685	...	...	...	...	...	...	...
Rockhampton	2,960,774	227,298	...	126,880	2,322,997	283,599	...	532	2	...	12,436	7,270	150	...	1,198,400	...	1,198,400	...	...	...	...	...	...	...
St. Lawrence	15,501	12,616	...	2,490	542,110	385	...	7	...	...	55	51	146	...	2,380	...	2,380	...	...	...	...	...	...	...
Wowan	585,541	19,661	...	23,770	542,110	...	...	124	1	...	2,247	388	222	...	9,598	...	9,598	...	...	...	...	...	...	...
Total Port Curtis	6,392,781	465,774	240	270,526	5,338,442	317,799	...	1,083	4	...	23,981	12,348	176	2,838,983	155,189	2,994,162	...	200	2,994,162	...	200	...	...	...

b Including 1,031,014 gallons of milk sent to New South Wales.

Table No. LXIV—continued.
 RETURN SHOWING THE RESULTS OF THE DAIRYING INDUSTRY IN THE SEVERAL PETTY SESSIONS DISTRICTS OF THE STATE DURING THE YEAR 1921—continued.

District.	Total Milk Obtained. Gallons.	HOW UTILISED.								ESTABLISHMENTS.			DAIRY CATTLE.		Average per Cow. Gallons.	BUTTER MADE.			CHEESE MADE.							
		For Butter on Farms. Gallons.	For Cheese on Farms. Gallons.	For Domestic Purposes by Producer. Gallons.	Separated for Sale. Gallons.	Sold for Consumption as Milk. Gallons.	Sold to Condensed Milk Factories. Gallons.	Sold to Cheese Factories. Gallons.	Dairying. No.	Butter Factories. No.	Cheese Factories. No.	In Milk. No.	Dry. No.	At Factories. Lb.		By Farmers. Lb.	Total. Lb.	At Factories. Lb.	By Farmers. Lb.	Total. Lb.						
<i>Downs—</i>																										
Allora ...	2,360,066	67,388	...	77,988	1,822,941	1,100	390,649	264	1	...	4,655	1,061	413	945,284	26,666	971,950	2,259,891	...	...	2,259,891	...	...	2,259,891	...	2,259,891
Clifton ...	3,200,628	85,778	...	112,842	1,518,389	2,090	1,481,529	418	1	12	6,961	1,205	392	496,635	39,680	536,315
Condamine ...	1,962,569	47,405	...	60,838	1,850,903	3,423	...	231	1	...	6,106	2,648	224	949,544	15,727	965,271
Dalby ...	7,801,079	273,769	...	265,572	6,180,210	50,773	1,030,755	932	2	5	23,562	7,853	248	3,162,177	119,108	3,281,285	955,952	...	...	955,952	...	...	955,952	...	955,952
Goombungee ...	1,232,500	29,900	...	28,800	955,500	...	218,300	139	1	3	2,659	681	369	910,613	14,750	925,363	345,632	...	...	345,632	...	...	345,632	...	345,632
Goondiwindi ...	529,807	17,562	...	22,315	479,010	...	4,860	92	1	1	1,967	441	220	323,933	8,199	332,132	234,534	...	...	234,534	...	...	234,534	...	234,534
Highfields ...	1,408,011	57,844	...	33,693	1,002,197	6,060	314,277	211	...	3	3,491	778	330	...	24,755	24,755	321,978	...	...	321,978	...	...	321,978	...	321,978
Inglewood ...	638,600	35,995	...	49,255	492,589	2,200	58,561	116	...	2	2,404	1,008	187	...	14,490	14,490	393,846	...	...	393,846	...	...	393,846	...	393,846
Jondaryan ...	2,007,524	61,413	...	52,595	955,424	...	938,092	254	...	10	5,030	2,055	283	...	26,162	26,162	1,385,565	...	...	1,385,565	...	...	1,385,565	...	1,385,565
Killarney ...	1,283,495	80,014	...	100,489	997,470	3,010	102,512	196	1	1	3,277	1,006	300	215,208	36,427	251,635	38,256	...	...	38,256	...	...	38,256	...	38,256
Oakey ...	3,732,627	58,107	...	122,591	1,657,415	12,441	1,624,981	441	1	6	8,692	2,108	346	1,217,404	28,195	1,245,599	1,498,691	...	...	1,498,691	...	...	1,498,691	...	1,498,691
Pittsworth ...	5,619,781	62,140	...	209,422	981,644	4,572	3,778,004	568	...	13	13,223	2,041	368	...	28,812	28,812	3,762,361	...	...	3,762,361	...	...	3,762,361	...	3,762,361
Stanthorpe ...	c 105,836	25,716	...	57,186	7,000	15,934	...	253	569	94	160	...	12,373	12,373
Texas ...	463,976	14,597	...	22,380	426,989	88	1	...	2,030	692	170	293,453	5,229	298,682
Toowoomba ...	3,866,788	79,074	...	169,552	948,438	173,854	1,430,039	510	1	7	6,896	1,419	465	2,374,031	38,323	2,412,354	1,422,050	...	...	1,422,050	...	...	1,422,050	...	1,422,050
Warwick ...	4,121,187	214,568	...	206,538	2,731,003	83,858	885,220	657	1	7	9,404	3,062	331	1,745,009	91,907	1,836,916
Total Downs ...	40,334,474	1,211,270	...	1,592,056	23,010,152	359,315	12,257,779	5,370	12	70	100,919	28,152	312	12,633,291	532,303	13,165,594	14,016,829	...	...	14,016,829	...	...	14,016,829	...	14,016,829
Other Districts ...	7,029,335	768,272	...	810,901	5,021,750	372,178	56,234	2,547	3	3	24,704	14,382	180	1,917,998	270,321	2,188,319	52,424	...	...	52,424	...	...	52,424	...	52,424
Grand Total, 1921 ...	151,080,802	5,915,545	...	5,920,472	117,411,706	4,569,640	13,264,810	21,695	47	83	423,251	130,957	273	58,550,238	2,372,956	60,923,194	15,188,627	...	...	15,188,627	...	...	15,188,627	...	15,188,627
Grand Total, 1920 ...	104,659,484	5,291,685	...	5,551,327	76,961,308	4,136,124	9,352,366	20,457	47	92	335,026	113,908	233	38,464,870	2,286,503	40,751,373	11,509,762	...	...	11,509,762	...	...	11,509,762	...	11,512,262
Increase, 1921 ...	46,421,408	623,860	...	366,145	40,450,398	433,516	3,912,444	1,238	...	...	89,225	17,949	40	20,085,368	86,453	20,171,821	3,678,865	...	...	3,678,865	...	...	3,678,865	...	3,688,265
Decrease, 1921	9

(c) Including 1,000 gallons to New South Wales.

(c) Including 55,890 gallons to New South Wales.

Handwritten notes in the right margin:

483
 191
 58550
 2372
 61922

Table No. LXV.

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 1921.

DIVISIONS AND PETTY SESSIONS DISTRICTS.	Total Extent of Land under Artificially Sown Grasses. Acres.	Total Extent of Land under Cultivation. Acres.	Land in Fallow, Lying Idle, &c. Acres.	Total Extent of Land under Crop. Acres.	GRAIN CROPS.							POTATOES.		COTTON.		Sugar-cane. Acres.	Arrowroot. Acres.	Tobacco. Acres.	COFFEE.		Hay (All Kinds). Acres.	Green Fodder. Acres.	VINES.		Bananas. Acres.	Pineapples. Acres.	Oranges. Acres.	Gardens and Orchards. Acres.	Other Crops. Acres.			
					Wheat. Acres.	Oats. Acres.	Barley. Acres.		Maize. Acres.	Rye. Acres.	Rice. Acres.	English. Acres.	Sweet. Acres.	Pumpkins and Melons. Acres.	Bearing. Acres.				Not Bearing. Acres.	Bearing. Acres.			Not Bearing. Acres.	Bearing. Acres.						Not Bearing. Acres.	Bearing. Acres.	Not Bearing. Acres.
							Total. Acres.	Malting. Acres.																									Other. Acres.
Moreton Division.	341	7,383	945	6,438	630	60			22	63	46,837	5,978	1,422	6,795	369	78	3,896	959	3	12	28,397	49,414	385	38	5,562	3,266	2,142	1,964	1,702			
Brisbane (A)	86	1,661	102	1,562	944	35	12	80	41	4	34	204	491	7	1	...	4	2				
Brisbane (B)	5,273	8,177	1,728	6,449	...	...	...	1,206	...	55	1	18	76	2	19,822	...	...	...	291	295	1	...	...	43	136	...	3
Beaudesert	65	843	168	675	...	...	...	291	...	13	3	...	6	...	12,101	...	...	...	65	88	...	...	...	45	2	...	10
Caboolture	24	2,435	418	2,017	...	...	...	181	...	20	46	...	4	...	...	...	...	...	61	65	...	...	...	2	5	...	...			
Cleveland	1,373	2,372	684	1,688	...	...	...	2,179	...	55	17	49	179	6	4,121	...	...	...	322	1,420	...	...	...	32	10	...	189
Coooyar	722	13,927	3,704	10,223	2,773	...	20	8	...	50	151	66	2	2				
Crow's Nest	4,804	21,329	1,915	19,414	...	...	...	1,555	...	271	33	35	4	...	74	...	...	...	725	1,255	...	...	...	12	56	...	34
Dugandan	3,622	11,694	2,691	9,003	...	...	...	388	...	29	18	26	10	...	...	...	...	...	211	542	...	...	...	2	14	...	...			
Esk	5,395	30,354	9,448	20,905	...	...	...	1,955	...	174	27	20	13	...	2,018	...	...	...	530	186	...	...	...	510	22	...	...			
Gatton	311	3	2	309	...	...	...	16	...	...	5	...	7	...	...	...	...	...	3	25	...	...	...	5	1	...	...			
Goodna	337	13,188	1,738	11,450	...	...	...	16,612	...	180	8	667	14	...	...	...	...	...	3,755	5,975	...	...	...	16	77	...	...			
Harrisville	2,398	6,840	1,311	5,529	...	...	...	639	...	183	11	12	3	...	1,508	...	...	...	186	161	...	...	...	74	19	...	...			
Hellidon	2	4,359	1,689	2,670	...	...	...	4,493	...	870	40	...	42	...	...	...	...	...	2,938	7,688	...	...	...	21	154	...	...			
Ipswich	3,828	1,970	352	1,618	...	...	...	1,590	...	74	13	136	...	...	...	...	...	...	948	3,902	...	...	...	...	...	...	...
Kilcoy	643	26,841	9,489	17,352	...	...	...	18	...	4	...	9	...	...	...	...	...	...	8	61	...	...	...	...	...	...	...
Laidley	...	4,989	641	4,348	...	...	...	194	...	10	23	17	...	...	...	...	...	...	32	314	...	...	...	...	...	...	...
Logan	601	11,801	1,888	9,913	...	...	...	10	...	...	...	...	...	...	...	...	...	...	10	199	...	...	...	...	...	...	...
Lowood	56	6,928	1,158	5,770	...	...	...	46,837	...	5,978	1,422	6,795	369	78	3,896	959	3	12	28,397	49,414	385	38	5,562	3,266	2,142	1,964	1,702		
Marburg	48,737	9,712	619	9,093	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maroochy	21,702	2,773	462	2,311	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Merang	901	3,710	518	3,192	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Redcliffe	97	8,879	2,163	6,716	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rosewood	1,365	93	...	93	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Southport	12,659	1,151	474	677	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Woodford	6	628	65	563	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wynnum	...	...	...	...	630	60	22	63	46,837	5,978	1,422	6,795	369	78	3,896	959	3	12	28,397	49,414	385	38	5,562	3,266	2,142	1,964	1,702	
Total Moreton	115,038	204,366	44,372	159,994	630	60	22	63	46,837	5,978	1,422	6,795	369	78	3,896	959	3	12	28,397	49,414	385	38	5,562	3,266	2,142	1,964	1,702					
Wide Bay Division.	16,193	2,591	727	1,864	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Biggenden	636	26,404	4,318	22,086	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bundaberg	1,524	14,571	1,986	12,585	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Childers	2,130	611	214	397	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eidsvold	29,161	4,840	378	4,462	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gaydah	1,537	7,115	1,907	5,208	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gin Gin	90,938	7,153	728	6,425	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gympie	1,349	1,743	503	1,240	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kilkivan	903	5,417	904	4,513	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maryborough	...	174	108	66	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mount Perry	32,131	36,993	9,149	27,844	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nauwago	4,638	4,498	1,459	3,039	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tiaro	51,176	40,229	8,319	31,910	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wienholt	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Wide Bay	232,316	152,339	30,680	121,659	876	227	16	26	42,934	1,865	203	2,435	468	27	39,679	4	3	2	9,442	18,157	37	4	3,155	308	818	493	470					
Port Curtis Division.	3,081	3,278	1,041	2,237	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Banana	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gladstone	234	206	28	176	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mount Morgan	14,494	5,654	1,528	4,126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rockhampton	395	395	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Lawrence	8,880	3,078	1,313	1,765	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wowan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total Port Curtis	26,455	12,641	3,910	8,731	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

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

Year.	GRAIN CROPS.							POTATOES.		Pumpkins & Melons.	Cotton Unginned.	SUGAR.		Arrowroot (Tubers).	Tobacco (Cured Leaf).	Coffee.	Hay (all Kinds).	Grapes.	Bananas.	Pineapples.	Oranges.	Mangoes.	Strawberries.	Apples.	Market Garden.	Gardens and Orchards.															
	Wheat.	Oats.	Barley.		Maize.	Eye.	Rice.	English.	Sweet.			Tons of Cane Crushed.	Tons of Sugar per Acre Crushed.														Tons.	Tons.	Tons.	Lb.	Lb.	Tons.	Lb.	Bunches.	Doz.	Bushels.	Quarts.	Bushels.	Bushels.	£	£
			Malting.	Other.																																					
1912 ...	15.81	19.48	15.34	16.28	21.39	15.66	27.00	1.86	3.83	2.88	341	12.72	1.45	10.24	350	705	1.37	2,504	162	263	133	366	1,531	25	27	11															
1913 ...	13.34	13.74	12.42	14.90	24.97	10.45	23.60	1.64	4.47	3.08	165	20.29	2.36	12.91	780	1,132	1.36	2,824	140	247	156	443	1,590	59	26	12															
1914 ...	12.48	15.99	15.03	13.87	24.16	8.98	22.00	1.91	4.43	3.69	152	17.80	2.09	10.25	1,026	602	1.29	2,951	136	240	139	371	1,690	40	25	11															
1915 ...	4.42	7.24	4.83	8.44	13.68	20.35	23.00	1.28	3.61	2.25	170	12.20	1.49	7.51	493	588	0.98	2,556	148	248	132	262	1,090	30	21	9															
1916 ...	10.81	16.55	20.19	18.79	16.64	12.73	...	2.18	3.37	2.99	324	20.81	2.33	10.82	733	263	1.29	1,671	113	210	94	245	1,059	31	22	12															
1917 ...	8.10	14.89	18.67	18.56	25.37	13.84	35.00	2.06	4.82	3.36	880	24.88	2.83	10.92	372	325	1.60	1,613	148	227	146	156	694	40	27	17															
1918 ...	4.83	12.19	6.53	7.50	27.46	10.00	24.55	1.72	4.94	2.53	820	15.01	1.70	13.04	531	486	1.68	1,468	162	214	120	201	721	43	33	23															
1919 ...	6.71	7.91	10.62	11.00	17.39	6.67	6.75	1.77	2.85	2.63	517	14.83	1.91	10.87	615	671	0.86	2,002	124	172	68	193	691	36	36	23															
1920 ...	20.91	22.16	19.46	21.49	17.38	14.53	20.00	2.17	3.43	2.32	344	15.03	1.88	11.43	539	673	1.24	2,312	133	211	71	176	1,815	47	37	31															
1921 ...	18.37	15.13	16.83	18.56	21.53	12.00	7.50	1.76	4.60	3.30	484	18.60	2.30	15.10	738	791	1.41	2,245	177	221	90	197	1,513	53	37	24															
‡	12.74	17.95	17.68	17.38	21.21	14.99	25.19	1.86	4.56	3.24	398	16.70	1.92	11.10	750	489	1.40	2,218	193	248	141	318	1,324	47	24	16															

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

Table No. LXX. RETURN SHOWING THE AREA AND PRODUCE OBTAINED DURING THE YEAR 1921 FROM CERTAIN OTHER CROPS, DETAILS OF WHICH ARE NOT INCLUDED IN THE GENERAL TABLE.

Table with columns for Division, Other Fruits, Other Vegetables, and Other Miscellaneous Crops. Rows include divisions like Moreton b, Wide Bay, Port Curtis, etc., and crops like Apples, Pears, Peas, etc.

a Linseed—29 acres—7,620lb. b Linseed—8 acres—3,920 lb. * Also 8 tons copra, value £200.

Table No. LXXI.

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 1921.

PETTY SESSIONS DISTRICTS.	HAY.									
	Wheat.		Oats.		Lucerne.		Other.		Total.	
	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.	Acres.	Tons.
Allora	331	370	451	408	5,298	4,754	160	90	6,240	5,622
Beaudesert	14	17	175	335	775	1,906	6	7	970	2,265
Brisbane (A)	4	5	49	69	187	866	21	40	261	980
Brisbane (B)	2	3	50	52	113	362	19	30	184	447
Clifton	1,052	902	1,424	1,404	7,038	5,515	386	289	9,900	8,110
Crow's Nest	27	15	58	72	993	1,434	17	17	1,095	1,538
Dalby	1,346	1,738	484	585	207	278	188	221	2,225	2,822
Dugandan	20	38	134	206	3,068	7,635	382	649	3,604	8,528
Esk	4	4	84	127	1,547	4,271	38	59	1,673	4,461
Gatton	1,365	2,060	335	400	4,151	7,240	399	498	6,250	10,198
Gympie	59	83	171	246	483	808	12	33	725	1,170
Harrisville	263	328	741	1,097	2,729	5,558	498	756	4,231	7,739
Helidon	225	262	75	71	1,203	2,236	41	45	1,544	2,614
Highfields	109	151	109	122	809	1,519	4	2	1,031	1,794
Inglewood	85	81	157	238	550	908	27	26	819	1,253
Ipswich	3	5	116	159	192	402	62	88	373	654
Killarney	158	162	309	328	2,167	4,991	113	93	2,747	5,574
Laidley	851	1,318	98	94	3,852	8,025	111	112	4,912	9,549
Lowood	27	36	103	115	770	1,320	31	20	931	1,431
Marburg	16	22	119	190	393	958	64	111	592	1,281
Maryborough	84	118	116	144	249	745	81	144	530	1,151
Nanango	127	135	1,172	1,475	2,311	4,090	145	104	3,755	5,804
Oakey	1,075	1,202	952	967	3,633	3,827	211	168	5,921	6,164
Pittsworth	1,902	2,022	654	697	6,047	4,737	393	349	8,996	7,805
Rockhampton	128	226	102	144	732	1,455	234	464	1,246	2,289
Rosewood	9	15	158	221	691	1,151	90	143	948	1,530
Toowoomba	474	492	1,520	1,508	4,696	4,039	132	200	6,822	6,239
Warwick	801	986	1,326	1,502	6,966	7,546	249	325	9,342	10,359
Wienholt	170	180	318	347	2,372	5,661	78	119	2,938	6,307
All other Districts	3,106	4,301	920	1,313	2,861	6,585	463	738	7,350	12,937
Grand Total { 1921	13,837	17,277	12,480	14,636	67,183	100,822	4,655	5,940	98,155	138,675
{ 1920	14,024	18,885	19,229	24,812	53,059	63,804	7,900	9,208	94,212	116,709
Increase, 1921 ... ..	...	...	...	...	14,124	37,018	...	...	3,943	21,966
Decrease, 1921	187	1,608	6,749	10,176	...	...	3,245	3,268	...	...
Average Yield per Acre	1.25		1.17		1.50		1.28		1.41	

Table No. LXXII.

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 1921.

PETTY SESSIONS DISTRICTS.	GREEN CROPS.				
	Wheat.	Oats.	Lucerne.	Other.	Total of all Kinds.
	Acres.	Acres.	Acres.	Acres.	Acres.
Allora	668	1,140	1,761	1,357	4,926
Beaudesert	165	577	1,037	860	2,639
Brisbane (A)	143	204	147	1,759	2,253
Brisbane (B)	14	55	58	675	802
Clifton	1,529	2,842	5,304	3,146	12,821
Crow's Nest	167	2,732	133	1,011	4,043
Dalby	1,714	1,087	171	1,373	4,345
Dugandan	194	2,544	250	2,529	5,517
Esk	94	1,447	479	2,123	4,143
Gatton	615	1,035	180	3,156	4,986
Goombungee	230	2,104	427	485	3,246
Gympie	72	503	163	517	1,255
Harrisville	161	1,308	480	1,470	3,419
Helidon	301	758	131	781	1,971
Highfields	142	1,279	575	444	2,440
Ipswich	48	333	159	897	1,487
Jondaryan	649	2,152	41	1,101	3,943
Killarney	138	1,213	1,748	1,695	4,794
Laidley	390	305	275	2,067	3,037
Lowood	84	809	241	1,844	2,978
Marburg	45	503	54	2,228	2,830
Nanango	284	4,078	431	1,182	5,975
Oakey	1,164	4,494	1,103	2,621	9,382
Pittsworth	4,004	3,712	2,370	2,973	13,064
Redcliffe	66	134	142	1,190	1,532
Rosewood	78	829	1,155	1,840	3,902
Toowoomba	976	3,787	2,573	1,796	9,132
Warwick	691	1,503	2,013	2,570	6,777
Wienholt	391	3,556	744	2,897	7,588
All other Districts	1,263	2,720	1,075	6,850	11,908
Grand Total { 1921	16,480	49,793	25,420	55,442	147,135
{ 1920	8,432	33,375	26,505	74,242	142,554
Increase, 1921	8,048	16,418	...	...	4,581
Decrease, 1921 ... ..	...	...	1,085	18,800	...

Table No. LXXIII.
RETURN SHOWING AVERAGE YIELD PER ACRE OF CROPS IN EACH DIVISION OF THE STATE FOR THE YEAR 1921.

Division.	GRAIN CROPS.							POTATOES.		Sugar-cane (to Acres Crushed)	Cotton.	Arrow-root (Tuber).	Tobacco (Dried Leaf).	Coffee.	Pumpkins and Melons.	Hay of all Kinds.	Grapes.	Bananas.	Pine-apples.	Oranges.
	Wheat.	Oats.	Barley, Maltng.	Barley, Other.	Maize.	Rye.	Rice.	English.	Sweet.											
Moreton	19-91	10-77	23-73	16-68	20-05	...	...	1-72	5-01	22-69	617	15-17	402	618	3-19	1-95	1,198	169	227	96
Wide Bay	13-17	20-48	20-63	19-35	21-09	12-00	...	1-65	4-13	20-58	496	12-50	156	350	4-12	1-88	1,616	200	195	86
Fort Curtis	...	...	...	10-00	16-16	...	...	2-59	2-56	22-49	489	5-00	...	...	2-21	1-91	1,841	181	208	130
Edgecumbe	30-00	...	...	...	18-75	7-50	...	2-25	3-05	17-42	388	...	583	112	1-95	1-64	1,756	122	221	71
Rockingham	...	...	...	...	29-57	...	...	2-48	4-81	...	...	...	...	2,233	4-09	1-19	2,341	143	164	96
York Peninsula	...	...	...	...	31-35	...	...	2-00	2-69	18-50	...	...	...	...	1-83	...	...	89	156	49
Carpentaria	...	...	...	...	19-24	...	...	2-00	4-40	...	...	...	...	...	2-29	1-00	1,640	120	...	111
Central-western	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South-western	...	...	...	...	10-00	...	...	2-00	...	...	...	...	...	...	...	1-38	3,460	...	...	66
Central	...	...	...	...	19-39	...	...	1-40	2-67	...	372	...	...	...	1-52	1-78	4,702	...	...	143
Maranoa	14-41	14-50	17-08	12-00	9-93	...	...	0-94	4-33	...	361	...	...	...	2-96	1-31	2,821	...	...	60
Downs	18-79	14-65	16-80	18-64	20-86	...	...	1-59	2-60	...	326	...	770	...	1-70	1-05	3,202	...	...	46
TOTAL AVERAGE YIELD, 1921	18-37	15-13	16-83	18-56	21-53	12-00	7-50	1-76	4-60	18-60	484	15-10	738	791	3-30	1-41	2,245	177	221	90
" " " 1920	20-91	22-16	19-46	21-49	17-38	14-53	20-00	2-17	3-43	15-03	344	11-43	539	673	2-32	1-24	2,312	133	211	71
INCREASE, 1921	...	...	...	...	4-15	...	...	...	1-17	3-57	140	2-67	199	118	0-98	0-17	...	44	10	19
DECREASE, 1921	2-54	7-03	2-63	2-93	...	2-53	12-50	0-41	...	...	...	...	...	...	...	...	67	...	...	...

Table No. LXXIV.

RETURN SHOWING THE AREA, YIELD, AND VALUE OF CROPS FOR THE YEAR 1921.

Description of Crop.		Area.	Yield.	Value.
		Acres.		£
Cereals	Barley { Malting	5,558	93,567 bushels	15,205
	Barley { Other	2,172	40,318 "	5,040
	Maize	135,034	2,907,754 "	654,245
	Oats	2,274	34,409 "	4,444
	Rye	5	60 "	14
	Wheat	164,670	3,025,786 "	857,306
	Other Cereals—Rice	8	60 "	30
Grass Seed		597	10,878 "	9,518
Green Forage (all kinds)		147,135		735,675
Hay	Lucerne	67,183	100,822 tons	554,521
	Oaten	12,480	14,636 "	131,724
	Wheaten	13,837	17,277 "	103,662
	Other	4,655	5,940 "	32,671
Straw	Oaten		318 "	1,081
	Wheaten		12,299 "	41,817
	Other		535 "	1,819
Pulse	Beans	53	7,237 bushels	2,623
	Peas	36	1,231 "	554
Root Crops	Arrowroot (Tubers)	968	14,619 tons	14,619
	Mangolds	109	795 "	2,783
	Onions	266	15,320 cwt.	5,362
	Potatoes	9,553	16,794 tons	119,237
	" Sweet	1,953	9,009 "	25,526
	Tapioca	1	5 cwt.	1
	Turnips (including Swede Turnips)	152	501 tons	1,854
	Other (Yams)	30	28 "	98
Grapes, Productive	For table use	1,042	1,349,052 lb.	25,295
	For wine		989,914 "	18,561
	For drying purposes			
" Unproductive			(Wine made)	
Sugar-cane, Productive	239	57,793 gallons		
" Unproductive	122,956	2,287,416 tons	5,794,787	
Tobacco	61,557			
Market Gardens	1,965	146,094 lb.	11,764	
Orchards and Fruit Gardens	Apples	2,203	117,223 bushels	72,155
	Apricots	110	4,073 "	64,473
	Bananas	9,873	1,742,786 bunches	363,080
	Cherries	16	654 bushels	741
	Citrons	4	28 "	4
	Custard Apples	207	15,572 "	7,786
	Figs	14	1,166 "	680
	Gooseberries (Cape)	40	52,772 quarts	1,869
	Lemons	367	21,514 bushels	8,964
	Mangoes	250	49,158 "	15,567
	Nectarines	231	11,422 "	4,378
	Oranges	2,828	255,818 "	118,316
	Passion Fruit	40	4,286 "	3,536
	Pawpaws	258	57,262 dozens	9,305
	Peaches	1,973	100,703 bushels	46,156
	Pears	292	9,463 "	6,151
	Persimmons	12	1,068 "	463
	Pineapples	3,956	876,101 dozens	162,521
	Plums	907	29,696 bushels	18,065
	Quinces	56	1,872 "	593
	Rosellas	2	108 "	14
	Strawberries	162	245,089 quarts	30,976
	Pomaloe	5	60 bushels	30
Other (Private, &c.)	723		14,675	
Unproductive	2,755			
Broom Millet	195	97,934 lb.	1,121	
Cabbages	788	166,334 dozens	60,989	
Canary Seed	2,111	989,306 lb.	5,521	
Cocoanuts	750	11,877 dozens	2,375	
Coffee	19	15,034 lb.	564	
Cotton, Unproductive	858			
Cotton	1,944	940,126 "	21,545	
Cowpea	61	719 bushels	359	
Cucumbers	199	68,381 dozens	3,704	
Green Beans	368	28,430 bushels	10,306	
Green Peas	285	18,535 "	8,341	
India Rubber	5			
Lucerne Seed	3	3,696 lb.	462	
Millet Seed	39	522 bushels	112	
Peanuts	521	551,047 lb.	10,332	
Pumpkins and Melons	10,199	33,640 tons	109,330	
Sunflowers	1	28 cwt.	21	
Tomatoes	2,128	218,742 bushels	153,119	
Miscellaneous—				
Chocos	4	1,451 dozens	33	
Linseed	37	11,540 lb.	192	
Chillies	4	678 bushels	509	
Marrows	9	23 tons	196	
Herbs	2	30 cwt.	210	
Egg Fruit	1	264 bushels	53	
Total under Crop	804,507		£10,514,659	
Land in fallow	95,887			
Area under permanent artificially sown grasses	459,914			
New ground broken up during season	12,427			
Previously cropped land lying idle during season	132,521			
Total area of arable land	1,505,256			

Price 3s. 9d.]

G. PORTER,
Registrar-General.

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